RC-Specific Evaluation of LTCC – Long-Term Climate Change: patterns and consequences

Seppo Saari & Antti Moilanen (Eds.)
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Seppo Saari & Antti Moilanen (Eds.)
Title: International Evaluation of Research and Doctoral Training at the University of Helsinki 2005–2010: RC-Specific Evaluation of LTCC – Long-Term Climate Change: patterns and consequences

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:

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<th>Main scientific field of research:</th>
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<th>Participation category:</th>
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<td>1. Research of the participating community represents the international cutting edge in its field</td>
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RC's responsible person:
Seppä, Heikki

Keywords:
Research Evaluation, Meta-evaluation, Doctoral Training, Bibliometric Analyses, Researcher Community

Series title and number:
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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
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CHAIR
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Materials science in chemistry and physics, nanotechnology, inorganic chemistry
Uppsala University, Sweden

VICE-CHAIR
Professor Jan van Leeuwen
Computer science, information technology
University of Utrecht, the Netherlands

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University of Sheffield, Great Britain

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Professor Ritske Huismans
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University of Bergen, Norway

Professor Jukka Jurvelin
Medical physics and engineering
University of Eastern Finland

Professor Lea Kauppi
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The Finnish Environment Institute, Finland

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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 Molinanen, 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 Kaltera, 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.

**HELSDIN UNIVRSITY 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
THCPI0 - 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-evaluation 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.
- 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.

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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

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**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 societal impact of the RC’s research and 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”.

10
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
   - University level public report
   - RC specific reports
   March–April 2012

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 Long-Term Climate Change group is on climate changes and their biotic and abiotic consequences on long (decadal, centennial, millennial and longer) time-scales, ranging from the deep geological past to the future. LTCC research focuses on using physical geological techniques, such as stable isotope analyses or glacier studies, to detect past changes in climate, some members also make use of fossil records as palaeoclimatological tools.

LTCC consists of 5 professors, 12 post docs and 9 PhD students.

The publication records show high scientific production and impacts with 6 publications in high impact journals such as Nature, Science, and Geology and a total of 198 publications during the evaluation period (MNJS 1.36, THCP 1.79). The citation indices are also high: MCS 6.53 and MNCS 1.64 above the average in the field. Note that in the list of A1 refereed journals several papers are included from rather local journals and apparent conference proceedings.

The following activities are highlighted:

1. Integrate palaeo-climatic records with physical techniques and use fossil data to explore how plants, animals, ecosystems, and biomes respond to large, long-term climate changes.
2. Combine physical and biological data with the model simulations to predict how biotic groups will respond to projected future climate changes.
3. Comparison of past records with simulations of past climates in order to evaluate the performance of the models.

The members of the LTCC RC are very active in editorial and referee work in top journals in their field and as examiners of PhD theses. They have received several awards and are very active in public outreach.

Overall, LTCC has an international top position in palaeo-climate research. The integrated efforts combining modeling of climatic zones and palaeo-climate data are especially noteworthy and deserve further development. Links with climate modeling groups mentioned in section 4, international collaboration, is highly laudable.

How is the work by Prof Luoto's group, which joined the RC only lately, integrated into the rest of LTCC? His group is also part of Prof Pellikka's GIMMEC RC. The evaluation material submitted provides rather few references to that expertise. How closely are other groups of the RC collaborating?

**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

LTCC supervised 40 PhD students during the evaluation period. From the documentation it is not completely clear how many of these were associated with the LTCC RC and how many with other groups/institutes. LTCC currently has 9 PhD students.

LTCC is involved in the Finnish Geology Graduate School that plays a central role in the recruitment, selection and funding of PhD projects.

Recruitment is primarily by individual targeted headhunting using informal research networks of the PI’s.

Supervision appears to be largely informal. Neither a formal PhD supervision committee nor regular project progress evaluation are mentioned in the evaluation.

International collaboration and exchange of PhD students is encouraged and funding is available for work visits to international partners.

The PhD student population has a very good gender balance.

The relatively small size of this RC has the advantage of allowing for easy interaction between senior and junior members of the group.

The PhD students might benefit from a structured approach to recruitment and selection, project definition, formal supervision committee, regular planned / required progress meetings, and progress reports. From the evaluation report it is not clear if this is in place.

**Numeric evaluation: 3.5 (Very good)**

### 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

The RC is involved in the Helsinki Insight Climate Change Group, in the Integrated Carbon Observation System (ICOS) and in the planned Institute for Atmospheric Research (INAR), and provided input to the IPCC 4AR report.

LTCC’s research contributes directly to the debate on climate change and its impacts on biodiversity and ecosystems. It uses understanding of past biodiversity patterns, past climate changes and species extinctions and investigates species survival strategies during past warm (or cold) climate periods.

Information about the last glaciations, including the extent of the ice sheet and the climatic conditions, as well as the related crustal dynamics with depression of the land masses, followed by land uplift and potential earthquakes, has been used for planning the construction and location of the nuclear power plants and long-term waste disposal sites.

Long term climate change is related to ground-water resources. The RC co-operates with the Geological Survey of Finland, mining and energy companies and water authorities in this context.

The RC frequently contributes to popular science events, newspapers, TV and radio, delivering news and lectures about past global climate changes and the past changes of atmospheric composition and the greenhouse gases.
LTCC is planning to increase the public dissemination of its research results to the general public, which is commendable and to be encouraged if the group has sufficient capacity for this alongside what must already be a very busy schedule.

**Numeric evaluation: 4 (Excellent)**

### 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**

**LTCC has a very strong national and international scientific network.**

Nationally LTCC collaborates with a range of institutes and disciplines including:

- The Finnish Meteorological Institute on combining palaeo-climatic reconstructions with long-term climate model simulations.
- The Department of Computer Science and the Department of Mathematics and Statistics, UH, The Aalto University and the Department of Computer Sciences and Mathematics, University of Oulu on developing techniques for reconstructing past climate from fossil records.
- Geological Survey of Finland.

LTCC collaborates with Nordic partners in the Geobiosphere Research Centre at Lund University, Sweden, the Ecological and Environmental Change Research Group at Bergen University, Norway, and the Centre for Ecological and Evolutionary Synthesis, University of Oslo.

The LTCC is active in the European Research Area through EU funded projects such as CARBO-NORTH, FP-6; ALARM, FP-6; MACIS, FP-6; INTIMATE, EU COST action, and in Nordic co-operation, e.g. PALSALARM, NEPAL, LANDCLIM, BIOCOLD.

Strong international partners include The Biodiversity and Climate Research Centre at the Goethe University in Frankfurt; Cenozoic climate modeling at University of Oxford, and University of Grenoble; The Institute of Vertebrate Palaeontology and Paleoanthropology, Academia Sinica, Beijing. The RC is also partner in the ETE programme, co-ordinated by the Smithsonian Institute, USA, and CSIRO in Australia.

Lastly the RC holds and maintains the NOW database, a public database of mammal localities and species of the Neogene of the Old World and North America, and plays an active role in the European Pollen Database and the international research and science policy programmes.

**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 LTCC has excellent research infrastructure.

The LTCC research hinges mostly on geochemical, isotopic, microfossil, GIS and sediment analyses using IRMS, CRDS, and ICP-MS. All these labs appear to be up and running including good technical
assistance with a full-time laboratory engineer and two laboratory assistants who are in charge of running the routines of the laboratories.

The RC furthermore has access to a state of the art LAMC-ICPMS through collaboration with the Finland Isotope Geoscience Laboratory, other geoscience departments in Finnish Universities and the Geological Survey of Finland in a joint laboratory facility.

Other key facilities at DGG are the microfossil and microscopy laboratory, a modern remote sensing and GIS laboratory, it houses the NOW database and a dendrochronological laboratory, all basic coring facilities and a ground penetrating radar.

The balance between teaching and research at UH follows general regulations. Each PI is involved in 3 to 4 courses a year. This seems reasonable and consistent with conditions elsewhere. The high scientific activity and output indicates that sufficient time remains for research.

Strengths
LTCC has access to excellent laboratory facilities and appears very successful in obtaining funding for equipment as well as for technical support.

In addition to the existing facilities a 3-D scanner, motorized light microscope will be added to the facilities of the microfossil laboratory in 2011.

2.6 Leadership and management in the researcher community

<table>
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<tr>
<th>Description</th>
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<tbody>
<tr>
<td>the execution and processes of leadership in the RC</td>
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<td>how the management-related responsibilities and roles are distributed in the RC</td>
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<td>how the leadership- and management-related processes support</td>
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<td>high quality research</td>
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<tr>
<td>collaboration between principal investigators and other researchers in the RC</td>
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<tr>
<td>the RC’s research focus</td>
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<tr>
<td>strengthening of the RC’s know-how</td>
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• 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

LTCC comprises 5 full professors and their research groups. The RC does not have a formal leader and management of the group appears to be via informally arranged collaborations. Given that the group has a relatively small size and appears very successful in setting up joint projects, in collaborating, and in using and managing joint research facilities this seems to work rather well.

The PI’s work in sub-groups on thematic research.

How coherent is this RC or is it a compilation of separate groups?

It is not completely clear what the formal arrangements are for supervision of PhD projects. Are there regular progress meetings, mid term evaluation reports, PhD project proposals at the start of the project, second supervisor in case of problems with the main supervisor? What measures are in place to ensure timely progress and finishing of PhD projects?

It appears that Prof. Seppä is responsible for the management of the RC only in the context of the evaluation. The RC could consider appointing a group leader who coordinates the RC also on a day-to-day basis or appointing a Director of Postgraduate Research (if formal arrangements for admission and progress review of PhD projects are not already in place).

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 RCs 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

LTCC has been successful in obtaining research funding. During the evaluation period the total amount of external funding was 3.5 million Euro. This is a good level of funding given that this is a relatively small research community. However, the funding is almost entirely from the Academy of Finland. There could be more opportunities for funding in EU FP and ERC programmes.

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

The LTCC’s strategic planning statement is a pleasing balance of overarching philosophy (build on existing strengths) with carefully articulated detail about which parts of the current work they will invest most effort in. The review panel particularly commends this RC for the amount of detail that they have offered.

We do not comment on each of their plans individually (all of which we think are sensible). However, we particularly welcome the group’s plan to integrate the data produced by the RC with various quantitative modeling approaches (GCM, physical, eco-biological) through collaborative efforts.

We would also like to note that increasing internationalization of PhD and post doc projects are efficient vehicles for research collaboration (as the group is certainly aware). Bridging the various disciplines becomes an increasing challenge when PhD students work in this way, however, and so proper management/support of their projects becomes even more important.

We would like to support the group’s suggestion that educating junior research staff in multidisciplinary research should (continue to) be a priority.

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.

Category 1. The research of the participating community represents the international cutting edge in its field.

LTCC has chosen the participation category: 1. Research of the participating community represents the international cutting edge in its field.

The material provided shows that this is justified. The RC is highly productive, publishes in high impact journals, has very strong international collaboration, performs basic research with high societal relevance, and has access to state of the art research facilities.

Numeric evaluation 5 (Outstanding)
2.10 Short description of how the RC members contributed the compilation of the stage 2 material

The full RC was involved in the compilation of the material.

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

Focus area 3: The changing environment – clean water

LTCC is highly relevant for the UH focus area “The changing environment – clean water”.

2.12 RC-specific main recommendations

LTCC has an internationally top position in palaeo-climate research. The integrated efforts to combine modeling of climatic zones and palaeo-climate data are especially noteworthy and deserve further development.

