

European Earth System Modelling Infrastructure Strategy

ENES is holding a community meeting in Reading (UK) on the 25th, 26th and 27th of October, supported by IS-ENES2 to discuss the future infrastructure strategy for earth system modelling. The meeting is expected to run from midday Tuesday, to mid-day Thursday.

In 2012, the European Network for Earth System Modelling (ENES) published an “Infrastructure Strategy for the European Earth System Modelling Community” (Mitchell et.al., 2012¹) based on meetings held in 2010 and 2011. This strategy addressed the underlying needs for the delivery of the next decade of European research on seasonal to centennial climate prediction. It envisaged a drive towards convective scale global modelling, with improved initialisation and larger ensemble sizes. At the same time, attribution was expected to be addressed with enhanced paleo-climate modelling, and more attention would be focused on climate predictability on regional scales.

The key recommendations were to:

1. Provide a blend of high-performance computing facilities ranging from national machines to a world-class computing facility suitable for climate applications, which, given the workload anticipated, may well have to be dedicated to climate simulations.
2. Accelerate the preparation for exascale computing, e.g. by establishing closer links to PRACE and by developing new algorithms for massively parallel many-core computing.
3. Ensure data from climate simulations are easily available and well documented, especially for the climate impacts community.
4. Build a physical network connecting national archives with transfer capacities exceeding Tbits/sec.
5. Strengthen the European expertise in climate science and computing to enable the long term vision to be realized.

Five years on, ENES is convening a meeting to address a “mid-term” update of this strategy. Since 2010-2012 there has been much progress, often with support from IS-ENES2². In particular, ideas that have been taken forward range from the establishment of a European Centre of Excellence in the Simulation of Weather and Climate³ and the European engagement and leadership in the Earth System Grid Federation providing access to climate data, to the proposal of a European Programme on Extreme Computing and Climate⁴. However, it is timely to take stock of how much progress, and whether or not these are still the right objectives – both scientifically, and in terms of the infrastructure. An updated strategy will also be important to address the issue of how to sustain the European research infrastructure for climate modelling.

The outcome of this meeting should be both the input for an update of the infrastructure strategy, and community agreement on which new or existing initiatives should be prioritised to address the science requirements of decadal to centennial prediction (including model evaluation, process understanding, and perhaps whether the scope should be widened to include seasonal prediction).

A registration website will be made available shortly. In the mean time, interested participants should hold the dates.

Sylvie Joussaume (ENES Chair and IS-ENES2 coordinator)

Bryan Lawrence (Meeting Organiser)

¹ [https://is.enes.org/archive/dissemination-documents-about-is-enes/dissemination-activities/ENES foresight.pdf](https://is.enes.org/archive/dissemination-documents-about-is-enes/dissemination-activities/ENES_foresight.pdf)

² <http://is-enes.org>

³ <https://www.esiwace.eu/>

⁴ <https://ec.europa.eu/futurium/en/content/flagship-european-programme-extreme-computing-and-climate>