Forskningsrådet

Assessment of grant application submitted to the Research Council of Norway

Grant application

Project number	250362
Project title	Knowledge Based Non-Stationary Modeling
Project manager	Steinsland, Ingelin
Project Owner	Institutt for matematiske fag
Programme/Activity	Fri prosj.st. mat.,naturv.,tek
Case officer	Terje Strand

Confirmation

By completing and submitting this form, I / we confirm the following (applies for the individual referee or the referee panel):

- I am /We are qualified to assess this application. See Regulations on Impartiality and Confidence in the Research Council of Norway.	Yes
- I/We have read and understood both the criteria I/we have been asked to use for assessing the application and the description of the scale of marks. The scale of marks is to be applied as an absolute scale, i.e. marks are to be determined for each grant application independently and not relative to other applications that the panel/referee is assessing.	Yes
- I/We understand and accept the guidelines for assessing applications for the Research Council of Norway. See Guidelines for referees/panels who assess applications for the Research Council of Norway.	Yes
- I am/We are qualified to conduct this assessment.	Yes

Summary of marks

Criterion	Mark
Scientific merit	6
Boldness in scientific thinking and scientific innovation	A
The project manager and project group	6
Implementation plan and resource parameters	A
International cooperation	A
Dissemination and communication of results	A
Overall assessment of the referee/panel	6

Criteria

Scientific merit

How would you rank the project's scientific merit?

This criterion gives an indication of the essential, fundamental aspects of the research project. The scientific merit of a project will be assessed in relation to the following points:
* Originality in the form of scientific innovation and/or the development of new knowledge.
* Whether the research questions, hypotheses and objectives have been clearly and adequately specified.
* The strength of the theoretical approach, operationalisation and use of scientific methods.
* Documented knowledge about the research front.
* The degree to which the scientific basis of the project is realistic.
* The scientific scope in terms of a multi- and interdisciplinary approach, when relevant.

This is an excellent research project that will treat selected challenges in quantitative genetics and hydrology that call for non-stationary modeling. In particular, models are formulated as solutions to stochastic partial differential equations (SPDE), more specifically non-stationary latent SPDE models. Models will be developed based on system knowledge, which is ensured through having a strong research group including leading experts from statistics, hydrology and quantitative genetics. Issues of improving practical identifiability of parameters and evaluating predictions in comparison to stationary models are central elements in the project. The proposed research does address important challenges in modern data analysis, where inhomogenieties and non-stationarities are important challenges that have to be dealt with. It is a highly interdisciplinary project, where success is to be expected because the research group both has expert knowledge within each of the elements in the project, as well as broad competences from the different researchers. Important methodological developments can be expected, which have the potential for high impact both in the statistics field, but certainly also in the two application fields.
The research questions, hypotheses and objectives have been clearly and adequately specified, the theoretical approach is adequate, and in the research group there is documented knowledge about the research fronts, both with respect to statistical methodology, hydrology and quantitative genetics. It is expected that the project can lead to significant advances in methodology.

The project description would have benefited from having pointed to the relevance and relation to the existing literature on non-stationary modeling in this kind of models, including own publications from the group.

Selected mark : 6 - Excellent
The project's objectives, research questions and hypotheses are very clearly presented and are based on an excellently formulated and highly original project concept. The project is in the forefront of its field and will contribute to scientific innovation as well as generate important new knowledge. The project is of excellent quality, with no significant weak points. Publications in leading scientific journals in the field are highly likely.

Boldness in scientific thinking and scientific innovation

Will the project contribute to significant advances in theory or methodology, or lead to groundbreaking results that will expand the current knowledge base?

This criterion gives an indication of how likely it is that the research project will lead to significant advances in theory, methodology or scientific knowledge, as opposed to more incremental progress.
Relevant elements to be assessed in this context include:
* Bold hypotheses
* High potential for significant theoretical advancement
* Original methodology
* Creative approach to expanding the current knowledge base in the field

There is high potential for significant theoretical advancement, and the methodology based on INLA is a new and expanding field with the strongest expertise at NTNU, and within the researchers of the project. Introducing this type of non-stationary models in the application fields has the potential for expanding the current knowledge.

