INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI 2005–2010

RC-Specific Evaluation of ATM – Center of Excellence in Physics, Chemistry, Biology and Meteorology of Atmospheric Composition and Climate Change

Seppo Saari & Antti Moilanen (Eds.)
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Summary:
Researcher Community (RC) was a new concept of the participating unit in the evaluation. Participation in the evaluation was voluntary and the RCs had to choose one of the five characteristic categories to participate. Evaluation of the Researcher Community was based on the answers to the evaluation questions. In addition a list of publications and other activities were provided by the TUHAT system. The CWTS/Leiden University conducted analyses for 80 RCs and the Helsinki University Library for 66 RCs. Panellists, 49 and two special experts in five panels evaluated all the evaluation material as a whole and discussed the feedback for RC-specific reports in the panel meetings in Helsinki. The main part of this report is consisted of the feedback which is published as such in the report.

Chapters in the report:
1. Background for the evaluation
2. Evaluation feedback for the Researcher Community
3. List of publications
4. List of activities
5. Bibliometric analyses

The level of the RCs’ success can be concluded from the written feedback together with the numeric evaluation of four evaluation questions and the category fitness. More conclusions of the success can be drawn based on the University-level report.

RC-specific information:

Main scientific field of research: Natural Sciences

Participation category:
1. Research of the participating community represents the international cutting edge in its field

RC’s responsible person: Kulmala, Markku

RC-specific keywords:
Atmosphere, biosphere, aerosols, air chemistry, meteorology, climate change, greenhouse gases, volatile organic compounds, boreal ecosystems, feedbacks, carbon cycle, nitrogen cycle, water cycle, multi-scale modeling, field measurements, health effects, tree ecophysiology, dynamic meteorology, biogeochemistry

Keywords:
Research Evaluation, Meta-evaluation, Doctoral Training, Bibliometric Analyses, Researcher Community
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The evaluation of research and doctoral training is being carried out in the years 2010–2012 and will end in 2012. The steering group appointed by the Rector in January 2010 set the conditions for participating in the evaluation and prepared the Terms of Reference to present the evaluation procedure and criteria. The publications and other scientific activities included in the evaluation covered the years 2005–2010.

The participating unit in the evaluation was defined as a Researcher Community (RC). To obtain a critical mass with university-level impact, the number of members was set to range from 20 to 120. The RCs were required to contain researchers in all stages of their research career, from doctoral students to principal investigators (PIs). All in all, 136 Researcher Communities participated in this voluntary evaluation, 5857 persons in total, of whom 1131 were principal investigators. PIs were allowed to participate in two communities in certain cases, and 72 of them used this opportunity and participated in two RCs.

This evaluation enabled researchers to define RCs from the “bottom up” and across disciplines. The aim of the evaluation was not to assess individual performance but a community with shared aims and researcher-training activities. The RCs were able to choose among five different categories that characterised the status and main aims of their research. The steering group considered the process of applying to participate in the evaluation to be important, which lead to the establishment of these categories. In addition, providing a service for the RCs to enable them to benchmark their research at the global level was a main goal of the evaluation.

The data for the evaluation consisted of the RCs’ answers to evaluation questions on supplied e-forms and a compilation extracted from the TUHAT – Research Information System (RIS) on 12 April 2011. The compilation covered scientific and other publications as well as certain areas of scientific activities. During the process, the RCs were asked to check the list of publications and other scientific activities and make corrections if needed. These TUHAT compilations are public and available on the evaluation project sites of each RC in the TUHAT-RIS.

In addition to the e-form and TUHAT compilation, University of Leiden (CWTS) carried out bibliometric analyses from the articles included in the Web of Science (WoS). This was done on University and RC levels. In cases where the publication forums of the RC were clearly not represented by the WoS data, the Library of the University of Helsinki conducted a separate analysis of the publications. This was done for 66 RCs representing the humanities and social sciences.

The evaluation office also carried out an enquiry targeted to the supervisors and PhD candidates about the organisation of doctoral studies at the University of Helsinki. This and other documents describing the University and the Finnish higher education system were provided to the panellists.

The panel feedback for each RC is unique and presented as an entity. The first collective evaluation reports available for the whole panel were prepared in July–August 2011. The reports were accessible to all panel members via the electronic evaluation platform in August. Scoring from 1 to 5 was used to complement written feedback in association with evaluation questions 1–4 (scientific focus and quality, doctoral training, societal impact, cooperation) and in addition to the category evaluating the fitness for participation in the evaluation. Panellists used the international level as a point of comparison in the evaluation. Scoring was not expected to go along with a preset deviation.

Each of the draft reports were discussed and dealt with by the panel in meetings in Helsinki (from 11 September to 13 September or from 18 September to 20 September 2011). In these meetings the panels also examined the deviations among the scores and finalised the draft reports together.

The current RC-specific report deals shortly with the background of the evaluation and the terms of participation. The main evaluation feedback is provided in the evaluation report, organised according to the evaluation questions. The original material provided by the RCs for the panellists has been attached to these documents.
On behalf of the evaluation steering group and office, I sincerely wish to thank you warmly for your participation in this evaluation. The effort you made in submitting the data to TUHAT-RIS is gratefully acknowledged by the University. We wish that you find this panel feedback useful in many ways. The bibliometric profiles may open a new view on your publication forums and provide a perspective for discussion on your choice of forums. We especially hope that this evaluation report will help you in setting the future goals of your research.

Johanna Björkroth  
Vice-Rector  
Chair of the Steering Group of the Evaluation

Steering Group of the evaluation  
Steering group, nominated by the Rector of the University, was responsible for the planning of the evaluation and its implementation having altogether 22 meetings between February 2010 and March 2012.

Chair  
Vice-Rector, professor Johanna Björkroth

Vice-Chair  
Professor Marja Airaksinen  
Chief Information Specialist, Dr Maria Forsman  
Professor Arto Mustajoki  
University Lecturer, Dr Kirsi Pyhältö  
Director of Strategic Planning and Development, Dr Ossi Tuomi  
Doctoral candidate, MSocSc Jussi Vauhkonen
Panel members

CHAIR
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Materials science in chemistry and physics, nanotechnology, inorganic chemistry
Uppsala University, Sweden

VICE-CHAIR
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Computer science, information technology
University of Utrecht, the Netherlands

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Probability and statistics, archeology, palaeoenvironmental science
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Mathematics, inverse problems of acoustic and electromagnetic scattering
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Mathematics, dynamical systems, mathematical physics
University of Geneva, Switzerland

Professor Ritske Huismans
Geosciences, geodynamics
University of Bergen, Norway

Professor Jukka Jurvelin
Medical physics and engineering
University of Eastern Finland

Professor Lea Kauppi
Environmental sciences, water research
The Finnish Environment Institute, Finland

Professor Rilitta Keiski
Chemical engineering, heterogeneous catalysis, environmental technology, mass and heat transfer processes
University of Oulu, Finland

Professor Mats Larsson
Experimental molecular physics, chemical dynamics, molecular spectroscopy, astrobiology
Stockholm University, Sweden

Professor Holger Stark
Medicinal, organic and pharmaceutical chemistry, pharmacology
Johann Wolfgang Goethe Universität, Germany

The panel, independently, evaluated all the submitted material and was responsible for the feedback of the RC-specific reports. The panel members were asked to confirm whether they had any conflict of interests with the RCs. If this was the case, the panel members disqualified themselves in discussion and report writing.
Added expertise to the evaluation was contributed by the members from the other panels.

**Experts from the Other Panels**
- **Professor Barbara Koch**, from the Panel of Biological, Agricultural and Veterinary Sciences
- **Professor Peter York**, from the Panel of Medicine, Biomedicine and Health Sciences

**EVALUATION OFFICE**
- **Dr Seppo Saari, Doc.**, Senior Adviser in Evaluation, was responsible for the entire evaluation, its planning and implementation and acted as an Editor-in-chief of the reports.

- **Dr Eeva Sievi, Doc.**, Adviser, was responsible for the registration and evaluation material compilations for the panellists. She worked in the evaluation office from August 2010 to July 2011.

- **MSocSc Paula Ranne**, Planning Officer, was responsible for organising the panel meetings and all the other practical issues like agreements and fees and editing a part the RC-specific reports. She worked in the evaluation office from March 2011 to January 2012.

- **Mr Antti Molanen**, Project Secretary, was responsible for editing the reports. He worked in the evaluation office from January 2012 to April 2012.

**TUHAT OFFICE**

**Provision of the publication and other scientific activity data**
- **Mrs Aija Kaitera**, Project Manager of TUHAT-RIS served the project ex officio providing the evaluation project with the updated information from TUHAT-RIS. The TUHAT office assisted in mapping the publications with CWTS/University of Leiden.

- **MA Liisa Ekebom**, Assisting Officer, served in TUHAT-RIS updating the publications for the evaluation. She also assisted the UH/Library analyses.

- **BA Liisa Jäppinen**, Assisting Officer, served in TUHAT-RIS updating the publications for the evaluation.

**HELSINKI UNIVERSITY LIBRARY**

**Provision of the publication analyses**
- **Dr Maria Forsman**, Chief Information Specialist in the Helsinki University Library, managed with her 10 colleagues the bibliometric analyses in humanities, social sciences and in other fields of sciences where CWTS analyses were not applicable.
Acronyms and abbreviations applied in the report

**External competitive funding**
AF – Academy of Finland
TEKES - Finnish Funding Agency for Technology and Innovation
EU - European Union
ERC - European Research Council
International and national foundations
FP7/6 etc. /Framework Programmes/Funding of European Commission

**Evaluation marks**
Outstanding (5)
Excellent (4)
Very Good (3)
Good (2)
Sufficient (1)

**Abbreviations of Bibliometric Indicators**
P - Number of publications
TCS – Total number of citations
MCS - Number of citations per publication, excluding self-citations
PNC - Percentage of uncited publications
MNCS - Field-normalized number of citations per publication
MNJS - Field-normalized average journal impact
THCP10 - Field-normalized proportion highly cited publications (top 10%)
INT_COV - Internal coverage, the average amount of references covered by the WoS
WoS – Thomson Reuters Web of Science Databases

**Participation category**
Category 1. The research of the participating community represents the international cutting edge in its field.
Category 2. The research of the participating community is of high quality, but the community in its present composition has yet to achieve strong international recognition or a clear break-through.
Category 3. The research of the participating community is distinct from mainstream research, and the special features of the research tradition in the field must be considered in the evaluation.
Category 4. The research of the participating community represents an innovative opening.
Category 5. The research of the participating community has a highly significant societal impact.

**Research focus areas of the University of Helsinki**
Focus area 1: The basic structure, materials and natural resources of the physical world
Focus area 2: The basic structure of life
Focus area 3: The changing environment – clean water
Focus area 4: The thinking and learning human being
Focus area 5: Welfare and safety
Focus area 6: Clinical research
Focus area 7: Precise reasoning
Focus area 8: Language and culture
Focus area 9: Social justice
Focus area 10: Globalisation and social change
1 Introduction to the Evaluation

1.1 RC-specific evaluation reports

The participants in the evaluation of research and doctoral training were Researcher Communities (hereafter referred to as the RC). The RC refers to the group of researchers who registered together in the evaluation of their research and doctoral training. Preconditions in forming RCs were stated in the Guidelines for the Participating Researcher Communities. The RCs defined themselves whether their compositions should be considered well-established or new.

It is essential to emphasise that the evaluation combines both meta-evaluation1 and traditional research assessment exercise and its focus is both on the research outcomes and procedures associated with research and doctoral training. The approach to the evaluation is enhancement-led where self-evaluation constituted the main information. The answers to the evaluation questions formed together with the information of publications and other scientific activities an entity that was to be reviewed as a whole.

The present evaluation recognizes and justifies the diversity of research practices and publication traditions. Traditional Research Assessment Exercises do not necessarily value high quality research with low volumes or research distinct from mainstream research. It is challenging to expose the diversity of research to fair comparison. To understand the essence of different research practices and to do justice to their diversity was one of the main challenges of the present evaluation method. Understanding the divergent starting points of the RCs demanded sensitivity from the evaluators.

1.2 Aims and objectives in the evaluation

The aims of the evaluation are as follows:

- to improve the level of research and doctoral training at the University of Helsinki and to raise their international profile in accordance with the University’s strategic policies. The improvement of doctoral training should be compared to the University’s policy.2
- to enhance the research conducted at the University by taking into account the diversity, originality, multidisciplinary nature, success and field-specificity,
- to recognize the conditions and prerequisites under which excellent, original and high-impact research is carried out,
- to offer the academic community the opportunity to receive topical and versatile international peer feedback,
- to better recognize the University’s research potential.
- to exploit the University’s TUHAT research information system to enable transparency of publishing activities and in the production of reliable, comparable data.

1.3 Evaluation method

The evaluation can be considered as an enhancement-led evaluation. Instead of ranking, the main aim is to provide useful information for the enhancement of research and doctoral training of the participating RCs. The comparison should take into account each field of science and acknowledge their special character.

1 The panellists did not read research reports or abstracts but instead, they evaluated answers to the evaluation questions, tables and compilations of publications, other scientific activities, bibliometrics or comparable analyses.
2 Policies on doctoral degrees and other postgraduate degrees at the University of Helsinki.
The comparison produced information about the present status and factors that have lead to success. Also challenges in the operations and outcomes were recognized.

The evaluation approach has been designed to recognize better the significance and specific nature of researcher communities and research areas in the multidisciplinary top-level university. Furthermore, one of the aims of the evaluation is to bring to light those evaluation aspects that differ from the prevalent ones. Thus the views of various fields of research can be described and research arising from various starting points understood better. The doctoral training is integrated into the evaluation as a natural component related to research. Operational processes of doctoral training are being examined in the evaluation.

**Five stages of the evaluation method were:**
1. Registration – Stage 1
2. Self-evaluation – Stage 2
3. TUHAT\(^3\) compilations on publications and other scientific activities\(^4\)
4. External evaluation
5. Public reporting

### 1.4 Implementation of the external evaluation

**Five Evaluation Panels**

Five evaluation panels consisted of independent, renowned and highly respected experts. The main domains of the panels are:

1. biological, agricultural and veterinary sciences
2. medicine, biomedicine and health sciences
3. natural sciences
4. humanities
5. social sciences

The University invited 10 renowned scientists to act as chairs or vice-chairs of the five panels based on the suggestions of faculties and independent institutes. Besides leading the work of the panel, an additional role of the chairs was to discuss with other panel chairs in order to adopt a broadly similar approach. The panel chairs and vice-chairs had a pre-meeting on 27 May 2011 in Amsterdam.

The panel compositions were nominated by the Rector of the University 27 April 2011. The participating RCs suggested the panel members. The total number of panel members was 50. The reason for a smaller number of panellists as compared to the previous evaluations was the character of the evaluation as a meta-evaluation. The panellists did not read research reports or abstracts but instead, they evaluated answers to the evaluation questions, tables and compilations of publications, other scientific activities, bibliometrics and comparable analyses.

The panel meetings were held in Helsinki:

- On 11–13 September 2011: (1) biological, agricultural and veterinary sciences, (2) medicine, biomedicine and health sciences and (3) natural sciences.
- On 18–20 September 2011: (4) humanities and (5) social sciences.

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\(^3\) TUHAT (acronym) of Research Information System (RIS) of the University of Helsinki

\(^4\) Supervision of thesis, prizes and awards, editorial work and peer reviews, participation in committees, boards and networks and public appearances.
1.5 Evaluation material

The main material in the evaluation was the RCs’ self-evaluations that were qualitative in character and allowed the RCs to choose what was important to mention or emphasise and what was left unmentioned.

The present evaluation is exceptional at least in the Finnish context because it is based on both the evaluation documentation (self-evaluation questions, publications and other scientific activities) and the bibliometric reports. All documents were delivered to the panellists for examination.

Traditional bibliometrics can be reasonably done mainly in medicine, biosciences and natural sciences when using the Web of Science database, for example. Bibliometrics, provided by CWTS/The Centre for Science and Technology Studies, University of Leiden, cover only the publications that include WoS identification in the TUHAT-RIS.

Traditional bibliometrics are seldom relevant in humanities and social sciences because the international comparable databases do not store every type of high quality research publications, such as books and monographs and scientific journals in other languages than English. The Helsinki University Library has done analysis to the RCs, if their publications were not well represented in the Web of Science databases (RCs should have at least 50 publications and internal coverage of publications more than 40%) – it meant 58 RCs. The bibliometric material for the evaluation panels was available in June 2011. The RC-specific bibliometric reports are attached at the end of each report.

The panels were provided with the evaluation material and all other necessary background information, such as the basic information about the University of Helsinki and the Finnish higher education system.

Evaluation material
1. Registration documents of the RCs for the background information
2. Self evaluation material – answers to the evaluation questions
3. Publications and other scientific activities based on the TUHAT RIS:
   3.1. statistics of publications
   3.2. list of publications
   3.3. statistics of other scientific activities
   3.4. list of other scientific activities
4. Bibliometrics and comparable analyses:
   4.1. Analyses of publications based on the verification of TUHAT-RIS publications with the Web of Science publications (CWTS/University of Leiden)
   4.2. Publication statistics analysed by the Helsinki University Library - mainly for humanities and social sciences
5. University level survey on doctoral training (August 2011)
6. University level analysis on publications 2005–2010 (August 2011) provided by CWTS/University of Leiden

Background material

University of Helsinki
- Basic information about the University of the Helsinki
- The structure of doctoral training at the University of Helsinki
- Previous evaluations of research at the University of Helsinki – links to the reports: 1998 and 2005

The Finnish Universities/Research Institutes
- Finnish University system
- Evaluation of the Finnish National Innovation System
- The State and Quality of Scientific Research in Finland. Publication of the Academy of Finland 9/09.

The evaluation panels were provided also with other relevant material on request before the meetings in Helsinki.
1.6 Evaluation questions and material

The participating RCs answered the following evaluation questions which are presented according to the evaluation form. In addition, TUHAT RIS was used to provide the additional material as explained. For giving the feedback to the RCs, the panellists received the evaluation feedback form constructed in line with the evaluation questions:

1. Focus and quality of the RC’s research
   - Description of
     - the RC’s research focus.
     - the quality of the RC’s research (incl. key research questions and results)
     - the scientific significance of the RC’s research in the research field(s)
   - Identification of the ways to strengthen the focus and improve the quality of the RC’s research

The additional material: TUHAT compilation of the RC’s publications, analysis of the RC’s publications data (provided by University of Leiden and the Helsinki University Library)
A written feedback from the aspects of: scientific quality, scientific significance, societal impact, innovativeness
   - Strengths
   - Areas of development
   - Other remarks
   - Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)

2. Practises and quality of doctoral training
   - Organising of the doctoral training in the RC. Description of the RC’s principles for:
     - recruitment and selection of doctoral candidates
     - supervision of doctoral candidates
     - collaboration with faculties, departments/institutes, and potential graduate schools/doctoral programmes
     - good practises and quality assurance in doctoral training
   - Identification of the ways to strengthen the practises and quality of doctoral training, and the actions planned for their development.

The additional material: TUHAT compilation of the RC’s other scientific activities/supervision of doctoral dissertations
A written feedback from the aspects of: processes and good practices related to leadership and management
   - Strengths
   - Areas of development
   - Other remarks
   - Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)

3. The societal impact of research and doctoral training
   - Description on how the RC interacts with and contributes to the society (collaboration with public, private and/or 3rd sector).
   - Identification of the ways to strengthen the societal impact of the RC’s research and doctoral training.

The additional material: TUHAT compilation of the RC’s other scientific activities.
A written feedback from the aspects of: societal impact, national and international collaboration, innovativeness
   - Strengths
   - Areas of development
   - Other remarks
   - Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)
4. International and national (incl. intersectoral) research collaboration and researcher mobility

- Description of
  - the RC's research collaborations and joint doctoral training activities
  - how the RC has promoted researcher mobility
- Identification of the RC's strengths and challenges related to research collaboration and researcher mobility, and the actions planned for their development.

A written feedback from the aspects of: scientific quality, national and international collaboration

- Strengths
- Areas of development
- Other remarks
- Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)

5. Operational conditions

- Description of the operational conditions in the RC's research environment (e.g. research infrastructure, balance between research and teaching duties).
- Identification of the RC's strengths and challenges related to operational conditions, and the actions planned for their development.

A written feedback from the aspects of: processes and good practices related to leadership and management

- Strengths
- Areas of development
- Other remarks
- Recommendations

6. Leadership and management in the researcher community

- Description of
  - the execution and processes of leadership in the RC
  - how the management-related responsibilities and roles are distributed in the RC
  - how the leadership- and management-related processes support
    - high quality research
    - collaboration between principal investigators and other researchers in the RC
    - the RC's research focus
    - strengthening of the RC's know-how
- Identification of the RC's strengths and challenges related to leadership and management, and the actions planned for developing the processes

7. External competitive funding of the RC

- The RCs were asked to provide information of such external competitive funding, where:
  - the funding decisions have been made during 1.1.2005-31.12.2010, and
  - the administrator of the funding is/has been the University of Helsinki
- On the e-form the RCs were asked to provide:
  1) The relevant funding source(s) from a given list (Academy of Finland/Research Council, TEKES/The Finnish Funding Agency for Technology and Innovation, EU, ERC, foundations, other national funding organisations, other international funding organisations), and
  2) The total sum of funding which the organisation in question had decided to allocate to the RCs members during 1.1.2005–31.12.2010.

Competitive funding reported in the text is also to be considered when evaluating this point.

A written feedback from the aspects of: scientific quality, scientific significance, societal impact, innovativeness, future significance

- Strengths
- Areas of development
- Other remarks
- Recommendations

8. The RC's strategic action plan for 2011-2013

- RC's description of their future perspectives in relation to research and doctoral training.

A written feedback from the aspects of: scientific quality, scientific significance, societal impact, processes and good practices related to leadership and management, national and international collaboration, innovativeness, future significance

- Strengths
- Areas of development
9. Evaluation of the category of the RC in the context of entity of the evaluation material (1-8)

The RC's fitness to the chosen participation category
A written feedback evaluating the RC's fitness to the chosen participation category
- Strengths
- Areas of development
- Other remarks
- Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)

10. Short description of how the RC members contributed the compilation of the stage 2 material

Comments on the compilation of evaluation material

11. How the UH’s focus areas are presented in the RC’s research?
Comments if applicable

12. RC-specific main recommendations based on the previous questions 1-11

13. RC-specific conclusions

1.7 Evaluation criteria

The panellists were expected to give evaluative and analytical feedback to each evaluation question according to their aspects in order to describe and justify the quality of the submitted material. In addition, the evaluation feedback was asked to be pointed out the level of the performance according to the following classifications:
- outstanding (5)
- excellent (4)
- very good (3)
- good (2)
- sufficient (1)

Evaluation according to the criteria was to be made with thorough consideration of the entire evaluation material of the RC in question. Finally, in questions 1-4 and 9, the panellists were expected to classify their written feedback into one of the provided levels (the levels included respective descriptions, ‘criteria’). Some panels used decimals in marks. The descriptive level was interpreted according to the integers and not rounding up the decimals by the editors.

Description of criteria levels

Question 1 – FOCUS AND QUALITY OF THE RC’S RESEARCH

Classification: Criteria (level of procedures and results)

Outstanding quality of procedures and results (5)
Outstandingly strong research, also from international perspective. Attracts great international interest with a wide impact, including publications in leading journals and/or monographs published by leading international publishing houses. The research has world leading qualities. The research focus, key research questions scientific significance, societal impact and innovativeness are of outstanding quality.

In cases where the research is of a national character and, in the judgement of the evaluators, should remain so, the concepts of “international attention” or “international impact” etc. in the grading criteria above may be replaced by “international comparability”.

Other remarks
Recommendations
Operations and procedures are of outstanding quality, transparent and shared in the community. The improvement of research and other efforts are documented and operations and practices are in alignment with the documentation. The ambition to develop the community together is of outstanding quality.

**Excellent quality of procedures and results (4)**

Research of excellent quality. Typically published with great impact, also internationally. Without doubt, the research has a leading position in its field in Finland.

Operations and procedures are of excellent quality, transparent and shared in the community. The improvement of research and other efforts are documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of excellent quality.

**Very good quality of procedures and results (3)**

The research is of such very good quality that it attracts wide national and international attention.

Operations and procedures are of very good quality, transparent and shared in the community. The improvement of research and other efforts are documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of very good quality.

**Good quality of procedures and results (2)**

Good research attracting mainly national attention but possessing international potential, extraordinarily high relevance may motivate good research.

Operations and procedures are of good quality, shared occasionally in the community. The improvement of research and other efforts are occasionally documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of good quality.

**Sufficient quality of procedures and results (1)**

In some cases the research is insufficient and reports do not gain wide circulation or do not have national or international attention. Research activities should be revised.

Operations and procedures are of sufficient quality, shared occasionally in the community. The improvement of research and other efforts are occasionally documented and operations and practices are to some extent in alignment with the documentation. The ambition to develop the community together is of sufficient quality.