- It is not completely clear how integrated the sub-groups in this RC are. The panel recommends improving the integration within the RC.
- The panel recommends continuation and possible expansion of integrated efforts to combine modeling of climatic zones and palaeo-climate data.
- PhD recruitment and progress monitoring is mostly on an informal basis. We recommend establishing a structured approach to recruitment and selection, project definition, formal supervision committee, regular planned / required progress meetings, and progress reports.
- The RC has an outstanding societal impact. LTCC’s research contributes directly to the debate on climate change and its impacts on biodiversity and ecosystems.
- The RC could consider appointing a group leader who coordinates the RC on a day-to-day basis or appointing a Director of Postgraduate Research (if formal arrangements for admission and progress review of PhD projects are not already in place).
- The funding for the RC is almost entirely from the Academy of Finland. It appears that there could be more opportunities for funding in EU FP and ERC programs.
- We support the group’s intention to educate junior research staff in multidisciplinary research as a priority.

2.13 RC-specific conclusions

LTCC has an international top position in palaeo-climate research. The integrated efforts combining modeling of climatic zones and palaeo-climate data are especially noteworthy and deserve further development.

- The PhD students might benefit from a structured approach to recruitment and selection, project definition, formal supervision committee, regular planned / required progress meetings, and progress reports.
- The research of LTCC has a high societal impact. It is involved in the Helsinki Insight climate change group, in the Integrated Carbon Observation System (ICOS) and in the planned Institute for Atmospheric Research (INAR), and provided input to the IPCC 4AR report.
- LTCC has a very strong national and international scientific network.
- LTCC has access to excellent laboratory facilities and appears very successful in obtaining funding for equipment as well as for technical support.
- LTCC comprises 5 full professors and their research groups. The RC does not have a formal leader and management of the group appears to be via informally arranged collaborations. Given that the group has a
relatively small size and appears very successful in setting up joint projects, in collaborating, and in using and managing joint research facilities this seems to work rather well.

LTCC has been successful in obtaining research funding from the Academy of Finland. There is potential to increase funding from EU/ERC programs.

The group’s research is clearly cutting edge and category 1 is appropriate.

2.14 Preliminary findings in the Panel-specific feedback

Quality in research and doctoral training

- **Research focus.** The RC conducts outstanding research on paleo-climate. We particularly recommend integrated efforts combining paleo-climate data and various climate modeling approaches.

- **Practices and quality of doctoral training.** A structured approach to recruitment and selection, project definition, formal supervision committee, regular planned / required progress meetings, and progress reports is recommended.

- **Societal impact.** The RC has an outstanding societal impact. LTCC’s research contributes directly to the debate on climate change and its impacts on biodiversity and ecosystems.

- **International and national collaboration.** LTCC has a very strong national and international scientific network and collaborations.

- **Leadership and management.** Management of this RC is on an informal basis. The group may consider appointing a group leader to coordinate its activities on a day to day basis.

- **External funding.** The RC has potential to increase funding from EU/ERC programs.

**Strategic action plan**

- **Potential development areas.** Multi-disciplinary and integrated research efforts, combining paleo-climate data and various modeling approaches, that this group has started recently provide a very good and potential development area for novel research.
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)
NAME OF THE RESEARCHER COMMUNITY:
Long-term climate change: patterns and consequences (LTCC)

LEADER OF THE RESEARCHER COMMUNITY:
Professor Heikki Seppä, Department of Geosciences and Geography, 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: Seppä, Heikki
E-mail: 
Phone: 09-19150820
Affiliation: Department of Geosciences and Geography, University of Helsinki
Street address: Department of Geosciences and Geography, PO Box 64, FIN-00014, University of Helsinki, Finland

2 DESCRIPTION OF THE PARTICIPATING RESEARCHER COMMUNITY (RC)

Name of the participating RC (max. 30 characters): Long-term climate change: patterns and consequences
Acronym for the participating RC (max. 10 characters): LTCC
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): The Long-Term Climate Change: patterns and consequences (LTCC) research community represents the biggest and foremost Finnish research group focusing on the climate changes and their biotic and abiotic consequences on long (decadal, centennial, millennial and longer) time-scales, ranging from the deep geological past to the future. LTCC is an umbrella community, bringing together five principal scientists (PIs) and their research groups, each with different approaches and techniques. Some PIs and their groups focus on using physical geological techniques, such as stable isotope analyses or glacier studies, to detect past changes in climate, some make use of the fossil records as palaeoclimatological tools. An integrative approach, increasingly used by the members of LTCC, is to generate palaeoclimatic records with the physical techniques and to use the fossil data to explore how plants, animals, ecosystems, and biomes respond to large, long-term climate changes. Another emerging line of research is to combine the physical and biological data with the model simulations. These simulations can predict how the biotic groups will respond to the projected future climate changes, while the comparison of the past records with the simulations of past climates can be used for evaluating the performance of the models. Given the integrative nature of these key aspects of the long-term climate change research, it is natural that all the senior scientists and PhD students involved in LTCC represent a coherent and complementary group of scientists. The members of LTCC have produced numerous joint papers, attended the same projects and networks, and co-supervised PhD students. They have also worked in close collaboration over the evaluation period in doctoral training, especially because the director and coordinator of the Geology Graduate School of Finland are members of LTCC and nearly all PIs and the majority of the other members of LTCC have benefited from this graduate school. In brief, LTCC represents a versatile group of scientists, unified by long-term professional collaboration and sharing the mutual scientific interest on long-term climate changes.

3 SCIENTIFIC FIELDS OF THE RC

Main scientific field of the RC's research: natural sciences
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 1 MATERIAL (registration form)

RC’s scientific subfield 1: Geosciences, Multidisciplinary
RC’s scientific subfield 2: Geology
RC’s scientific subfield 3: Geography, Physical
RC’s scientific subfield 4: --Select--
Other, if not in the list:

<table>
<thead>
<tr>
<th>Participation category</th>
<th>Justification for the selected participation category (MAX. 2200 characters with spaces):</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Research of the participating community represents the international cutting edge in its field</td>
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The category 1 - international cutting edge - is a natural choice given the level of scientific ambition, international status, the depth of international collaboration and the level of scientific output of LTCC. Scientific results in the fields of long-term climate change and the response patterns of species to the changing climate have important societal and economical dimensions, and the scientific work carried out by the members of LTCC is therefore not without societal impacts, but pure scientific research is in the crux of the LTCC group. In its field, LTCC has done determined long-term work, thanks to which it now consists of many scientists who stand for high international status in their specific fields of interests. LTCC’s members are predominantly based at the Department of Geoscience and Geography, where the long-term climate change (including palaeoclimatology, biogeography, and global change studies) is a strategic key scientific area. Thus, the department has a long-term plan to support research in this field, including decisions in the personal structure and the development of the facilities at the department. This long-term commitment will provide the future basis for the members of LTCC for carrying out long-term climate change research at the international cutting edge level.

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 common theme of LTCC is the long-term climate changes, but the nature of the research within this overarching theme is diverse in terms of approaches, methodologies, research areas, and time-scales. The climate changes in the geological past are investigated, for example, by means of fossil faunal and floral records, isotope analyses, and glacier reconstructions. For these purposes the members of LTCC have been at the international forefront for developing quantitative climate reconstruction tools for example from the morphology of fossil teeth, from the microfossils preserved in sediments and from the tree-rings. An equally central part of LTCC is the biotic response to long-term climate changes, both in the past, at present and in the future. This includes such timely issues as the response of the biome boundaries to the climate change and the changing patterns of animal and plant diversity under likely future climate scenarios. LTCC is involved in palaeoclimatic and earth system modeling, one of the most dynamic fields of long-term climate research, and the LTCC members are currently participating in international projects for modeling the Earth’s climate millions and thousands of years ago. A newer contribution of LTCC is pertinent to the predictive ecosystem and species modeling, critically important for disentangling the role of various climate parameters on the geographical distribution of species and landforms, and for predicting their range shifts.
in the future. LTCC has been successful in its doctoral training, partly due to the fact that the Finnish Geology Graduate School has been led and coordinated by the members of LTCC in 2005-2010. The success of LTCC in the graduate school is reflected by the total number of the PhDs (20) supervised by the PIs of LTCC and supported by the graduate school during the evaluation period, by its success in acquiring continuous funding, and by the high number of post-doctoral fellows and PhD students attending LTCC. A number of former PhD students who have defended in 2005-2010 are currently successfully continuing their scientific careers in foreign universities as post-docs.

**Significance of the RC’s research and doctoral training for the University of Helsinki (MAX. 2200 characters with spaces):** Understanding the patterns and consequences of the long-term climate changes has never been more critical than now, as the rapidly changing atmospheric conditions and climatic forcing patterns are predicted to strongly change the global climate, with major implications for the Earth’s biota and many critical physical processes. LTCC includes most of the leading scientists of the University of Helsinki working on long time-scales and climate changes. Consequently, LTCC represents practically the only unit at the university with expertise in issues such as the evolution of the mammals under changing climatic and environmental conditions, the nature of the ice ages and their impact on animals, plants and ecosystems, the species response to the predicted future warming, and the global carbon cycle on long time-scales. Due to their key scientific role in these and other issues related to the long-term climate change, members of the group are frequently invited to join various consortia which are put together for project and network applications, and have been successful in obtaining external funding. As a testimony to this, LTCC is represented in the Helsinki Insight (climate change group), a panel of top-level scientists with a task of providing the scientific basis for the fund raising campaign of the university. For the doctoral training of the University of Helsinki LTCC’s contribution is vital, as it is virtually the only unit, where the PhD students are trained to understand long-term climate changes in the geological past and the related research methods. The majority of the LTCC’s members are based at the Department of Geosciences and Geography, where the long-term development of the laboratories and other technical facilities needed in long-term climate change research is one of the strategic key areas. Given these facts, it is undeniable that LTCC represents scientists who provide most, or in many cases all, contributions to the scientific research and doctoral training in the field of long-term climate and environmental change at the University of Helsinki.

**Keywords:** long-term climate change, palaeoclimatology, paleontology, biogeography, proxy methods, models

**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): LTCC represents the largest and most active research group at the national level in the fields of palaeoclimatology and evolutionary paleontology, with nationally significant contributions to related subjects, such as global change studies, biogeography, and terrestrial palaeoecology. The international cutting edge scientific status of LTCC is best reflected in its publication profile. LTCC members publish constantly in high-level international journals, with papers published in Science, Nature, Nature Geoscience, PNAS, PLOS, and Geology during the period 2005-2010, and the publication activity is demonstrated by the fact that in 2010, for example, the PIs of LTCC have so
far published 29 papers in ISI peer-reviewed journals. LTCC is represented in the new Nordic Centre of Excellence (Cryosphere-Atmosphere Interactions in a Changing Arctic Climate (CRAICC), 2010-2014), providing basis for top-level Nordic collaboration in the future. Its members have been or are involved in numerous international networks, projects and other collaborative efforts, including EU projects and ESF and NordForsk networks. They collaborate with colleagues from all the continents and carry out fieldwork practically on global geographical scale of research, including past or ongoing projects in South America, China, The Middle East, Africa and the Arctic. The activity and intensity at the international level is reflected by the fact that the five PIs have published papers with colleagues representing 25 nationalities during the period 2005-2010, and many more before this period. The top-level research and strongly international approach are reflected in the doctoral training of LTCC, with PhD students publishing in high-profile journals, participating in the international collaboration and spending a part of their PhD projects in foreign universities. Likewise, the PIs of LTTC are supervising or have supervised during the evaluation period many foreign PhD students and post-docs, for example from China, UK, Germany, Iran, Argentina and Spain.