Selected mark : A - Very Good

The project has a very high potential for scientific innovation. It is highly likely to result in substantial theoretical advancement, and/or the development of significantly new methodology and/or a radical expansion of knowledge. The project is exceptionally creative.

The project manager and project group

How would you rank the qualifications of the project manager and project group?

This criterion gives an indication of the qualifications of the project manager and project group. The project manager and project group will be assessed in relation to the following points:
* Project management
* Expertise and experience within the field of research
* Publication record
* Experience with national and international collaboration on projects
* Experience with supervision of students and younger researchers
* The degree to which the project manager and project group are part of a research environment that has the competence and resources needed to ensure the success of the project

The PI is strong, still relatively young, and at the ideal moment in her career to take on such a project. The research group is excellent, and expertise within all required fields of the project is present in the group. There is both national and international collaboration. The PI has previous experience supervising, so success with the two PhD projects is to be expected. The project manager is in an ideal research environment at NTNU to ensure the success of the project.

Selected mark : 6 - Excellent

The project manager and/or research/project group is/are qualified at a high international level, has/have contacts within the foremost national and international research environments and will be able to play an important role in ensuring the success of the project.

Implementation plan and resource parameters

How well-suited are the implementation plan and resource parameters in relation to the project?

This criterion gives an indication of whether the plan for project implementation is satisfactory, and whether the planned use of resources in the project is well-suited for the tasks in the project, based on assessment of the following elements:
* Plans for project implementation, including breakdown into work packages/sub-projects, milestones and deliverables.
* Need for personnel resources, as listed in terms of work time distributed by work packages, sub-projects or milestones.
* Need for other resources (such as equipment, data collection, field work), distributed by work packages/sub-projects or milestones.

The assessment is not to be linked to any scientific risk.

Plans for project implementation, including breakdown into work packages/sub-projects, milestones and deliverables are very detailed and appropriate. It is reasonable with the planned two PhD projects and a postdoc.

Selected mark : A - Very good
The project plan and planned use of resources are very clearly described and are well-suited to the tasks in the project.

International cooperation

How would you rank the international cooperation set out for the project?

This criterion gives an indication of the extent and quality of the international cooperation activities set out for the project.

There is very qualified international collaboration in the project. Previous co-authorships between PI and the international collaborators indicates that the cooperation activities set out for the project are realistic.

Selected mark : A - Very good
The international cooperation activities set out for the project have a wide scope and are of high quality.

Dissemination and communication of results

How would you rank the quality of the dissemination and communication plans?

This criterion gives an indication of the quality of the dissemination and communication plans for the project. Dissemination and communication of results will be assessed in relation to the following points:
* Plans for scholarly publication, dissemination and other communication activities.
* Plans for popular science dissemination and communication activities vis-à-vis the general public as well as users of the project results, including planned use of channels and measures.
* Plans for ensuring that important users (in industry, community life and public administration) are incorporated into/take part in dissemination activities for the project.

When assessing dissemination and communication plans, importance should be attached to the level of detail provided and how realistic the plans are.

There are excellent plans for dissemination and communication of results at all levels, and previous track record of the PI shows that this is realistic. Apart from the usual and expected dissemination plans of publishing in recognized international journals and presentations at international meetings and conferences, also software development, organization of PhD courses and workshops are planned. Finally, meetings and courses for users in the industry are planned, which will ensure that the methodology will be used in a meaningful way.

Selected mark : A - Very good
The project’s dissemination and communication plans provide a thorough level of detail and are of high relevance.

Overall assessment of the referee/panel

How does the project rank in terms of the referee’s/panel’s overall assessment?

This criterion indicates the overall view of the referee/panel, based on the specific criteria which they have been asked to assess.

This is an excellent and a very well planned project with the potential of high impact. It has well defined and realistic objectives. Additionally, it includes clearly documented and well planned implementations in quantitative genetics and hydrology. The project parts are extremely well structured and distributed to the team members. The project manager is qualified at a high international level. She also has a rich experience in PhD supervision and project management. In collaboration with a strong project team, the success of the project is guaranteed and publications in leading journals are expected.

Selected mark : 6 - Excellent
A project at a very high international level and of great national and international interest. Publications in leading journals are expected. The researchers are among the leaders in their field.

Special points to consider

Comments to special points to consider