**Question 2 – DOCTORAL TRAINING**

**Question 3 – SOCIETAL IMPACT**

**Question 4 – COLLABORATION**

**Classification: Criteria (level of procedures and results)**

**Outstanding quality of procedures and results (5)**

Procedures are of outstanding quality, transparent and shared in the community. The practices and quality of doctoral training/societal impact/international and national collaboration/leadership and management are documented and operations and practices are in alignment with the documentation. The ambition to develop the community together is of outstanding quality. The procedures and results are regularly evaluated and the feedback has an effect on the planning.

**Excellent quality of procedures and results (4)**

Procedures are of excellent quality, transparent and shared in the community. The practices and quality of doctoral training/societal impact/international and national collaboration/leadership and management are documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of excellent quality. The procedures and outcomes are evaluated and the feedback has an effect on the planning.

**Very good quality of procedures and results (3)**

Procedures are of very good quality, transparent and shared in the community. The practices and quality of doctoral training/societal impact/international and national collaboration/leadership and
management are documented and operations and practices are to large extent in alignment with the
documentation. The ambition to develop the community together is of very good quality.

**Good quality of procedures and results (2)**

Procedures are of good quality, shared occasionally in the community. The practices and quality of
doctoral training/societal impact/international and national collaboration/leadership and
management are documented and operations and practices are to large extent in alignment with the
documentation. The ambition to develop the community together is of good quality.

**Sufficient quality of procedures and results (1)**

Procedures are of sufficient quality, transparent and shared in the community. The practices and
quality of doctoral training/societal impact/international and national collaboration/leadership and
management are occasionally documented and operations and practices are to some extent in
alignment with the documentation. The ambition to develop the community together is of sufficient
quality.

**Question 9 – CATEGORY**

Participation category – fitness for the category chosen

The choice and justification for the chosen category below should be reflected in the RC's responses to the
evaluation questions 1–8.

1. *The research of the participating community represents the international cutting edge in its field.*
2. *The research of the participating community is of high quality, but the community in its present
composition has yet to achieve strong international recognition or a clear break-through.*
3. *The research of the participating community is distinct from mainstream research, and the special
features of the research tradition in the field must be considered in the evaluation.* The research is
of high quality and has great significance and impact in its field. However, the generally used
research evaluation methods do not necessarily shed sufficient light on the merits of the
research.
4. *The research of the participating community represents an innovative opening.* A new opening can
be an innovative combination of research fields, or it can be proven to have a special social,
national or international demand or other significance. Even if the researcher community in its
present composition has yet to obtain proof of international success, its members can produce
convincing evidence of the high level of their previous research.
5. *The research of the participating community has a highly significant societal impact.* The
participating researcher community is able to justify the high social significance of its research.
The research may relate to national legislation, media visibility or participation in social debate,
or other activities promoting social development and human welfare. In addition to having
societal impact, the research must be of a high standard.

**An example of outstanding fitness for category choice (5)**

The RC's representation and argumentation for the chosen category were convincing. The RC recognized
its real capacity and apparent outcomes in a wider context to the research communities. The specific
character of the RC was well-recognized and well stated in the responses. The RC fitted optimally for the
category.

- Outstanding (5)
- Excellent (4)
- Very good (3)
- Good (2)
- Sufficient (1)

The above-mentioned definition of outstanding was only an example in order to assist the panellists in
the positioning of the classification. There was no exact definition for the category fitness.

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5 The panels discussed the category fitness and made the final conclusions of the interpretation of it.
1.8 Timetable of the evaluation

The main timetable of the evaluation:

1. Registration November 2010
3. External peer review May–September 2011
4. Published reports March–April 2012
   - University level public report
   - RC specific reports

The entire evaluation was implemented during the university’s strategy period 2010–2012. The preliminary results were available for the planning of the following strategy period in late autumn 2011. The evaluation reports will be published in March/April 2012. More detailed time schedule is published in the University report.

1.9 Evaluation feedback – consensus of the entire panel

The panellists evaluated all the RC-specific material before the meetings in Helsinki and mailed the draft reports to the evaluation office. The latest interim versions were on-line available to all the panellists on the Wiki-sites. In September 2011, in Helsinki the panels discussed the material, revised the first draft reports and decided the final numeric evaluation. After the meetings in Helsinki, the panels continued working and finalised the reports before the end of November 2011. The final RC-specific reports are the consensus of the entire panel.

The evaluation reports were written by the panels independently. During the editing process, the evaluation office requested some clarifications from the panels when necessary. The tone and style in the reports were not harmonized in the editing process. All the reports follow the original texts written by the panels as far as it was possible.

The original evaluation material of the RCs, provided for the panellists is attached at the end of the report. It is essential to notice that the exported lists of publications and other scientific activities depend how the data was stored in the TUHAT-RIS by the RCs.
2 Evaluation feedback

2.1 Focus and quality of the RC’s research

- Description of
  - the RC’s research focus
  - the quality of the RC’s research (incl. key research questions and results)
  - the scientific significance of the RC’s research in the research field(s)
- Identification of the ways to strengthen the focus and improve the quality of the RC’s research

ASPECTS: Scientific quality, scientific significance, societal impact, innovativeness

The focus of the ATM RC has been described as follows:
1. formation and growth mechanisms of atmospheric aerosols, aerosol dynamics and air ion and cluster dynamics
2. the effect of secondary biogenic aerosols on global aerosol load
3. aerosol-cloud-climate interaction
4. the relationships between the atmosphere and different ecosystems, particularly the boreal forest
5. The ATM group consists of 19 professors, 47 senior or post-doctoral researchers and 54 PhD students or technical staff.

The publication record shows high scientific impact with 15 Nature and Science papers during 2005-2010, and ca. 550 peer reviewed articles in other high quality journals (MNJS 1.37, THCP 1.59). The leading researchers are high in their fields of the ISI rankings (Kulmala 3/Geosciences; Vesala 50/Ecology and Environment). According to the bibliometric study prepared for this evaluation the citation indices are also high: MCS 7.23 and MNCS 1.56, i.e. well above the average in the field.

The recent results are specified in the material in the following highlights:
1. Development of continuous comprehensive research stations and the use of continuous data in climatological studies, participation in the ESFRI process at national and international levels.
2. Air quality – climate interactions. Initiation of scientific discussion on how cleaner air will cause hotter climate.
3. Towards quantitative understanding of new particle formation: Improvement of the atmospheric particle detection efficiency from 3nm to 1.2 nm, and analyses of the composition of small ions and neutral molecules and clusters.
4. From nm-scale to global scale: Nucleation parameterizations based on quantum chemistry and cluster models as well as atmospheric observation and laboratory experiments have been utilized in global climate models and CTMs to improve the understanding of the role of aerosols in global climate change.
5. The conceptual understanding of forest ecosystem – atmosphere interactions and processes in the ecosystem has been utilized e.g. in studies connecting photosynthesis and aerosol production. The plant biophysical approach links the transport in roots and tree stems to leaf gas exchange and the detailed influence of light and temperature on the physiology of photosynthesis.
6. Climate change influences terrestrial carbon balance: The effect of nitrogen deposition on forest net carbon sequestration is positive in all currently available data sets. The northern terrestrial ecosystems may loose carbon dioxide in strong response to autumn warming, offsetting the increased carbon dioxide uptake during spring, when the growing season tends to start earlier due to warming.

Many of the members of ATM are also active in editorial and referee work in top journals of the relevant fields as well as opponents and examiners of theses. They have received various scientific awards and two ERC advanced grants (Kulmala, Zilitinkievich) and one ERC starting grant (Vehkamäki).
Overall, ATM is internationally recognized, particularly for their specific Nordic oriented climate research. Methodologically they apparently have a leading position within the research community. The long-term time series provide unique opportunities for further analyses. New innovative combinations of different datasets might open new avenues.

Numeric evaluation: 5 (Outstanding)

### 2.2 Practises and quality of doctoral training

- **Organising of the doctoral training in the RC. Description of the RC’s principles for:**
  - recruitment and selection of doctoral candidates
  - supervision of doctoral candidates
  - collaboration with faculties, departments/institutes, and potential graduate schools/doctoral programmes
  - good practises and quality assurance in doctoral training
  - assuring of good career perspectives for the doctoral candidates/fresh doctorates
- **Identification of the RC’s strengths and challenges related to the practises and quality of doctoral training, and the actions planned for their development.**
- **Additional material: TUHAT compilation of the RC’s other scientific activities/supervision of doctoral dissertations**

**ASPECTS: Processes and good practices related to leadership and management**

ATM educated 46 doctors in 2005-2010. It coordinates a multi-site national doctoral programme “Atmospheric Composition and Climate Change: From Molecular Processes to Global Observations and Models (ACCC)”, and all the doctoral training within the ATM is done in the context of that programme. The ATM currently has 76 doctoral students. The core of the doctoral programme includes four universities, four research institutes, and five private enterprises.

International collaboration is active in doctoral training e.g. within the Marie Curie Initial Training Network CLOUDITN, Nordic graduate school CBACCI, Nordic centres of excellence CRAICC and DEFROST, the iLEAPS IPO, EUSAAR, and ACCENT.

ACCC organizes an open, international doctoral student selection biannually. Generally, the applications are ranked according to the following guidelines:

- suitability of master's degree studies
- grades in master's degree studies
- number and quality of publications
- other scientific and technological merits
- initial research plan
- supervisors' statements

The top applicants are always interviewed. Special attention is paid to equality issues in the student selection. Currently there is a good balance between genders (47% of all students are female).

In practice the doctoral training is organized the following way:

- providing core and transferable skills by a selection of courses, many of them given jointly with other universities and research institutes
- a well-specified research project
- 2-3 supervisors, including at least one senior scientist who is internationally recognized.
- guidance groups
- participation in workshops and conferences
- mobility (national, international, cross-sector)

ATM organizes annually joint summer and winter schools, field courses (totalling 4-6). Ad hoc courses, workshops and conferences (incl. annual workshop of the ACCC doctoral programme and annual workshop for teachers and supervisors) as well as E-learning courses (2-5, usually organized jointly).

In the beginning of PhD studies, each student prepares a study and research plan, identifying the skills to be developed (the gap between the current situation and the desired outcome) and educational
activities, including courses and training on transferable skills, needed to meet the goals in the specific
time window (usually 4 years). The personalized projects often include inter-sectoral visits and/or
secondments to another institution in Finland or abroad. The study plans are designed by recognizing the
whole research career.

ATM follows the Standards and Guidelines for Quality Assurance in the European Higher Education
Area.

ATM itself has recognized one future challenge in doctoral training: a rapidly growing research
community in the ATM’s research areas in Finland creates challenges in the general coordination of
doctoral training.

Overall, the doctoral training is very well organized and continuously and systematically evaluated in
ATM. This is reflected in the number of PhDs produced as well as in the good employment of PhDs after
the studies. The latter of course is also supported by the demand for their specific skills and knowledge in
the labour market. The attraction of the PhD students in the labour market is also based on their tight
integration in running research projects.

The procedures developed for doctoral training in ATM provide a good benchmark which could be used
more widely in the whole university.

**Numeric evaluation: 5 (Outstanding)**

### 2.3 The societal impact of research and doctoral training

- **Description on how the RC interacts with and contributes to the society (collaboration with public,
  private and/or 3rd sector).**
- **Identification of the ways to strengthen the societal impact of the RC’s research and doctoral training.**
- **Additional material: TUHAT compilation of the RC’s other scientific activities.**

**ASPECTS:** Societal impact, national and international collaboration, innovativeness

In addition to international peer-reviewed journals, scientific results of ATM are published in various
reports, newsletters, conference publications and short popular scientific articles.

ATM research contributes directly to current debate on climate change and air quality issues by
delivering state-of-the art data for science policy and policy making processes. ATM contributes its science
findings to international assessments, e.g. IPCC assessment reports as well as to international climate
negotiations (COP/CMP), the Vienna Convention on the Protection of the Ozone Layer and the Convention
of Long-range transport of Air Pollutants. Several ATM scientists are members of expert panels e.g. of
funding agencies, and of working groups of ministries.

The wider public is informed via interviews and articles in popular science magazines, newspapers as
well as in the television and radio. ATM is a founding member in several platforms for outreach, such as
Hiukkastieto (www.hiukkastieto.fi/) for aerosol information, Hillipuu (www.hillipuu.fi) and
Ympäristötiedon forumi (www.ymparistotiedonfoorumi.fi).

Members of ATM work also in co-operation with elementary and high schools. This was realized e.g. in
the Nordic Climate Day 2010 activities with expert visits in 16 elementary schools, and by participating in
organizing the Millennium Youth Camp in 2010.

There is co-operation with private sector. ATM co-operates with the CLEEN Ltd and is a member of
“Business from the innovation pipeline – commercialization of cleantech innovations”-project, which aims
at commercialized know-how, new enterprises and jobs.

ATM is planning to further strengthen its role in outreach platforms and on constructing European
environmental research infrastructures with open data access and visualization of data. This is highly
recommendable.

**Numeric evaluation 5 (Outstanding)**
2.4 International and national (incl. intersectoral) research collaboration and researcher mobility

- Description of
  - the RC’s research collaborations and joint doctoral training activities
  - how the RC has promoted researcher mobility
- Identification of the RC’s strengths and challenges related to research collaboration and researcher mobility, and the actions planned for their development.

**ASPECTS: Scientific quality, national and international collaboration**

ATM has active collaboration with ca 80 different research laboratories and they have participated in over 40 EU projects.

Nationally ATM is a core in a CoE, coordinates a national graduate school, and operates SMEAR stations. The infrastructure project ICOS-Finland (Integrated Carbon Observation System) will launch the operation phase in 2012. ATM hosts several international visiting scientists, e.g. two FiDiPros.

ATM is a key partner in many Nordic research initiatives, e.g. the Nordic Top Research Initiative for climate, energy and environment, and Nordic CoEs. ATM coordinates the Nordic graduate school CBACCI and master program ABS. The planning of SMEAR Estonia started in 2009.

ATM is working closely with European Research Area initiatives and is active in developing ESFRI infrastructures, such as ICOS, planning of European aerosol and atmospheric chemistry infrastructure (ACTRIS I3), and enhancing collaboration between European environmental RIs.

ATM is a member of Marie Curie CLOUD-ITN (2008-12), and was a member of Marie Curie-iLEAPS (2004-08). It is a partner of a European network of excellence, ACCENT – Atmospheric Composition Change, with various mobility and training schemes.

ATM is active also in the global change research community, e.g. hosting the International Project Office of iLEAPS, Integrated Land Ecosystem – Atmosphere Processes Study.

From the beginning of 2010, Kulmala has been a co-chair of the iLEAPS. ATM is also participating on the IPCC AR5 processes.

**Numeric evaluation: 5 (Outstanding)**

2.5 Operational conditions

- Description of the operational conditions in the RC’s research environment (e.g. research infrastructure, balance between research and teaching duties).
- Identification of the RC’s strengths and challenges related to operational conditions, and the actions planned for their development.

**ASPECTS: Processes and good practices related to leadership and management**

The backbone of the ATM research infrastructure is the three SMEAR (Station for Measuring Forest Ecosystem-Atmosphere Relations) stations. The SMEAR II station is a flagship measurement station, currently accepted in the ICOS network as an atmospheric and full ecosystem station.

ATM has been very successful in developing the research infrastructure. The physical infrastructure is well established and at present the challenges are related to technical staff and continuity because most the ATM members are funded from external sources. Naturally the instrumentation has to be continuously updated making use of the new technologies.

2.6 Leadership and management in the researcher community

- Description of
  - the execution and processes of leadership in the RC
▪ how the management-related responsibilities and roles are distributed in the RC
▪ how the leadership- and management-related processes support
  ▪ high quality research
  ▪ collaboration between principal investigators and other researchers in the RC
  ▪ the RC’s research focus
  ▪ strengthening of the RC’s know-how
▪ Identification of the RC’s strengths and challenges related to leadership and management, and the actions planned for developing the processes

ASPECTS: Processes and good practices related to leadership and management

ATM is formed by researchers from two faculties and three departments at UH. The core of the unit is the Finnish Center of Excellence in Physics, Chemistry, Biology and Meteorology of Atmospheric Composition and Climate Change (FCoE), led by Acad. Prof. Markku Kulmala who is also the chair of the FCoE Board. The practical issues within ATM are coordinated by a research coordinator and teaching coordination is done by a university lecturer. This structure indicates a very professional organization and is reflected in the excellent output.

The scientific work is divided into smaller thematic sub-groups, which all utilize the common strategic plan. All senior scientists and sub-group leaders participate in strategic planning within ATM. A special empowerment project for planning group members to develop leadership skills and practices was organized between 2008–2009.

The quality of scientific leadership can be seen in outstanding results (Nature/Science papers, ERC grants etc.). Coordination of research and education are closely linked together and all ATM members are involved in both.

Leadership and management of a big multidisciplinary research community as such is a big challenge. The self-evaluation has identified several challenges related to that, but has also realistic plans how to tackle them. This RC is also very successful in terms of gender balance.

2.7 External competitive funding of the RC

▪ The RCs were asked to provide information of such external competitive funding, where:
  ▪ the funding decisions have been made during 1.1.2005–31.12.2010, and
  ▪ the administrator of the funding is/has been the University of Helsinki
▪ On the e-form the RCs were asked to provide:
  1) The relevant funding source(s) from a given list (Academy of Finland/Research Council, TEKES/The Finnish Funding Agency for Technology and Innovation, EU, ERC, foundations, other national funding organisations, other international funding organizations), and
  2) The total sum of funding which the organisation in question had decided to allocate to the RC members during 1.1.2005–31.12.2010.

Competitive funding reported in the text is also to be considered when evaluating this point.

ASPECTS: Scientific quality, scientific significance, societal impact, innovativeness and future significance

ATM has been extremely successful in obtaining external funding. During the evaluation period 2005–2010 the total amount of external funding was around 40 mill €. The sources include all relevant national funding organizations, EU, ERC and also the private sector.

The challenge is to maintain the good level of external funding in the present economic situation in Europe. However, ATM is a very well placed and active player in the national, European and global research policy arenas.
2.8 The RC’s strategic action plan for 2011–2013

- RC’s description of their future perspectives in relation to research and doctoral training.

ASPECTS: Scientific quality, scientific significance, societal impact, processes and good practices related to leadership and management, national and international collaboration, innovativeness, future significance

ATM has very clear objectives and implementation plans how to develop the research infrastructure and education and where to focus in research. Based on the evidence from the evaluation period the plans are realistic.

The challenge in the big strong research community like ATM, is how to maintain and enhance innovative thinking, to keep a clear focus and at the same time encourage people to think out of the box.

2.9 Evaluation of the category of the RC in the context of entity of the evaluation material (1-8)

The RC’s fitness to the chosen participation category.

ATM has chosen the participation category 1. The research of the participating community represents the international cutting edge in its field.

The material provided to us proves that the choice is very well justified. If one could choose more categories, also the category 5 would be applicable.

Numeric evaluation: 5 (Outstanding)

2.10 Short description of how the RC members contributed the compilation of the stage 2 material

The whole ATM was involved in the compilation of the material, and the process has as such been also an education process.

2.11 How the UH’s focus areas are presented in the RC’s research

Focus area 3: The changing environment – clean water

ATM is instrumental to the UH focus area ‘The changing environment – clean water’.

2.12 RC-specific main recommendations

The long-term time series provide unique opportunities for further analyses. New innovative combinations of different datasets might open new avenues.

ATM is planning to further strengthen its role in outreach platforms and on constructing European environmental research infrastructures with open data access and visualization of data. This is highly recommendable.

It would be worth devoting some time for foresight thinking on the potential research themes in the longer time horizon like 20 years.
2.13 RC-specific conclusions

ATM is internationally highly recognized, particularly for their specific Nordic oriented climate research. Methodologically they have a leading position within the research community. The scientific quality of research in ATM is outstanding: 15 Nature and Science papers were published by this RC during 2005-2010, and ca. 550 peer reviewed articles in other high quality journals. The leading researchers are high in their fields of the ISI rankings (Kulmala 3/Geosciences; Vesala 50/Ecology and Environment). In addition to international peer-reviewed journals, scientific results of ATM are published in various reports, newsletters, conference publications and short popular scientific articles. The wider public is informed via interviews and articles in popular science magazines and in the public media. ATM is a founding member in several platforms for outreach. Members of ATM work also in co-operation with elementary and high schools.

Many of the members of the ATM RC are active in editorial and referee work in top journals of the relevant fields as well as opponents and examiners of theses. They have received various scientific awards and two ERC advanced grants and one ERC starting grant.

ATM research contributes directly to current debate on climate change and air quality issues by delivering state-of the art data for science policy and policy making processes. ATM contributes its science findings to international assessments, e.g. IPCC assessment reports as well as to international climate negotiations (COP/CMP). Several ATM scientists are members of expert panels e.g. of funding agencies, and of working groups of ministries.

Doctoral training is very well organized and continuously and systematically evaluated in the ATM. This is reflected in the number of PhDs produced as well as in the good employment of PhDs after the studies. The latter of course is also supported by the demand for their specific skills and knowledge in the labour market. The doctoral training procedures of ATM could provide a benchmark for doctoral training in the whole university.

ATM has active collaboration with ca 80 different research laboratories and they have participated in over 40 EU projects.

ATM is a core of a national CoE and a key partner in Nordic CoEs, a partner of European network of excellence, ACCENT. It coordinates a national and a Nordic graduate school, a Nordic master programme, and operates the Finnish SMEAR stations. The planning of SMEAR Estonia started in 2009. The infrastructure project ICOS-Finland (Integrated Carbon Observation System) will launch the operation phase in 2012. ABS. ATM is working closely with European Research Area initiatives and is active in ESFRI infrastructures, such as ICOS and in planning of European aerosol and atmospheric chemistry infrastructure (ACTRIS I3). They have successfully exploited Marie Curie instruments. ATM is active also in the global change research community, e.g. hosting the International Project Office of iLEAPS. From the beginning of 2010, Kulmala has been a co-chair of iLEAPS.

There is also co-operation with private sector. ATM co-operates with the CLEEN Ltd and is a member of “Business from the innovation pipeline – commercialization of cleantech innovations” -project, which aims at commercialized know-how, new enterprises and jobs.

ATM has been extremely successful in obtaining external funding (in 2005-2010 altogether 40 mill €). The sources include all relevant funding organizations.

ATM has very clear objectives and implementation plans how to develop the research infrastructure and education and where to focus in research. Based on the evidence from the evaluation period the plans are realistic.

The challenge in the big strong well established research community like ATM, is how to maintain and enhance innovative thinking, to keep a clear focus and at the same time encourage people to think out of the box.
2.14 Preliminary findings in the Panel-specific feedback

ATM could provide a benchmark for doctoral training in the whole university.

ATM is an excellent example of a successful multi- and interdisciplinary research community which has developed and expanded during a long period of time. The lessons learnt from this process should be analyzed and utilized when the university is developing the implementation of its strategy.

2.15 Preliminary findings in the University-level evaluation

ATM could provide a benchmark for doctoral training in the whole university.

ATM is an excellent example of a successful multi- and interdisciplinary research community which has developed and expanded during a long period of time. The lessons learnt from this process should be analyzed and utilized when the university is developing the implementation of its strategy.
3 Appendices

A. Original evaluation material
   a. Registration material – Stage 1
   b. Answers to evaluation questions – Stage 2
   c. List of publications
   d. List of other scientific activities

B. Bibliometric analyses
   a. Analysis provided by CWTS/University of Leiden
   b. Analysis provided by Helsinki University Library (66 RCs)
International evaluation of research and doctoral training at the University of Helsinki 2005-2010

RC-SPECIFIC MATERIAL FOR THE PEER REVIEW

NAME OF THE RESEARCHER COMMUNITY:
Center of Excellence in Physics, Chemistry, Biology and Meteorology of Atmospheric Composition and Climate Change (ATM)

LEADER OF THE RESEARCHER COMMUNITY:
Professor Markku Kulmala, Department of Physics, Faculty of Science

RC-SPECIFIC MATERIAL FOR THE PEER REVIEW:

- Material submitted by the RC at stages 1 and 2 of the evaluation
  - STAGE 1 material: RC’s registration form (incl. list of RC participants in an excel table)
  - STAGE 2 material: RC’s answers to evaluation questions
- TUHAT compilations of the RC members' other scientific activities 1.1.2005-31.12.2010
  (analysis carried out by CWTS, Leiden University)

NB! Since Web of Science(WoS)-based bibliometrics does not provide representative results for most RCs representing humanities, social sciences and computer sciences, the publications of these RCs will be analyzed by the UH Library
(results available by the end of June, 2011)
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 1 MATERIAL (registration form)

1 RESPONSIBLE PERSON

Name: Kulmala, Markku
E-mail:
Phone: +358 40 5962311
Affiliation: Professor
Street address: Gustaf Hällströminkatu 2a

2 DESCRIPTION OF THE PARTICIPATING RESEARCHER COMMUNITY (RC)

Name of the participating RC (max. 30 characters): Center of Excellence in in Physics, Chemistry, Biology and Meteorology of Atmosphere

Acronym for the participating RC (max. 10 characters): ATM

Description of the operational basis in 2005-2010 (eg. research collaboration, joint doctoral training activities) on which the RC was formed (MAX. 2200 characters with spaces):

ATM is formed on the basis of the long-lasting and successful collaboration between aerosol physicists and forest ecologists at the University of Helsinki, initiated already in 1980’s. The research group created the SMEAR stations (Stations for Measuring Forest Ecosystem - Atmosphere Relations), recognized as world leading supersites in atmospheric research. The group was later replenished with atmospheric chemistry and dynamic meteorology. Besides national centre of excellence, ATM is also collaborating in researcher training in the form of a joint Nordic Master program (Atmosphere-Biosphere Studies), a post-doctoral study program CBACCI (Carbon-Biosphere-Atmosphere-Clouds-Climate Interactions) and a Graduate School (The Atmospheric Composition and Climate Change: From Molecular Processes to Global Observations and Models). We are combining the strengths of three departments in two faculties, namely Department of Physics and Department of Chemistry in the Faculty of Natural Sciences, and Department of Forest Sciences in the Faculty of Agriculture and Forestry.

