

<Title>

Inclusion of OpenIFS into EC-Earth

Project plan

< The purpose of the project plan is to identify, define and delimit the project's commitment. >

< WHO IS INVOLVED IN THE PROJECT >

1. Project organization

Requester

Name: Gunilla Svensson

Title/position: Professor

Affiliation: Department of Meteorology, Stockholms University

Phone:

E-mail: gunilla@misu.su.se

Co-Requester

Name: Ralf Döscher

Title/position: Rossby Centre Science Coordinator, Chair of the EC-Earth Steering Committee.

Affiliation: SMHI

Phone:

E-mail: ralf.doescher@smhi.se

Project responsible for SNIC

Name: Hamish Struthers

Title/position: Application expert

Affiliation: NSC, SNIC

Phone: 0732702419

E-mail: struthers@nsc.liu.se

< For other project members, please specify role and contact details. >

Project manager

Name: Torben Rasmussen

Title/position: Application expert

Affiliation: NSC, SNIC

Phone: 013281494

E-mail: torbenr@nsc.liu.se

2. SNIC project name

< Name of an associated SNIC resource allocation project, if applicable (e.g. SNIC 2014/X-YYY). >

SNIC 2013/26-4 and SNIC 2014/8-18.

< MOTIVATION FOR GETTING THIS PROJECT SUPPORT >

3. Expected enabling benefit

< Generally provided by the requester. Formulate the expected enabling benefit. That is, the benefit the project will contribute to associated research activities on short and/or long term. How will this further enable research activities for the requester and others? >

Short-term benefit:

- Update of the atmospheric component of the EC-Earth model to cycle 38R1.
- Develop experience and document the integration OpenIFS into EC-Earth.

Long-term benefit:

- Replacing IFS with OpenIFS in EC-Earth will help to ensure the atmospheric component of EC-Earth is kept closer to the latest developments at ECMWF, and EC-Earth specific options become permanent parts of the OpenIFS
- OpenIFS is a code largely identical to IFS, but excluding components for weather forecast such as data assimilation. Moving to OpenIFS making it easier for researchers to work with the atmospheric component of EC-Earth.
- OpenIFS strives to be portable over a range of architectures.
- OpenIFS has a growing academic user group.
- Potentially simplify the licensing conditions of EC-Earth.

4. Impact of the research that the project is associated with

< Generally provided by the requester. Why is this enabling important? For example, describe how important the software/data is for your current and future research activity and for other national and international research activities. >

EC-Earth (<http://www.ec-earth.org/>) is a fully coupled global climate model being developed and used by a consortium of European partners currently lead by the Rossby Centre. The current model version (EC-Earth 3) is targeting a full-scale ESM including new components such as dynamic vegetation, a global carbon cycle and terrestrial C balance. EC-Earth 3 will be the primary model used for

the Swedish contributions to CMIP6.

CMIP projects generates a wealth of scientific value, in the form of insights in climate processes, model shortcomings, predictability of climate and future climate projections. CMIP6 will also provide a better basis for assessment of regional and local climate by downscaling of the global scale information to finer scale. The recent COordinated Regional climate Downscaling Experiment (CORDEX) is the primary example for regional downscaling of CMIP information. The combined results of CMIP lead to improved decision support, and allow for informed measures targeting climate change mitigation and adaptation.

Within the Swedish climate modeling community, research projects using EC-Earth will work along four primary scientific tracks:

1. Circulation, variability and decadal predictability;
2. Climate change future scenarios
3. Parameterization of unresolved scales;
4. Paleo-climate modelling;
5. Arctic climate change.

5. Why is SNIC assistance needed?

The proposed project is a technical development of the EC-Earth model and therefore outside the scope of the climate modeling scientific research. SNIC application experts have experience with code modifications of complex models such as EC-Earth.

< WHAT ARE WE HANDS-ON GOING TO DO IN THE PROJECT? AND HOW? >

6. Project objective

< Describe briefly the background and formulate the project objective, i.e. what is it intended that the project should do to achieve the expected enabling benefit? How are you going to deliver the requested enabling? >

OpenIFS

(<https://software.ecmwf.int/wiki/display/OIFS/OpenIFS+Home>) is an ECMWF led project which provides an easy-to-use, exportable version of the IFS (integrated forecast system). OpenIFS aims to develop and promote research, teaching and training on numerical weather prediction (NWP) and NWP-related topics with academic and research institutions.

This project aims to incorporate OpenIFS (c38R1) into an appropriate EC-Earth development branch and will be undertaken in collaboration with other developers within the EC-Earth consortium and with the OpenIFS developers at ECMWF.

This project is a technical development of EC-Earth and does not cover the scientific verification or tuning of output from the modified (EC-Earth/OpenIFS) model.

Deliverables:

Delivery no.	Description	Schedule
1	A functional version of EC-Earth3 including OpenIFS ready for code review by EC-Earth core developers.	31 May 2015
2	Documentation of the changes made on the EC-Earth development portal.	31 May 2015

7. Work plan and resource estimate

< Specify the required staff resources in PM and the time frame for the project. >

The project will be conducted during 2014-H2 and 2015-H1. NSC will spend up to 3 PM within this project. Person months will be carried by the 'Avancerat national Användarstöd' project.

Start date: November 2014

End date: 2015-05-31

Defined milestones (MS) and decision points (DP):

< Describe important review points in the form of milestones and decision points. >

Milestone/Decision point	Description	Date
DP1	Project plan approved	November 2014
MS1	Familiarization with OpenIFS (c38R1) and previous work related to the integration of earlier IFS cycles into EC-Earth.	November 2014
MS2 & DP2	Mid-way evaluation meeting including follow-up on	Jan/Feb 2015

MS3

coordination with other sites.
DP2 on distribution of
remaining tasks.

Finalize first version of code
and documentation.

May 2015

Responsibilities:

< Describe the responsibilities of the various project members and stakeholders. Who is responsible for what? And who decides what? >

- EC-Earth core developers will recommend to appropriate EC-Earth development branch to be used for this project (Contact: UF, KW, ME, SS).
- EC-Earth core developers will provide technical support including code review (Contact: UF, KW, ME, SS,).
- The implementation work will be a coordinated effort amongst EC-Earth consortium partners. (Contact: RD)
- NSC/SNIC will work with other EC-Earth developers on OpenIFS and EC-Earth code changes (Contact: Hamish).
- NSC/SNIC will ensure code changes are logged and documentation added to the EC-Earth development portal (Contact: Hamish).
- NSC/SNIC will organize a mid-point meeting to review progress and coordination of work (Contact: Hamish).

Communication and dialogue:

< Describe how the project members will keep each other updated throughout the project. Describe how results, decisions, project changes, etc. will be discussed and communicated. >

- E-mail contact as necessary throughout the project.
- Wiki/forums on the EC-Earth development portal will be used to document project progress and highlight issues.
- Project meetings organized if required during the project.
- Mid-point meeting (Jan/Feb 2015) to review progress and coordination.

Confidentiality requirements:

N/A

8. Approval

10/13/15

< The signatures of all parties confirm the validity of the project plan. The SNIC office can overrule this approval or require adjustments to the project plan, such as the amount of PMs that can be spent in the project. >

I agree to the objective, scope, and responsibilities described in this project plan:

Requester

For SNIC

Date:

Date:

Gunilla Svensson

Patrick Norman

Project responsible for SNIC

Date:

Hamish Struthers