Comments on how the RC’s scientific productivity and doctoral training should be evaluated (MAX. 2200 characters with spaces): LTCC suggests that its scientific productivity and doctoral training would be evaluated by international experts of high scientific status. LTCC can envisage the use of specific expert evaluators or one expert panel that would assess LTCC and other research communities with related topics, as long as there is sufficient expertise, insight and experience regarding the general scientific output and quality in the specific field of science represented by LTCC. Thus, LTCC would envisage the most favourable assessment when its achievements are compared with other national and international research groups whose work on long-term climate change is based on the combined approaches of fossils records, physical proxy records, and modeling and would cover equally diverse time-scales as in LTCC. When assessing the success in doctoral training, LTCC proposes direct comparison to the numbers of PhDs and post-docs with other fields of science at the departments of geosciences, geology and geography in Finland. LTCC aims to maintain its high publication profile both in terms of quantity and quality. A high number of joint papers combining the different approaches of the LTCC members and integrating their results are planned to be published.
### LIST OF RC MEMBERS

**NAME OF THE RESEARCHER COMMUNITY:** Long-term climate change: patterns and consequences (LTCC)

**RC-LEADER**
- H. Seppä

**CATEGORY**
- 1

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<tr>
<th>Last name</th>
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<th>PI-status (TUHAT-check, lista 16.11.)</th>
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<td>Arppe</td>
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<td>Finnish Museum of Natural History</td>
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INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 2 MATERIAL

Name of the RC’s responsible person: Seppä, Heikki
E-mail of the RC’s responsible person: 

Name and acronym of the participating RC: Long-Term Climate Change, LTCC

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:

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).

This research community (RC) - Long-Term Climate Change: patterns and consequences (LTCC) - represents the biggest and foremost Finnish research group focusing on the climate changes and their biotic and abiotic consequences on long (decadal, centennial, millennial and longer) time-scales, ranging from the deep geological past to the future. LTCC is an umbrella community, bringing together five principal scientists (PIs) from the Department of Geosciences and Geography (DGG), and their research groups, each with different and complementary research questions, approaches and techniques (Appendix 1). Some PIs and their groups focus on using physical geological techniques, such as stable isotope analyses or glacier studies, to detect past changes in climate, some make use of the fossil records as palaeoclimatological proxies and some forecast future biotic and environmental changes under changing climatic scenarios. An integrative approach, increasingly used by the members of LTCC, is to generate palaeoclimatic records with the physical techniques and to use the fossil data to explore how plants, animals, ecosystems, and biomes have responded to large, long-term climate changes in the past and how they are likely to respond in the future. Another emerging line of research is to combine the physical and biological data with the model simulations, especially those based on bioclimatic envelope models. Such models are a special case of species distribution models in which the current geographical distribution of species is related to climatic variables, so as to enable projections of distributions under past or future climate change scenarios. Bioclimatic modeling is thus the main method to predict how the biotic groups will respond to the projected future climatic warming, while the comparison of the past records with the simulations of past climates can be used for evaluating the performance of the models.

LTCC’s goal is at the international top-level science. It represents the largest and most active research group at the national level in the fields of palaeoclimatology and evolutionary palaeontology, with internationally significant contributions to related subjects, such as global change studies, biogeography, and terrestrial palaeoecology. The members of the group have been for long at the international cutting edge in many aspects of their fields of research, including such topics as the quantitative climate reconstruction from fossil and isotopic records, palaeoclimatic data-model comparison and bioclimatic modeling. The high international scientific status of the RC is best reflected in its publication profile. LTCC’s members publish constantly in high-level international journals, with papers published in Science, Nature, Nature Geoscience, PNAS, PLOS, and Geology during the period 2005-2010, and the publication activity is demonstrated by the fact that in 2010, for example, the PIs of the RC published 33 papers in ISI peer-reviewed journals. The members of the RC have been very successful in obtaining external
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project funding, both from national and international funding agencies. LTCC is also represented as a work-package leader in the new Nordic Centre of Excellence (Cryosphere-Atmosphere Interactions in a Changing Arctic Climate (CRAICC, 2010-2014), providing funding and collaborative basis for top-level Nordic climate change science in the future.

The high quality and potential of the RC is largely due to the intensive international activity and concerted multidisciplinary collaboration of the PIs and other members, and due to the cutting-edge methodological approaches. All PIs are involved in research at the interface between climate change, geology, biogeography and statistics and have a strong ability to integrate insights from those fields. The wide international and national collaboration with climatologists, climate modellers, earth scientists, botanists, zoologists, geophysicists, statisticians and computer scientists is the hallmark of the members of the RC and will further be strengthened in the future. The scientific activity at the international level is reflected by the fact that the five PIs have published papers with colleagues representing 25 nationalities during the period 2005-2010, and many more before this period, and by the fact that the members of the RC have their research areas in all the continents and carry out fieldwork practically on global geographical scale of research, including past or ongoing projects in South America, China, The Middle East, Africa and the Arctic.

The significance of research is obvious. Understanding the patterns and consequences of the long-term climate changes has never been more critical than now, as the rapidly changing atmospheric conditions and climatic forcing patterns are predicted to strongly change the global climate, with major implications for the Earth’s biota and many critical physical processes. LTCC includes most of the leading scientists of the University of Helsinki (UH) working on long time-scales and major climate changes that have happened under natural conditions and provide thus important examples and analogues to understand the processes causing the major climate changes and their impacts. Consequently, LTCC represents practically the only unit at the university with expertise in issues such as the evolution of the mammals under changing climatic and environmental conditions, species extinctions and associated biodiversity changes, the nature of the ice ages and their impact on animals, plants and ecosystems, the species responses to the predicted future warming, and the global carbon cycle on long time-scales. As these examples show, the main significance of the long-term climate research lies in the possibility to synthesize different lines of evidence into a comprehensive picture of past and future climate variability, to test hypotheses about the causes of climatic changes, and to realistically reconstruct and model their impacts on biota and environment.

Due to their key scientific role in these and other issues related to the long-term climate change, the members of the group are frequently invited to join various consortia, which are put together for project and network applications, and have been successful in obtaining external funding. As a testimony to this, LTCC is represented in the Helsinki Insight (climate change group), a panel of top-level scientists with a task of providing the scientific basis for the fund raising campaign of the university, while the ground-breaking research in the field of palaeobiology and palaeoclimatology has led to invitations to high-level boards and councils, including for example advising the Board on Earth Sciences and Resources National Research Council (USA), and participating in the prestigious workshop “Biodiversity Theory to Inform Global Change Strategies” at the University of California at Berkeley (USA), as well as the aforementioned Nordic Centre of Excellence.

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

  The opportunities to develop are diverse, ranging from new field and laboratory analysis methods to bioclimatic modeling and data mining. An important innovation currently being adopted by the members of the RC is the rapid development of the earth system models, which represent a new
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generation of climate models that can be used for a more complete simulation of climatic and environmental (abiotic and biotic) processes over long geological time-scales. The RC is also involved in the development of new generation of hybrid models for climate change impact assessment. These models aim for a compromise between realism and accuracy, and complexity and simplicity and they are opening up new ways to address the pressing biogeographical questions. Given the synthetic approach of the RC, utilizing and linking various aspects and techniques of long-term climate change research, a key challenge will be to keep up with the latest conceptual breakthroughs and rapid technical advances that are happening in all the relevant sectors included in the research.

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 practices and quality assurance in doctoral training, and assuring good career perspectives for the doctoral candidates/fresh doctorates.

The RC recruits doctoral candidates with the world-wide scope, aiming to employ the best possible candidates with the highest scientific talent and likelihood for a successful post-doctoral career in science. Recruitment is primarily by targeted “head hunting”, followed by the selection process by screening of documents, by requesting evaluation reports from the colleagues who know the doctoral candidates, and in the last phase by including interviews, typically over the internet. The final decision about the appointment of the student will be made by the scientists in charge of the project. There has been a growing trend of appointing international doctoral students to the RC, so that six international doctoral candidates have either defended their PhDs or are currently doctoral students under the supervision of the PIs of the RC.

For the doctoral training of the UH LTCC’s contribution is vital, as it is virtually the only unit, where the PhD students are trained to understand the long-term climate changes in the geological past and the related research methods, and an emerging centre for the training of doctoral candidates in modern bioclimatic modeling techniques. The general aim of the RC is to give the doctoral students (and the subsequent young post-docs) a supportive, stimulating, and many-faceted environment which will lead to independent research careers. We aim to broaden and deepen their research skills, and introduce them to the many other kinds of activities that are part of an academic career in the palaeoclimatological, paleontological, environmental and biogeographical sciences. Doctoral students are actively and intensively supervised by means of personal interaction with the supervisor or supervisors, and the aim of completing the PhD within the target time (4-5 years) has been well achieved. Supervision happens both individually and collectively, and it is both informal and frequent unless the student is reclusive, in which case problems may develop (rare so far). The majority of the doctoral candidates (6 out of 9) and young post docs (7 out of 12) in the LTCC are women and every effort will be made to strengthen the advancement of their careers so that they are able to pass through the historical ‘glass ceiling’ of earth sciences and achieve senior positions alongside their male peers.

LTCC promotes direct contacts between young scientists and senior scientists both nationally and internationally. The international collaboration and visibility has been particularly promoted in the RC, by making it possible for the doctoral students to visit foreign universities and research groups, by supporting participation and interaction in the international networks and projects and by encouraging the doctoral students to produce joint papers with foreign scientists and foreign doctoral students. We promote the policy of having foreign colleagues involved in the PhD projects of our doctoral students, for example as co-supervisors. Likewise, the PIs of LTTC are supervising or have supervised during the
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

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evaluation period many foreign doctoral students and post-docs, for example from China, UK, Germany, Iran, Argentina and Spain. The doctoral thesis reviewers and examiners are nearly invariably leading foreign scientists, which we see as one of the main means for quality assurance in the doctoral candidate training.

Thanks to the interaction and collaboration between the senior and junior scientists of the RC, we currently have an active network of young scientists, which ensures that they have a range of good interdisciplinary contacts right from the beginning of their research careers. This is the first time that a research community of this kind and volume has been implemented within the field of long-term climate change studies in Finland. As an example of the creative practice for increasing the involvement and interaction between the doctoral students in the RC we can mention the "Björn Kurtén Club", which is an informal scientific club functioning at the DGG, especially in palaeontology and palaeoclimatology. In the weekly meetings the doctoral students and other participants present talks either about their own research or any interesting and topical issue and the meetings are thus a forum for exchange of news, ideas, and solutions to problems. The meetings are also open for the undergraduate students and have proven useful for increasing the visibility of palaeontology and palaeoclimatology among the students and making them interested in becoming graduate students. Another innovative practice is the Finnish "palaeo-cruise", a two-day cruise organized on a ship on the Baltic Sea together with colleagues from the Faculty of Bioscience in autumn 2010 for our doctoral students, their supervisors and invited external experts to create a chance to present their results and exchange ideas in an informal environment.

Collaboration in doctoral student training has been frequent, including, for example, a jointly funded doctoral student (defended 2009) with the Aalto University, Finland, a doctoral candidate jointly funded and supervised with the Liverpool University, UK, a student in the mathematics department of UH, funded from a project at DGG, and a student funded by a graduate school in bioscience getting her degree at DGG. Post-doctoral researchers form a wide collaborative network and participate in doctoral student supervision, informally as well as formally. Some doctoral students have an advisory committee; this is voluntary and the results have been mixed.