Our main objective is to contribute to the reduction of scientific uncertainties concerning global climate change questions, particularly those related to aerosols and clouds. We aim at a deep understanding on the dynamics of aerosol particles and ion and neutral clusters in the lower atmosphere, with the emphasis in their biogenic formation mechanisms and linkages to biosphere-atmosphere interaction processes, biogeochemical cycles and trace gases. Our research involves detailed laboratory studies, multi-scale field studies, satellite-based remote-sensing and numerical and process modelling ranging from the molecular ab initio level to the global scale Earth system models. The use of the results in the context of global scale modelling, and the development and utilisation of the newest measurement techniques are emphasized. The cores of our activities are a) continuous measurements and database of atmospheric and ecological mass fluxes and aerosol precursors and CO2/aerosol/trace gas interactions in SMEAR field stations and b) focused experiments and modelling to understand the observed patterns.
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 1 MATERIAL (registration form)

3 SCIENTIFIC FIELDS OF THE RC

Main scientific field of the RC's research: natural sciences
RC's scientific subfield 1: Physics, Multidisciplinary
RC's scientific subfield 2: Geosciences, Multidisciplinary
RC's scientific subfield 3: Forestry
RC's scientific subfield 4: Chemistry, Analytical
Other, if not in the list: Environment and ecology
Geosciences, atmospheric sciences

4 RC'S PARTICIPATION CATEGORY

Participation category: 1. Research of the participating community represents the international cutting edge in its field

Justification for the selected participation category (MAX. 2200 characters with spaces): The 4th assessment report of IPCC has identified aerosols, clouds and precipitation as one of the largest uncertainties in our current understanding of the climate system (IPCC, 2007), and the work done in ATM aims at filling this knowledge gap. Finland is a world leader in the field of atmospheric sciences and atmosphere-biosphere research, mainly due to the long-standing collaborative work done by physicists and forest scientists at the University of Helsinki. This fruitful collaboration has been awarded with both national, Nordic and European Center of Excellence status, ERC fundings (two Advanced and a Starting research grant) and two FiDiPro positions. ATM is actively participating in the work of IPCC (Intergovernmental Panel for Climate Change) and IGBP (the International Geosphere-Biosphere Programme) by co-chairing and hosting iLEAPS (Integrated Land Ecosystem – Atmosphere Processes Study) international project office.

Our publication record shows high scientific impact with 15 Nature and Science papers during 2005-2010 (10% of all Nature/Science articles by Finnish researchers), in addition to the ca. 550 peer reviewed articles in other high quality journals. The leading researchers are high in their fields the ISI rankings (Kulmala 3/Geosciences; Vesala 50/Ecology and Environment).

Our focus has been in following topics:
1. formation and growth mechanisms of atmospheric aerosols, aerosol dynamics and air ion and cluster dynamics (Berndt et al Science 2005; Kulmala et al 2007 Science; Winkler et al 2008 Science, Sipilä et al 2010 Science)
3. aerosol-cloud-climate interaction (Rosenfeld et al Science 2008)
4. the relationships between the atmosphere and different ecosystems, particularly the boreal forest (Ciais et al Nature 2005; Magnani et al Nature 2007, 2008; Piao et al Nature 2008)
5. Climate – air quality interactions (Arneth et al Science 2009)

**5 DESCRIPTION OF THE RC'S RESEARCH AND DOCTORAL TRAINING**

Public description of the RC’s research and doctoral training (MAX. 2200 characters with spaces): The research in ATM involves several fields of science such as physics, chemistry, meteorology, biology, agricultural and forest sciences, technology, and biogeoosciences. It forms a framework where observations are based on unifying theoretical framework, and are carried out with up-to-date ground-based, airborne and satellite measurement techniques (including development of new devices and instrumentation), supporting each other. Furthermore, field observations are tested, compared, and analysed against laboratory experiments, and the underlying process understanding is tightly tied to theoretical and modeling work as well as model development. The ability to up-scale the small scale processes to the regional and global level phenomena and dynamics is of great importance for the society and scientific community. Our research includes all these components and also brings them to the level of the student training.

The ATM research and education has three strong pillars: an advanced research infrastructure (SMEAR stations and laboratories), a powerful and internationally oriented researcher community (Finnish and Nordic Centres of Excellence), and an efficient training structure based on best practices collected from several universities in Nordic and Baltic countries. Our doctoral training programme aims at educating multidisciplinary experts to tackle the future challenges of climate change, air quality problems and environmental technologies.

The ATM group includes 19 professors, 47 senior or post-doctoral researchers and 54 PhD students or technical staff.

**Significance of the RC’s research and doctoral training for the University of Helsinki (MAX. 2200 characters with spaces):** ATM is one of the world leaders in our research area, and it possesses the most modern and versatile measurement systems for measuring ecosystem-atmosphere interactions. The activity and the role of the ATM in European and global initiative has been recognized by the University of Helsinki by listing atmospheric sciences as one of the research focus areas in the strategy of the University of Helsinki. ATM is supporting and promoting the general aim of the University of Helsinki to be included in the world’s 25 top universities. This is done by

- participating actively in European and Global research initiatives and development in the field of atmospheric and biogeoosciences.

- being active in various European Research Area initiatives, such as building of European research infrastructures, establishing Joint Programming activities, enhancing the mobility of European researchers and promoting European Science & technology collaboration. Specifically, we are active in ESFRI infrastructures, such as building ICOS (Integrated Carbon Observation System), planning of European aerosol and atmospheric chemistry infrastructure and the Distributed Infrastructure for experimentation in ecosystem research, and enhancing overall collaboration between European environmental research infrastructures. We are also active in planning the Joint Programming Initiative.
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 1 MATERIAL (registration form)

on decadal climate predictability and developing of better climate services for end-users (JPI - Connecting Climate Knowledge for Europe, Clik’EU).

- collaborating with several industrial enterprises and the Strategic Centre for Science, Technology and Innovation in Energy and Environment, coordinated by CLEEN Ltd. Our educational programmes are working together with private enterprises, and we actively promote spin-off company development among our research fields. We anticipate a growing need for experts specialized in both the physical and biological basis of climate change phenomena, and in the potential ways to control/mitigate global warming.

Keywords: Atmosphere, biosphere, aerosols, air chemistry, meteorology, climate change, greenhouse gases, volatile organic compounds, boreal ecosystems, feedbacks, carbon cycle, nitrogen cycle, water cycle, multi-scale modeling, field measurements, health effects, tree ecophysiology, dynamic meteorology, biogeochemistry

6 QUALITY OF RC’S RESEARCH AND DOCTORAL TRAINING

Justified estimate of the quality of the RC’s research and doctoral training at national and international level during 2005-2010 (MAX. 2200 characters with spaces): The importance of atmospheric aerosols to global radiation budget, cloud formation, and human health motivates our research. Ecosystems and atmosphere are tightly connected via physical, chemical, meteorological and biological processes in the atmosphere and at the atmosphere-biosphere interface. Thus, supra-disciplinary research with a high level of technological and scientific innovation is necessary.

Our publication record shows high scientific impact with 15 Nature and Science papers during 2005-2010 and ca. 550 peer reviewed articles in other high quality journals.

Our recent results are specified in the following highlights.

1. Development of continuous comprehensive research stations and the use of continuous data in climatological studies, participation in the ESFRI process at national and international levels.

2. Air quality – climate interactions. We have initiated scientific discussion on how cleaner air will cause hotter climate.

3. Towards quantitative understanding of new particle formation: We have improved the atmospheric particle detection efficiency from 3nm to 1.2 nm, and analysed the composition of small ions and neutral molecules and clusters.
4. From nm-scale to global scale: Nucleation parameterizations based on quantum chemistry and cluster models as well as atmospheric observation and laboratory experiments have been utilized in global climate models and CTMs to improve the understanding of the role of aerosols in global climate change.

5. The conceptual understanding of forest ecosystem – atmosphere interactions and processes in the ecosystem has been utilized e.g. in studies connecting photosynthesis and aerosol production. The plant biophysical approach links the transport in roots and tree stems to leaf gas exchange and the detailed influence of light and temperature on the physiology of photosynthesis.

6. Climate change influences terrestrial carbon balance: The effect of nitrogen deposition on forest net carbon sequestration is positive in all currently available data sets. The northern terrestrial ecosystems may lose carbon dioxide in strong response to autumn warming, offsetting the increased carbon dio

Comments on how the RC's scientific productivity and doctoral training should be evaluated (MAX. 2200 characters with spaces):

We are publishing our results rapidly and in high quality journals. We are also active in editorial and referee work in several top journals of our fields. The PhD students are encouraged to develop their oral and writing skills already early in their doctoral studies, and part of their regular mentoring and guidance is directly planned to aid in scientific presentation and writing. Workshops, Summer and winter schools are utilized efficiently and many of them eventually produce one or more scientific articles as an end result.

The methods for assessing scientific productivity and doctoral training:
- citation index under atmospheric sciences as a department and as individual
- our positions as a department and individuals in world lists of atmospheric science and other disciplines
- numbers, impact factors and citations of peer-reviewed articles
- numbers of Nature/Science papers, % of all Nature/Science papers which affiliate to finnish Universities
- coordinating international research projects
- obtained external funding
- MSc and PhD degrees
- professors educated
- ERC grants
- work as journal editors and referees
- work as pre-examiner or opponent in theses
- scientific impact: awards, recognitions, memberships in expert panels
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<tr>
<th>Last name</th>
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<td>Sundström</td>
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<td>Hanna X</td>
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**Background Information**

Name of the RC's responsible person: Kulmala, Markku

E-mail of the RC’s responsible person:

Name and acronym of the participating RC: Center of Excellence in Physics, Chemistry, Biology and Meteorology of Atmosphere, ATM

The RC’s research represents the following key focus area of UH: 3. Muuttuva ympäristö - puhdas vesi – The changing environment - clean water

Comments for selecting/not selecting the key focus area: ATM is investigating the Global Climate Change with interdisciplinary research tools. Our emphasis is in the biosphere-atmosphere interactions, in particular in formation and growth of atmospheric aerosols above terrestrial surfaces. We are utilizing a wide array of research tools from nano scale to global modeling, operating consistently within a research framework.

**1. Focus and Quality of RC's Research (max. 8800 characters with spaces)**

- **Description of the RC’s research focus, the quality of the RC’s research (incl. key research questions and results) and the scientific significance of the RC’s research for the research field(s).**

Understanding the global climate change and the complex, non-linear system of atmospheric new aerosol formation requires a diverse range of scientific and technological expertise in the areas of chemistry, physics, biology, and meteorology, and involves laboratory studies, ground, ship, and airborne field studies, satellite remote-sensing and numerical modelling studies ranging from the molecular ab initio level to the global scale Earth system models. Our research approach covers all those observational, experimental and theoretical aspects. Our results have given compelling evidence of the strong feedbacks between biosphere and atmosphere. Their importance has been manifested in the large number of high-impact publications from the group. During the evaluation period we have published 15 papers in Nature or Science. That is over 14% of all Nature/Science articles published by authors from University of Helsinki (altogether 105 during the period 1.1. 2005 – 31.12. 2010.). We have also received two ERC advanced grants (Kulmala, Zilitinekivich) and one starting grant (Vehkamäki).

The main focus of ATM can be divided to following main topics:


4) the relationships between the atmosphere and different ecosystems, particularly the boreal forest: (Hari et al. Nature 2003; Magnani et al Nature 2007, 2008; Piao et al Nature 2008).

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During the evaluation period we have received several outstanding results, which are specified in following six highlights.

1. Further development of continuous comprehensive research stations and the use of continuous data in climatological studies: recently we have presented the concept of hierarchy of research stations based on our experience at SMEAR stations (Hari et al. 2009); the cosmic rays have been shown to have minor (ca 1%) effect on new particle formation over solar cycle (Kulmala et al. 2010).

2. Air quality - climate interactions. The conceptual paper to start the discussion how cleaner air will cause hotter climate (Arneth et al. 2009) was published. Also the results from eastern Germany (Hamed et al. 2010) show changes in nucleation rates and nucleation frequency when the pollution level has decreased between 1996 and 2006. On the other hand the growth rates are increasing.

3. Towards quantitative understanding of new particle formation. Several laboratory measurements have been performed (Sipilä et al. 2010; Kiendler-Scharr et al. 2009). We have been able to change the detection efficiency of CPCs from 3nm to 1.2 nm (Sipilä et al. 2010) and also to develop new instruments to investigate composition of small ions and probably also neutral molecules and clusters using API-ToF (Junninen et al. 2010). Also the chemical composition of recently formed particles (Smith et al. 2010) and also ageing of particles (Jimenez et al. 2009). Most recently, we have found out that biospheric particles are amorphous (Virtanen et al. 2010,)

4. From nm-scale to global scale. Nucleation parameterizations based on our quantum chemistry (Kurten et al. 2009) and cluster models as well as atmospheric observation and laboratory experiments have been utilized in global climate models and CTMs (Makkonen et al. 2009, Vesala et al 2010).

5. The scientific approach presented in the recent book (Hari & Kulmala 2008) describing the forest ecosystem - atmosphere interactions and processes in the ecosystem have been utilized e.g. in spring recovery studies connecting photosynthesis and aerosol production (Dal Maso et al 2009, Lappalainen et al 2009) and in analysis of leaf, individual and ecosystem level BVOC synthesis and emissions (Ghirardo et al 2010, Bäck et al 2010, Aaltonen et al 2011). The new physical model approach links the factors influencing long distance transport in trees to leaf gas exchange (Hölttä et al 2009, Cochard et al 2010). The detailed influence of light and temperature on the physiology of photosynthesis can be followed with leaf level measurements based on the novel Monitoring-PAM instrumentation (Porcar-Castell et al. 2008).

6. Predicting the long-term dynamics of forest productivity under climate change. Forest net carbon sequestration is overwhelmingly driven by nitrogen deposition, largely as a result of anthropogenic activities. The effect is positive over the range of nitrogen deposition covered by currently available data sets (Magnani et al 2007, 2008). The northern terrestrial ecosystems may currently lose carbon dioxide in strong response to autumn warming, offsetting the increased carbon dioxide uptake during spring, when the growing season tends to start earlier due to warming (Piao et al 2008).

ATM has an internationally leading position in the research area of formation of atmospheric aerosols and biosphere-atmosphere interactions.

References:
Arneth et al. (2009) Science 326, 672-3
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Kiendler-Scharr et al. (2009). Nature 461, 381-4
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O'Dowd et al. (2002b) Nature, 417, 632-636
Sipilä et al. (2010) Science 327, 1243-1246
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Tunved et al. (2006) Science 312, 261-263
Winkler et al. (2008) Science 319, 1374-1377

Ways to strengthen the focus and improve the quality of the RC’s research.

The ATM group is genuinely supradisciplinary. Our future focus is to work over boundaries from nano scale to global scale and to utilize best knowledge from different disciplines both inside and outside of ATM. Our strength is in creating a research framework where the feedbacks between biosphere and atmosphere are analyzed in a comprehensive manner and using an interdisciplinary methodology. This includes e.g. improvements in measurement techniques and instruments, data mining, new
experiments, model development and theories in biosphere-atmosphere-climate-air quality interactions.

We are in a unique position in respect to the high temporal resolution comprehensive datasets collected over 15 years at SMEAR II station. In future, more emphasis will be put on effective use of our long-term data sources, in order to be able to answer the grand challenges (environmental changes in decadal and regional scale, Earth system functioning).

More emphasis will be put on recruiting new staff across disciplines, among the highest-ranking international PhD students, post-docs and professors.

### 2. Practices and Quality of Doctoral Training (max. 8800 characters with spaces)

- **How is doctoral training organised in the RC?** Description of the RC’s principles for recruitment and selection of doctoral candidates, supervision of doctoral candidates, collaboration with faculties, departments/institutes, and potential graduate schools/doctoral programmes, good practises and quality assurance in doctoral training, and assuring good career perspectives for the doctoral candidates/fresh doctorates.

ATM educated 46 doctors in 2005-2010. The ATM coordinates a multi-site national doctoral programme “Atmospheric Composition and Climate Change: From Molecular Processes to Global Observations and Models (ACCC)”, and all the doctoral training within the ATM is done in the context of the doctoral programme. The ATM currently has 76 doctoral students. From the beginning of 2010, the core of the doctoral programme has included four universities, four research institutes, and five private enterprises. The doctoral programme is operating within the Strategic Centre for Science, Technology and Innovation in Energy and Environment, coordinated by CLEEN Ltd. Furthermore, the ATM has direct working connections to more than 80 international laboratories and has participated in more than 40 EU-projects. International collaboration is done e.g. within the Marie Curie Initial Training Network CLOUD-ITN, Nordic graduate school CBACCI, Nordic centres of excellence CRAICC and DEFROST, the ILEAPS IPO, EUSAAR, and ACCENT.

ACCC organizes an open, international doctoral student selection biannually, but we are able to take new doctoral students continuously depending on the current research needs and project funding. In the application stage, the candidate must submit personal information, a letter of motivation, an initial research plan, a statement by the supervisor in master studies, and a copy of the master’s degree certificate including the transcript of studies.

Generally, the applications are ranked according to the following guidelines:
- suitability of master’s degree studies
- grades in master’s degree studies
- number and quality of publications (peer reviewed journals, peer reviewed conference papers)
- other scientific and technological merits
- initial research plan
- supervisors’ statements

The top applicants are always interviewed. Special attention is paid to equality issues in the student selection. The aim is that there is a minimum representation of 40% of each gender. Currently there is a good balance between genders (47% of all students are female). The rules for the ranking are transparent, and are clearly communicated through the doctoral programme webpage.
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Each doctoral student has 2-3 supervisors, including at least one senior scientist who is internationally recognized. Furthermore, at least one of the supervisors is working in a very close scientific collaboration with the student. There are currently 37 docent-level supervisors linked to ATM, out of which 13 are professors.

In practice the doctoral training is organized the following way:
- providing core and transferable skills by a selection of courses, many of them given jointly with other universities and research institutes
- a well-specified research project
- 2-3 supervisors
- guidance groups
- participation in workshops and conferences
- mobility (national, international, cross-sector)

The ATM organizes annually:
- Joint summer and winter schools, field courses (totalling 4-6)
- Ad hoc courses (courses with special emphasis on a very current research topic)
- Workshops and conferences (local, national and international):
  • Annual workshop of the ACCC doctoral programme
  • Annual workshop for teachers and supervisors
  • ~10 other conferences and workshops, very active participation in national and international conferences and workshops
  • E-learning courses (2-5, usually organized jointly)

In the beginning of PhD studies, each student prepares a study and research plan, identifying the skills to be developed (the gap between the current situation and the desired outcome) and educational activities, including courses and training on transferable skills, needed to meet the goals in the specific time window (usually 4 years). The personalized projects often include inter-sectoral visits and/or secondments to another institution in Finland or abroad. The study plans are designed by recognising the whole research career. Also the prospects for the postdoc period and after that are taken into account.

During the studies, each student participates in courses and workshops organized jointly by the ACCC partners and/or some of the international networks (CBACCI, CRAICC, DEFROST, CLOUD-ITN etc.).

The general timeline of doctoral studies:
Yr 1: Summer school, winter school, courses, workshop, research
Yr 2: Courses (focus on training in transferable skills), workshop, research
Yr 3: Research, manuscripts, papers, workshop, seminar course
Yr 4: Ph.D. thesis final papers ready, summary

Each doctoral student participates in one or two guidance groups. A guidance group typically consists of 5-8 students and 2-3 supervisors. The group meets every second week. In the group meetings the students report their progress, which is then discussed. Currently there are altogether 13 guidance
groups operating. Joint supervision is a common practice, and currently more than 40% of the students have supervisors from at least 2 departments/institutes.

The supervisors for individual students are selected according to a) needs of students, b) the research needs, and c) the capacity and experience of the supervisor.

The ATM is frequently requested to provide candidates for international tasks in universities and research institutes abroad. These tasks represent an important and rapidly growing area in our fields. The appreciation of the excellence in Finnish research has led to a situation where the doctors trained here have become desirable for foreign research institutes and universities. Environmental consultancy as well as industrial research and development tasks are becoming more important. Career planning is a solid part of the studies. In practice the career planning is done within guidance groups and in other supervision meetings. Some of the students are involved in innovation systems and/or mentoring programmes of private enterprises.

The general guidelines and good practices within the ATM include:
- Maintenance, development and dissemination of best practices
- Open and transparent recruitment policy
- Active participation on the national and international policy and education system development
- Use of external evaluation (ACCC)
- Continuation of commitment on all levels (students, postdocs, senior scientists, professors)

The doctoral education within the ATM is constantly evaluated both by self-assessment and by the External Advisory Board of the ACCC doctoral programme. When evaluating the doctoral programme, the following criteria are taken into account:
- Employability of graduates
- Quality and nature of core and transferable skills
- Universities’ ability to foresee future challenges in science & society
- The graduates’ ability to carry out independent, original research work
- Quality of research
- Publications in high-impact journals
- Number of publications
- Structured and dedicated supervision

Internal evaluation is carried out on different levels. Students of the programme serve as a valuable source of criticism and new ideas of developing the training. Student feedback is collected from all educational events. The feedback is processed after each event, and collected in a database. The guidance groups provide a common, permanent, well-working feedback system. The ACCC programme arranges an annual 2-day workshop for the teachers and supervisors to further improve their skills to advise students. The meetings include discussions e.g. on quality assurance and self-assessment in teaching and supervision, intercultural supervision and education, and ethics in science.

- RC’s strengths and challenges related to the practises and quality of doctoral training, and the actions planned for their development.

The ATM and the whole ACCC programme follows the Standards and Guidelines for Quality Assurance in the European Higher Education Area (www.enqa.eu).
ATM’s strengths and challenges related to the practises and quality of doctoral training, and the actions planned for their development:

- coordination of a well organized national doctoral programme
- effective use of external experts (advisory board)
- dedicated supervisors
- professionally organized joint training events (summer and winter schools, field courses, e-learning courses) provide the students with an easy access to national and international collaboration and enable them to form their own networks already during doctoral studies
- a rapidly growing research community in the ATM’s research areas in Finland creates challenges in the general coordination of doctoral training

Description of how the RC interacts with and contributes to the society (collaboration with public, private and/or 3rd sector).

The main philosophy of ATM is to support and promote creative thinking and research. Creative and innovative research needs strong national and international collaboration and communication between science community and society. ATM is not only distributing scientific knowledge but also keeping up constant dialogue with decision makers, private and public sector.

All the scientific results are published in international peer-reviewed journals. In addition to international peer-reviewed journals, scientific results are published in various report, newsletters, conference publications and short popular scientific articles. Stakeholders and key data-user groups have also been invited to some of ATM meetings.

The ATM research contributes directly to current debate on climate change and air quality issues by delivering valuable state-of the art data for science policy and policy making processes. ATM contributes its science findings to international assessments, e.g. IPCC assessment reports. ATM findings are also relevant to international climate negotiations (COP/CMP), the Vienna Convention on the Protection of the Ozone Layer and the Convention of Long-range transport of Air Pollutants. Several ATM scientists are members of expert panels e.g. of funding agencies and working groups of ministries.

The non-scientific end-users of the data are informed using distributed written material and press conferences, which generates interviews and articles in popular science magazines and in domestic and international newspapers as well as in the television and radio. ATM is founding member in several platforms for outreach, such as Hiukkastieto (www.hiukkastieto.fi/) for aerosol information, Hillipuu (www.hillipuu.fi) for illustration of CO2 fluxes of boreal tree and ympäristötiedonfoorumi (www.ymparistotiedonfoorumi.fi), which is collaborative network of actors in environmental science to promote dialogue between scientists and decision makers at different levels. ATM is partner in University of Helsinki fundraising campaign with the climate change theme.

