

# **PRISM Support Initiative (PSI)**



## **PRISM Support Initiative Activity Report January-August 2005**

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PSI Management Report 2

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## 1 Overview

This document gives an overview of the PSI Team activities for the period January to August 2005.

An important event during this period was the PRISM Steering Board meeting on May 30th 2005, where the PSI Structure document and the PRISM team 3-year activity plan were presented and discussed. Following this meeting, the PRISM team was reorganized into 5 workgroups (WGs):

- Coupler and I/O; lead: S. Valcke, CERFACS.
- Standard Compiling and Running Environments (SCE &SRE); lead: S. Legutke, MPI-M&D.
- Graphical User Interface and Web Services System (GUI & WSS); lead: C. Larsson, ECMWF.
- Standard Version Control Environment (SVCE); lead: M. Carter, UK MetOffice.
- Data management, Diagnostics, and visualisation; lead: J. Wegner, MPI-M&D

The activities of these WGs and those of the PRISM User Group (PUG, lead by R. Budich, MPI) cover the maintenance, support and development of the different PRISM software tools; they are described in more detail in the next sections.

A PSI core group, gathering the PRISM Team General Coordinator (E. Guilyardi), the PRISM Team Technical Coordinator (S. Valcke), the lead of each WG and at least one representative per partner was formed. The PSI core group, or part of this group, joined for monthly teleconferences to ensure the general coordination of the PSI activities; the minutes of these teleconferences can be found at <http://prism.enes.org/sustained>. The following actions were organized:

- **Wiki and e-mail lists**

A PSI wiki and e-mail lists were set-up to facilitate day-to-day interaction within the PSI PT (see <http://www.cgam.nerc.ac.uk/pmwiki/PRISM/>)

- **PRISM Web Site**

A group composed of R. Hatcher (CGAM), C. Larsson (ECMWF), N. Wedi (ECMWF), and E. Guilyardi (CNRS) took over the rebuilding of the PRISM web site, based on the work already done by R. Budich (MPI). This web site is planned to be ready during the first week of September. It was decided that the web site address will remain the present one (<http://www.prism.enes.org>). For more details, see <http://www.cgam.nerc.ac.uk/pmwiki/PRISM/index.php/Main/PRISMWebSite>).

- **PRISM distribution role**

Some discussion took place on the type of software that PRISM should distribute. It was concluded that the PRISM Repository should distribute to the public only PRISM software and toy models. However, frozen versions of real assembled coupled models for which the PRISM Team (PT) gave support should be available for the PT on the PRISM Repository for testing.

- **User Survey**

A User Survey is being organized to gather the experience of the users that have already used or tested the PRISM software, their ideas and requirements for future evolution. A contract, funded by CEA and CNRS, was signed with Graham Riley and Rupert Ford from Manchester Informatics Ltd to realize this survey. A questionnaire was written and reviewed by the PSI core group and two test sites (UK Met Office and MPI-M&D). The final questionnaire will be sent to about 20 different groups at the beginning of September. 3 to 5 groups will be visited for further investigation. The results of the User Survey will be presented at the PRISM Community meeting in November. The PRISM team 3-year activity plan will be revisited to follow the conclusions of the User Survey.

- **2005 PRISM Community meeting**

The 2005 PRISM Community meeting is being organized in CERFACS, Toulouse, on November 16th and 17th. The objectives of the meeting are to:

- present the status of PRISM software developments
- present the PSI new support structure to the community

- gather experience and expectations from the Community via discussions on PRISM standards and developments, and presentation of the results of the PRISM User Survey currently underway.

A first announcement was posted in July and the second announcement will be done in September.

- **Visit to the UK Met Office**

A visit to the UK MetOffice in Exeter is being organized on September 26th to 30th to review the Met Office FCM project. The Met Office FCM includes a compiling environment and software to manage the development process of a model code and related scientific applications. The visit of V. Gayler (MPI-M&D), M.-A. Foujols (IPSL), and S. Valcke (CERFACS) will be covered by the MetOffice; S. Legutke (MPI-M&D) and C. Levy (IPSL) will also participate. The NEMO ocean code has been successfully included in FCM and some preparatory work on how to include the OASIS4 sources into FCM has been done at the Met Office.

- **Fundings**

- The call for “Exploratory Workshops 2006 - European Science Foundation (ESF)” was missed (deadline: May 1st); making a proposal will be considered next year.
- It was decided not to make any proposal for the FP6 IST, as the fit does not seem to be good enough.
- FP7 looks more promising; however, lobbying is needed to ensure that there will be money for software infrastructure projects. We expect the first FP7 call for end of 2006 - early 2007.
- CGAM obtained funding for the GENIEfy project, resulting in 24 person-months to work on PRISM-Flume interaction.
- S. Valcke is working on a proposal to the Agence Nationale pour la Recherche (ANR, France) with Olivier Marti from CEA (12 pm for OASIS4 development and 24 pm for OASIS4 User Support); the deadline is 12/09/2005.