Finnish Geology Graduate School (FGGS) has a central role in the recruitment, selection and funding of the graduate students for the RC. PIs of the LTCC have played a key role in initiating, organizing and running the FGGS. Prof. Salonen has been the director of FGGS since its foundation in 1998 and Prof. Karhu a member of its board, and practically all the doctoral students or post-docs involved in the RC have received financial support from FGGS for their PhD projects, either as monthly salaries or as support for visits to foreign universities, training courses, conferences etc. In Finland, FGGS organizes a number of training courses each year, often with invited foreign specialists as the main teachers. The annual Geology Research Day, organized by the FGGS, is an important event where the doctoral students present their new results, meet each other as well as more senior colleagues. As part of the Geology Research Days lectures, speakers from outside the geology community have been invited to present talks about more general topics, such as how to write and publish scientific papers etc.

Career perspectives for the doctoral students of the RC have been excellent during the evaluation period and all the members of the RC who defended during evaluation period have had markedly successful post-doctoral careers. A notable feature of the RC is the high proportion of post-docs who are based in foreign universities or research institutes after completing their PhD. Hence, in the group, five young scientists are currently continuing their careers as post-docs at foreign universities (in Austria (2), Britain, Canada, China). Continuing the practice so far, we aim to guarantee the positive career
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

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perspectives in the future through the long-term international collaboration of the PIs and by the early involvement of the doctoral students in the international activities.

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

  The strengths are the compact structure of the RC with daily interactions between the doctoral candidates and supervisors, international orientation, wide collaboration, early involvement in the projects and networks and generally good performance of the doctoral students with their doctoral schedules and thesis quality. A challenge is to further increase the proportion on foreign doctoral candidates and to develop the study environment of the RC, so that it will efficiently support their research and studies required for completing the doctoral studies, including an adequate number of courses in English. A potential future challenge can be the space limitation at DGG. The infrastructure must be constantly improved and updated to guarantee that the best national and international doctoral candidates would find the RC an attractive option for their studies.

**3 Societal Impact of Research and Doctoral Training (max. 4,400 characters with spaces)**

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

  The societal relevance of long-term climate change is increasingly recognized. This is demonstrated by the participation of the RC in the Helsinki Insight climate change group and by the role the RC has in many societal important initiatives, such as the Integrated Carbon Observation System (ICOS) and in the planned Institute for Atmospheric Research (INAR) or, in a wider sense, by the inclusion of the long-term climate change view into the latest IPCC 4AR report. The biogeographical research carried out in the RC is directly relevant for understanding the future of the species and ecosystems under predicted climate warming. Modeling global change impacts on biodiversity is one of the most dynamic areas of research partly because of the implicit political and scientific pressure associated with this topic. Decision makers, politicians, environmentalists and scientists are interested to understand and forecast how biodiversity and ecosystems respond to changing climate, highlighting the societal impact of the biogeographical research in the RC. The research into past biodiversity patterns is equally relevant, especially because it provides an opportunity to explore the links between past climate changes and species extinctions and to investigate species survival strategies during past warm (or cold) climate periods.

  The RC’s research has also more directly applied aspects. Information about the last glaciations, including the extent of the ice sheet and the climatic conditions, as well as the related crustal dynamics with depression of the land masses, followed by land uplift and potential earthquakes, has proven important for the companies planning the construction and location of the nuclear power plants and long-term waste disposal sites. Similarly research related to, for example, the ground-water resources and their future use is related to long-term climate changes. In the context of these applied issues, the RC co-operates with Geological Survey of Finland, mining and energy companies and the water authorities.

  Aspects of long-term climate change interest the public and the members of the RC frequently contribute to popular science events, newspapers, tv and radio, delivering news and lectures about their results. One important event is The Science Days organized by the UH, where the RC members have presented talks about the past global climate changes and the past changes of atmospheric composition and the greenhouse gases.
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 2 MATERIAL

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

Societal impact, and particularly societal interest, is likely to stay high, given the general relevance of the topic, and the role of the RC can be further enhanced by increasing the dissemination of the expertise of the members of the RC in the public forums. We believe that the role of the long-term view will become more prominent in the societal sectors such as nature conservation and biodiversity management, providing new prospects for collaboration and employment of the doctoral candidates. A permanent challenge will be the academic time management pressures of the PIs and other RC’s members.

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

International collaboration is the scientific backbone of the RC. In addition to the literally world-wide personal contacts and collaboration in terms of individual projects, joint papers etc., much of the international research activities of the PIs and their groups in 2005-2010 has been funded through, for example, the European Union funding (CARBO-NORTH, FP-6: INTIMATE, EU COST action) and NordForsk network funding (NEPAL, LANDCLIM, BIOCOLD), resulting in an intense Nordic and European collaboration. One important form of international collaboration is the NOW database, a public database of mammal localities and species of the Neogene of the Old World and North America, housed and maintained by the RC. The database is the most comprehensive of its kind, maintained and developed in collaboration with an advisory board of about 60 leading specialists. The NOW data have been widely used in publications, including several in high-impact journals. The RC has also active role in many other international databases (such as the European Pollen Database, EPD) and international research and science policy programmes, such as PALSALARM, funded by the Nordic Council of Ministers, and EC FP6 Integrated Projects ALARM and MACIS.

The most important Nordic collaborative partners are the modeling group of the Geobiosphere Research Centre at Lund University, Sweden, the Ecological and Environmental Change Research Group at the Bergen University, Norway, and the Centre for Ecological and Evolutionary Synthesis, University of Oslo. In central Europe, we have extensive collaboration with the Biodiversity and Climate Research Centre at the Goethe University in Frankfurt am Main, Germany, especially pertaining to the modeling the Cenozoic climates, University of Oxford, UK, and University of Grenoble, France. Outside Europe, the main long-term partners are The Institute of Vertebrate Palaeontology and Paleoanthropology, Academia Sinica, Beijing (prof. Fortelius is Visiting Research Fellow), the members of the Evolution of Terrestrial Ecosystems (ETE) programme, co-ordinated by the Smithsonian Institute, USA, and CSIRO in Australia.

National collaboration is equally active. The collaboration with the climatologists and climate modelers of the Finnish Meteorological Institute (FIM) is important and this activity is currently developing towards joint studies where the palaeoclimatic reconstructions by the LTCC members are used to validate the long-term climate model simulations. Another important form of collaboration is that with the mathematicians and computer scientists, who represent the Department of Computer Science and the Department of Mathematics and Statistics, UH (Prof. M. Gyllenberg and his group) and the Department of Computer Sciences and Mathematics, University of Oulu (Prof. L. Holmström and his group). Many important results and methodological progress have been achieved with this collaboration, for example regarding the use of Bayesian
approaches in developing techniques for reconstructing past climate from fossil records. Geological
Survey of Finland is an important national collaborating institute for nearly all members of the RC.

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

International collaboration is one the main strengths of the RC. All PIs are internationally oriented, work
literally with scientific issues of world-wide relevance, and have established efficient and large

collaboration networks. This background is reflected in the orientation of the younger members of the
RC. A challenge may lie in the dynamic nature of the modern climate change science, with the constant
need to find new collaborative partners for solving new scientific problems leading to rapidly shifting

collaboration networks, followed by a subsequent difficulty to reconcile the pressure to travel and to

attend international conferences and meetings with teaching, administration and other departmental
commitments.

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).

Most of the RC’s members are based at the Kumpula science campus, where DGG houses well-equipped

laboratories for geochemical, isotopic, microfossil, GIS and sediment analyses. A full-time laboratory
engineer and two laboratory assistants are in charge of running the routines of the laboratories and
larger strategic decisions are carried out by the director and the board of the DGG. The isotope

laboratory is equipped with an isotope ratio mass spectrometer (IRMS) and a cavity ring-down
spectrometer (CRDS) for stable isotope analyses. For elemental analyses the laboratory has an ion

chromatography system and an ICP mass spectrometer. At Espoo, the Finland Isotope Geoscience
Laboratory is a joint analytical facility established through collaboration by DGG, other geoscience
departments in Finnish Universities and the Geological Survey of Finland. The new laboratory is

equipped with a laser ablation multiple-collector inductively coupled plasma mass spectrometer (LA-

MC-ICPMS) and has the capabilities and capacity to analyze the isotopic composition of a large number

of diverse sample types, while covering the largest possible spectrum of elements of the periodic table.
The doctoral candidates and other members of the RC frequently use these joint facilities in isotope-

based palaeoclimatological studies.

DGG has a scanning electron microscopy laboratory equipped with an electron probe micro-analyzer

(EPMA Jeol JXA-8600 superprobe, equipped with energy dispersive (EDS) detector (Si(Li) thin window
type) and four wavelength dispersive detectors (WDS) and a scanning electron microscope (SEM, Jeol

JSM-T330, equipped with energy dispersive (EDS) detector (Si(Li), thin window type). Other key facilities
of the RC are the recently established and equipped microfossil and microscopy laboratory at DGG, with

a number of research-level light microscopes and stereomicroscopes and a digital microphotography
system. DGG manages a modern remote sensing and GIS laboratory. This lab is highly equipped by the
state-of-the-art software (Erdas, ArcGIS, ArcMap and MapInfo), global data sets and efficient computers
for data intensive research. DGG also houses an office for managing the NOW database and a
dendrochronological laboratory.

Coring and sediment sampling are important for the RC and the DGG is equipped with all basic coring
facilities, including various types of piston corers, gravity and box corers, Russian peat samplers and
devices for sampling on lakes or through ice. A ground penetrating radar is an important part of the
fieldwork infrastructure in all sediment-based research.
The balance between the research and training duties is dictated by the general regulations of the DGG and it follows the general principles of the UH. Thus, currently all the members of the RC are involved both in research and training. The PIs generally teach three or four courses in a year, in addition to which they are often involved in organizing various special courses, usually targeted for doctoral students and post-docs. Post-docs and doctoral students all teach, usually by giving special courses to undergraduate students about their special topics, generally with a five percent time allocation.

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

Operational conditions are good when compared internationally, but they can be improved. A new 3-D scanner and an up-to-date, motorized light microscope will be added to the facilities of the microfossil laboratory in 2011. There is a demand for field spectroradiometers in visible, near infrared and middle infrared range, broadband and narrowband radiation sensors and logging systems, and other field observations instruments (e.g. data loggers for climate observations). Part of these instruments may be operated by the RC’s partners (Department of Physics, FIM), but nevertheless the portable field instruments should be possessed by the RC itself.

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 RC represents a non-hierarchical, closely interacting and collaborating group of scientists, with all PIs and most of the other scientists and doctoral candidates being based at the DGG. Thanks to the compact nature of the RC, there is interaction on nearly daily basis and a continuous change of ideas, personal contacts and communication within the RC. All five PIs are professors and act thus as independent scientific leaders in the RC, with their own scientific agenda, funding and research groups. However, the agendas are suitably overlapping within the overarching theme of the long-term climate change, so that all PIs and research groups are able interact in terms of research, training and efficient infrastructure management. It has been possible to develop the infrastructure with mutual benefits and organize common special courses, as demonstrated by courses and workshops such as “Bioscience/spatial ecology workshop” in 2005, “Late-Quaternary extinctions in Perspective” in 2006 an annual advanced seminar of palaeontology. Doctoral candidates are all supervised by at least one of the PIs, whereas some of the post-docs have their own funding and own research agendas and work currently outside the DGG, and some are based at DGG and work in closer collaboration with the PIs of the RC. We hope to create for undergraduates, doctoral students, post-docs, and senior members of the RC an environment in which multilevel, interdisciplinary learning experiences are the rule.