Members of ATM are presently working also in close co-operation with elementary and high schools to familiarize pupils and students with analyses of environmental data and the scientific world. This was realized e.g. in the Nordic Climate Day 2010 activities with expert visits in 16 elementary schools, and by participating in organizing the Millennium Youth Camp in 2010.

There is co-operation with several private enterprises. The ATM co-operates with the CLEEN Ltd. ATM is also a member of “Business from the innovation pipeline – commercialization of cleantech innovations” -project, which is aiming for commercialized know-how, new enterprises and jobs. ATM has several active partners in private sector e.g. Vaisala Oyj, Nokia Oyj, Beneq Oy, Space Systems Finland Oy.
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Helsinki Aerosol Consulting Oy, and Airmodus Oy. The last two on the list are spin-off companies of the ATM.

- Ways to strengthen the societal impact of the RC's research and doctoral training.

ATM will continue its active role by distributing scientific knowledge via national and international publications, assessment reports, participating in expert panels and public discussion on climate change and air quality matters. ATM strengthens its role in outreach platforms and on constructing European environmental research infrastructures with open data access and visualization of data.

Our goal in PhD training is to educate people for the future challenges of the society. A specific aim is to enhance the settling on the private sector after obtaining the PhD degree. Projects and training events involve students and researchers from universities, research institutes as well as private companies. The students learn to work in research enterprises, particularly in co-operation with FiDiPro Professors, Dr. D. R. Worsnop (vice president of Aerodyne Research, Inc., and the director of the Center for Aerosol and Cloud Chemistry) and Dr. V. Chandrasekar (Deputy director and director of research of NSF/CASA). This will enhance the innovation networks and chains in Finland.

- Description of the RC’s research collaborations and joint doctoral training activities and how the RC has promoted researcher mobility.

Figure 1 shows the main network and partnership related to research, education and knowledge transfer and research infrastructures. The research collaboration promotes research mobility. We have active collaboration with ca 80 different research laboratories and we have participated in over 40 EU projects.

National

ATM is a core in FCoE (other partners FMI and UEF). ATM also coordinates national graduate school and operates SMEAR stations. The infrastructure project ICOS-Finland (Integrated Carbon Observation System) was funded as one of the first at the European level for its construction phase, and is ready to launch the operation phase in 2012. This funding helps the whole ESFRI ICOS to materialize its operations in the future. ATM hosts international visiting scientists, e.g. the FiDiPros D. Worsnop and V. Chandrasekar (Acad. of Finland).

Nordic/Baltic

ATM is an important partner in Nordic climate change and atmospheric research. We participate in many Nordic research initiatives, e.g. the Nordic Top Research Initiative for climate, energy and environment. Two new Nordic CoEs, CRAICC (Coordinator: Kulmala) and DEFROST (PI Vesala) were funded by NordForsk in years 2010-2015. ATM participated in writing the NordForsk Policy Brief on Nordic Climate Change Research. NordForsk is funding several networking activities, e.g. the ‘NordFlux’, the ‘Charged clusters in the atmosphere’ and the ‘Nordic-Baltic BACCI’. ATM coordinates Nordic graduate school CBACCI and master program ABS. The planning of SMEAR Estonia started in 2009.

European

The ATM is working closely with European Research Area initiatives. We have been active in ESFRI infrastructures, such as ICOS, planning of European aerosol and atmospheric chemistry infrastructure (ACTRIS I3), and enhancing collaboration between European environmental RIs.
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Members of ATM have been active in preparing the Joint Programming Initiative on decadal climate predictability and developing of better climate services for end-users (Connecting Climate Knowledge for Europe, Clik’EU). ATM is a member of Marie Curie CLOUD-ITN (2008-12), and was a member of Marie Curie-iLEAPS (2004-08). ATM is a partner of European network of excellence, ACCENT - Atmospheric Composition Change, with various mobility and training schemes. ATM has also participated many EU projects. Currently Kulmala coordinates FP6 IP EUCAARI, which has 48 partners from 23 different countries.

Global

ATM is an active partner in the global change research community, e.g. hosting the International Project Office of iLEAPS, Integrated Land Ecosystem – Atmosphere Processes Study. iLEAPS organized two large science conferences in Boulder (2006) and in Melbourne (2009). From beginning of 2010, Kulmala has been a co-chair of the iLEAPS. ATM is also participating on the IPCC AR5 processes and future developments of the global research programmes (IGBP/WCRP). ATM organized the International Aerosol Conference in Helsinki in 2010 (ca 1500 participants).

ATM has also collaboration with non-European research institutions, e.g. with Chinese research bodies in building of joint SMEAR station near Nanjing. ATM is taking part in operation of atmospheric measurement station in South Africa and planning one in Saudi Arabia.

- RC’s strengths and challenges related to research collaboration and researcher mobility, and the actions planned for their development.

The main strength is the multi- and interdisciplinary nature of our international network. Within this network we are able to find out the best available knowledge to answer our research questions. The network also enables us to provide good international mobility to our researchers, and attracts excellent visiting scientists.

One of the key challenges is the development of ICOS (Integrated Carbon Observation System). ICOS is a new European Research Infrastructure for quantifying and understanding the greenhouse gas balance of the European continent and of adjacent regions ATM partners are preparing to host ICOS headquarters in the future. Members of the ATM are promoting the European Institute of Atmospheric Sciences and Earth System Research, EINAR, which could provide integrated European vision and research strategy and long-term funding for the research community in the future.

5 OPERATIONAL CONDITIONS (MAX. 4400 CHARACTERS WITH SPACES)

- Description of the operational conditions in the RC’s research environment (e.g. research infrastructure, balance between research and teaching duties).

Understanding the complex, non-linear system requires a diverse range of scientific and technological expertise in the areas of chemistry, physics, biology, and meteorology, and involves laboratory studies, ground, ship, and airborne field studies, satellite remote-sensing and numerical modelling studies ranging from the molecular ab initio level to the global scale Earth system models (See Figure 2). Our operational conditions cover all those observational, experimental and theoretical aspects.

In practice we start from molecular simulations (Monte Carlo and Molecular Dynamics) to understand nucleation and aerosol thermodynamic processes. These microscopic processes of nucleation together with condensation/evaporation and coagulation are required to understand aerosol dynamics, particle concentrations and composition. Significant advances in laboratory data and modelling techniques are needed for a number of important aerosol systems. Similarly, photosynthesis, autotrophic respiration
and VOC synthesis are modeled in cell, stomatal and leaf scales together with chamber measurements in laboratory and field. Fundamental aerosol and carbon cycle processes need to be understood in order to quantify aerosol radiative properties and the influence of aerosols on cloud microphysics and dynamics at the scale of individual clouds, and to understand changes in carbon uptake dynamics. At larger scales, advances in understanding of boundary layer meteorology are needed to understand atmospheric aerosol transport, trace gas (e.g. CO₂, methane, N₂O, O₃, SO₂, NOₓ, VOCs) and water vapor exchange and deposition processes. Boundary layer studies form a link to regional-scale processes and further to global-scale phenomena. For simulating global climate and air quality, the most recent progress on this chain of processes must be compiled, integrated and implemented in Climate Change and Air Quality numerical models via novel parameterizations.

The backbone of our research infrastructure are the three SMEAR (Station for Measuring Forest Ecosystem-Atmosphere Relations) stations. The main idea of SMEAR-type infrastructures is continuous, comprehensive measurements of fluxes, storages and concentrations in the land ecosystem-atmosphere continuum. The major coupling mechanisms between atmosphere and land surface are the fluxes of energy, momentum, water, carbon dioxide, atmospheric trace gases and atmospheric aerosols. The SMEAR II station is a flagship measurement station, currently accepted in the ICOS network as an atmospheric and full ecosystem station.

The majority of ATM staff is funded with external funding sources. However, all ATM members participate in teaching, either as giving lectures or guiding group works and practical trainings. This enables the rapid use of up-to-date scientific results in teaching, and also facilitates recruitment of the best students. The balance between teaching and research is maintained through distributing the teaching load between all group members. Supervision of students is also divided between senior scientists and junior group members.

- **RC’s strengths and challenges related to operational conditions, and the actions planned for their development.**

  **Strengths:**
  - innovative, effective, productive
  - supradisciplinary, holistic approach
  - strong focus area (forest-atmosphere interactions, nucleation, instrument development, fluxes, comprehensive, long-term series)
  - direct contact networks (education, science, science policy)
  - solid infrastructures
  - high motivation level, unlimited challenges
  - inspiring work environment (informal atmosphere, talented personnel, support, tolerance towards dissimilarity)
  - comprehensive education
  - international orientation
  - good reputation in delivering

  **Challenges:**
  - insufficient technical staff
  - uncertainties related to funding
  - further development of world class infrastructures
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- to keep and strengthen leading position in atmospheric aerosol science and atmosphere-biosphere interactions
- to utilize optimally the different disciplines inside ATM

Planned actions:
- ensure future funding flows
- recruit outstanding staff
- continue development of SMEAR stations
- find new strategic and scientific openings
- participation of international activities

6 LEADERSHIP AND MANAGEMENT IN THE RESEARCHER COMMUNITY (MAX. 4400 CHARACTERS WITH SPACES)

- Description of the execution and processes of leadership in the RC, how the management-related responsibilities and roles are distributed in the RC and how the leadership- and management-related processes support high quality research, collaboration between principal investigators and other researchers in the RC, the RC’s research focus and strengthening of the RC’s know-how.

The ATM is formed by researchers from two faculties and three departments at UHEL. The core of the unit is the Finnish Center of Excellence in Physics, Chemistry, Biology and Meteorology of Atmospheric Composition and Climate Change (FCoE), led by Acad. Prof. Markku Kulmala who is also the chair of the FCoE Board. The vice chair is Prof. Timo Vesala, and also Prof. Eero Nikinmaa and Prof. Marja-Liisa Riekola are members of the Board. The practical issues within ATM are coordinated by Research coordinator Jaana Bäck, who also is the Secretary General in the Nordic CoE CRAICC. Teaching coordination is done by university lecturer Antti Lauri. Besides FCoE members the whole division of Atmospheric Sciences from Department of Physics belongs to ATM. The division is led by M. Kulmala.

ATM has international scientific leadership in atmospheric aerosol science (M. Kulmala) and in biogeochemical cycles (T. Vesala) (see also Figure 1.).

The scientific work is divided into smaller thematic sub-groups, which all utilize the common strategic plan. A Planning Group, where senior scientists and all sub-group leaders are involved, is participating in strategic planning within the ATM. Empowerment project for planning group members to develop leadership skills and practices was organized between 2008-9. The administrative issues and information flow are facilitated in the ADMIN group where also practical plans and day-to-day administrative duties are handled. All meetings produce written minutes.

Information flow is organized through:
- regular small-group meetings
- weekly department level meetings and seminars
- annual or bi-annual project meetings
- e-mail lists
- web site

International and science policy issues are handled by all senior scientists, with help from ICOS Finland, iLEAPS IPO and Dr Sanna Sorvari, who is coordinating those activities.
RC’S strengths and challenges related to leadership and management, and the actions planned for developing the processes.

Strengths: ATM has been formed around a common scientific framework, which creates an inspired atmosphere and facilitates group management. The world class scientific leadership can be seen in outstanding results (Nature/Science papers, ERC grants etc.). Coordination of research and education are closely linked together and all ATM members are involved in both.

The challenges related to leadership and management are:
- interdisciplinary work
- size of the group
- information flow and daily management
- unfavorable changes in research politics in Finland, changes in external support and collaboration
- inbreeding, lack of ‘fresh blood’

Actions planned:
- improving internal science policy planning, clarifying research strategies and responsibilities
- Interaction and communication between fields and disciplines strongly encouraged
- Coaching and mentoring as means of empowerment at all stages
- Information flow and daily management challenges; more effective meetings
- Recruitment strategy to ensure inflow of people from other universitites in Finland and abroad

### 7. External competitive funding of the RC

- **Listing of the RCs external competitive funding, where:**
  - the funding decisions have been made during 1.1.2005-31.12.2010, and
  - the administrator of the funding is/has been the University of Helsinki

- **Academy of Finland (AF)** - total amount of funding (in euros) AF has decided to allocate to the RC members during 1.1.2005-31.12.2010: **14600000**

- **Finnish Funding Agency for Technology and Innovation (TEKES)** - total amount of funding (in euros) TEKES has decided to allocate to the RC members during 1.1.2005-31.12.2010: **3800000**

- **European Union (EU)** - total amount of funding (in euros) EU has decided to allocate to the RC members during 1.1.2005-31.12.2010: **12800000**

- **European Research Council (ERC)** - total amount of funding (in euros) ERC has decided to allocate to the RC members during 1.1.2005-31.12.2010: **4500000**

- **International and national foundations** – names of international and national foundations which have decided to allocate funding to the RC members during 1.1.2005-31.12.2010, and the amount of their funding (in euros).
  - names of the foundations: **Nessling Foundation**
  - **Aaltonen Foundation**
  - **King Carl XVI Gustaf Environmental Research Foundation**
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 2 MATERIAL

- Finnish Academy of Science and Letters
- Finnish Physical Society
- Wiuril Foundation
- Societas Scientiarum Fennica, Magnus Ehrnrooth Foundation
- The Finnish Work Environment Fund
- Finnish Forest Foundation
- Finnish Association for Aerosol Research
- total amount of funding (in euros) from the above-mentioned foundations: 1110000

• Other international funding - names of other international funding organizations which have decided to allocate funding to the RC members during 1.1.2005-31.12.2010, and the amount of their funding (in euros).
  - names of the funding organizations: University of Ghent
  - Aerodyne US
  - Nordforsk
  - COST
  - total amount of funding (in euros) from the above-mentioned funding organizations: 1230000

• Other national funding (incl. EVO funding and Ministry of Education and Culture funded doctoral programme positions) - names of other national funding organizations which have decided to allocate funding to the RC members during 1.1.2005-31.12.2010, and the amount of their funding (in euros).
  - names of the funding organizations: Nokia Ltd
  - Vaisala Ltd
  - SHOK Forestcluster LTD
  - SHOK CLEEN Ltd
  - University of Helsinki
  - CSC
  - Ministry of Education
  - Ministry of Agric & Forestry
  - City of Vantaa
  - City of Malmö
  - total amount of funding (in euros) from the above-mentioned funding organizations: 1700000

B RC’S STRATEGIC ACTION PLAN FOR 2011–2013 (MAX. 4400 CHARACTERS WITH SPACES)

• Description of the RC’s future perspectives in respect to research and doctoral training.
  Period 2011-2013 is characterized by investments
  • to large scale infrastructure such as:
    o ICOS, ACTRIS, INAR/EINAR
    o SMEAR stations
  • to instrument development coupled with theoretical understanding, with potential spin off applications
    o mass spectrometers
    o CPCs, AIS/NAIS
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RC-SPECIFIC STAGE 2 MATERIAL

- to deeper understanding of processes related to e.g. atmospheric nucleation, soil chemistry, biophysics and -chemistry of photosynthesis, and biosphere-atmosphere interactions
- to harmonization of data bases e.g. related to SMEAR stations and international research networks
- to develop models from molecular level to global scale
- to participate and lead international laboratory experiments like CLOUD/CERN and develop further own laboratory facilities
- to national and international co-operation like
  - SHOK (CLEEN, Forestcluster)
  - JPIs
  - new directions in global change community (Earth System visioning processes by ICSU)
- to deeper co-operation with existing FiDiPros Worsnop and Chandrasekar and finding out new potential FiDiPros

Research action plan is conducted at research group level. Each main topic is organized in guidance groups and near future plans are discussed between researchers at all levels of seniority. In research we will concentrate on interlinks, interconnections and feedbacks related to soil-biosphere-cryosphere-atmosphere continuum including natural and anthropogenic effects on climate change and air quality.

Main tools to develop:
- Instrument development
- Laboratory experiments
- Atmospheric observations
- Molecular-scale simulations
- Kinetic modelling
- Aerosol dynamic and atmospheric chemistry modeling
- Boundary layer Modelling
- Global models
- Satellites

ATM will recruit new staff and students across disciplines and also outside of the ATM community (other Universities in Finland and abroad) based on recruitment plan made by the ATM planning group. ATM will improve curriculum and resources related to that, and streamline the educational offering by structuring the courses and developing supervision and supervision groups.

Based on our expertise we will establish new spin off companies and co-operate intensively with existing ones. ATM will also work for employment of students via active contacts to future employers of environmental experts (e.g. FMI, SYKE, Metla, CSC, private companies, etc).

Future perspectives for next 5-10 years include clear and ambitious visions for empirical and experimental (laboratory, field, instrument developing) as well as theoretical (basic theories, simulations, model development) investigations.
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 2 MATERIAL

In research/science we will participate in
• Reducing scientific uncertainty in climate change
• Solving atmospheric nucleation and initial steps of particle growth
• Understanding of climate/Earth System functioning
• Understanding of interlinkages, feedbacks etc. between (eco)systems and atmosphere
• Scaling-up of ecophysiological processes over long time spans and across wider regions
• Understanding Air quality – climate change interactions

In science policy we will focus on
• to have UHEL in the frontline in climate change research
• to strengthen research resources from national and international sources
• taking and keeping leading role in global initiatives

Our societal perspectives are
• Adaptation and mitigation of climate change
• Dissemination of research findings (for policy making processes)
• From research to innovations; SMEs
• Training of multi-talented environmental and atmospheric experts

Particularly we will focus on training in all levels (MScs, PhD students, post docs and senior scientists). We will further develop our curriculum to answer multi-scale, supra-disciplinary requirements. In doctoral training we have international focus, and teach students to write clear research papers and proposals.

The doctoral training is organized the following way:
• providing core and transferable skills by a selection of courses, jointly with other universities and research institutes
• a well-specified research project
• 2-3 supervisors
• guidance groups
• participation in workshops and conferences
• mobility (national, international, cross-sector)

However, we will further develop it to provide to students active connections to society, private companies, international organizations etc.

| Short description of how the RC members have contributed to the compilation of the stage 2 materials (max. 1100 characters with spaces). |

The stage 2 materials were compiled by all ATM members. The answers to specific questions were compiled by Markku Kulmala, Jaana Bäck, Sanna Sorvari, Antti Lauri and the ‘strategy group’ (members: Kaarle Hämeri, Tuukka Petäjä, Miikka Dal Maso, Taina Ruuskanen, Dmitri Moisseev, Jaana Bäck). Comments and input to strategy were also provided by Eero Nikinmaa, Annikki Mäkelä, Timo Vesala, Michael Boy, Anni Reissell and Mari Pihlatie. All members filled in the TUHAT database regarding their publications and activities between 2005-2010.
**Figure 1.** Research and education networks utilized in ATM at national, Nordic-Baltic, European and global levels.

**Abbreviations:**
- ABS = Atmosphere-Biosphere Studies
- ACTRIS = European aerosol and atmospheric chemistry infrastructure
- BACCI = Biosphere-Aerosol-Cloud-Climate Interactions
- CBACCI = Carbon-Biosphere-Atmosphere-Cloud-Climate-Interactions
- CLOUD = Cosmics Leaving Outoor Droplets
- COPAL = Community heavy-Payload Long endurance Instrumented Aircraft for Tropospheric Research in Environmental and Geo-Sciences
- CRAICC = Cryosphere-Atmosphere Interactions in a Changing Arctic Climate
- DEFROST = A changing cryosphere – depicting ecosystem-climate feedbacks as affected by permafrost, snow and ice
- EINAR = European Institute of Atmospheric Sciences and Earth System Research
- EUCAARI = European Integrated Project on Aerosol-Cloud-Climate-Air Quality Interactions
- EUSAAR = European Supersites for Atmospheric Aerosol Research
- EXPEER = Distributed Infrastructure for EXPERimentation in Ecosystem Research
- FCoE = Finnish Centre of Excellence in Physics, Chemistry, Biology and Meteorology of Atmospheric Composition and Climate Change
- FLUXNET = Integrated CO2 flux measurement network
- GAW = Greenhouse gas management in European land use system
- GHGEurope = Global Atmospheric Watch
- GS = Finnish graduate school
- IAGOS = In-service Aircraft for Global Observing System
- ICOS = Integrated Carbon Observation System
- IPCC = Intergovernmental Panel for Climate Change
- LifeWatch = e-science and technology infrastructure for biodiversity data and observatories
- NordFlux = A Nordic research network for greenhouse gas exchange from northern ecosystems
- P-S GAW = Pallas-Sodankylä Global Atmospheric Watch Station
- PEGASOS = Pan-European Gas-Aerosol-Climate Interaction Study
- SIOS = Svalbard Integrated Arctic Earth Observing System
- SMEAR = Station for Measuring Ecosystem-Atmosphere Relations
Figure 2. Model and Data Integration Philosophy over spatio-temporal scales. CTM = Chemical Transport Model
### 1 Analysis of publications

#### Publication year

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<th>2006</th>
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<th>2008</th>
<th>2009</th>
<th>2010</th>
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### ATM/Kulmala

**INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI**

**RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010**

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<tr>
<td>I2 ICT programs or applications</td>
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<td></td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
2 Listing of publications

A1 Refereed journal article

2005


Clarke, G., Kernan, M., Marchetto, A., Sorvari, S., Catalan, J., 2005, 'Using diatoms to assess geographical patterns of change in high-altitude European lakes from pre-industrial times to the present day', Aquatic Sciences, vol 67, pp. 224-236.


ATM/Kulmala


Kourchev, I., Ruuskanen, T., Maenhaut, W., Kulmala, M., Claeyss, M. 2005. ‘Observation of 2-methyltetrols and related photo-oxidation products of isoprene in boreal forest aerosols from Hyytiälä, Finland’, Atmospheric Chemistry and Physics, vol 5, pp. 2761-2770.


Yohannes, G, Wiedner, SK, Jussila, M, Riekkiola, M (2005), 'Fractionation of humic substances by asymmetrical flow field-flow fractionation', Chromatographia, vol 61, no. 7-8, pp. 399-304.


2006


Hann, N, Hautala, JT, Bo, T, Wiedmer, SK, Riekkola, M 2006, 'Im mobilization of phospholipid-avidin on fused-silica capillaries for chiral separation in open-tubular capillary electrophromatography', Electrophoresis, vol 27, pp. 1502-1509.


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2007


ATM/Kulmala


ATM/Kulmala


Boy, M, Kazi, J, Lovejoy, ER, Guenther, A, Kulmala, M 2008, 'Relevance of ion-induced nucleation of sulfuric acid and water in the lower troposphere over the boreal forest at northern latitudes', Atmospheric Research, vol 90, no. 2-4, pp. 151-158.


ATM/Kulmala


Kurten, T, Loukonen, V, Vehkamäki, H, Kulmala, M 2008, 'Amines are likely to enhance neutral and ion-induced sulfuric acid-water nucleation in the atmosphere more effectively than ammonia', Atmospheric Chemistry and Physics, vol 8, pp. 4095-4103.


2009


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ATM/Kulmala


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INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

ATM/Kulmala


Schaa, M, Aplin, A, Timmermans, RMA, Koelmeijer, RBA, de Leeuw, G 2009, 'Exploring the relation between aerosol optical depth and PM2.5 at Cabauw, the Netherlands', Atmospheric Chemistry and Physics, vol 9, pp. 909-925.


2010


ATM/Kulmala


Lehtipalo, K., Kulmala, M., Sipila, M., Petaja, T., Vana, M., Ceburnis, D., Dupuy, R., O'Dowd, C. 2010. 'Nanoparticles in boreal forest and coastal environment: a comparison of observations and implications of the nucleation mechanism', Atmospheric Chemistry and Physics, vol 10, pp. 7009-7016.


Leppänen, K., Spetz, P., Pranovich, A., Hartonen, K., Kitunen, V., Isén, E., 2010. 'Pressurized hot water extraction of Norway spruce hemicelluloses using a flow-through system', Wood Science and Technology.


Mencuccini, M, Holla, T 2010, 'The significance of phloem transport for the speed with which canopy photosynthesis and belowground respiration are linked', New Phytologist, vol 185, no. 1, pp. 189-203.


ATM/Kulmala


ATM/Kulmala


Virkula, AO 2010, 'Correction of the calibration of the 3-wavelength Particle Soot Absorption Photometer (3a PSAP)', Aerosol Science and Technology, vol 44, pp. 706-712.


2005


2006


2007


2008


2010

Schultz, DM 2010, ‘Are three heads better than two?: How the number of reviewers and editor behavior affect the rejection rate’, Scientometrics, vol 84, no. 2, pp. 277-292.


A3 Contribution to book/other compilations (referred)

2006

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RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

ATM/Kulmala


Sill, T, Kauhanen, J, Savijärvi, H, Hari, A, Schmidt, W, Järvenoja, S, Montabone, L 2006, 'Simulations of atmospheric circulations for the Phoenix landing area and season-of-operation with the mars limited area model (MLAM)', Lunar and Planetary Institute, Houston, TX.