- **Interaction with other projects**

- GO-ESSP meeting: Joerg Wegner (MPI - M&D) attended the GO-ESSP meeting that took place in BADC on June 6th to 8th. Of particular interest for PRISM, the future of the netCDF CF convention was discussed. For more details, see [http://data1.gfdl.noaa.gov/~ck/go-essp/presentations/06\\_06\\_05/meeting\\_agenda.html](http://data1.gfdl.noaa.gov/~ck/go-essp/presentations/06_06_05/meeting_agenda.html)
- EU FP6 GEMS project: S. Legutke (MPI - M&D) attended the GEMS kick-off meeting in Hamburg in July; it was decided to hold a OASIS4 workshop on October 17-18 at ECMWF; S. Legutke, R. Redler and S. Valcke will attend this workshop.
- ESMF community meeting took place in Cambridge (USA) on July 20-22. R. Redler attended the community and advisory board meetings. A summary of the meeting will be posted shortly at <http://www.cgam.nerc.ac.uk/pmwiki/PRISM/index.php/Main/PSICommunity>

## 2 Coupler and I/O

### 2.1 OASIS3

The maintenance and user support for OASIS3 was provided as usual. Since January, about ten different groups (from France, Italy, UK, Canada, USA, Japan, Australia, China) contacted us to obtain the latest OASIS3 version. Active user support was provided in particular to Meteorological Service of Canada in the framework of a collaboration with CERFACS.

Few bug fixes have been added since the last OASIS3 release. A new official version should be delivered before the end of the year.

## 2.2 OASIS4

Since its first official release in November 2004, the development and improvement of the OASIS4 coupler went on. Active user support was also provided to the few groups that started using OASIS4. The tasks realised are the following:

- Bug fixes, optimisation, and validation of bilinear and trilinear interpolation (masked point treatment, missing values, etc.).
- Support and validation of 2D bicubic interpolation (16-point and gradient methods).
- Partial support of Reduced Gaussian grids:
  - all available types of interpolation for fields going onto Gaussian reduced grid;
  - nearest neighbour interpolation of fields coming from a Gaussian reduced grid;
  - direct transfer of fields between two components working on identical (Reduced Gaussian) grids where no interpolation is needed.
- Bug fix for remapping/interpolation search for cyclic source grids.
- Support of non-gridded data (not fully validated yet).
- Support for components which include processes that do not have any grid defined.
- Support and validation of applications running more than one component concurrently.
- Strict use of MPI1.2 standard when option PSMILE\_WITH\_MPI1 is activated.
- Support of I/O parallel mode using PARALLEL NetCDF.
- Revised PMIOD and SMIOC XML file structure in agreement with GUI and WSS working group.
- Testing and various debugging using toy coupled models.
- Adaptation of OASIS4 sources to PRISM Standard Compiling Environment (not released yet).
- Use of pdflatex for documentation.
- Active support for the GEMS project, via e-mails.
- Active support for SMHI (coupling of SMHI regional Arctic models), via e-mail and visit of R. Redler to SMHI.
- Active support for IFM-GEOMAR (Kiel) (using OASIS4 with pseudo-models to interpolate high-resolution fields).
- Active support for UK MetOffice via e-mail.
- Presentation at the EGU meeting 2005.

## 3 Standard Compiling and Running Environments (SCE & SRE)

### 3.1 User support

- Support for PRISM users was given to MPI/Met for ECHAM5/MPIOM, IPSL for NEMO adaptation, MPI-Jena for PISCES
- Release of PRISM version prism\_2-4

### 3.2 Model adaptation

- ECHAM5/MPIOM/PISCES coupled combinations were adapted to the SCE/SRE and tested on the DKRZ platforms
- ECHAM5 was adapted to the SCE/SRE as stand-alone model
- IPSL NEMO model was adapted to the SCE

- CLM, the German “community” regional model was adapted to the SCE and SRE as the first regional model

### 3.3 SCE & SRE upgrade

- A script was developed to test all PRISM models and model combinations (including oasis3) within the SCE & SRE.
- A script for launching of an html based browser for the PRISM component models was written; the work is continued to include optional browsing of preprocessed models.
- Upgrade of SCE prerequisite checker (needed for NEMO and parallel compilation).
- The SRE now includes a task for preprocessing (e.g. in order to provide forcing data for regional models).
- Parallel compiling was included into the SCE and tested with all component models available; it will be available in the next PRISM software release and will be documented in the next edition of the SCE handbook.
- The development of a generic Linux WS version of the SCE & SRE was started.
- A generic Sun WS version of the SCE & SRE is in work.

### 3.4 Dissemination and outreach

- Workshop at DKRZ to introduce design/usage of SCE/SRE including hands-on sessions (Feb 23, 2005)
- Design/usage of SCE/SRE was introduced to a Finish visitor group at MPI-Met (March 2, 2005).
- Design/usage of SCE/SRE was presented at the EGU meeting 2005.
- Design/usage of SCE/SRE was presented in a seminary at the FU Berlin (June 16, 2005).