The appointment of Prof. M. Luoto, with expertise in biogeographical modeling, to the professor position in physical geography in 2009, has been an important addition to the leadership and management of the RC, with new opportunities for more intensive collaboration. As an associated challenge, we identify the prospect of more efficiently orchestrated use of the laboratories and other facilities.

The management structure of the project is shown in the appendix 1, which also indicates the major areas of expertise and specialisation of the PIs of the RC.
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

**RC-SPECIFIC STAGE 2 MATERIAL**

- RC's strengths and challenges related to leadership and management, and the actions planned for developing the processes.

  The undeniable strength in the leadership and management of the RC is the fluent interaction between the PIs and their research groups. Although independent, the research groups are scientifically close enough to make mutually satisfactory decisions about the laboratory facilities and other infrastructure. As for the evaluation of the LTCC, the management of financial and administrative matters, plus direct management of overall scientific goals, is the responsibility of professor H. Seppä. He has direct experience of four EU contracts, coordination of the NordForsk-funded Nordic Network of Palaeoclimatology in 2007-2009, many years’ experience of managing national grant funding (3 Academy of Finland projects and 1 Swedish Research Council project), and co-ordination of other types of international and national projects and programmes. The co-ordinator will be advised by a Steering Group, comprising all PIs and two members from the group of other scientists and post-docs and two from the group of doctoral candidates.

### 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: **2880000**

- **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:

- **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: **140000**

- **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:

- **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: Finnish Cultural Fund, K.H. Renlund’s Fund, Oskar Östlund’s Fund, Kone Fund
  - total amount of funding (in euros) from the above-mentioned foundations: **320000**

- **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: NordForsk
  - total amount of funding (in euros) from the above-mentioned funding organizations: **100000**
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 2 MATERIAL

- 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: Ministry of the Environment, Rector of the University of Helsinki
  - total amount of funding (in euros) from the above-mentioned funding organizations: 60000

8 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.
  
The RC will build on its current strengths: international collaboration, global-scale research themes, integration of physical and biological data, links between climate modeling and advanced data analysis, and increasing use of model-data comparison and synthesis. We will continue to develop the state-of-the-art technical facilities and methods for data analysis and modeling, in collaboration with the leading international specialists. We will further enhance the early involvement of doctoral candidates with the international science community and will increase the number of foreign doctoral candidates and post-docs in the RC.

  More specifically, the deep time climate change science will stay as one of the main focus areas, with a special emphasis on the past climate changes and extinction dynamics. A second main strategic line is parallel analysis of multiple continents and the explicit study of climatic teleconnection effects. We will enhance the collaboration between the deep-time and Quaternary palaeoclimatologists, with focus on issues such as the nature of the plant and animal communities during the glacial periods, the influence of the abrupt climate changes during the last ice age on these communities, and the extinction patterns and survival strategies of animals and plants during the glacial-interglacial cycles. We will further deepen our collaboration with climate modelers and earth system modelers to explore causative links between past climate changes, their mechanisms and biotic consequences.

  The impact of long-term climate changes on species ranges and biodiversity will be one of the key issues. The RC will increasingly address the links between the long-term climate change and biodiversity, and focus particularly on issues such as what are the main drivers of species and biodiversity at different spatial scales, how to effectively and accurately map, monitor and model past, current and future biodiversity patterns in different environments under global change and how to develop spatial modeling methods to increase the quality and quantity of biodiversity information for global change impact assessments.

  To conclude, the most unique aspects of the RC is that, for the first time in Finland’s history, leading specialists from different branches of earth sciences and biogeography, with scientific focuses from the geological past to the future, are brought together into a single framework for analysis of long-term climate change and its biological and environmental impacts. This has helped to break down sectoral scientific and technical barriers that have hitherto impeded integrated solutions for long-term climate research. With its versatile and integrating approaches, linking the physical and organism-based palaeoclimatic records, the RC provides an opportunity to enhance our understanding of patterns and processes of the long-term climate change, while the fossil databases and biodiographic modeling tools used by the members of the RC will provide unique insights to such evolutionary, biotic and environmental consequences of climate changes that cannot be determined or investigated with the short-term views available in the modern climatological or ecological research.
9 Short description of how the RC members have contributed to the compilation of the stage 2 materials (max. 1100 characters with spaces).

The compilation of the material was co-ordinated by Prof. H. Seppä. Contributions for each topic were directly requested from all PIs and for some topics from junior members of the RC, including the doctoral candidates. Information about the received funding was requested from all members of the RC. H. Seppä wrote the text on the basis of the contributions received. Additions and comments on the text were provided from many members of the RC during the process, for example some doctoral candidates read the description about the practices and quality of doctoral training and added their views about the strengths and challenges.
Appendix 1 - LTCC

LONG-TERM CLIMATE CHANGE
patterns and consequences

prof. M. Fortelius
deep time palaeontology
evolutionary dynamics, Cenozoic environments

prof. J. Karhu
deep time and Quaternary climates
oxygen and carbon isotopes in palaeoeclimatology

prof. M. Luoto
present and future biogeography
bioclimatic envelope modeling

prof. V.-P. Salonen
Quaternary climates, environmental geology
glaciers and sediments

prof. H. Seppä
Quaternary and Holocene climates
fossil records, Quaternary ecosystems
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

LTCC/Seppä

1 Analysis of publications

- Associated person is one of Laura Arppe, Anna Haapaniemi, Anna Haapaniemi, Juha Karhu, Frauke Kubischta, Anu Pauliina Kaakinen, Miska Luoto, Tomi Luoto, Marc Macias Fauria, Majid Mirzaie Ataabadi, Liisa Nevalainen, Diana Pushkina, Juha Saarinen, J. Sakari Salonen, Laura Säilä, Heikki Seppä, Laura Säilä, Hui Tang, Pirkko Anneli Ukkonen.

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<th>2009</th>
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<td>45</td>
<td>51</td>
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<td>4</td>
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<td>1</td>
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<td>C1 Published scientific monograph</td>
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</table>
2 Listing of publications

A1 Refereed journal article

2005


Evans, AR, Hunter, J, Fortelius, M, Sanson, GD. 'The scaling of tooth sharpness in mammals', Annales Zoologici Fennici.

Helama, S, Timonen, M, Lindholm, M, Meriläinen, J, Eronen, M. 'Low-frequency and high-frequency changes in temperature and effective humidity during the Holocene in south-central Sweden: implications for atmospheric and oceanic forcings of climate', Climate Dynamics.


2005
Liu, L, Kostopoulos, D, Fortelius, M. 'Suidae (Mammalia, Artiodactyla) from the Late Miocene of Akkasdag, Turkey', Museum National d'Histoire Naturelle. Geodiversitas.


Nevalainen, L, Sarmaja-Korjonen, K. 'Identification of subfossil remains of cladocerans Latona setifera, Diaphanosoma brachyurum and Holopedium gibberum', Studia quaternaria., vol 22, pp. 41-44.

Ogurtsov, M, Helama, S, Eronen, M, Lindholm, M. 'Centennial-to-millennial fluctuations in July temperatures in north Finland as recorded by timberline tree rings of Scots pine', Quaternary Research, vol 63, pp. 182-188.

Papineau, D, Mojsis, SJ, Coath, CD, Karhu, J, McKeegan, KD. 'Multiple sulfur isotopes of sulfides from sediments in the aftermath of Paleoproterozoic glaciations', Geochimica et Cosmochimica Acta, vol 69, no. 21, pp. 5033-5060.

Papineau, D, Mojsis, SJ, Karhu, J, Marty, B. 'Nitrogen isotopic composition of ammoniated phyllosilicates: case studies from Precambrian metamorphosed sedimentary rocks', Chemical Geology


2
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

VT/sippa


2006


Appé, L., Karhu, JA 2006. 'Implications for the Late Pleistocene climate in Finland and adjacent areas from the isotopic composition of mammoth skeletal remains', Palaeogeography, Palaeoclimatology, Palaeoecology, vol 231, pp. 322-330.


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

RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010


2007


2007
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

LTCC/Seppä


Luoto, T 2007, 'Subfossil chironomids from 18 lakes in southern and northern Finland', Chironomus : Newsletter on Chironomidae Research, no. 20, pp. 16-23.


Salonen, V, Korikka-Niemelä, K 2007, 'Influence of parent sediments on the concentration of heavy metals in urban and suburban soils in Turku, Finland', Applied Geochemistry, vol 22, no. 5, pp. 906-918.


2008


DeMiguel, D, Fortelius, M, Azanza, B, Morales, J 2008, 'Ancestral feeding state of ruminants reconsidered: earliest grazing adaptation claims a mixed condition for Cervidae', *BMC Evolutionary Biology*.

Evans, AR, Fortelius, M 2008, 'Three-dimensional reconstruction of tooth relationships during carnivoran chewing', *Palaeontology electronica*, vol 11, no. 2.


2009


Luoto, T 2009, 'An assessment of lentic ceratopogonids, ephemeropterans, trichopterans and orbital midges as indicators of past environmental change in Finland', *Annales Zoologici Fennici*, vol 46, no. 4, pp. 259-270.


2010


Appre, L, Karhu, JA 2010, 'Oxygen isotope values of precipitation and the thermal climate in Europe during the middle to late Weichselian ice age', Quaternary Science Reviews, vol 29, 9-10, pp. 1263-1275.


Helama, SO, Holopainen, J 2010, 'Late Holocene climatic variability reconstructed from incremental data from pines and pearl mussels - a multi-proxy comparison of air and subsurface temperatures', Boreas, vol 39, no. 4, pp. 734-748.

Helama, SO, Holopainen, J 2010, 'Late Holocene climatic variability reconstructed from incremental data from pines and pearl mussels - a multi-proxy comparison of air and subsurface temperatures', Boreas, vol 39, no. 4, pp. 734-748.

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Helama, SO, Holopainen, J 2010, 'Late Holocene climatic variability reconstructed from incremental data from pines and pearl mussels - a multi-proxy comparison of air and subsurface temperatures', Boreas, vol 39, no. 4, pp. 734-748.


Luoto, TP, Helama, S 2010, 'Paleoecological and palaeolimnological records from fossil middles and tree-rings: the role of the North Atlantic Oscillation in eastern Finland through the Medieval Climate Anomaly and Little Ice Age', Quaternary Science Reviews, vol 29, no. 17-18, pp. 2411-2423.


Nielsen, AB, Moller, PF, Giesecke, T, Stavngaard, B, Fontana, SL, Bradshaw, RHW 2010, 'The effect of climate conditions on interannual flowering variability monitored by pollen traps below the canopy in Drained Forest, Denmark', Vegetation History and Archaeobotany, vol 19, no. 4, pp. 309-323.


Pushkina, D, Bocherens, H, Chairmann, Y, Jaeger, J 2010, 'Stable carbon isotope reconstructions of diet and palaeoenvironment from the late Middle Pleistocene Snake Cave in Northeastern Thailand', Naturwissenschaften, vol 97, no. 9, pp. 299-309.


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RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010


Virtanen, R, Luoto, M, Rämä, T, Mikkola, K, Hjort, J, Grytnes, J, Birks, HJB 2010, 'Recent vegetation changes at the high-latitude tree line ecotones are controlled by geomorphological disturbance, productivity and diversity', Global Ecology and Biogeography, vol 19, no. 6, pp. 810-821.