2007


2008


INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

ATM/Kulmala


INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

ATM/Kulmala


ATM/Kulmala


2010


A4 Article in conference publication (referred)

2005


2006


Suni, T, Sogacheva, L, Kulmala, M, Bäck, J 2007, 'Atmospheric aerosol and ion characteristics during EUCAP (eucalypt forest aerosols and precursors)', in Nucleation and atmospheric aerosols, pp. 943-947.


2008

2009

2010
2005


2006


Reissell, A 2006, 'Session 1: Land-atmosphere exchange of reactive and long-lived compounds: key interactions and feedbacks in the Earth system', ILEAPS Newsletter, vol 2, pp. 28.


2007


2008


2009


2005


2006


Reissell, A 2006, 'Session 1: Land-atmosphere exchange of reactive and long-lived compounds: key interactions and feedbacks in the Earth system', ILEAPS Newsletter, vol 2, pp. 28.


2007


2008


B2 Contribution to book/other compilations (non-refereed)

2005


2006


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RC-SPECIFIC TUTAHK COMPILATIONS OF PUBLICATIONS DATA 2005-2010

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RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

ATM/Kulmala

2008


2009


B3 Unreferred article in conference proceedings

2005


Räisänen, J, Ruokolainen, L, Mikkonen, L 2005. 'Kasvihuoneilmiön voimistumisesta johtuvan ilmastonmuutoksen vaikutus Suomen lumiolosuhteisiin vuosina 2071 - 2100', in XXII GEORGYSIIKAN PÄIVÄT, pp. 185-190 GEORGYSIIKAN PÄIVÄT.


Savijärvi, H 2005. 'JOITAKIN MESOMETEORLOGIIA TUTKIMUKSIA', in Geoilysikan päätäkk XXII, pp. 219-222.


Atmospheric Chemistry and Physics (ACP)


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RC-SPECIFIC TUHAT COMPIILATIONS OF PUBLICATIONS DATA 2005-2010

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2008


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ATM/Kulmala


Hyvärinen, A, Varhanen, J, Lihavainen, H, Kulmala, M, Väisänen, Y 2008, 'Surface tension measurements of compounds related to atmospheric aerosols', in Proceedings of the Nordic Center of Excellence BACCI (Biosphere-Atmosphere-Cloud-Climate Interactions) and the Finnish Center of Excellence 'Research Unit on Physics, Chemistry and Biology of Atmospheric Composition Climate Chance' activities in 2002-2007, pp. 54-60 Report series in aerosol science, no. 93.


Lushnikov, A, Kulmala, M 2008, 'Relevance of different nucleation theories investigated with the 1-dimensional model MALTE', in Proceedings of the Nordic Center of Excellence BACCI (Biosphere-Air-Cloud-Climate Interactions) and the Finnish Center of Excellence 'Research Unit on Physics, Chemistry and Biology of Atmospheric Composition Climate Chance' activities in 2002-2007 , pp. 141-144 Report series in aerosol science, no. 93.


Ortega Colomer, IK, Kurten, TC, Vehkamäki, H, Kulmala, M 2008, 'The role of ammonia in sulfuric acid ion induced nucleation', in Proceedings of the Nordic Center of Excellence BACCI (Biosphere-Atmosphere-Cloud-Climate Interactions) and the Finnish Center of Excellence 'Research Unit on Physics, Chemistry and Biology of Atmospheric Composition and Climate Change' Activities in 2002-2007, pp. 182 Report series in aerosol science, no. 93.


Sunil, T, Sogacheva, L, Kulmala, M, Bäck, J 2008, 'Atmospheric aerosol and ion characteristics during EUCAP (eucalypt forest aerosols and precursors)', in Proceedings of the Nordic Center of Excellence BACCI (Biosphere-Aerosol-Cloud-Climate Interactions) and the Finnish Center of Excellence 'Research Unit on Physics, Chemistry and Biology of Atmospheric Composition Climate Chance' activities in 2002-2007, pp. 240-243 Report series in aerosol science, no. 93.


Toivola, M, Kurten, TC, Sundberg, M, Vetkamki, H 2008, 'Quantum chemical calculations of the binding energies of (H2SO4)2, HOSO2 x H2SO4 and HOSO4 x H2SO4', in Nucleation and Atmospheric Aerosols ICNAAM, pp. 218-221.


2009


Järvi, L, Rannik, U, Mammeri, I, Jokipii, L, Eirola, E, Aalto, PP, Kolari, P, Kulmala, M, Vesala, T 2009.'The direct measurements of aerosol particle number fluxes in Helsinki, Finland', in Abstracts of the 7th International Conference on Air Quality-Science and Application.


Kulmala, M. 2009, The role of organic vapours in atmospheric aerosol formation and growth, Geochimica et Cosmochimica Acta 73 PERGAMON.


INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

ATM/Kulmala


de Leeuw, G 2009, 'Primary production of sea spray aerosol', Geochemistry & Cosmochimica Acta 73 PERSGAMON.

2010


ATM/Kulmala


77
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

ATM/Kulmala


C1 Published scientific monograph

2007

2008

2009


2010

C2 Edited book, compilation, conference proceeding or special issue of journal

2005


2006


2007

2008
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

ATM/Kulmala


D1 Article in professional journal


Pytkänen, M, Vehkamäki, H 2010. 'Mirna ja Hanna Erkkilä kosimassa', Arkhimedes, no. 6, pp. 35-37.

D2 Article in professional hand or guide book or in a professional data system, or text book material

2005

2007

2008

D4 Published development or research report

2007

2010

D5 Text book or professional handbook or guidebook or dictionary

2006

2008

2009

2010
Hyttikäinen, T, Riekola, M 2010, Kaasuksurtomatografia-massaspektrometria. Massaspektrometrin perusteet, Hakapaino OY.

E1 Popular article, newspaper article

2005
Räisänen, J 2005, 'Ilmastomuutokset ja ilmiöt', TEK - teknikka ja Talous, no. 2, pp. 32.
Räisänen, J 2005, 'Alastomuus et ja ongelmat', Tekniikka ja Talous, no. 11.

2006
Räisänen, J 2006, 'Miten kasvihuoneilmiön voimistuminen vaikuttaa Suomen sähintä?', Yliopiston almanakka vuodeksi ... jälkeen Vapahtajamme Kristuksen syntymän, pp. 74-76.

2007

2008

2009


2010
Riipinen, I 2010, 'Vallan ilhuus', Yliopisto : Helsingin yliopiston tiedelehti, vol 58, no. 11.

E1 Popular contribution to book/other compilations

2005

2006

E2 Popular monograph

2006

H1 Patents

2006

2009

I2 ICT programs or applications

2009
MOODS
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

ATM/Kulmala

1 Analysis of activities 2005-2010


<table>
<thead>
<tr>
<th>Activity type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisor or co-supervisor of doctoral thesis</td>
<td>100</td>
</tr>
<tr>
<td>Prizes and awards</td>
<td>27</td>
</tr>
<tr>
<td>Editor of research journal</td>
<td>305</td>
</tr>
<tr>
<td>Editor of research anthology/collection/conference proceedings</td>
<td>14</td>
</tr>
<tr>
<td>Peer review of manuscripts</td>
<td>234</td>
</tr>
<tr>
<td>Editor of communication journal</td>
<td>3</td>
</tr>
<tr>
<td>Editor of series</td>
<td>2</td>
</tr>
<tr>
<td>Editor of special theme number</td>
<td>1</td>
</tr>
<tr>
<td>Assessment of candidates for academic posts</td>
<td>14</td>
</tr>
<tr>
<td>Membership or other role in review committee</td>
<td>25</td>
</tr>
<tr>
<td>Membership or other role in research network</td>
<td>32</td>
</tr>
<tr>
<td>Membership or other role in national/international committee, council, board</td>
<td>189</td>
</tr>
<tr>
<td>Membership or other role in public Finnish or international organization</td>
<td>49</td>
</tr>
</tbody>
</table>
### ATM/Kulmala

<table>
<thead>
<tr>
<th>Activity type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Membership or other role of body in private company/organisation</td>
<td>17</td>
</tr>
<tr>
<td>Participation in interview for written media</td>
<td>262</td>
</tr>
<tr>
<td>Participation in radio programme</td>
<td>21</td>
</tr>
<tr>
<td>Participation in TV programme</td>
<td>29</td>
</tr>
<tr>
<td>Participation in interview for web based media</td>
<td>3</td>
</tr>
</tbody>
</table>
2 Listing of activities 2005-2010

Supervisor or co-supervisor of doctoral thesis

Almut Arneth
PhD supervision, B. Mantlana, Almut Arneth, 2005 → 2008
PhD supervision, D. Wärnfld, Almut Arneth, 2008 → ...
PhD supervision, K Baumanns, Almut Arneth, 2010 → ...
PhD supervision, S.Olin, Almut Arneth, 2010 → ...

Jaana Bäck,
PhD thesis supervisor, Nuria Altimir, Jaana Bäck, 01.01.1999 → 31.08.2006, Finland
PhD thesis supervisor, Hermanni Aaltonen, Jaana Bäck, 01.01.2009 → ..., Finland
PhD thesis supervisor, Juho Aalto, Jaana Bäck, 01.01.2010 → ..., Finland

Marja Bister,
Ph.D. thesis supervision, Marja Bister, 2003 → ..., Finland

Michael Boy,
Supervision of doctoral student, Michael Boy, 01.07.2007 → 31.12.2010, Finland
Supervision of doctoral student, Michael Boy, 01.01.2009 → 10.12.2010, Finland
Supervision of doctoral student, Michael Boy, 01.01.2009 → 31.12.2010
Supervision of doctoral student, Michael Boy, 01.01.2010 → 31.12.2010

Miikka Dal Maso,
Co-supervision of PhD student: Ella Kyrö, Miikka Dal Maso, 2010 → ...
PhD supervisor for Li Liao, Miikka Dal Maso, 2010

Sabine Göke,
Supervision of doctoral thesis, Sabine Göke, 01.01.2007 → 31.12.2007, France

Kari Hartonen,
Parameters affecting the extraction of polycyclic aromatic hydrocarbons with pressurised hot water, Kari Hartonen, 2000 → 2007, Finland

Leena Järvi,
PhD thesis supervision, Leena Järvi, 2009 → ..., Finland

Eija Juurola,
vältösirkatyön osaohjaaja, Eija Juurola, 2002 → 2008

Markku Kulmala,
PhD thesis supervision, Miikka Dal Maso, Markku Kulmala, 01.01.2004 → 17.11.2006, Finland
Supervision of doctoral thesis, Markku Kulmala, 01.01.2004 → 31.10.2008, Finland
Ph.D. thesis supervision: Juhani Damski, Markku Kulmala, 2005
Ph.D. thesis supervision: Mika Komppula, Markku Kulmala, 2005
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Ph.D. thesis supervision: Petteri Mönkkönen, Markku Kulmala, 2005
Ph.D. thesis supervision: Tareq Hussein, Markku Kulmala, 2005
Ph.D. thesis supervision, Elja Asmi, Markku Kulmala, 2006 → 29.06.2010, Finland
Ph.D. thesis supervision, Marko Lallo, Markku Kulmala, 2006 → 31.03.2010, Finland
Ph.D. thesis supervision, Erik Herrmann, Markku Kulmala, 2006 → 08.10.2010, Finland

Lauri Laakso,

Annikki Mäkelä-Carter,
PhD supervision: Aleksi Lehtonen, Annikki Mäkelä-Carter, 2005, Finland
PhD supervision: Anu Kantola, Annikki Mäkelä-Carter, 2008, Finland
PhD supervision: Paulina Schiessl-Aalto, Annikki Mäkelä-Carter, 2008 → ..., Finland
PhD supervision: Sanna Härkönen, Annikki Mäkelä-Carter, 2008 → ..., Finland
PhD supervision: Robert Schneider, Annikki Mäkelä-Carter, 2008, Canada
PhD supervision: Tianjian Cao, Annikki Mäkelä-Carter, 2010, Finland

Eero Nikinmaa,
Väitöskirjan ohjaus, Eero Nikinmaa, 2010 → ..., Finland
Väitöskirjanohjaus, Eero Nikinmaa, 2010 → ..., Finland
Väitöskirjanohjaus, Eero Nikinmaa, 2010 → ..., Finland
Väitöskirjanohjaus, Eero Nikinmaa, 2010 → ..., Finland
Väitöskirjanohjaus, Eero Nikinmaa, 2010 → ..., Finland

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RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

ATM/Kulmala

Tuukka Petaja,
Understanding the chemistry of atmospheric aerosol particle formation through measurements of physical properties, Tuukka Petaja, 2006 → 2010, Finland

Mari Pihlatie,
Doctoral training/Thesis supervision, Mari Pihlatie, 2007 → ...
Doctoral training/Thesis supervision, Mari Pihlatie, 2008 → ..., Finland
Doctoral training/Thesis supervision, Mari Pihlatie, 2009 → ...

Albert Porcar-Castell,
PhD Thesis Supervision, Albert Porcar-Castell, 15.01.2010 → ...

Jukka Pumpanen,
PhD thesis of Liisa Kulmala, Jukka Pumpanen, 01.01.2006 → ..., Finland
PhD thesis of Terhi Rasilo, Jukka Pumpanen, 01.01.2007 → ..., Finland
PhD thesis of Hermanni Aaltonen, Jukka Pumpanen, 01.01.2008 → ..., Finland
PhD thesis of Janne Korhonen, Jukka Pumpanen, 01.01.2008 → ..., Finland

Jouni Räisänen,
Supervision of PhD work of Jussi Ylhäisi, Jouni Räisänen, 2009 → 2012, Finland

Maarit Raivonen,
PhD thesis supervision, Maarit Raivonen, 2010 → ...

Ilona Riipinen,
Doctoral degree of Taina Yli-Juuti, Ilona Riipinen, 2001 → 2006

Hannu Savijärvi,
Supervision of doctoral thesis 2006 (1), Hannu Savijärvi, 2006 → ...
Supervision of doctoral theses 2007 (5), Hannu Savijärvi, 2007 → ...
Supervision of doctoral thesis 2008 (1), Hannu Savijärvi, 2008 → ...
Supervision of doctoral theses 2009 (2), Hannu Savijärvi, 2009 → ...

Sanna Sorvari,
PhD supervision: Laura Försström, Sanna Sorvari, 2001 → 2006

Hanna Vehkamäki,
Väitöskirjatyön ohjaus, Hanna Vehkamäki, 2001 → 2007
Väitöskirjatyön ohjaus, Hanna Vehkamäki, 2001 → 2006, Finland
Väitöskirjatyön ohjaus, Hanna Vehkamäki, 2002 → 2008
Väitöskirjatyön ohjaus, Hanna Vehkamäki, 2003 → 2010, Finland
Väitöskirjatyön ohjaus, Hanna Vehkamäki, 2003 → 2007, Finland
Väitöskirjatyön ohjaus, Hanna Vehkamäki, 2005 → ..., Finland
Väitöskirjatyön ohjaus, Hanna Vehkamäki, 2005 → 2007
Väitöskirjatyön ohjaus, Hanna Vehkamäki, 2006 → 2011, Finland
Väitöskirjatyön ohjaus, Hanna Vehkamäki, 2008 → ..., Finland
Väitöskirjan ohjaus, Hanna Vehkamäki, 2010 → ...
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Timo Vesala,
Doctoral Dissertation, Timo Vesala, 2005, Finland
Doctoral Dissertation, Timo Vesala, 2005, Finland
Doctoral Dissertation, Timo Vesala, 2005, Finland
Doctoral Dissertation, Timo Vesala, 2006, Finland
Doctoral Dissertation, Timo Vesala, 2007, Finland
Doctoral Dissertation, Timo Vesala, 2008, Finland
Doctoral Dissertation, Timo Vesala, 2008, Finland
Doctoral Dissertation, Timo Vesala, 2009, Finland
Doctoral Dissertation, Timo Vesala, 2010, Finland

Douglas Worsnop,
PhD Co-Supervision, Mikael Ehn, Douglas Worsnop, 12.11.2010, Finland

Sergej Zilitinkevich,
Supervision of doctoral thesis, Sergej Zilitinkevich, 01.01.2006 → 31.12.2006, United States

Prizes and awards

Almut Arneth
Guest fellowship, Almut Arneth, 2010

Mikka Dal Maso,
FAAR award, Mikka Dal Maso, 02.09.2010

Heikki Junninen,
Kunniamaininta Smart-SMEAR projektille openusteknologiapalkintokilpailussa, Heikki Junninen, 23.11.2007

Janne Henrik Korhonen,
Good Teacher Award for junior teachers, Janne Henrik Korhonen, 19.12.2007, Finland

Markku Kulmala,
Doctor of Natural Sciences, Honorus Causa, University of Stockholm, Markku Kulmala, 30.09.2005
Wilhelm Bjerkenes medal, Markku Kulmala, 17.04.2007
Doctor of Philosophy (Physics), Honorus Causa, University of Tartu, Markku Kulmala, 01.12.2008
Honorary Chair, Markku Kulmala, 30.10.2008
Nominee for the 2007 Descartes prize for Transnational Collaborative Research for NCoE BACCI, Markku Kulmala, 15.04.2008
Fellow, American Geophysical Union, Markku Kulmala, 2009
Fuchs Memorial Award, Markku Kulmala, 01.09.2010

Hanna K Lappalainen
NASA Goddard Team Award - EOS_AURA OMI Team, Hanna K Lappalainen, 2005

Ivan Mammarella,
Kipp & Zonen Award for Boundary Layer Meteorology 2007, Ivan Mammarella, 2007

Tuukka Petaja,
Finnish Association for Aerosol Research Award, Tuukka Petaja, 02.09.2010, Finland
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Ilona Riipinen, MSc thesis award of the Faculty of Science, University of Helsinki, Ilona Riipinen, 2005
PhD thesis award of University of Helsinki, Ilona Riipinen, 2008
Honorary title of Doctor Prima in the conferment ceremony of the Faculty of Philosophy, University of Helsinki, Ilona Riipinen, 2010
Member of the Academy Club for Young Scientists, Finnish Academy of Science and Letters, Ilona Riipinen, 2010 → 2011
Sheldon K. Friedlander award, Ilona Riipinen, 2010
The FAAR (Finnish Association for Aerosol Research) award, Ilona Riipinen, 2010

Hanna Vehkamäki, Magnus Ehrnrooth Foundation award 2010, Hanna Vehkamäki, 2010 → ..., Finland

Regents Lecturer, College of Chemistry, University of California, Douglas Worsnop, 28.01.2008 → 08.02.2008, United States
Yoram Kaufman Award for Unselfish Cooperation in Research, Douglas Worsnop, 14.12.2010, United States

Editor of research journal

Almut Arneth
Biogeoosciences, Almut Arneth, 2007 → ..., Finland
Global Biogeochemical Cycles, Almut Arneth, 2007 → ...

Jaana Bäck
Silva Fennica, Jaana Bäck, 28.06.2005 → 31.12.2005, Finland
Assisting scientific editor, Silva Fennica, Jaana Bäck, 01.01.2006 → 31.12.2007, Finland
Boreal Environment Research, Jaana Bäck, 01.01.2008 → 31.12.2008, Finland
Silva Fennica, Jaana Bäck, 01.01.2006 → 31.12.2006, Finland
Subject Editor, Boreal Environment Research, Jaana Bäck, 01.01.2006 → ..., Finland
Boreal Environment Research, Jaana Bäck, 01.01.2007 → 31.12.2007, Finland
Report Series in Aerosol Sciences, Jaana Bäck, 01.01.2007 → 31.12.2007, Finland
Silva Fennica, Jaana Bäck, 01.01.2007 → 31.12.2007, Finland

Michael Boy
Atmospheric Chemistry and Physics, Michael Boy, 01.01.2008 → 31.12.2008
Boreal Environment Research, Michael Boy, 01.01.2008 → 31.12.2008

Mikka Dal Maso
Atmospheric Chemistry and Physics, Mikka Dal Maso, 01.01.2005 → 31.12.2005, Germany
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Mikael Kristian Ehn,
Atmospheric Chemistry and Physics, Mikael Kristian Ehn, 01.01.2008 → 31.12.2008

Kaarle Hämeri,
Atmospheric Chemistry and Physics, special issue, Quantification of aerosol nucleation in the European boundary ayer (QUEST 2002-2004), Kaarle Hämeri, 01.01.2006 → 31.12.2006
Atmospheric Research / Associate editor, Kaarle Hämeri, 2007 → ...
Report Series in Aerosol Science, Kaarle Hämeri, 01.01.2007 → 31.12.2007, Finland
Atmospheric Chemistry and Physics, Kaarle Hämeri, 01.01.2008 → 31.12.2008
Atmospheric Research, Kaarle Hämeri, 01.01.2008 → 31.12.2008

Jan Daniel Julin,

Eija Juurola,
Tieteellinen toimittaja, Metsätieteen aikakauskirja, Eija Juurola, 01.01.2006 → 30.04.2009, Finland
Tieteellinen toimittaja, Silva Fennica, Eija Juurola, 01.01.2006 → 30.04.2009, Finland

Markku Kulmala,
Boreal Environment Research, Markku Kulmala, 01.01.2002 → 31.12.2014, Finland
Atmospheric Chemistry and Physics, Markku Kulmala, 01.01.2004 → 31.12.2014
Aerosol Science and Technology, Markku Kulmala, 01.01.2005 → 31.12.2005
Atmospheric Chemistry and Physics, Markku Kulmala, 01.01.2005 → 31.12.2005
Atmospheric Environment, Markku Kulmala, 01.01.2005 → 31.12.2005
Atmospheric Chemistry and Physics, Markku Kulmala, 01.01.2005 → 31.12.2005
Atmospheric Research, Markku Kulmala, 01.01.2005 → 31.12.2005
Environmental Modelling and Software, Markku Kulmala, 01.01.2005 → 31.12.2005
Environmental Science & Technology, Markku Kulmala, 01.01.2005 → 31.12.2005
Journal of Geophysical Research, Associate editor, Markku Kulmala, 01.01.2005 → 31.12.2005
Monte Carlo Methods and Applications, Markku Kulmala, 01.01.2005 → 31.12.2005
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Science, Markku Kulmala, 01.01.2005 → 31.12.2005
Tellus, Markku Kulmala, 01.01.2005 → 31.12.2006
Tellus B, Markku Kulmala, 01.01.2005 → 31.12.2005
The Science of The Total Environment, Markku Kulmala, 01.01.2005 → 31.12.2005
Aerosol Science and Technology, Markku Kulmala, 01.01.2006 → 31.12.2006
Atmospheric Chemistry and Physics, Markku Kulmala, 01.01.2006 → 31.12.2006
Atmospheric Chemistry and Physics, Markku Kulmala, 01.01.2006 → 31.12.2006
Atmospheric Environment, Markku Kulmala, 01.01.2006 → 31.12.2006
Atmospheric Research, Markku Kulmala, 01.01.2006 → 31.12.2006
Atmospheric Research, special editor, Markku Kulmala, 01.01.2006 → 31.12.2006
Boreal Environment Research, Markku Kulmala, 01.01.2006 → 31.12.2006
Boreal Environment Research, Markku Kulmala, 01.01.2006 → 31.12.2006
Chemical Engineering Science, Markku Kulmala, 01.01.2006 → 31.12.2006
Environmental Science and Technology, Markku Kulmala, 01.01.2006 → 31.12.2006
Journal of Atmospheric Sciences, Markku Kulmala, 01.01.2006 → 31.12.2006
Journal of Geophysical Research, Associate editor, Markku Kulmala, 01.01.2006 → 31.12.2006
Monte Carlo Methods and Applications, Markku Kulmala, 01.01.2006 → 31.12.2006, Finland
Quarterly Journal, Royal Meteorological Society, Markku Kulmala, 01.01.2006 → 31.12.2006
Tellus B, Markku Kulmala, 01.01.2006 → 31.12.2006, Finland
Tellus B, Markku Kulmala, 01.01.2006 → 31.12.2006
The Science of The Total Environment, Markku Kulmala, 01.01.2006 → 31.12.2006
Aerosol Science and Technology, Markku Kulmala, 01.01.2007 → 31.12.2014, United States
Aerosol Science and Technology, Markku Kulmala, 01.01.2007 → 31.12.2007
Atmospheric Chemistry and Physics, Markku Kulmala, 01.01.2007 → 31.12.2007
Atmospheric Chemistry and Physics, editor, Markku Kulmala, 01.01.2007 → 31.12.2007
Atmospheric Environment, Markku Kulmala, 01.01.2007 → 31.12.2007
Atmospheric Research, Markku Kulmala, 01.01.2007 → 31.12.2007
Boreal Environment Research, Markku Kulmala, 01.01.2007 → 31.12.2007
Boreal Environment Research, Markku Kulmala, 01.01.2007 → 31.12.2007
Geophysical Research Letters, Markku Kulmala, 01.01.2007 → 31.12.2007
Journal of Aerosol Science, Markku Kulmala, 01.01.2007 → 31.12.2007
Journal of Geophysical Research, Associate editor, Markku Kulmala, 01.01.2007 → 31.12.2007
Monte Carlo Methods and Applications, Markku Kulmala, 01.01.2007 → 31.12.2007
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Science, Markku Kulmala, 01.01.2007 → 31.12.2007
Tellus B, Markku Kulmala, 01.01.2007 → 31.12.2007
Tellus B, Markku Kulmala, 01.01.2007 → 31.12.2007
Tellus B, Guest editor, Markku Kulmala, 01.01.2007 → 31.12.2007
The Science of The Total Environment, Markku Kulmala, 01.01.2007 → 31.12.2007
Boreal Environment Research, Markku Kulmala, 01.01.2008 → 31.12.2008, Finland

