



The PRISM Standard Compile and Runtime Environments

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A major objective of PRISM (Project for Integrated Earth System Modelling) was the establishment of a common infrastructure for the European Earth System modelling community. Within this infrastructure the Standard Compile Environment (SCE) and the Standard Running Environment (SRE) are playing a central role. They define standards for most aspects of Earth System modelling experiments, beginning with the source code management and configuration of the component models and ending with the post-processing and visualisation of experiment results.

Because of the large number of models and platforms used within the European climate modelling community, and taking into consideration the quick development of both software and hardware, the SCE and SRE are designed in a flexible and open way. The environments are easily extendable to accommodate new models and platforms.

An important aspect of the standard environments is a well defined Unix directory tree for component models (including the coupler), libraries, compiler output and the compiling and runtime utilities. The structure of the model source code directory tree is kept as simple as possible. Models adapted to this structure can be compiled and executed with the portable tools provided.

Scripts for model compilation and execution are specific for the component model, the coupled model constellation and the platform the model is supposed to run on. PRISM does not distribute ready-to-use scripts, but provides a comprehensive set of utilities to generate standardised scripts specific to the model and to the user's platform. The scripts are assembled from a base of small files, called header files, containing script code fragments. These fragments are specific for a model or a platform or both, or they can be used for all models on all platforms. The method allows for easy adaptation to new coupled models or new platforms as model and site dependent sections are clearly

identified. Besides, maintenance is small, as there is little redundant code.

The scripts generated within the SCE and SRE (i.e. scripts for model compilation, integration, data pre- or post-processing, visualisation, and archiving of output data) give a common look&feel for every model adapted to the PRISM infrastructure. This minimises the effort to setup and run coupled model experiments. The standards also help designing and running new coupled models and facilitate porting activities to new platforms. Cooperation between different centres and scientists is facilitated.

Once a model is integrated in the PRISM system it profits from easy portability to all other PRISM platform, support from the PRISM Team and from future updates of the system.

Several EU and other projects (e.g. ENSEMBLES, GEMS, COSMOS) as well as research centres (e.g. IPSL, MPI-Met, M&D) plan to exploit the use of the PRISM infrastructure including the SCE and SRE for their activities.