A4 Article in conference publication (refereed)

2005


2006


2010

B1 Unrefereed journal article
2005

2006


2007


2008


2010
B2 Contribution to book/other compilations (non-refereed)

2008

B3 Unrefereed article in conference proceedings

2007

2008

2009

C1 Published scientific monograph

2009

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

2007

2010

D1 Article in professional journal

2007

2010
D2 Article in professional hand or guide book or in a professional data system, or text book material

2005

2006

D4 Published development or research report

2005

2006
Schulman, A, Luoto, MS 2006, Concept of “High Nature Value (HNV) farmland” and identification of HNV areas in Finland, Finnish Environment Institute, Helsinki.

2009

E1 Popular article, newspaper article

2005

2006

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

RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

LTCC/Seppälä


2010


INTRODUCTION TO RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF OTHER SCIENTIFIC ACTIVITIES 2005-2010

1 Analysis of activities 2005-2010

- Supervised or co-supervised of doctoral thesis
- Prizes and awards
- Editor of research journal
- Peer review of manuscripts
- Editor of special theme number
- Assessment of candidates for academic posts
- Membership or other role in review committee
- Membership or other role in research network
- Membership or other role in national/international committee, council, board
- Membership or other role in public Finnish or international organization
- Membership or other role in private company/organisation
- Participation in interview for written media
- Participation in radio programme
- Participation in TV programme
- Participation in interview for web based media

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<th>Activity type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisor or co-supervisor of doctoral thesis</td>
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<td>85</td>
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<td>Peer review of manuscripts</td>
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<td>Membership or other role in national/international committee, council, board</td>
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</tbody>
</table>
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Supervisor or co-supervisor of doctoral thesis

Jussi Tuomas Eronen,
Thesis Supervision Lintulaakso, Jussi Tuomas Eronen, 2007 → ..., Finland
Thesis supervision Tang, Jussi Tuomas Eronen, 2008 → ..., Finland
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Mikael Fortelius,
Supervision of PhD Thesis and Thesis Examination: Kaakinen, Mikael Fortelius, 21.06.2005, Finland
Supervision of PhD Thesis and Thesis Examination: Eronen, Mikael Fortelius, 22.08.2006, Finland
Supervision of PhD Thesis and Thesis Examination: Pushkina, Mikael Fortelius, 29.11.2007, Finland
Supervision of PhD Thesis and Thesis Examination: Ataabadi, Mikael Fortelius, 05.11.2010

Anu Pauliina Kaakinen,
Supervision of PhD Thesis, Anu Pauliina Kaakinen, 01.01.2007 → …
Supervision of PhD Thesis, Anu Pauliina Kaakinen, 01.01.2007 → ...

Miska Luoto,
Remote sensing and GIS based models in biodiversity assessments, Miska Luoto, 01.01.2007 → 06.2011
Spatial modeling of aquatic vegetation and catchment scale water protection, Miska Luoto, 01.01.2007 → ...
Modeling of high-latitude vegetation change, Miska Luoto, 01.01.2008 → ...
Spatial modeling of water quality in river basins, Miska Luoto, 06.2008 → ...
Activity layer of palsa, Miska Luoto, 11.2009 → ...
Breeding habitat suitability modeling for endangered raptors in Finland, Miska Luoto, 01.01.2009 → ...
Space use and habitat selection of the wolf (Canis Lupus) in human-altered environment in Finland, Miska Luoto, 01.01.2009 → 03.2011
Complex shoreline processes and vegetation changes on sandy uplifting beaches., Miska Luoto, 04.2010
Spatial modeling and mapping of underwater biota and habitats., Miska Luoto, 08.2010

Veli-Pekka Salonen,
Supervision of PhD-thesis, Veli-Pekka Salonen, 26.08.2005, Finland
Supervision of PhD-thesis, Veli-Pekka Salonen, 26.05.2005, Finland
Supervision of PhD-thesis, Veli-Pekka Salonen, 09.06.2006, Finland
Supervision of PhD-thesis, Veli-Pekka Salonen, 14.06.2007, Finland
Supervision of PhD-thesis, Veli-Pekka Salonen, 13.04.2007, Finland
Supervision of doctoral thesis, Veli-Pekka Salonen, 01.01.2007 → 31.12.2007, United Kingdom
Supervision of PhD-thesis, Veli-Pekka Salonen, 14.08.2009, Finland
Supervision of PhD thesis, Veli-Pekka Salonen, 21.05.2010, Finland

Kaarina Margareta Sarmaja-Korjonen,
Supervision of doctoral thesis, Kaarina Margareta Sarmaja-Korjonen, 01.01.2007 → 31.12.2007, Finland
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Supervision of doctoral thesis, Heikki Seppä, 01.01.2005 → 30.04.2010, Finland
Supervision of doctoral thesis, Heikki Seppä, 01.01.2009 → 31.12.2010, United Kingdom

Pirkko Anneli Ukkonen

Väitöskirjan ohjaus, Pirkko Anneli Ukkonen, 2008

Prizes and awards

Laura Arppe

Award for best Ph.D. thesis in the field of geochemistry, Laura Arppe, 10.03.2010

Heikki Seppä


Editor of research journal

Mikael Fortelius

Editor: Evolutionary Ecology Research, Mikael Fortelius, 01.06.2001 → 31.12.2010
Courier Senckenb. Forschungsinst, Mikael Fortelius, 01.01.2005 → 31.12.2005
PLOS, Mikael Fortelius, 01.01.2005 → 31.12.2005
Palaeontographica A, Mikael Fortelius, 01.01.2005 → 31.12.2005
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Paleo-3, Mikael Fortelius, 01.01.2005 → 31.12.2005
Paleobiology, Mikael Fortelius, 01.01.2005 → 31.12.2005
Folia Primatol., Mikael Fortelius, 01.01.2006 → 31.12.2006
J. Zoo &amp; Wildlife, Mikael Fortelius, 01.01.2006 → 31.12.2006
J.Zool., Mikael Fortelius, 01.01.2006 → 31.12.2006
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SEKJ, Mikael Fortelius, 01.01.2006 → 31.12.2006
Annales Zoologici Fennici, Mikael Fortelius, 01.01.2007 → 31.12.2007
Bollettino della Società Paleontologica Italiana, Mikael Fortelius, 01.01.2007 → 31.12.2007
Evolutionary Ecology Research, Mikael Fortelius, 01.01.2007 → 31.12.2007
Hellenic Journal of Geosciences, Mikael Fortelius, 01.01.2007 → 31.12.2007
Nature, Mikael Fortelius, 01.01.2007 → 31.12.2007
Neues Jahrbuch für Geologie und Paläontologie, Mikael Fortelius, 01.01.2007 → 31.12.2007
Palaeogeography, Palaeoclimatology, Palaeoecology, Mikael Fortelius, 01.01.2007 → 31.12.2007
Palaeobiology, Mikael Fortelius, 01.01.2007 → 31.12.2007
Evolutionary Ecology Research, Mikael Fortelius, 01.01.2008 → 31.12.2008
Naturwissenschaften, Mikael Fortelius, 01.01.2008 → 31.12.2008
PNAS, Mikael Fortelius, 01.01.2008 → 31.12.2008
Palaeontologia Electronica, Mikael Fortelius, 01.01.2008 → 31.12.2008
Quaternary Science Reviews, Mikael Fortelius, 01.01.2008 → 31.12.2008
Science, Mikael Fortelius, 01.01.2008 → 31.12.2008
Swiss J. Of Geoscience, Mikael Fortelius, 01.01.2008 → 31.12.2008
The Pliocene Hominoid Site Laetoli, Tanzania, Mikael Fortelius, 01.01.2008 → 31.12.2008

Juha Karhu,
Precambrian research, Juha Karhu, 01.01.2005 → 31.12.2005, Netherlands
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Terra, Juha Karhu, 01.01.2006 → 31.12.2006, Finland
Geochimica Cosmochimica Acta, Juha Karhu, 12.11.2007 → 31.12.2007, Netherlands
Precambrian research, Juha Karhu, 01.01.2007 → 31.12.2007, Netherlands
Precambrian research, Juha Karhu, 01.01.2008 → 31.12.2008, Netherlands
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Veli-Pekka Salonen,
Useita, Veli-Pekka Salonen, 01.01.2005 → 31.12.2005
6 kpl kansainvälisten tieteellisten aikakauslehtien artikkelien revidointitöitä, Veli-Pekka Salonen, 01.01.2006 → 31.12.2006
Useita julkaisuja, Veli-Pekka Salonen, 01.01.2007 → 31.12.2007

Kaarina Margareta Sarmaja-Korjonen,
Archiv für Hydrobiologie, Kaarina Margareta Sarmaja-Korjonen, 01.01.2005 → 31.12.2005
Hydrobiologia, Kaarina Margareta Sarmaja-Korjonen, 01.01.2005 → 31.12.2005
Studia Quaternaria, Kaarina Margareta Sarmaja-Korjonen, 01.01.2005 → 31.12.2005
Vegetation History and Archaeobotany, Kaarina Margareta Sarmaja-Korjonen, 01.01.2005 → 31.12.2005
Belgian Journal of Botany, Kaarina Margareta Sarmaja-Korjonen, 01.01.2006 → 31.12.2006
Boreal Environmental Research, Kaarina Margareta Sarmaja-Korjonen, 01.01.2006 → 31.12.2006
Studia Quaternaria, Kaarina Margareta Sarmaja-Korjonen, 01.01.2006 → 31.01.2006, Poland
Ambio, Kaarina Margareta Sarmaja-Korjonen, 01.01.2007 → 31.12.2007
Annales Botanici Fennici, Kaarina Margareta Sarmaja-Korjonen, 01.01.2007 → 31.12.2007, Finland
Geochronometria, Kaarina Margareta Sarmaja-Korjonen, 01.01.2007 → 31.12.2007, Poland
Journal of Palaeolimnology, Kaarina Margareta Sarmaja-Korjonen, 01.01.2007 → 31.12.2007
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Heikki Seppä,
Boreal Environment Research, Heikki Seppä, 2009
Journal of Quaternary Science, Heikki Seppä, 2009

Peer review of manuscripts

Jussi Tuomas Eronen,
Palaeontologische Zeitschrift, Jussi Tuomas Eronen, 2007 → …, Germany
Climate Dynamics, Jussi Tuomas Eronen, 2008 → …
Annales Zoologici Fennici, Jussi Tuomas Eronen, 2009 → …
Contributions to Zoology, Jussi Tuomas Eronen, 2009 → …
Journal of Human Evolution, Jussi Tuomas Eronen, 2009 → …
Palaeogeography, Palaeoclimatology, Palaeoecology, Jussi Tuomas Eronen, 2010 → …
Philosophical Transactions of the Royal Society B, Jussi Tuomas Eronen, 2010 → …

Mikael Fortelius,
Acta Palaeontologia Polonica, Mikael Fortelius, 09.04.2010
Biological Reviews (Cambridge), Mikael Fortelius, 13.12.2010
Geobios, Mikael Fortelius, 18.06.2010
Geology, Mikael Fortelius, 28.08.2010
Journal of Quaternary Science Reviews, Mikael Fortelius, 14.04.2010
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Nature, Mikael Fortelius, 05.02.2010
PNAS, Mikael Fortelius, 21.02.2010
Paleobiology, Mikael Fortelius, 19.02.2010
Quaternary Research, Mikael Fortelius, 05.07.2010

Samuli Olavinpoika Helama,
International Journal of Climatology, Samuli Olavinpoika Helama, 01.07.2006 → 31.07.2006, United Kingdom
- Annales Geophysicae, Samuli Olavinpoika Helama, 01.01.2007 → 31.12.2007
- Canadian Journal of Fisheries and Aquatic Sciences, Samuli Olavinpoika Helama, 01.01.2007 → 31.12.2007, Canada
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Anu Pauliina Kaakinen,
Reviewer, Sedimentary Geology, Anu Pauliina Kaakinen, 01.01.2010 → 31.12.2010

Miska Luoto,
Global Change Biology, Miska Luoto, 08.2010 → ...
Global Ecology and Biogeography, Miska Luoto, 09.2010 → ...
Journal of Biogeography, Miska Luoto, 03.2010 → ...