**Theo Christian Kurten**

Journal of Chemical Thermodynamics, Theo Christian Kurten, 01.01.2007 → 31.12.2007

**Lauri Laakso**

Atmospheric Chemistry and Physics, Lauri Laakso, 01.01.2005 → 31.12.2005
Atmospheric Environment, Lauri Laakso, 01.01.2005 → 31.12.2005
Atmospheric Research, Lauri Laakso, 01.01.2005 → 31.12.2005
Boreal Environment Research, Lauri Laakso, 01.01.2005 → 31.12.2005
Bulletin of the Finnish Air Pollution Prevention Society (Ilmansuojelulehti), Lauri Laakso, 01.01.2005 → 31.12.2005, Finland
Atmospheric Chemistry and Physics, Lauri Laakso, 01.01.2005 → 31.12.2005
Atmospheric Environment, Lauri Laakso, 01.01.2005 → 31.12.2005
Atmospheric Research, Lauri Laakso, 01.01.2005 → 31.12.2005
Boreal Environment Research, Lauri Laakso, 01.01.2006 → 31.12.2006
Bulletin of the Finnish Air Pollution Prevention Society (Ilmansuojelulehti), Lauri Laakso, 01.01.2006 → 31.12.2006, Finland
Atmospheric Chemistry and Physics, Lauri Laakso, 01.01.2007 → 31.12.2007
Atmospheric Chemistry and Physics, Lauri Laakso, 01.01.2008 → 31.12.2008
Space Science Reviews, Lauri Laakso, 01.01.2008 → 31.12.2008
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RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

Samuli Launiainen,
Telus B, Samuli Launiainen, 01.01.2006 → 31.12.2006, Sweden

Antti Johannes Lauri,
Journal of Chemical Physics, Antti Johannes Lauri, 01.01.2005 → 31.12.2005, United States
Physical Review E, Antti Johannes Lauri, 01.01.2005 → 31.12.2005, United States
The Journal of Chemical Physics, Antti Johannes Lauri, 01.01.2006 → 31.12.2006, United States
Journal of Chemical Physics, Antti Johannes Lauri, 01.01.2007 → 31.12.2007, United States
Report Series in Aerosol Science, Antti Johannes Lauri, 01.01.2007 → 31.12.2007, Finland
Journal of Chemical Physics, Antti Johannes Lauri, 01.01.2008 → 31.12.2008, United States

Annikki Mäkelä-Carter,
Tree Physiology, Annikki Mäkelä-Carter, 2006

Risto Juhani Makkonen,
Atmospheric Chemistry and Physics, Risto Juhani Makkonen, 01.01.2008 → 31.12.2008

Ivan Mammarella,
Boundary-Layer Meteorology, Ivan Mammarella, 01.01.2006 → 31.12.2006

Ismo Ilmari Napari,
Journal of Chemical Physics, Ismo Ilmari Napari, 01.01.2005 → 31.12.2005
Journal of Chemical Physics, Ismo Ilmari Napari, 01.01.2006 → 31.12.2006
Journal of Chemical Physics, Ismo Ilmari Napari, 01.01.2007 → 31.12.2007

Eero Nikinmaa,
Canadian Journal of Botany, Eero Nikinmaa, 01.01.2006 → 31.12.2006, Canada
Plant, Cell & Environment, Eero Nikinmaa, 01.01.2006 → 31.12.2006, United Kingdom
 Silva Fennica, Eero Nikinmaa, 01.01.2006 → 31.12.2006, Finland
Tellus, Eero Nikinmaa, 01.01.2006 → 31.12.2006, Sweden
Tree Physiology, Eero Nikinmaa, 01.01.2006 → 31.12.2006, Canada
Trees, Eero Nikinmaa, 01.01.2006 → 31.12.2006, Germany

Tuukka Petaja,

Mari Pihlatie,
Global Change Biology, Mari Pihlatie, 01.01.2005 → 31.12.2005
Tellus B, Mari Pihlatie, 01.01.2006 → 31.12.2006, Sweden
New Phytologist, Mari Pihlatie, 01.01.2008 → 31.12.2008, United Kingdom
Plant and Soil, Mari Pihlatie, 01.01.2008 → 31.12.2008, Netherlands
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Jukka Pumpanen,
Global Change Biology, Jukka Pumpanen, 04.05.2005 → 31.12.2005, United Kingdom
Boreal Environment Research, Jukka Pumpanen, 01.01.2006 → 31.12.2006, Finland
Agricultural and Forest Meteorology, Jukka Pumpanen, 26.07.2007 → 31.12.2007, United Kingdom
Biogeosciences, Jukka Pumpanen, 11.06.2007 → 31.12.2007, Germany
Global Change Biology, Jukka Pumpanen, 01.01.2007 → 31.12.2007, United Kingdom
Plant and Soil, Jukka Pumpanen, 28.08.2007 → 31.12.2007, Netherlands
Metalliteen aikakaaskirja, Jukka Pumpanen, 01.01.2008 → 31.12.2010, Finland
Silva Fennica, Jukka Pumpanen, 01.01.2008 → 31.12.2010, Finland

Jouni Räisänen,
Tellus A, member of editorial board, Jouni Räisänen, 2006 → ..., Sweden
IPCC Technical Paper on Climate Change and Water, member of the principal author group, Jouni Räisänen, 01.01.2007 → 31.12.2007
The Impact of Climate Change on European Lakes, Jouni Räisänen, 01.01.2007 → 31.12.2007
Geophysica, member of editorial board, Jouni Räisänen, 2008 → ..., Finland

Maarit Raivonen,
Tellus Series B: Chemical and Physical Meteorology, Maarit Raivonen, 01.01.2006 → 31.12.2006

Anni Reissell,
ILEAPS Newsletter, Anni Rassell, 01.01.2007 → 31.12.2007

Marja-Liisa Riekkola,
Member of Editorial Board of Journal of Biochemical and Biophysical Methods, Marja-Liisa Riekkola, 1998 → 2008, Netherlands
Member of Advisory editorial board of Chromatographia, Marja-Liisa Riekkola, 01.01.1999 → ..., Germany
Member of Advisory editorial board of Electrophoresis, Marja-Liisa Riekkola, 01.01.1999 → ..., Germany
Member of Advisory editorial board of J. Chromatographic Science, Marja-Liisa Riekkola, 01.01.2000 → ..., United States
Member of Advisory editorial board of Journal of Analytical and Bioanalytical Chemistry, Marja-Liisa Riekkola, 2002 → 2009, Germany
Member of Advisory editorial board of Journal of Separation Science, Marja-Liisa Riekkola, 01.01.2002 → ..., Germany
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Journal of Aerosol Science, Hanna Vehkamäki, 2009
Atmospheric Chemistry and Physics, Hanna Vehkamäki, 2010
Atmospheric Research, Hanna Vehkamäki, 2010

Timo Vesala,
Agricultural and Forest Meteorology, Timo Vesala, 2005
ATM/Kulmala

Atmospheric Research, Timo Vesala, 2005 → ...
Boundary-Layer Meteorology, Timo Vesala, 2005 → ...
Silva Fennica, Timo Vesala, 2005 → ...
Trees, Timo Vesala, 2005 → ...
Plant Physiology, Timo Vesala, 2006 → ...
Annals of Botany, Timo Vesala, 2007 → ...
Global Biogeochemical Cycles, Timo Vesala, 2007 → ...
Journal of Applied Meteorology and Climatology, Timo Vesala, 2007 → ...
Biogeosciences, Timo Vesala, 2008 → ...
Ecological Monographs, Timo Vesala, 2008 → ...
Journal of Experimental Botany, Timo Vesala, 2008 → ...
Nature, Timo Vesala, 2008 → ...
Plant Biology, Timo Vesala, 2009 → ...
Atmospheric Measurement Techniques, Timo Vesala, 2010 → ...
Ecology, Model Development, Timo Vesala, 2010 → ...
Plant Ecology, Timo Vesala, 2010 → ...

Douglas Worsnop

Journal of Physical Chemistry, Douglas Worsnop, 01.01.1990 → ..., United States
Journal of Geophysical Research, Douglas Worsnop, 01.01.1992 → ...
Geophysical Research Letters, Douglas Worsnop, 01.01.1993 → ..., United States
Science, Douglas Worsnop, 01.01.1997 → ..., United States
Environmental Science and Technology, Douglas Worsnop, 01.01.1998 → ..., United States
Aerosol Science and Technology, Douglas Worsnop, 01.01.2001 → ..., United States
Atmospheric Chemistry and Physics, Douglas Worsnop, 01.01.2002 → ..., Germany
Editorial Board, Atmospheric Environment, Douglas Worsnop, 01.09.2008 → ..., United Kingdom

Editor of communication journal

Sanna Sorvari
iLEAPS Newsletter, issue no 3, Sanna Sorvari, 12.2006
iLEAPS Newsletter, special issue on Biomass Burning, issue no 4, Sanna Sorvari, 06.2007
iLEAPS Newsletter, special issue on Aerosol-clouds-Precipitation-Climate, issue no 5, Sanna Sorvari, 01.01.2008 → 31.12.2008

Editor of series

Markku Kulmala

Hanna Vehkamäki
Vieraileva toimittaja, Boreal Environment Research, Hanna Vehkamäki, 2007 → ..., Finland

Editor of special theme number

Annikki Mäkelä-Carter
Guest editor of Tree Physiology 25(7), 2005: Modeling Forest Production, Annikki Mäkelä-Carter, 2005
Assessment of candidates for academic posts

Kaarle Hämeri,
Evaluation for Professorship, Kaarle Hämeri, 2010 → ..., Sweden
Evaluation for Professorship for Stockholm University, Kaarle Hämeri, 2010, Sweden
Examiner / Dosentship / Mika Komppula, Kaarle Hämeri, 2010, Finland
University lecturers / member in expert committees, Kaarle Hämeri, 2010, Finland

Markku Kulmala,
Professor in Physics, Markku Kulmala, 10.03.2010 → 14.03.2010, Ireland

Annikki Mäkelä-Carter,
External evaluator: Chair in silviculture, SLU, Annikki Mäkelä-Carter, 2009, Sweden

Marja-Liisa Riekkola,
Evaluator of Candidates for Professor in Analytical Chemistry at Göteborg University, Marja-Liisa Riekkola, 31.01.2007, Sweden
Candidate assessment for professor in analytical chemistry, Oslo University, Marja-Liisa Riekkola, 2010 → ..., Norway
Candidate assessment for professor in separation technologies and bioanalytics, University of Vienna, Marja-Liisa Riekkola, 13.09.2010, Austria
Promotion to Assistant Professor, University of Cyprus, Marja-Liisa Riekkola, 08.10.2010, Cyprus
Research Evaluation for Development of Research at the University of Gothenburg, Sweden, Marja-Liisa Riekkola, 2010 → ..., Sweden
Senior Research Position in Analytical chemistry for a sustainable development, Swedish Research Council, Sweden, Marja-Liisa Riekkola, 2010 → ..., Sweden

Hannu Savijärvi,
Arvioija, MISU:n apul.prof./senior lecturer post, Hannu Savijärvi, 2010 → ..., Sweden

Hanna Vehkamäki,
Dosentthakemuksen arvioija, Hanna Vehkamäki, 2010, Finland

Membership or other role in review committee

Jaana Bäck,
member in grant panel, Jaana Bäck, 2009
Member in grant panel, Jaana Bäck, 2010, Finland

Annikki Mäkelä-Carter,
Member of the nominations board for the professorships on horticulture, Annikki Mäkelä-Carter, 2005, Finland
Member of the nominations board for the professorships on forest pathology, Annikki Mäkelä-Carter, 2006, Finland
Chair of the nominations board for the professorships on forest soil science, Annikki Mäkelä-Carter, 2009, Finland
Chair of the nominations board for the professorships on tropical silviculture, Annikki Mäkelä-Carter, 2009, Finland
Member of Panel 8 (Forest management and products) of the Quality and Impact Assessment of SLU, Annikki Mäkelä-Carter, 2009, Sweden
Chair of evaluations board of the MLI research programme, Metla, Annikki Mäkelä-Carter, 2010, Finland
Member of the nominations board for the professorships on geoinformatics, Annikki Mäkelä-Carter, 2010 → 2011, Finland

Jouni Rääsänen,
Reviewer of EU FP6 ENSEMBLES project, Jouni Rääsänen, 2005 → 2007
Membership in Review committee for United States National Science Foundation, Jouni Rääsänen, 2006 → ..., United States
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

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Membership in Review panel of Research Council of Norway, Jouni Räisänen, 2006 → ..., Norway
Membership in Review Panel, Czech Academy of Sciences, Jouni Räisänen, 2007, Czech Republic
Membership in review panel, NWO, Jouni Räisänen, 2007, Netherlands
Membership in review panel, French Academy of Sciences, Jouni Räisänen, 2008, France
Membership in review panel, NWO, Jouni Räisänen, 2009, Netherlands

Marja-Liisa Riekkola
Member of the Evaluation Board, Marja-Liisa Riekkola, 2000 → 2006, Finland
Member of Evaluation Panel of the Komppa Chemistry Doctoral Thesis Award, Marja-Lisa Riekkola, 2006 → ..., Finland
Member of COST Evaluation Panel of Chemistry and Molecular Sciences and Technologies (CMST), Marja-Lisa Riekkola, 20.08.2007 → 21.08.2007, Belgium
Member of Evaluation Panel of Chemistry at Uppsala University KoF 07 [Quality and Renewal 2007], Marja-Lisa Riekkola, 11.03.2007 → 30.03.2007, Sweden
Finnish-German Research Training cooperation/Joint Call of Deutsche Forschungsgemeinschaft, Marja-Lisa Riekkola, 03.2009, Finland
The Aalto University Research Assessment Exercise 2009, Marja-Lisa Riekkola, 07.06.2009 → 12.06.2009, Finland

Timo Vesala
Review committee member, Timo Vesala, 08.2010 → 01.2011, Finland

Membership or other role in research network

Almut Arneth
Scientific Steering Committee, Almut Arneth, 2004 → ...
Scientific Steering Committee, Almut Arneth, 08.2006 → 09.2009
Member, Almut Arneth, 2008 → ...
Member of Expert Group, Almut Arneth, 2009 → ...
Vice-Chair, Almut Arneth, 2009 → ...
Working group leader, Almut Arneth, 2009 → ...

Jaana Bäck
BACCI (Biosphere-Atmosphere_Cloud_Climate Interactions) Nordic CoE, Jaana Bäck, 2005 → 2009
Physics, Chemistry, Biology and Meteorology of Atmospheric Composition and Climate Change, Jaana Bäck, 2007 → 2010
Nordic-Baltic BACCI, Jaana Bäck, 2009 → ...
CRYOSPHERE-ATMOSPHERE INTERACTIONS IN A CHANGING ARCTIC CLIMATE (CRAICC), Jaana Bäck, 2010 → ...

Markku Kulmala
CBACCI, coordinator, Markku Kulmala, 2003 → 2013
EUSAAR, steering committee, Markku Kulmala, 2006 → 2011
Megacity, steering committee, Markku Kulmala, 2009 → 2013
CRAICC, coordinator, Markku Kulmala, 2010 → 2015

Katrianne Lehtipalo
Aerosolitutkimusseuran sihteeriyys, Katrianne Lehtipalo, 01.08.2009 → 31.12.2010, Finland
Annikki Mäkelä-Carter, Chair of IUFRO working party, Annikki Mäkelä-Carter, 1995 → 2005
COST Action FP0803, member of management committee and steering committee, Annikki Mäkelä-Carter, 2008 → 2011
Nordic network on climate and biodiversity - membership, Annikki Mäkelä-Carter, 2010 → ...

Eero Nikinmaa, Functional structural plant models scientific board, Eero Nikinmaa, 1997 → 2013

Siegfried Schoesberger, CLOUD Initial Training Network, Siegfried Schoesberger, 01.09.2009 → 31.07.2012, Germany

Sanna Sorvari, Project: MUTUAL - Multiproxy approach to estimate changes in UV exposure in Arctic lakes, Sanna Sorvari, 01.01.2004 → 31.12.2006, Finland
Project: Science workshop on past, present and future climate change, funded by Finnish Cultural Foundation, member of the project committee, Sanna Sorvari, 01.01.2007 → 31.12.2008
Helsinki Insight - Fundraising campaign, coordinator of theme Climate Change, Sanna Sorvari, 01.01.2008 → ..., Finland
Project: ILMA - Ilmakehätieden kehittämishanke, Sanna Sorvari, 01.09.2008 → ...
Assessing Nordic climate change research (NordForsk Policy Brief 2009-8 on Climate Change Research, Sanna Sorvari, 01.06.2009 → 30.06.2009
Environmental Science panel for assessing Finnish research (SIGHT – The State and quality of scientific research in Finland 2009), Sanna Sorvari, 01.05.2009 → 31.05.2009
Project: EIT-EINAR European Institute for Innovation and Technology, Sanna Sorvari, 01.01.2009 → 31.12.2009
Member of Ympäristötiedon Foorumi, Sanna Sorvari, 01.07.2010 → 31.12.2011

Timo Vesala, Member, Timo Vesala, 2010 → ..., United States

Membership or other role in national/international committee, council, board

Almut Arneth, Advisory Board Member, Almut Arneth, 2004 → ...

Ari Asmi, Finnish Association for Aerosol Research FAAR - Aerosolitutkimusseura ry, treasurer, Ari Asmi, 01.01.2005 → 31.12.2005, Finland
Finnish Association for Aerosol Research FAAR - Aerosolitutkimusseura ry, treasurer, Ari Asmi, 01.01.2006 → 31.12.2006, Finland


Michael Boy, 1st ILEAPS Science Conference 21 - 26 January 2006, Boulder, CO, member of the local Organizing committee, Michael Boy, 01.01.2006 → 31.12.2006
Workshop on Biogenic Secondary Organic Aerosols: Observations to Global Modeling, member of the organizing committee, Michael Boy, 01.01.2007 → 31.12.2007, Finland
Miikka Dal Maso, Vice member of the Board of the Finnish Association of Aerosol Research, Miikka Dal Maso, 2010...

Mikael Kristian Ehn, De Finlandsvenska Fysikdagarna, 20.22.10.2007, MIS Silja Serenade, member of the organizing committee for a conference for physics teachers, Mikael Kristian Ehn, 01.01.2007...

Kaarle Hämeri, Chairman / TSI-Fissan-Pui award committee, Kaarle Hämeri, 2004...

Finnish Association for Aerosol Research FAAR - Aerosoilittkimusseura ry, vice chairman, Kaarle Hämeri, 01.01.2005...

Nanotechnology in Northern Europe, Congress and Exhibition 26-28.4.2005, Helsinki, Fair Centre, member of the Organizing Committee for the section Nanotechnology and Environment, Kaarle Hämeri, 01.01.2005...

The American Association for Aerosol Research AAAR, Kaarle Hämeri, 01.01.2005...

Finnish Association for Aerosol Research FAAR - Aerosoilittkimusseura ry, vice chairman, Kaarle Hämeri, 01.01.2006...

Nanotechnology in Northern Europe Conference in Helsinki 16.-18.5.2006, member of the Scientific Committee, Kaarle Hämeri, 02.02.2006...

Physics Days 2007, Tallinn 15.-17.3.2007, organizing committee, Kaarle Hämeri, 01.01.2006...

Seminari "Hyvät, pahat ja rumat pienhiukkaset", Ilmatieteen laitos 8.11.2006, järjestäjä, Kaarle Hämeri, 01.01.2006...

The American Association for Aerosol Research AAAR, Kaarle Hämeri, 01.01.2006...

Board member of Fine particle forum / Hiukkasfoorumi, Kaarle Hämeri, 2007...

Finnish Association for Aerosol Research FAAR, Kaarle Hämeri, 01.01.2007...

Physics Days 2007, Tallinn 15.-17.3.2007, organizing committee, Kaarle Hämeri, 01.01.2007...

2010 International Aerosol Conference, Helsinki, conference co-chairman, Kaarle Hämeri, 01.01.2008...

Finnish Association for Aerosol Research FAAR, Kaarle Hämeri, 01.01.2008...

Formas Forskningsrådet för miljö, areella näringar och samhällsbyggande, Kaarle Hämeri, 01.01.2008...

International Aerosol Research Assembly, vice chairman, Kaarle Hämeri, 01.01.2008...

Member of steering group of Uudenmaan Nano-oke, Kaarle Hämeri, 2008...

Kari Hartonen, Chromatographic division, Kari Hartonen, 1991...

Mass Spectrometry division, Kari Hartonen, 2004...

Compressed fluid technologies division, Kari Hartonen, 2005...

Suomen Kemian Seuran Ylikriittiset fluiditekniikat -jaosto, Kari Hartonen, 01.01.2005...

Leena Järvi, 10th Anniversary of Hyytälä EUROFLUX workshop 10.-12.12.2008, member of the organizing committee, Leena Järvi, 01.01.2008...

Finnish Centre of Excellence in Physics, Chemistry, Biology and Meteorology of Atmospheric Composition and Climate Change, Leena Järvi, 2008...

New opportunities for Finnish-Japanese cooperation in urban land-atmosphere and air quality research, seminar held in Kumpula 24.-26.11.2008, member of the organizing committee, Leena Järvi, 01.01.2008...

American Meteorological Society, Leena Järvi, 2010...

Eija Juurola, Suomen metsätieteellisen seuran sihteeri, Eija Juurola, 01.01.2006...
Markku Kulmala,

Gesellschaft für Aerosolforschung, Markku Kulmala, 1984 → ..., Germany

The American Association for Aerosol Research, Markku Kulmala, 1985 → ..., United States

The European Geophysical Union, Markku Kulmala, 1999 → ...

Committee on Nucleation and Atmospheric Aerosols, honorary chair, Markku Kulmala, 2004 → ...

Coordinator of NorFA Graduate School, CBACCI, Markku Kulmala, 01.01.2005 → 31.12.2005

Coordinator of Nordic Centre of Excellence BACCI, Markku Kulmala, 01.01.2005 → 31.12.2005

Finnish Association for Aerosol Research FAAR, member of the board, Markku Kulmala, 01.01.2005 → 31.12.2005, Finland

Member of the Committee on Nucleation and Atmospheric Aerosols (CNAA), Markku Kulmala, 01.01.2005 → 31.12.2005

Vice-Chair of Scientific Steering Committee of LEAPS, Markku Kulmala, 01.01.2005 → 31.12.2005


Finnish Association for Aerosol Research FAAR, member of the board, Markku Kulmala, 01.01.2006 → 31.12.2006, Finland

NorFA Graduate School CBACCI, coordinator, Markku Kulmala, 01.01.2006 → 31.12.2006

Nordic Center of Excellence, Research Unit of Biosphere - Aerosol - Cloud - Climate Interactions (BACCI), coordinator, Markku Kulmala, 01.01.2006 → 31.12.2006

Vice-Chair of Scientific Steering Committee of LEAPS, Markku Kulmala, 01.01.2006 → 31.12.2006

EUCAARI 1st Annual Review, Helsinki 20.-23.11.2007, chairman of the organizing committee, Markku Kulmala, 01.01.2007 → 31.12.2007, Finland

EUCAARI coordinator, Markku Kulmala, 01.01.2007 → 31.12.2010, Finland

Finnish Association for Aerosol Research FAAR, member of the board, Markku Kulmala, 01.01.2007 → 31.12.2007, Finland

Nordic Centre of Excellence, Markku Kulmala, 01.01.2007 → 31.12.2007

Workshop on Biogenic Secondary Organic Aerosols: Observations to Global Modeling, member of the organizing committee, Markku Kulmala, 01.01.2007 → 31.12.2007, Finland

iLEAPS Scientific Steering Committee, Markku Kulmala, 01.01.2007 → 31.12.2007


European Aerosol Conference 24-29 August 2008, Thessaloniki, Greece, member of the scientific committee, Markku Kulmala, 01.01.2008 → 31.12.2008

FAAR, honorary chair, Markku Kulmala, 2008 → ...

