

Configuration of CAM5.3, nudged to ERA-Interim reanalysis and related post-processing software

Project plan

1. Project organization

Requester

Name: Daniel Partridge
Title/position: Postdoctoral Researcher
Affiliation: Stockholm University, ACES
Phone: 0046 86747642
E-mail: dan.partridge@aces.su.se

Project responsible for SNIC

Name: Hamish Struthers
Title/position: Application expert
Affiliation: NSC, SNIC
Phone: 0732702419
E-mail: struthers@nsc.liu.se

Project manager

Name: Torben Rasmussen
Title/position: Application expert
Affiliation: NSC, SNIC
Phone: 013281494
E-mail: torbenr@nsc.liu.se

2. SNIC project name

LIU-2016-XXXX

3. Expected enabling benefit

Short-term benefit:

- Enable the generation of climate model output tailored for use in a comparative study of transport to the Arctic of short lived climate forcing agents. The aim is to publish this work in a high impact journal.

Long-term benefit:

- Gain experience in configuring and running the nudged configuration of CAM5
- Gain experience in generating HYSPLIT arl input files from NetCDF and GRIB model output

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

To date, no satisfactory methodology has been proposed to compare source-receptor analyses of long timeseries of atmospheric measurements taken at fixed measurements locations ('station data') with large scale model output.

This project supports a novel approach to comparing valuable source-receptor relationships derived from high-latitude station data with global climate models that include interactive aerosol modules. The methodology can be generalized to any region and atmospheric constituent and thus has the potential to strongly influence the field of large scale model evaluation.

5. Why is SNIC assistance needed?

The proposed project is a technical implementation/configuration of the CAM5.3 model and specific post-processing software. This work is outside the scope of the climate modeling scientific research. SNIC application experts have experience with CAM5.3.

6. Project objective

The project aims to enable the generation and reformatting of CAM5.3 model output (meteorological and aerosol variables) for use in a high impact study evaluating how well climate models simulate poleward transport of short lived climate forcing agents using a novel source-receptor methodology.

We will:

- Configure the CAM5.3 global atmospheric model to run in nudged mode, nudged by ERA-Interim reanalysis fields.
- Port post-processing software to SNIC resources (Triolith). This software is designed to reformat CAM output to arl format suitable for use with the HYSPLIT Lagrangian transport model.

Deliverables:

Delivery no.	Description	Schedule
1	End-to-end workflow implemented	October 2016
2	Documentation of CAM5.3 nudged configuration on SNIC docs	October 2016

7. Work plan and resource estimate

The project will be conducted during 2016-H2. NSC will spend up to 0.5 PM within this project. Person months will mostly be carried by the 'National Användarstöd' project.

Start date: 2016-07-01

End date: 2016-11-30

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

Milestone/Decision point	Description	Date
DP1	Project plan approved	July 2016
MS1	CAM5.3 code changes introduced and tested	October 2016
MS2	Post-processing software installed and tested	September 2016
MS3	Complete end-to-end workflow implemented and tested	October 2016

Responsibilities:

- Requester will obtain CAM5.3 code changes required for nudged simulations from collaborators at NCAR (USA).
- Requester will obtain ERA-Interim nudging data from collaborators at NCAR (USA).
- NSC/SNIC will configure CAM5.3 model.
- Requester will obtain post-processing scripts and software from collaborators at Oxford University/ECMWF.
- NSC/SNIC will assist in porting post-processing software to SNIC resources.

Communication and dialogue:

- E-mail contact as necessary throughout the project.
- Face-2-face meetings to work on code/implementation. These can coincide with regular NSC AE visits to SU.

Confidentiality requirements:

N/A

8. Approval

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

Requester**For SNIC**

Date: _____

Date: _____

Daniel Partridge**Project responsible for SNIC**

Date: _____

Hamish Struthers