### 3.5 Projects

- GEMS: the support for the MOZART group of the GRG subproject of the GEMS project was started.
- COSMOS: we participated in the workshop held in May.
- IPCC: regional experiments were set up within the SCE & SRE

## 4 Graphical User Interface and Web Services System

### 4.1 PMIOD/SMIOC

A revised version of the PMIOD schema was agreed upon with the Coupler WG and will be tested during autumn with the OASIS4 coupler. The new version contains typing information for variables that is used by the GUI to create variables that are not defined by the model but are valid coupler directives. The cross analysis of the SMIOC/PMIOD schemas (in the GUI) have been eliminated and thereby simplifying the approach by having all information in a single PMIOD schema.

### 4.2 GUI

The GUI software has been updated to fully integrate the software developments during the PRISM project into the main prepIFS code base, including the operational prepIFS code, WebCDP, and the OASIS-4

module. The merged software forms the base of further developments and is planned to be available (operationally) in Autumn 2005.

The prepIFS GUI has been further developed, including new visualization options, new layout features, more visual feedback on changed configurations, and additional features in support of the GEMS project. Further, we have started to revise the documentation of the GUI and some bugfixes have been introduced. Research started on the design of extension modules and service provision/discovery to new modules.

## 5 Standard Version Control Environment

- The Met Office analysis that Subversion should be chosen as the Version Control tool of choice for the PSI has been agreed upon and the host site (M&D) has agreed to install this as the primary version control server.
- The Met Office has successfully developed a process and supporting scripts around Subversion that is particularly aimed at the software development process and the management of developed scientific configurations (rather than the lodging of released versions of PSI codes). This development, at the Met Office, is the Version Control part of the Met Office FCM project that will also include a new compile system. Here we call the Version Control part of the project FCM(VC). This project has delivered documentation and prototype software by end July 2005 as promised. The development of naming conventions is not yet complete enough to release to the PSI for review, but has gone through one round of iteration at the Met Office.
- It is planned to replace the cvs server on bedano by a Subversion server located in Hamburg.
  - The bedano server is mirrored at M&D. This assures the availability of the PRISM software repository at all times. As long as the bedano cvs server is running, remote access is only possible to bedano.
  - A computer was dedicated to host the PSI subversion repository.
  - Subversion was installed on that machine. Remote access is controlled by an apache server.
  - A test repository was installed for learning and testing subversion. The software seems to satisfy our needs.
  - The configuration of the apache server to control access rights of different users for the different projects remains to be done. The PRISM repository cannot be transferred to M&D until this has happened.
- Some high level discussions on the policy for software access have taken place, in particular during the 9 June 2005 teleconference. It was decided that the PSI team will distribute only the PRISM software (coupler, SCE/SRE) and this has no access limitations. Other software (e.g. coupled models) is freely accessible to PRISM team members for testing purposes. Coupled models interfaced to the PRISM software may be delivered to other people if they have met the license requirements for all components of the coupled model. These license requirements are defined by the institutes owning the component model.

## 6 Data management, Diagnostics, and Visualisation

### 6.1 Data

- M&D developed concepts for new structures of data archiving. Main issue is the integration of NetCDF files to the data structure of the CERA data base. A split of the header information, grid information and data will allow a time series, variable dependent storage of NetCDF datasets like grib data. New programs compose any length of a time series and will be able to select regions from global data sets "on the fly" and store them in CF compliant NetCDF files.

- First discussions about a data workshop in Hamburg Jan/Feb 06 took place. The following issues should be on the agenda: data processing, structure of data archiving, usage of NetCDF/CF, etc.

## 6.2 SRE Pre- and Post- processing

- Work was done on LE-Graphics for tuning and bug fixing. Integration of LE-Graphics to SRE is still in a test phase due to several small problems with the CDAT - LE Graphics interface.
- Also in progress is the change of LE-Graphics stand-alone package from a one-file script to a module library.
- We continue to support the PINGO and cdo postprocessing packages for GRIB and NetCDF data and advertise CDAT but the discussions about CDAT are not finished yet.

## 7 PRISM User Group (PUG)

The PRISM User Group PUG has the goal to establish strong links between the PSI team and the users of the PRISM tools to enable the exchange of input and feedback between these two entities.

So far the activities of the group have been rather limited since the establishment of the core team and the different means for cooperation between the participating groups have drawn a lot of attention. Most of the time spent for the PUG went into the establishment of the requirements for the User Survey. This process has now, in close cooperation with the core team, been finished, the User Survey is on it's way.

The next action item will now be the identification of the core writers for the paper "PUG: Using the PRISM framework: Experiences and Requirements", which will have to be written with the input from the user survey. A report of the first user meeting to be held in November will also have to be produced.