Finnish Association for Aerosol Research FAAR, Markku Kulmala, 01.01.2008 → 31.12.2008, Finland


New opportunities for Finnish-Japanese cooperation in urban land-atmosphere and air quality research, seminar held in Kumpula 24-25.11.2008, member of the scientific committee, Markku Kulmala, 01.01.2008 → 31.12.2008, Finland

iLEAPS Scientific Steering committee, Markku Kulmala, 01.01.2008 → 31.12.2008

American Geophysical Union, fellow, Markku Kulmala, 2009 → ..., United States

Chair / LEAPS, Markku Kulmala, 01.01.2010 → 31.12.2012

Lauri Laakso,

APSA steering group, Lauri Laakso, 01.01.2007 → 31.12.2007

POLARCAT steering group, Lauri Laakso, 01.01.2007 → 31.12.2007

Antti Johannes Lauri,

Matemaattis-luonnontieteellisten alojen Akateemiset ry, Antti Johannes Lauri, 01.01.2005 → ..., Finland

The 1st European Conference on Science, Art and Technology in the Service of Man, 7.-9.9.2006, University of Helsinki, chairman of the programme committee, Antti Johannes Lauri, 01.01.2006 → 31.12.2006, Finland
ATM/Kulmala

Finnish Association for Aerosol Research FAAR - Suomen Aerosolitutkimusseura, treasurer, Antti Johannes Lauri, 01.01.2007 → 31.12.2007, Finland
Finnish Association for Aerosol Research FAAR, treasurer, Antti Johannes Lauri, 01.01.2008 → 31.12.2008, Finland
Aerosolitutkimusseura, Antti Johannes Lauri, 01.01.2009 → ..., Finland
MATIAS, Antti Johannes Lauri, 01.01.2010 → ..., Finland

Annikki Mäkelä-Carter, Finnish Society for Forest Science: member of governing board, Annikki Mäkelä-Carter, 2002 → 2005, Finland
Member of the Finnish Academy of Science and Letters, Annikki Mäkelä-Carter, 2004 → ..., Finland
Chair of the steering group for Vänrö research station, Annikki Mäkelä-Carter, 2005 → 2009, Finland
Member of the smaller faculty council (suppea tdk-neuvosto), Annikki Mäkelä-Carter, 2007 → 2009, Finland

Eero Nikinmaa, Hallituksen jäsen, Eero Nikinmaa, 01.05.2006 → 31.12.2010, Finland
Suomen Metsätieteellinen Seura, Eero Nikinmaa, 01.01.2006 → 31.12.2006, Finland

Mari Pihlatie, NORFRETETE team, Mari Pihlatie, 01.01.2005 → 31.12.2005

Jukka Pumpanen, NWO Innovational Research Incentive Scheme, Jukka Pumpanen, 24.08.2007 → 31.12.2007, Netherlands

Jouni Räisänen, Lead Author in Intergovernmental Panel on Climate Change, Jouni Räisänen, 2004 → 2007
Intergovernmental Panel on Climate Change, Author of the Fourth Climate Change Report and Referee of the Preliminary Versions of the Report, Jouni Räisänen, 01.01.2006 → 31.12.2006

Anni Reissell, Monsoon Asia Integrated Regional Study (MAIRS), member of the scientific committee, Anni Reissell, 01.01.2008 → 31.12.2008
COST Action DC ESSEM External Expert Panel meeting, Anni Reissell, 02.09.2010 → 03.09.2010, Belgium
COST ESSEM Domain Committee, Domain External Expert, Anni Reissell, 01.06.2010 → 31.05.2014, Belgium
COST Trans-Domain Porposals (TDP FL) Domain Expert, Anni Reissell, 09.2010 → 10.2010, Belgium
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ATM/Kulmala

Marja-Liisa Riekkola,
Member and Vice-Chairman (2007-2008) of Board of Directors, Marja-Liisa Riekkola, 2001 → 2008, Finland
Member of Board of Directors, Marja-Liisa Riekkola, 2001 → 2006, Finland
Kansallinen nanotieteen tutkijakoulu (NGS-NANO), Marja-Liisa Riekkola, 01.01.2005 → 31.12.2005
Luonnont- ja ympäristötieteiden neuvottelukunta, Marja-Liisa Riekkola, 01.01.2005 → 31.12.2005
Maj ja Tor Nesslingin säätiö, Marja-Liisa Riekkola, 01.01.2005 → 31.12.2005
Member of Nanoscience Development Committee of Ministry of Education, Marja-Liisa Riekkola, 2005, Finland
Scientific Advisory Board of Kumpula Campus, Marja-Liisa Riekkola, 01.01.2005 → 31.12.2005
Board Member of Chemical Sensors and Microsystems Graduate School (CHEMSEM), Marja-Liisa Riekkola, 01.01.2006 → …, Finland
Kansallisen nanotieteen (NGS-NANO) tutkijakoulun, Marja-Liisa Riekkola, 01.01.2006 → 31.12.2006, Finland

Ilona Riiipinen,
Academy of Sciences of the Czech Republic, Ilona Riiipinen, 01.01.2008 → 31.12.2008, Czech Republic
National Oceanic and Atmospheric Administration (NOAA), Ilona Riiipinen, 01.01.2008 → 31.12.2008, United States
Invited expert in European Research Area Board, Ilona Riiipinen, 2009

Janne Rinne,
European Geophysical Union, Janne Rinne, 01.01.2007 → 31.12.2007
Federal Wetenschapsbeleid (BELSPO), Janne Rinne, 01.01.2007 → 31.12.2007, Belgium

Taina Ruuskanen,
ACCENT OVOC Intercoromparsion PTR-MS measurements project, person in charge, Taina Ruuskanen, 01.01.2005 → 31.12.2005
Nordic Center of Excellence, Research Unit on Biosphere - Aerosol - Cloud - Climate Interactions (BACCI), Taina Ruuskanen, 01.01.2005 → 31.12.2005
Nordic Graduate School CBACCI, Taina Ruuskanen, 01.01.2005 → 31.12.2005
iLEAPS 2011 Science Conference ECSW organizing committee member, Taina Ruuskanen, 01.10.2010 → 18.09.2011

Hannu Savijärvi,
European Centre for Medium-Range Weather Forecasts ECMWF, Scientific Advisory Committee, Hannu Savijärvi, 04.06.2005 → 14.06.2005
MEXC-NetFAM summer school "Flow over complex surface" in Sodankylä observatory, member of the organizing committee, Hannu Savijärvi, 01.01.2005 → 31.12.2005, Finland
Suomen Akatemian Climatic Extremes-projektin johtoryhmä, Hannu Savijärvi, 01.01.2005 → 31.12.2005, Finland
American Astronomical Society, Hannu Savijärvi, 01.01.2006 → 31.12.2006, United States
American Geophysical Union, Hannu Savijärvi, 01.01.2006 → 31.12.2006, United States
European Geophysical Society, Hannu Savijärvi, 01.01.2006 → 31.12.2006
Geofysiikan seura, Hannu Savijärvi, 01.01.2006 → 31.12.2006
Summer School on Air-sea Interaction, Helsinki, 28.8.-1.9.2006, member of the organizing committee, Hannu Savijärvi, 01.01.2006 → 31.12.2006, Finland
Suomalainen Tiedeakatemia, Hannu Savijärvi, 01.01.2006 → 31.12.2006

Sanna Sorvari,
International Diatom Society, Sanna Sorvari, 2000 → 2006
Finnish Limnology Society, Sanna Sorvari, 2003 → 2006
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ATM/Kulmala

Geophysical Society of Finland, Sanna Sorvari, 2007 → ...
European Geoscience Union, Sanna Sorvari, 2008 → ...
JPI Clik’EU Interim Executive Board member, Sanna Sorvari, 01.01.2010 → 31.12.2010
Member of ICOS-Finland Stakeholder Board, Sanna Sorvari, 01.01.2010 → 31.12.2010
Member of Nordic Centre of Excellence CRAICC - Cryosphere-Atmosphere Interactions in a Changing Arctic Climate, Sanna Sorvari, 01.11.2010 → 30.10.2013

Tanja Suni, Finnish Association for Aerosol Research FAAR, Tanja Suni, 01.01.2008 → 31.12.2008, Finland

Hanna Vehkamäki

NOSA johtokunnan jäsen, Hanna Vehkamäki, 2003 → ...
European Aerosol Assemblies yksikön jäsen, Hanna Vehkamäki, 2004 → ...
Junge-palkituseuran jäsen, Hanna Vehkamäki, 2004 → ...
Nucleation and atmospheric aerosols komitean jäsen, Hanna Vehkamäki, 2004 → 2009
Board member of Nordic Society for Aerosol Research (NOSA), Hanna Vehkamäki, 01.01.2005 → 31.12.2005
European Aerosol Assembly, General Secretary, Hanna Vehkamäki, 01.01.2005 → 31.12.2005, Finland
Finnish Association for Aerosol Research FAAR - Suomen Aerosolitutkimusseura, deputy member of the board, Hanna Vehkamäki, 01.01.2005 → 31.12.2006, Finland
Member of the International Conference for Nucleation and Atmospheric Aerosols commission, Hanna Vehkamäki, 01.01.2005 → 31.12.2005
Representative of NOSA in European Aerosol Assembly (EAA), Hanna Vehkamäki, 01.01.2005 → 31.12.2005
Representative of NOSA in Junge prize committee, Hanna Vehkamäki, 01.01.2005 → 31.12.2005
Board member of Nordic Society for Aerosol Research (NOSA), Hanna Vehkamäki, 01.01.2006 → 31.12.2006
European Aerosol Assembly, General Secretary, Hanna Vehkamäki, 01.01.2006 → 31.12.2006
Finnish Association for Aerosol Research FAAR - Suomen Aerosolitutkimusseura, deputy member of the board, Hanna Vehkamäki, 01.01.2006 → 31.12.2006, Finland
International Conference for Nucleation and Atmospheric Aerosols commission, member, Hanna Vehkamäki, 01.01.2006 → 31.12.2006
Junge prize committee, representative of NOSA, Hanna Vehkamäki, 01.01.2006 → 31.12.2006
Finnish Association for Aerosol Research FAAR - Suomen Aerosolitutkimusseura, deputy member of the board, Hanna Vehkamäki, 01.01.2007 → 31.12.2007, Finland
Nordic Society for Aerosol Research, Hanna Vehkamäki, 01.01.2007 → 31.12.2007
Committee on Nucleation and Atmospheric Aerosols, Hanna Vehkamäki, 01.01.2008 → 31.12.2008
Finnish Association for Aerosol Research FAAR - Suomen Aerosolitutkimusseura, vice chairman of the board, Hanna Vehkamäki, 01.01.2008 → 31.12.2008, Finland
Finnish/Nordic representative in the European Aerosol Assembly (EAA), Hanna Vehkamäki, 01.01.2008 → 31.12.2008
NOSA representative in the Junge Award committee, Hanna Vehkamäki, 01.01.2008 → 31.12.2008
Suomen aerosolitutkimusseuran varapuheenjohtaja, Hanna Vehkamäki, 2008 → ..., Finland

Timo Vesala

Grant Agency Academy of Sciences of the Czech Republic, Timo Vesala, 01.01.2005 → 31.12.2005, Czech Republic
Physics Days 2007 (41. Annual Meeting of the Finnish Physical Society), Tallinn 15.-17.3.2007, program committee, Timo Vesala, 01.01.2007 → 31.12.2006, Finland
IMTECC workshop for CO2 flux measurement techniques, chairman of the organizing committee, Timo Vesala, 18.06.2007 → 20.06.2007, Finland
Marie Curie - iLEAPS: Training Course - Measurements, Hyytälä field station, organizer, Timo Vesala, 07.05.2007 → 12.05.2007, Finland
Physics Days 2007 (41. Annual Meeting of the Finnish Physical Society), Tallinn 15.-17.3.2007, program committee, Timo Vesala, 01.01.2007 → 31.12.2007, Finland
Workshop on eddy covariance flux measurements of CH_4 and N_2O exchanges, Hyytälä 8.-11.4.2008, member of the organizing committee, Timo Vesala, 01.01.2007 → 31.12.2007, Finland
ICOS, member of the Core Team, Timo Vesala, 01.01.2008 → 31.12.2008
New opportunities for Finnish-Japanese cooperation in urban land-atmosphere and air quality research, seminar held in Kumpula 24.-25.11.2008, member of the scientific committee, Timo Vesala, 01.01.2008 → 31.12.2008, Finland
Suomalainen Tiedeakatemia 100 vuotta 2008, Symposium Maan ytimestä avaruuteen, member of the program committee, Timo Vesala, 01.01.2008 → 31.12.2008, Finland
Workshop Eddy Covariance 2008, Hyytälä, April 8 11, chairman of the organizing committee, Timo Vesala, 01.01.2008 → 31.12.2008, Finland
Chair of COST Action, Timo Vesala, 2010 → ..., Finland
Executive Board Member, Timo Vesala, 2010 → ..., France
Steering group member, Timo Vesala, 2010 → ..., France
Steering group member, Timo Vesala, 11.2010 → 12.2010, Sweden

Douglas Worsnop,
Atmospheric Chemistry Gordon Conference, Douglas Worsnop, 2005
Fellow of the American Association for the Advancement of Science, Douglas Worsnop, 2006
Fellow of the American Geophysical Union, Douglas Worsnop, 2007 → ...
Awards Committee, Douglas Worsnop, 2008 → ...

Sergej Zilitinkevich,
Academia Europaea (Earth and Cosmic Sciences Section), Sergej Zilitinkevich, 01.01.2006 → 31.12.2006, United Kingdom
American Biographical Institute, Consulting Editor, Sergej Zilitinkevich, 01.01.2006 → 31.12.2006, Sierra Leone
BWW Society / Institute for Advancement of Positive Global Solutions, Distinguished Professor, Sergej Zilitinkevich, 01.01.2006 → 31.12.2006, United States
Co-ordination Board of NERC Centre for Polar Observation and Modelling, Sergej Zilitinkevich, 01.01.2006 → 31.12.2006, United Kingdom
Committee for the Vilhelm Bjerknes Medal (European Geosciences Union), Sergej Zilitinkevich, 01.01.2006 → 31.12.2006
Geophysical Society of Georgia, Honorary Foreign Member, Sergej Zilitinkevich, 01.01.2006 → 31.12.2006, Georgia
NATO Advanced Research Workshop, Atmospheric Boundary Layers: Modelling and Applications for Environmental Security, held in Dubrovnik, Croatia, 18.-22.4.2006, member of the organizing committee, Sergej Zilitinkevich, 01.01.2006 → 31.12.2006
Royal Meteorological Society, Fellow, Sergej Zilitinkevich, 01.01.2006 → 31.12.2006
SABLE Workshop, Sedona, AZ, USA (Arizona State University / Army Research Lab), Nov. 12-16, 2006, member of the Organising Committee, Sergej Zilitinkevich, 01.01.2006 → 31.12.2006, United States

**Membership or other role in public Finnish or international organization**

- Member of Departmental Board, Miikka Dal Maso, 01.01.2010 – ..., Finland
- Nordic Association of Aerosol Research (NOSA) member, Miikka Dal Maso, 2010 – ...

- Board member of Union of Finnish university professors / Professoriliitto, Kaarle Hämeri, 2007 – 2010, Finland
- Vice president / International Aerosol Research Assembly, Kaarle Hämeri, 01.01.2007 – 31.12.2010
- President / Finnish Association for Aerosol Research, Kaarle Hämeri, 2008 – 2011, Finland

- Member of Departmental Board, Kari Hartonen, 2010 – ...
- Nordic Association of Aerosol Research (NOSA) member, Kari Hartonen, 2010 – ...

- **Leena Järvi**, The Finnish Association for Aerosol Research, Leena Järvi, 2006 – ..., Finland


- Ilmatieteen laitos, johtokunnan jäsen, Markku Kulmala, 01.01.2005 – 31.12.2005, Finland
- Finnish Meteorological Institute, member of the board, Markku Kulmala, 01.01.2006 – 31.12.2006, Finland
- Yliopistolehtorien puheenjohtaja, Markku Kulmala, 01.01.2010 – 31.12.2013, Finland

- **Lauri Laakso**, North-West Provinssin ilmanlaatumuutauksijärjestelmän kehittämisen auttaminen, Lauri Laakso, 01.01.2007 – 31.12.2007, South Africa

- Luonnontieteiden foorumi (matemaattis-luonnontieteellisten järjestöjen epävirallinen nauvoittelu), Antti Johannes Lauri, 01.01.2007 – 31.12.2007, Finland

- **Annikki Mäkelä-Carter**, Member of the steering group of the Department of Forest Ecology, Annikki Mäkelä-Carter, 2005 – 03.2009, Finland
- Member of the strategic planning committee of the Faculty of Agric.&For., Annikki Mäkelä-Carter, 01.2007 – 12.2009, Finland
- Chair of the steering group of the Department of Forest Ecology, Annikki Mäkelä-Carter, 03.2009 – 12.2009, Finland
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RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

Eero Nikinmaa,

Tuukka Petaja,
Finnish Association for Aerosol Research, Tuukka Petaja, 2002 → ...
European Geophysical Union, Tuukka Petaja, 2004 → ...
American Geophysical Union, Tuukka Petaja, 2008 → ...
American Association for Aerosol Research, Tuukka Petaja, 2010 → ...

Albert Porcar-Castell,
Member, Albert Porcar-Castell, 2004 → ...
Member, Albert Porcar-Castell, 2008 → ...

Anni Reissell,
Joint Scientific Committee of the World Climate Research Programme (WCRP), Anni Reissell, 06.03.2006 → 07.03.2006, India

Marja-Liisa Riekkola,
Committee Member of Public Information, Marja-Liisa Riekkola, 2000 → 2009, Finland

Ilona Riipinen,
HELAC Helsinki Aerosol Consulting Ltd, Executive Manager, Ilona Riipinen, 01.01.2008 → 31.12.2008, Finland

Hannu Savijärvi,
Hydmet-Diploma-lautakunta (Ilmatieteen laitos, Palmenia), Hannu Savijärvi, 01.01.2005 → 31.12.2005, Finland
International Commission of Planetary Atmospheres and their Evolution (ICPAE), Hannu Savijärvi, 01.01.2005 → 31.12.2005
Meteorological Professional Development (PD)-lautakunta (Ilmatieteen laitos, Palmenia), Hannu Savijärvi, 01.01.2005 → 31.12.2005, Finland
Meteorological post-graduate diploma education, Hannu Savijärvi, 01.01.2006 → 31.12.2006, Finland
Supplementary education in hydrometeorology, Hannu Savijärvi, 01.01.2006 → 31.12.2006

Mikko Juhani Sipilä,
HELAC Helsinki Aerosol Consulting Ltd, Measurement Services Manager, Mikko Juhani Sipilä, 01.01.2008 → 31.12.2008, Finland

Hanna Vehkamäki,
Finnish Physical Society, working group Female Physicists in Finland, Hanna Vehkamäki, 01.01.2008 → 31.12.2008, Finland

Timo Vesala,
Geodetic-Geophysical National Committee of Finland, Timo Vesala, 01.01.2006 → 31.12.2006, Finland
The Finnish Society of Sciences and Letters, Timo Vesala, 01.01.2006 → 31.12.2006, Finland
Member, Timo Vesala, 2010 → ..., Finland

Douglas Worsnop,
Fellow, American Association for Advancement of Science, Douglas Worsnop, 02.02.2004 → ..., United States
Board of Directors, American Association for Aerosol Research, Douglas Worsnop, 01.10.2009 → 30.09.2012, United States
Member, Finnish Society of Sciences and Letters, Douglas Worsnop, 20.12.2010 → ..., Finland
Membership or other role of body in private company/organisation

Kaarle Hämeri,
Professoriliitto, hallitus, Kaarle Hämeri, 01.01.2007 → 31.12.2007, Finland
Aerosolututkimusseura ry, Kaarle Hämeri, 01.01.2008 → 31.12.2008, Sweden
CLEEN / member of R&D committee, Kaarle Hämeri, 2009 → ..., Finland

Kari Hartonen,
Suomen kemian seuran Painaiset fluiditeknologiat-jäosto (ent. ylikriittiset fluiditekniikat-jäosto), Kari Hartonen, 01.01.2006 → 31.12.2006, Finland

Lauri Laakso,
Suomen fyysikko-, matemaatikko- ja tietojenkäsittelijäliitto SMFL ry, member of the PR-committee, Lauri Laakso, 01.01.2005 → 31.12.2005, Finland

Antti Johannes Lauri,
Suomen Matemaatikko-, Fyysikko- ja Tietojenkäsittelijäliitto SMFL ry, Antti Johannes Lauri, 01.01.2005 → 31.12.2005, United States
Tekniikan Akateemisten Liitto TEK ry, valtion valiokunta, Antti Johannes Lauri, 01.01.2006 → 31.12.2006, Finland
Suomen Matemaatikko-, Fyysikko- ja Tietojenkäsittelijäliitto SMFL ry, Antti Johannes Lauri, 01.01.2006 → 31.12.2006, Finland
Jäättävä tihku, hallituksen jäsen, Antti Johannes Lauri, 01.01.2007 → 31.12.2007, Finland
Suomen Matemaatikko-, Fyysikko- ja Tietojenkäsittelijäliitto SMFL ry, Antti Johannes Lauri, 01.01.2008 → 31.12.2008, Finland
Suomen Matemaatikko-, Fyysikko- ja Tietojenkäsittelijäliitto SMFL ry, Antti Johannes Lauri, 01.01.2009 → 31.12.2009, Finland

Eero Nikinmaa,
Poikkipuoliaisen, Tervalammen ja Huhmarjärven vesiensuojeyhdistys, Eero Nikinmaa, 01.01.2006 → 31.12.2006, Finland

Mari Pihlatie,
Jäättävä tihku, Mari Pihlatie, 01.01.2006 → 31.12.2006, Sweden

Janne Rinne,
Ilmansuojeluyhdistys, Ilmansuojelu-Uutiset lehden toimituskunnan jäsen, Janne Rinne, 01.01.2007 → 31.12.2007, Belgium
Ilmansuojeluyhdistys, Ilmansuojelu-Uutiset lehden toimituskunnan jäsen, Janne Rinne, 01.01.2008 → 31.12.2008, Finland

Hanna Vehkamäki,
Finnish Physical Society, working group Female Physicists in Finland, Hanna Vehkamäki, 01.01.2007 → 31.12.2007, United Kingdom

Participation in interview for written media

Kaarle Hämeri,
Fysikans seminarium, Tampereen teknillinen yliopisto, Kaarle Hämeri, 01.01.2003 → 31.12.2011, Finland
Helsingin yliopisto, Kaarle Hämeri, 01.01.2003 → 31.12.2011, Finland
Studia Generalia, Kuopio, Kaarle Hämeri, 01.01.2003 → 31.12.2011, Finland
Alueuutiset, haastattelu, toimittaja Jari Pietiläinen, s. 7, Kaarle Hämeri, 06.07.2005 → 31.12.2011, Sweden
LERU Kids University, Kaarle Hämeri, 11.11.2005 → 31.12.2011, Sweden
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Vallakunnallinen LUMA-viikko, paneelikeskustelu kouluasialle Chemicumissa, Kaarle Hämeri, 08.11.2005 → 31.12.2011, Sweden
Aamulehti, haastattelu, Kaarle Hämeri, 09.08.2006 → 31.12.2011, Finland
Aamulehti, haastattelu, toimittaja Virpi Ekholm, Kaarle Hämeri, 16.11.2006 → 31.12.2011, Finland
Helsingin Sanomat, haastattelu, toimittaja Elsa Tuppurainen, Kaarle Hämeri, 03.12.2006 → 31.12.2011, Finland
Helsingin yliopiston kotisivut, Tiede & tutkimus, Viikon tiedeuutinen, Kaarle Hämeri, 01.01.2006 → 31.12.2011, Finland
STT, haastattelu, Kaarle Hämeri, 15.11.2006 → 31.12.2011, Finland

Eija Juurola,
Haastattelu Kauppalehti Presso-lehdessä, Eija Juurola, 05.11.2005, France
Haastattelu tieteessä tapahtuu palstalle Yliopistolehti 9/2005, Eija Juurola, 01.10.2005, France

Petri Ilkka Rinaldo Keronen,

Markku Kulmala,
Helsingin Sanomat, Markku Kulmala, 17.06.2001 → 31.12.2011, Sweden
Helsingin yliopisto, haastattelu, Markku Kulmala, 13.06.2001 → 31.12.2011, Sweden
Universitas Helsingiensis, Quarterly magazine 2/2003, haastattelu, toim. Virve Pohjanpalo, Markku Kulmala, 01.01.2003 → 31.12.2011, Finland
Helsingin yliopiston tutkimuskeskus Huippututkimusta, Cutting-edge research, Markku Kulmala, 09.12.2004 → 31.12.2011, Austria

Katjaan suomenkielinen kansalaisopisto, Markku Kulmala, 04.11.2004 → 31.12.2011, Austria
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RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