Veli-Pekka Salonen,
Vertaisarviointien teko, Veli-Pekka Salonen, 2010 → ...

Heikki Seppä,
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Journal of Ecology, Heikki Seppä, 30.06.2010
Mires and Peat, Heikki Seppä, 31.12.2010
Quaternary Science Reviews, Heikki Seppä, 31.12.2010
The Holocene, Heikki Seppä, 31.12.2010

Laura Säilä,
Review for Journal of Vertebrate Palaeontology, Laura Säilä, 11.2009, United States
Review for Journal of Vertebrate Paleontology, Laura Säilä, 07.2010, United States

Editor of special theme number
Mikael Fortelius,
Neogene Terrestrial Mammalian Biostratigraphy and Chronology in Asia, Mikael Fortelius, 08.06.2008 → 31.12.2010, United States

Assessment of candidates for academic posts
Laura Arppe,
Evaluation of applicants for the post of University Lecturer in Geochemistry, Laura Arppe, 01.05.2009 → 30.06.2009

Membership or other role in review committee
Jussi Tuomas Eronen,
scientific referee for NSF (National Science Foundation, USA), Jussi Tuomas Eronen, 2007 → ..., United States
NWO (Netherlands Organisation for Scientific Research), Jussi Tuomas Eronen, 2008 → ..., Netherlands

Membership or other role in research network
Jussi Tuomas Eronen,
Neogene Climate Evolution in Eurasia (NECLIME), Jussi Tuomas Eronen, 2005 → ..., Germany
Evolution of Terrestrial Ecosystems (ETE), Jussi Tuomas Eronen, 2007 → ..., United States
integrative Climate Change Biology, Jussi Tuomas Eronen, 2008 → ..., Finland
Juha Saarinen,
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Nordic network of palaeoclimatology (NEPAL), Heikki Seppä, 01.01.2007 → 31.12.2009
The past land cover-climate interactions in Scandinavia and NW Europe over the last 10000 years (LAND-CLIM), Heikki Seppä, 01.01.2009 → 31.12.2011

Membership or other role in national/international committee, council, board
Jussi Tuomas Eronen,
Neogene of Old World (NOW) Database, Jussi Tuomas Eronen, 2009 → ..., Finland
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GSA (Passey), Mikael Fortelius, 01.01.2005 → 31.12.2005
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NERC (Dobney), Mikael Fortelius, 01.01.2005 → 31.12.2005
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NSF (Barnosky), Mikael Fortelius, 01.01.2005 → 31.12.2005
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Suomen tiedeseura, Mikael Fortelius, 01.01.2006 → 31.12.2006
IUBS Programme on Integrated Climate Change Biology (iCCB), Mikael Fortelius, 01.01.2007 → 31.12.2007
NOW Database of Neogene Old World Mammals, Mikael Fortelius, 01.01.2007 → 31.12.2007
PaleoanthPortal, Mikael Fortelius, 01.01.2007 → 31.12.2007
Suomen eläin- ja kasvitieteellinen julkaisutoimikunta, Mikael Fortelius, 01.01.2007 → 31.12.2007
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European Research Council (ERC), Mikael Fortelius, 01.01.2008 → 31.12.2008
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Juha Karhu ,
Expert team evaluating the study programs in geology of the Estonian higher education institutions, September 26 October 1, 2005.,

Geological Society of Finland, Juha Karhu, 01.01.2005 → 31.12.2005, Finland

IODP (International Ocean Drilling Program) kansallinen tukiryhmä, Juha Karhu, 01.01.2005 → 31.12.2005, Finland

Organizing Committee of the 27th Nordic Geological Winter Meeting, Oulu, Juha Karhu, 01.01.2005 → 31.12.2005, Finland

Suomen Kansallinen Geologian Komitea, Juha Karhu, 01.01.2005 → 31.12.2005, Finland

Suomen Kansallinen Geologian Komitea, Portaalijohtoryhmä, Juha Karhu, 01.01.2005 → 31.12.2005, Finland


ICDP (International Continental Drilling Program) kansallinen tukiryhmä, Juha Karhu, 01.01.2006 → 31.12.2006, Finland

IODP (International Ocean Drilling Program) kansallinen tukiryhmä, Juha Karhu, 31.12.2006, Finland

Lapin Yhdyskunta, Lapin liitto, Juha Karhu, 01.01.2006 → 31.12.2006, Finland

Suomalainen Tiedeakatemia, Juha Karhu, 01.01.2006 → 31.12.2006, Finland

Suomen Kansallinen Geologian Komitea, Juha Karhu, 01.01.2006 → 31.12.2006, Finland

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Suomen Kansallinen Geologian Komitea, stratigrafiatyöryhmä, Juha Karhu, 31.12.2006, Finland

The national committee for organization of IGC33, Oslo, Norway, 2008, Juha Karhu, 01.01.2006 → 31.12.2006, Finland

IODP (International Ocean Drilling Program) kansallinen tukiryhmä, Juha Karhu, 01.01.2006 → 31.12.2006, Finland

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The national committee for organization of IGC33, Oslo, Norway, 2008, Juha Karhu, 01.01.2007 → 31.12.2007, Finland

Mineralogical Society of Finland, Juha Karhu, 31.12.2007, Finland

ICDP (International Continental Drilling Program) kansallinen tukiryhmä, Juha Karhu, 01.01.2008 → 31.12.2008, Finland

Suomalainen Työntekijöiden Liitto, Juha Karhu, 01.01.2008 → 31.12.2008, Finland

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The national committee for organization of IGC33, Oslo, Norway, 2008, Juha Karhu, 01.01.2008 → 31.12.2008, Finland

Miska Luoto ,
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The International Permafrost Association, Miska Luoto, 11.2009 → ...
EUCOP III International Organizing Committee, Miska Luoto, 06.2010, Norway
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Veli-Pekka Salonen,
NSERC, Veli-Pekka Salonen, 01.01.2005 → 31.12.2005, Canada
Archimedes Foundation, Veli-Pekka Salonen, 01.01.2006 → 31.12.2006, Estonia
Suomen Stratigrafin komitea, Veli-Pekka Salonen, 01.01.2006 → 31.12.2006, Finland
ETIS, Veli-Pekka Salonen, 01.01.2007 → 31.12.2007, Estonia
FORMA, Veli-Pekka Salonen, 01.01.2007 → 31.12.2007, Sweden
Suomen stratigrafinen toimikunta, Veli-Pekka Salonen, 01.01.2007 → 31.12.2007, Finland
Evaluation panel, Veli-Pekka Salonen, 2010, Estonia

Kaarina Margareta Sarmaja-Korjonen,
Suomen Akatemia, Kaarina Margareta Sarmaja-Korjonen, 01.01.2005 → 31.12.2005, Finland
, Kaarina Margareta Sarmaja-Korjonen, 01.01.2006 → 31.12.2006, Estonia
Suomen Akatemia, Kaarina Margareta Sarmaja-Korjonen, 01.01.2006 → 31.12.2006, Finland
Suomen Akatemia, arviointipaneeli, Kaarina Margareta Sarmaja-Korjonen, 01.01.2008 → 31.12.2008, Finland

Membership or other role in public Finnish or international organization

Mikael Fortelius,
Geol. laitos, johtoryhmä (vj), Mikael Fortelius, 01.01.2005 → 31.12.2005
LTKM, johtokunta, Mikael Fortelius, 01.01.2005 → 31.12.2005
Geol. laitos, johtoryhmä, Mikael Fortelius, 01.01.2006 → 31.12.2006
LTKM, johtokunta, Mikael Fortelius, 01.01.2006 → 31.12.2006
European Research Council (ERC), Mikael Fortelius, 01.01.2007 → 31.12.2007
National Research Council, Board on Earth Sciences and Resources (esitelmä ja keskustelu NSF:n rahoitusprioriteeteista ihmisen alkuperän ympäristökontekstin liittyvässä tutkimuksessa), Mikael Fortelius, 01.01.2007 → 31.12.2007, United States
National Science Foundation (NSF), Mikael Fortelius, 01.01.2007 → 31.12.2007, United States
Nordenskõldssamfundet, Mikael Fortelius, 01.01.2007 → 31.12.2007, Finland
Sohlbergs stiftelse, Mikael Fortelius, 01.01.2007 → 31.12.2007, Finland
Waldemar von Frenckell s Stiftelse, Mikael Fortelius, 01.01.2007 → 31.12.2007, Finland
ML-tiedekunnan markkinointitoimikunta, Mikael Fortelius, 01.01.2008 → 31.12.2008

Juha Karhu,
Administrative Committee of the Aarne ja Anna-Liisa Laitakari Fund, Finnish Cultural Foundation, Juha Karhu, 01.01.2005 → 31.12.2005, Finland
Executive Board of the Institute of Seismology, University of Helsinki, Juha Karhu, 01.01.2005 → 31.12.2005, Finland
Executive Board of the Institute of Seismology, University of Helsinki, Juha Karhu, 01.01.2006 → 31.12.2006, Finland
Executive Board of the Institute of Seismology, University of Helsinki, Juha Karhu, 01.01.2007 → 31.12.2007, Finland
Helsingin yliopiston ja Merentutkimuslaitoksen yhteistyöryhmä, Juha Karhu, 01.01.2007 → 31.12.2007, Finland
Executive Board of the Institute of Seismology, University of Helsinki, Juha Karhu, 01.01.2008 → 31.12.2008, Finland
Helsingin yliopiston ja Merentutkimuslaitoksen yhteistyöryhmä, Juha Karhu, 01.01.2008 → 31.12.2008, Finland

Miska Luoto,
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LTCC/Seppä

National Permafrost association (Finland), Miska Luoto, 11.2010 → ..., Finland

Heikki Seppä ,
Ulkomaisen projektihakemuksen arviointi, Heikki Seppä, 01.01.2005 → 31.12.2005

Membership or other role of body in private company/organisation

Mikael Fortelius ,
Jääkausi r.y., Mikael Fortelius, 01.01.2006 → 31.12.2006
Luonnonroteettisen keskustavan johtokunta, Mikael Fortelius, 01.01.2007 → 31.12.2007, Finland
Nordenskiöldsmuseet, Mikael Fortelius, 01.08.2008 → 31.12.2008
Söthbergs stiftelse, Mikael Fortelius, 01.08.2008 → 31.12.2008
Waldemar von Frenckell s Stiftelse, Mikael Fortelius, 01.08.2008 → 31.12.2008, United Kingdom

Outi Sanna Maria Hyytinen ,
Suomen Geologinen Seura, Geologi-lehden päätoimittaja, Outi Sanna Maria Hyytinen, 01.01.2008 → 31.12.2009, Finland