ATM/Kulmala

YLE Teema, Tutkittu juttu -sarja, Markku Kulmala, 01.01.2004 → 31.12.2011, Austria
CSCnews-lehti 4/2005, s. 10-12, haastattelu, toimittaja Leena Jukka, Markku Kulmala, 01.01.2005 → 31.12.2011, Finland
Forssan lehti, haastattelu, Markku Kulmala, 06.03.2005 → 31.12.2011, Finland
MikroPC-lehti 7/2005, haastattelu toimittaja Juha Haatajan kolumnissa, s. 19, Markku Kulmala, 01.01.2005 → 31.12.2011, Finland
Palmenian syyspäivä, Markku Kulmala, 04.10.2005 → 31.12.2011, Finland
Studia Generalia, Helsingin yliopisto, Markku Kulmala, 06.10.2005 → 31.12.2011, Finland
YLE teema, tutkittu juttu, uusinta, Markku Kulmala, 03.10.2005 → 31.12.2011, Finland
YLE teema, tutkittu juttu, uusinta, Markku Kulmala, 07.10.2005 → 31.12.2011, Finland
Excellent Stems from People, international conference, Markku Kulmala, 27.08.2007 → 31.12.2011, Finland
Helsingin kaupungin verkkoalbumi, uutislinkki, Markku Kulmala, 23.01.2007 → 31.12.2011, Finland
Tieteen päivät ’07, Markku Kulmala, 10.01.2007 → 31.12.2011, Finland
YLE X, uutiset, Markku Kulmala, 22.01.2007 → 31.12.2011, Finland
Yliopisto-lehti 9/2008, lyhyt haastattelu, Markku Kulmala, 15.05.2008 → 31.12.2011, Finland
Hyvät ja pahat pienhiukkaset, Markku Kulmala, 15.07.2010, Finland
Metsästä tieteen huipulle, Markku Kulmala, 2010, France

Theo Christian Kurten,
Nuorten luonnontiedevierailukerhon Luova, haastattelun pohjalta kirjoitettu artikkeli, Theo Christian Kurten, 27.11.2007 → 31.12.2011, Finland
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

ATM/Kulmala

Vanda Arbis, föreläsningsserie i Keimola, Theo Christian Kurten, 06.02.2007 → 31.12.2011, Finland
Helsingin Suomalaisen Yhteiskoulun (SYK) lukion erikoiskurssilla luennoimassa, Theo Christian Kurten, 11.03.2008 → 31.12.2011, Switzerland
Polttavan Kysymyksen kampanjakoulutus (Maan Ystävät r.y.), Nuorten Luontotalo, Helsinki, Theo Christian Kurten, 26.01.2008 → 31.12.2011, Switzerland

Lauri Laakso,
Kairosyhödyt, Lauri Laakso, 12.05.2005 → 31.12.2011, Finland

Samuli Launiainen,

Antti Johannes Lauri,
Dimenso 5/2001 (MAOL ry:n jäsenlehti), haastattelu kesäkuussa, Antti Johannes Lauri, 01.01.2001 → 31.12.2011, Finland
Työministeriön teettämä video, jaetaan lukioihin, kuvaukset marraskuussa, video valmistuu tammikuussa 2002, Antti Johannes Lauri, 01.01.2001 → 31.12.2011, Finland
Helsingin Uuden yhteiskoulun ympäristöpäivä, Antti Johannes Lauri, 15.01.2003 → 31.12.2011, United States
Financial Times Deutschland, haastattelu, Antti Johannes Lauri, 18.07.2005 → 31.12.2011, United States
Fysiikan päivä, Helsinki, Antti Johannes Lauri, 08.10.2005 → 31.12.2011, United States
Público, haastattelu, Antti Johannes Lauri, 14.08.2005 → 31.12.2011, United States
Helsingin Uuden yhteiskoulun fysiikan opettuji lukiolasille, Antti Johannes Lauri, 03.02.2006 → 31.12.2011, Finland
Helsingin Uuden yhteiskoulun fysiikan opettuji lukiolasille, Antti Johannes Lauri, 27.10.2006 → 31.12.2011, Finland
Karjalainen, haastattelu, Antti Johannes Lauri, 22.09.2008 → 31.12.2011, Finland

Eero Nikinmäa,
HKK:n Koekatu seminars, Eero Nikinmäa, 16.03.2004 → 31.12.2011, Germany
A-Studio, YLE1, Eero Nikinmäa, 11.08.2006 → 31.12.2011, Finland
Tampereen hiperpäivä, Eero Nikinmäa, 08.02.2006 → 31.12.2011, Finland
Träd bladet 3/2006 (Svenska Trädförening, Eero Nikinmäa, 01.01.2006 → 31.12.2011, Finland
Vihreämpäristö lemmittäsemistunt, Eero Nikinmäa, 01.09.2006 → 31.12.2011, Finland
Ennuste: Kuusen kasvu voi tyrehtyä Etelä-Suomessa, Eero Nikinmäa, 14.01.2010, Finland
Metsähuomi: Ilmastonmuutos suosi sekametsäjä ja lehtipuita, Eero Nikinmäa, 11.02.2010, Finland
Professori Eero Nikinmäa: Metsien kestävä hoito, käyttö ja suojelu ohikäsee ilmastonmuutosta, Eero Nikinmäa, 22.02.2010, Finland
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

ATM/Kulmala

Sää suosi ja koitteli, Eero Nikinmaa, 16.12.2010, Finland

Tuukka Petaja,
Lukiolaissynty, Tuukka Petaja, 26.08.2004 → 31.12.2011, United States
Lukiolaissynty, Tuukka Petaja, 12.11.2004 → 31.12.2011, United States
LERU-Kids-University, ala-asteikäisille, Tuukka Petaja, 10.11.2005 → 31.12.2011, Finland
Lukiolaissynty, Tuukka Petaja, 23.11.2005 → 31.12.2011, Finland
Evyälaajokullin purkaus ei ollut valtaisa, mutta sen mittauksessa ja mallinnuksessa oli monia haasteita, Tuukka Petaja, 2010, Finland
Hyytälästä nousee ilmaan tutkimusluotaimia, Tuukka Petaja, 20.07.2010, Finland
Tuhka ei olekaan poissa, totesivat kuumailmapalloilla lentäneet tutkijat, Tuukka Petaja, 23.04.2010
Tuukka Petaja, 31.12.2011, United States
Tuukka Petaja, 31.12.2011, United States
Tuukka Petaja, 31.12.2011, United States
Tuukka Petaja, 31.12.2011, United States

Mari Pihlatie,
Riposten, nr. 3. Personaleblad for Forskningscenter Risø. Interview in the internal magazine of Risø National Laboratory, Roskilde, Mari Pihlatie, 01.01.2003 → 31.12.2011, Hungary
RisøNyt 4/2004. Interview in the local magazine of Risø National Laboratory, Roskilde, Mari Pihlatie, 01.01.2004 → 31.12.2011, Italy

Jouni Räisänen,
SMFL:n (Suomen Matemaatiko-, Fyysikko- ja Tietojenkäsittelytieteilijäliitto) yleisöseminaari Dipolissa 38. Fysiikan päivien yhteydessä, Jouni Räisänen, 19.03.2005 → 31.12.2011, Finland
Suomen operaattitutkimusseuran Itäpäiväseminaari, Helsingin Kauppalokerkeäkoulu, Jouni Räisänen, 02.06.2005 → 31.12.2011, Finland
Tekniikan & Talous, Uutiset, s. 3, referointi ja kommentti Fysiikan päivillä pidetyistä esitelmästä, toim. Ralli Leino, Jouni Räisänen, 31.03.2005, Finland
Finnish Meteorological Institute, Media education on Climate Change, Jouni Räisänen, 14.03.2006 → 31.12.2011, United States
Helsingin Sanomat, haastattelu sivuilla D4-5, toimittaja Anu Nousiainen, Jouni Räisänen, 07.05.2006, United States
Helsingin Sanomat, haastattelu, toim. A. Nieminen ja S. Rasmus, Jouni Räisänen, 12.03.2006, United States
Newspaper interview for Uutislehti 100, July 2006, Jouni Räisänen, 07.07.2006, Finland
Newspaper interview for Vyhré Á Lanka, May 2006, Jouni Räisänen, 12.05.2006, Finland
Helsingin Sanomat, haastattelu, s. A 3, Jouni Räisänen, 03.02.2007, Albania
Helsingin Sanomat, haastattelu, toimittaja Anu Nousiainen, s. D 3, Jouni Räisänen, 04.02.2007, Albania
Helsingin kaupungin rakennusviraston seminaari, Jouni Räisänen, 14.03.2007, Albania
Ilmatieteen laitoksen IPCC-tiedotustilaisuus tiedotusvälineille, Jouni Räisänen, 02.02.2007 → 31.12.2011, Albania
Ilmatieteen laitoksen IPCC-seminarit, Jouni Räisänen, 14.02.2007 → 31.12.2011, Albania
Ilmatieteen laitoksen ja Suomen IPCC-ryhmän IPCC-seminarit, Jouni Räisänen, 03.02.2007 → 31.12.2011, Albania
Ilmatieteen laitoksen ja Suomen IPCC-ryhmän IPCC-seminarit, Jouni Räisänen, 05.02.2007 → 31.12.2011, Albania
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

ATM/Kulmala

Joensuun yliopiston tilastotieteen laitoksen kvantitatiivisten menetelmien seminaari, Jouni Räisänen, 09.10.2007 → 31.12.2011, Albania
Newspaper interview for Aamulehti, January 2007, Jouni Räisänen, 31.01.2007, Finland
Newspaper interview for Finpro, March 2007, Jouni Räisänen, 03.2007, Finland
Newspaper interview for Helsingin Sanomat, February 2007, Jouni Räisänen, 02.02.2007, Finland
Newspaper interview for Helsingin sanomat, January 2007, Jouni Räisänen, 30.01.2007, Finland
Newspaper interview for Ilta-Sanomat, December 2007, Jouni Räisänen, 12.12.2007, Finland
Newspaper interview for Ilta-Sanomat, January 2007, Jouni Räisänen, 31.01.2007, Finland
Newspaper interview for Kalemva, March 2007, Jouni Räisänen, 13.03.2007, Finland
Newspaper interview for Kansan Uutiset, January 2007, Jouni Räisänen, 05.01.2007, Finland
Newspaper interview for Kauppareitteihin Presso, February 2007, Jouni Räisänen, 10.02.2007, Finland
Newspaper interview for Yliopistolaisten, October 2007, Jouni Räisänen, 23.10.2007, Finland
Newspaper interview for Ympäristö, October 2007, Jouni Räisänen, 23.10.2007, Finland
Newspaper interview for Ilta-Sanomat, December 2007, Jouni Räisänen, 12.12.2007, Finland
Newspaper interview for Yliopistolainen, October 2007, Jouni Räisänen, 23.10.2007, Finland
Newspaper interview for Ympäristö, March 2007, Jouni Räisänen, 03.2007, Finland
Suomen IPCC-ryhmän päätösseminaari IPCC Uusien haasteiden edessä, Jouni Räisänen, 01.01.2007 → 31.12.2011, Albania
Suomen Kuvalehti, haastattelu, toimittaja Jukka Ukkola, s. 12-13, Jouni Räisänen, 02.02.2007 → 31.12.2011, Albania
Työterveyslaitoksen seminaari, Jouni Räisänen, 20.03.2007 → 31.12.2011, Albania
Tähtitieteellinen Yhdistys URSAn kuukausikokous, Jouni Räisänen, 13.02.2007 → 31.12.2011, Albania
Ylen ykkönen Aamuykkönen, Jouni Räisänen, 01.01.2007 → 31.12.2011, Albania
Yliopisto-lehti, haastattelu, toimittaja Kai Maksimainen, Jouni Räisänen, 19.11.2007, Finland
Suomen tiedeakatemian 100-vuotisjuhlaseminaari, Geotieteellinen symposium, Physicum, Jouni Räisänen, 11.01.2008 → 31.12.2011, France
Tähtitieteen laitoksen kollokvio, Jouni Räisänen, 12.03.2008 → 31.12.2011, France
Newspaper interview for Finnish Institute, September 2009, Jouni Räisänen, 29.11.2009, Finland
Newspaper interview for Estland-Suomen sanomat, March 2010, Jouni Räisänen, 03.2010, Finland
Newspaper interview for Helsingin Sanomat, November 2010, Jouni Räisänen, 30.11.2010, Finland
Newspaper interview for Tekniikka ja Talous, November 2010, Jouni Räisänen, 26.11.2010, Finland
Newspaper interview for Tekniikka ja Talous, November 2010, Jouni Räisänen, 26.11.2010, Finland
Newspaper interview for Yhtiölek, February 2010, Jouni Räisänen, 04.02.2010, Finland
Newspaper interview for Ympäristö, March 2010, Jouni Räisänen, 29.03.2010, Finland
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

ATM/Kulmala

Anni Reissell
Presentation to journalists from the University of Helsinki, Anni Reissell, 19.11.2004 → 31.12.2011, New Zealand
Tietojenkäsittelyn verkkolehden haastattelu, Lotta Lounasniemi, Anni Reissell, 01.01.2004 → 31.12.2011, New Zealand
Ilmatieteen laitos, Puhuri nro: 5/2005, s. 16-17, Toimittanut Eija Vallinheimo, Anni Reissell, 01.01.2005 → 31.12.2011, Finland
Karjalainen, uutinen, Anni Reissell, 14.04.2006 → 31.12.2011, India
Seminar on Computational Science Crossing the Disciplines, CSC, Life Sciences Center, Espoo, paneelikeskustelun jäsen, Anni Reissell, 21.03.2006 → 31.12.2011, India

Ilona Riipinen
Säteilevät naiset seminaari, Säätytalo, Ilona Riipinen, 28.06.2006 → 31.12.2011, Finland
Yliopisto-lehti 11/2008, haastattelu, s. 24-25, toimittaja Heli Perttula, Ilona Riipinen, 01.01.2008 → 31.12.2011, Finland
Yliopisto-lehti 15/2003, haastattelu, Janne Rinne, 01.01.2003 → 31.12.2011, France

Hannu Savijärvi
Esitelmä (2 h) Hankasalan kunnantalon juhlasalissa, Jyväskylän yliopiston organisoima ikäihmisten yliopiston tilaisuus, Hannu Savijärvi, 05.03.2001 → 31.12.2011, Finland
Esitelmä (2 h) Lauskun kunnantalon juhlasalissa, Jyväskylän yliopiston organisoima ikäihmisten yliopiston tilaisuus, Hannu Savijärvi, 06.03.2001 → 31.12.2011, Finland
Esitelmä (2 h) Saarijärven kunnantalon juhlasalissa, Jyväskylän yliopiston organisoima ikäihmisten yliopiston tilaisuus, Hannu Savijärvi, 01.01.2001 → 31.12.2011, Finland
Esitelmä (2 h) Alakosken kunnantalon juhlasalissa, Jyväskylän yliopiston organisoima ikäihmisten yliopiston tilaisuus, Hannu Savijärvi, 01.01.2001 → 31.12.2011, Finland
Sis-Suomen Lehti, haastattelu, Hannu Savijärvi, 01.01.2001 → 31.12.2011, Finland
Yliopisto 15/2003, haastattelu, toim. Virve Pohjanpalo, Janne Rinne, 01.01.2003 → 31.12.2011, France

Sanna Sevanto
Yliopisto-lehti 9/03, haastattelu, toim. Tapio Ollikainen, Sanna Sevanto, 01.01.2003 → 31.12.2011, Germany
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ATM/Kulmala

Timo Vesala,
Helsingin Sanomat, haastattelu, Timo Vesala, 13.06.2001 → 31.12.2011, Finland
Helsingin yliopisto, ilmehaahdetteiden osasto, avajaiset, Timo Vesala, 07.09.2001 → 31.12.2011, Finland
Tieteet päivät, Timo Vesala, 10.01.2003 → 31.12.2011, Finland
Yleisduento, Eläinmuseo, Timo Vesala, 13.08.2003 → 31.12.2011, Finland
Helsingin Sanomain verkkosivut, Timo Vesala, 22.09.2005 → 31.12.2011, Canada
Helsingin yliopiston verkkokohteet "iliivii", haastattelu, toimittaja Simo Salmela, Timo Vesala, 01.01.2005 → 31.12.2011, Canada
Helsingin yliopiston verkkokohteet ilmion videoesiitys, Timo Vesala, 01.01.2005 → 31.12.2011, Canada
Kansallinen Fysiikan päivä, Physicum, Timo Vesala, 08.10.2005 → 31.12.2011, Canada
LERU (League of European Research Universities) Kids University, Children's finishing ceremony, Bruxelles, Timo Vesala, 23.11.2005 → 31.12.2011, Canada
LERU (League of European Research Universities) Kids University, Finishing evening ceremony, Bruxelles, Timo Vesala, 23.11.2005 → 31.12.2011, Canada
LERU Kids University, Timo Vesala, 07.11.2005 → 31.12.2011, Canada
Luonnonkielellinen keskusmuseo, Mammmutien maailma -näyttelyyn liittyvän luentosarjan, Timo Vesala, 13.08.2005 → 31.12.2011, Canada
Tekesin kotisivut, uutisia, haastattelu, toim. Pirkko Rönkön, Timo Vesala, 01.01.2005 → 31.12.2011, Canada
MALJA TIETEELLE - Avoinmen yliopiston 30-vuotispäivitylässarjaa, Timo Vesala, 02.10.2007 → 31.12.2011, United Kingdom
The Guardian's netpage, interview by science correspondent James Randerson, Timo Vesala, 01.01.2007 → 31.12.2011, Finland
Tieteet päivät 'OT, Timo Vesala, 10.01.2007 → 31.12.2011, United Kingdom
Aamulehti, tiedeuutinen, Timo Vesala, 03.01.2008 → 31.12.2011, Finland
Book release seminar due to the publication of "Boreal Forest and Climate Change", Infokeskus Korona, Vikki, Timo Vesala, 21.10.2008 → 31.12.2011, Finland
Etelä-Suomen Sanomat, tiede/tech, toimittaja Samuli Heikkinen, Timo Vesala, 03.01.2008 → 31.12.2011, Finland
Helsingin Sanomat, STT:n tiedeuutinen, Timo Vesala, 03.01.2008 → 31.12.2011, Finland
Helsingin Sanomat, tiedeuutinen ja haastattelu, toimittaja Ilona Väihäkara, Timo Vesala, 27.01.2008 → 31.12.2011, Finland
Helsinki University Bulletin 1/2008, interview by Mari Siipakainen, Timo Vesala, 01.01.2008 → 31.12.2011, Finland
Hufvudstadsbladet, intervju, redaktör Erik Wahlinström, s. 33, Timo Vesala, 06.01.2008 → 31.12.2011, Finland
Jyväskylän KesäUusitutu energia -seminaari, Jyväskylä, Timo Vesala, 08.07.2008 → 31.12.2011, Finland
Participation in radio programme

Mikael Kristian Ehn,

Markku Kulmala,
YLEn aikainen, Radio Suomi, tunnin kontaktiohjelma, jossa kuuntelijat ja katsojat saivat esittää kysymyksiä, Markku Kulmala, 05.10.2005 → 31.12.2011, Finland

Yo, Radio Suomi, Tiedeutiset, Markku Kulmala, 11.08.2005 → 31.12.2011, Finland

Radio Suomi, Aamu peli, Markku Kulmala, 22.01.2007 → 31.12.2011, Finland

Swedish Radio, Markku Kulmala, 20.02.2010, Sweden

Theo Christian Kurten,


Antti Johannes Lauri,

Jouni Rääsänen,
Appearance on radio, 12.10.2007, Jouni Rääsänen, 12.10.2007, Finland

Appearance on radio, 21.8.2007, Jouni Rääsänen, 21.08.2007, Finland

Appearance on radio, 16.2.2010, Jouni Rääsänen, 16.02.2010, Finland

Anni Reissell,
YLE Radio 1, luetteen viikko-ohjelma, haastattelija Sisko Loikkanen (12.4.2006), editoija Maija Typpi, kesto 6 min 20 s, Anni Reissell, 01.01.2006 → 31.12.2011, India

YLE Radio Suomi, Tiede ja opetus, haastattelija Minttu Heimovirta (9.2.2008), Anni Reissell, 28.02.2006 → 31.12.2011, India


Ilona Ripinen,
Interview for Yleisradio, 'Nainen fyysikkona', Radiaattorin 2010., Ilona Ripinen, 2010

Timo Vesala,
Radiohaastattelu Radio Suomi YLE 1, Timo Vesala, 25.09.2005 → 31.12.2011, Canada

Radiohaastattelu YLE 1, Timo Vesala, 23.09.2005 → 31.12.2011, Canada
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Radiohaastattelu, Radio Suomi YLE 1, Timo Vesala, 27.09.2005 → 31.12.2011, Canada
YLE, Radio 1, haastattelu, 28 minuuttia, Timo Vesala, 24.10.2006 → 31.12.2011, Finland
Interview in radio, Timo Vesala, 17.06.2010, Finland

Participation in TV programme

Ari Asmi

Kaarle Hämeri
TV news / interview, Kaarle Hämeri, 29.07.2010, Finland

Markku Kulmala
Yle, TV1, haastattelu, Markku Kulmala, 07.10.2005 → 31.12.2011, Finland
YLE, TV1, Prisma Studio, haastattelu, Markku Kulmala, 19.04.2006 → 31.12.2011, Finland
MTV3 Huomenta Suomi, Markku Kulmala, 01.01.2007 → 31.12.2011, Finland
YLE TV1, A-studio, Markku Kulmala, 01.01.2007 → 31.12.2011, Finland
Nordic Atmospheric Research, Markku Kulmala, 2010, Sweden
TV1 Tutkittu juttu -sarja, Markku Kulmala, 18.11.2010 → 31.12.2011, Austria

Tuukka Petaja
Prisma Studio, Tuukka Petaja, 20.04.2010, Finland

Mari Pihlatie
Interview of Terhi Riutta and Mari Pihlatie from Siikaneva measurement site. TV2 18:00 news, Mari Pihlatie, 01.01.2005 → 31.12.2011, Sweden

Albert Porcar-Castell
Prisma Studio/Tulevaisuuden Metsät, Albert Porcar-Castell, 27.04.2010

Jouni Räisänen
Appearance in TV 17.1.2005, Jouni Räisänen, 17.01.2005, Finland
Appearance in TV, 12.10.2007, Jouni Räisänen, 12.10.2007, Finland
Appearance in TV, 16.3.2007, Jouni Räisänen, 16.03.2007, Finland
Appearance in TV, 2.2.2007, Jouni Räisänen, 02.02.2007, Finland
Appearance on TV, 12.12.2007, Jouni Räisänen, 12.12.2007, Finland
Appearance on TV, 23.11.2009, Jouni Räisänen, 23.11.2009
Appearance on TV, 23.9.2009, Jouni Räisänen, 23.09.2009, Finland
Appearance on TV, 3.2.2010, MTV3, Jouni Räisänen, 03.02.2010, Finland
Appearance on TV, 3.2.2010, TV1, Jouni Räisänen, 03.02.2010, Finland

Janne Rinne
Interview as mir specialist in TV1, Janne Rinne, 21.08.2006 → 31.12.2011, Greece

Taina Ruuskanen
TV: Yle 2, Hämeen alueutiset, haastattelu, Taina Ruuskanen, 11.08.2005 → 31.12.2011, Finland
Timo Vesala

MTV3 Seitsemän uutiset, Timo Vesala, 31.05.2007 → 31.12.2011, United Kingdom
TV4, uutiset, haastattelu Nature-artikkelin johdosta, Timo Vesala, 01.01.2008 → 31.12.2011, Finland
TV1 Prisma-tiedejelma, Timo Vesala, 02.04.2008 → 31.12.2011, Finland
YLE TV1, uutiset ja sää 20:30, Timo Vesala, 02.01.2008 → 31.12.2011, Finland
Interview in TV, Timo Vesala, 17.06.2010, Finland

Jouni Räisänen

Helsingin yliopiston nettisivun "Ajankohtaista", haastattelu, toimittajat Minna Meriläinen ja Tapani Sainio, Jouni Räisänen, 01.01.2008 → 31.12.2008, France
Interview for web based media, August 2008, Jouni Räisänen, 24.08.2008, Finland

Ilona Riipinen

Interview for University of Helsinki's web advertisement "Tieteen näkökulma", Ilona Riipinen, 2009
Research Group: Kulmala M

**Basic statistics**

- Number of publications (P): 692
- Number of citations (TCS): 4,980
- Number of citations per publication (MCS): 7.23
- Percentage of uncited publications: 22%
- Field-normalized number of citations per publication (MNCS): 1.56
- Field-normalized average journal impact (MNJS): 1.37
- Field-normalized proportion highly cited publications (top 10%): 1.59
- Internal coverage: .82

**Trend analyses**

- MNCS
- THCP10
- MNJS

**Collaboration**

- Performance (MNCS) by collaboration type
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by CWTS, Leiden University, the Netherlands

Research profile