Juha Karhu ,
Helsingin yliopiston YT-neuvosto, Juha Karhu, 01.01.2005 → 31.12.2005, Finland
Helsingin yliopiston keskusvaalilautakunta, Juha Karhu, 01.01.2005 → 31.12.2005, Finland
Helsingin yliopiston opettajien ja tutkijoiden UPI arviointiryhmä, Juha Karhu, 01.01.2005 → 31.12.2005, Finland
JUKO (Julkisalan koulutusten ammattijärjestö), Juha Karhu, 01.01.2005 → 31.12.2005, Finland
Professoriliiton Helsingin yliopiston osaston johtokunta, Juha Karhu, 01.01.2005 → 31.12.2005, Finland
Professoriliiton Helsingin yliopiston osaston johtokunta, Juha Karhu, 01.01.2005 → 31.12.2005, Finland
Professoriliiton valtuusto, Juha Karhu, 01.01.2005 → 31.12.2005, Finland
Helsingin yliopiston Geologian laitoksen johtoryhmä, Juha Karhu, 01.01.2006 → 31.12.2006, Finland
Helsingin yliopiston Kumpulan Kampusneuvottelukunta, Juha Karhu, 01.01.2006 → 31.12.2006, Finland
Helsingin yliopiston Matemaattis-kuunnontieteellisen tiedekunnan suunnittelutoimikunta, Juha Karhu, 01.01.2006 → 31.12.2006, Finland
Helsingin yliopiston Matemaattis-kuunnontieteellisen tiedekunnan tiedekuntaneuvosto, Juha Karhu, 01.01.2006 → 31.12.2006, Finland
Helsingin yliopiston YT-neuvosto, Juha Karhu, 01.01.2006 → 31.12.2006, Finland
Helsingin yliopiston keskusvaalilautakunta, Juha Karhu, 01.01.2006 → 31.12.2006, Finland
Helsingin yliopiston opettajien ja tutkijoiden UPI arviointiryhmä, Juha Karhu, 01.01.2006 → 31.12.2006, Finland
JUKO (Julkisalan koulutusten ammattijärjestö), Juha Karhu, 01.01.2006 → 31.12.2006, Finland
Professoriliiton Helsingin yliopiston osaston johtokunta, Juha Karhu, 01.01.2006 → 31.12.2006, Finland
Professoriliiton valtuusto, Juha Karhu, 01.01.2006 → 31.12.2006, Finland
Helsingin yliopiston YT-neuvosto, Juha Karhu, 01.01.2007 → 31.12.2007, Finland
Helsingin yliopiston keskusvaalilautakunta, Juha Karhu, 01.01.2007 → 31.12.2007, Finland
Helsingin yliopiston opettajien ja tutkijoiden UPI arviointiryhmä, Juha Karhu, 01.01.2007 → 31.12.2007, Finland
JUKO (Julkisalan koulutusten ammattijärjestö), Juha Karhu, 01.01.2007 → 31.12.2007, Finland
Professoriliiton Helsingin yliopiston osaston johtokunta, Juha Karhu, 01.01.2007 → 31.12.2007, Finland
Professoriliiton valtuusto, Juha Karhu, 01.01.2007 → 31.12.2007, Finland
Helsingin yliopiston YT-neuvosto, Juha Karhu, 01.01.2008 → 31.12.2008, Finland
Helsingin yliopiston keskusvaalilautakunta, Juha Karhu, 01.01.2008 → 31.12.2008, Finland
Helsingin yliopiston opettajien ja tutkijoiden UPI arviointiryhmä, Juha Karhu, 01.01.2008 → 31.12.2008, Finland
JUKO (Julkisalan koulutusten ammattijärjestö), Juha Karhu, 01.01.2008 → 31.12.2008, Finland
Professoriliiton Helsingin yliopiston osaston johtokunta, Juha Karhu, 01.01.2008 → 31.12.2008, Finland
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Participation in interview for written media

Laura Arppe,
Interviewed by X - Veikkauksen asiakaslehti, Laura Arppe, 2010

Mikael Fortelius,
Ekenäsäiliökapet (kokous), Mikael Fortelius, 19.03.2002 → 31.12.2011, Finland
Inhimen ja kosmos, Mikael Fortelius, 15.03.2002 → 31.12.2011, Finland
Ilkäihmisten yliopisto, Mikael Fortelius, 01.01.2002 → 31.12.2011, Finland
Walking With Beasts, Pt 6 (BBC/Discovery), Mikael Fortelius, 01.01.2002 → 31.12.2011, Finland
YLE:Tutkimu juttu: Kuudes massasuikupuutto, Mikael Fortelius, 01.01.2002 → 31.12.2011, Finland
Inhimen hävitti mammutin (Seara), Mikael Fortelius, 01.01.2003 → 31.12.2011, Sweden
Kalmaronien aika ei olka koskaan (Viherä lanka), Mikael Fortelius, 01.01.2003 → 31.12.2011, Sweden
Mammutin maailma (useita muita), Mikael Fortelius, 01.01.2003 → 31.12.2011, Sweden
Tilaisuus, Mikael Fortelius, 01.01.2003 → 31.12.2011, Sweden
MY, mainosbroshyrty, Mikael Fortelius, 01.01.2004 → 31.12.2011, United Kingdom
Hufvudstadsbladet, Mikael Fortelius, 01.01.2004 → 31.12.2011, United Kingdom
Fysikersamfundet, Mikael Fortelius, 09.11.2005 → 31.12.2011, France
Jumalanainen heinäkuu (YLE), Mikael Fortelius, 01.01.2007 → 31.12.2011, Finland
Miel Forum, Mikael Fortelius, 01.01.2007 → 31.12.2011, Finland
Svenska Klubben, Mikael Fortelius, 01.01.2007 → 31.12.2011, Finland
Tieteen Päivät, Mikael Fortelius, 01.01.2007 → 31.12.2011, Finland
Calculus, Mikael Fortelius, 01.01.2007 → 31.12.2011, Finland
Turun keskussairaalan lastenlinion seminarisarja, Mikael Fortelius, 01.01.2007 → 31.12.2011, Finland
Yleisiltäälausus Helsingin Tuomiokirkon kryptassa, Mikael Fortelius, 01.01.2007 → 31.12.2011, Finland
Yleisiltäälausus Helsingin Tuomiokirkon kryptassa, Mikael Fortelius, 01.01.2007 → 31.12.2011, Finland
tellkorohjem vuhanenemisesta, Mikael Fortelius, 01.01.2007 → 31.12.2011, Finland
Darwin-symposium, Mikael Fortelius, 01.01.2008 → 31.12.2011, United Kingdom
HY:n Ihmisen evoluutio-yleisöluento, Mikael Fortelius, 01.01.2008 → 31.12.2011, United Kingdom
LTKM:n yleisöluento, Mikael Fortelius, 01.01.2008 → 31.12.2011, United Kingdom
Samuli Olavinoipa Helama,
Helsingin Sanomat, Samuli Olavinoipa Helama, 07.11.2006 → 31.12.2011, United Kingdom
Anu Pauliina Kaakinen,
Helsingin Sanomat, Anu Pauliina Kaakinen, 31.07.2007 → 31.08.2007, Finland
Universitas Helsinkiensis -lehti, Anu Pauliina Kaakinen, 01.09.2007, Finland
Yliopisto-lehti, Anu Pauliina Kaakinen, 01.09.2007, Finland
Juha Karhu,
Physicumin vihikästen yleisökuunot, Juha Karhu, 08.09.2001 → 31.12.2011, Finland
Professoriin virkaanastujaislehti, Juha Karhu, 05.12.2001 → 31.12.2011, Finland
Mammutinlätitteilyn liittyvä seminaari, Luomontieteen keskusmuseo, Juha Karhu, 20.08.2003 → 31.12.2011, Finland
Helsingin normaaliyksikkö tiedepaattelaisen luokan tineral Physiologican latokselle, Juha Karhu, 01.01.2004 → 31.12.2011, Finland
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Yliopisto-lehti, s. 11, Juha Karhu, 26.02.2007 → 31.12.2011, Finland

Yliopistolainen 2/2007, s 4-5, Juha Karhu, 27.02.2007 → 31.12.2011, Finland

Lapin kuntakaivajan Ilton seminaari, Juha Karhu, 25.01.2008 → 31.12.2011, Finland

Pirkko Anneli Ukkonen

Helsingin Sanomat, Pirkko Anneli Ukkonen, 08.10.2000 → 31.12.2011, Sweden


Aamulehti, Pirkko Anneli Ukkonen, 26.06.2002 → 31.12.2011, Finland

Kirkko & Kaupunki, Pirkko Anneli Ukkonen, 05.02.2002 → 31.12.2011, Finland

Suomen Luonto, Pirkko Anneli Ukkonen, 01.01.2002 → 31.12.2011, Finland

Luonnontieteellisen keskuseumon yleisluentosarja, Pirkko Anneli Ukkonen, 10.08.2003 → 31.12.2011, Finland

Luonnontieteellisen keskuseumon yleisluentosarja, Pirkko Anneli Ukkonen, 03.09.2003 → 31.12.2011, Finland

Savon Sanomat, Pirkko Anneli Ukkonen, 17.08.2003 → 31.12.2011, Finland

Tilaisuus: Kuvat kivessä näyttelyn yleisöluentosarja, Vapriikki, Pirkko Anneli Ukkonen, 05.02.2003 → 31.12.2011, Finland

useita haastatteluita eri tiedotusvälineille, Pirkko Anneli Ukkonen, 26.06.2003 → 31.12.2011, Finland

Participation in radio programme

Anu Pauliina Kaakinen

YLE Radio Suomi, tiebeuutiset, Anu Pauliina Kaakinen, 01.08.2005, Finland

Juha Karhu

YLE Radio 1, Radaattori (Siakko Lokkanen), Juha Karhu, 07.11.2007 → 31.12.2011, Finland

Veli-Pekka Salonen


Radio Suomi, Veli-Pekka Salonen, 05.02.2007 → 31.12.2011, United Kingdom

Geologiilta, Veli-Pekka Salonen, 10.11.2010, Finland

Participation in TV programme

Laura Arppe

YLE 1 morning show "Luonto lähellä", Laura Arppe, 12.02.2007, Finland

Mikael Fortelius

Lähikuvaasia TV-haastattelu (YLE) Useita radio- ja lehtihartaloja, Mikael Fortelius, 23.02.2005 → 31.12.2011, France

Juha Karhu


Yle Aamu-tv, Juha Karhu, 01.01.2005 → 31.12.2011, Finland

Ykkösen aamu-tv, Luonto lähellä, Juha Karhu, 01.01.2007 → 31.12.2011, Finland

Veli-Pekka Salonen
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TV1, Veli-Pekka Salonen, 26.09.2007 → 31.12.2011, United Kingdom

Participation in interview for web based media
Laura Arppe,
Invited contributor to Yliopistolehti-magazine's "Tutkimusretkellä" blog, Laura Arppe, 10.03.2008 → 08.06.2008, Finland
Research Group: Seppä H

Basic statistics
- Number of publications (P) 198
- Number of citations (TCS) 1,283
- Number of citations per publication (MCS) 6.53
- Percentage of uncited publications 30%
- Field-normalized number of citations per publication (MNCS) 1.64
- Field-normalized average journal impact (MNJS) 1.36
- Field-normalized proportion highly cited publications (top 10%) 1.79
- Internal coverage .65

Trend analyses

Collaboration

Performance (MNCS) by collaboration type
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING
AT THE UNIVERSITY OF HELSINKI
by CWTS, Leiden University, the Netherlands

Research profile

[Diagram showing research profile with categories such as Geosciences, Multidisciplinary, Geography, Physical, Ecology, etc., with bars indicating the number of publications in each category. The x-axis represents the number of publications, ranging from 0 to 40, and the y-axis lists the categories.]