**First announcement : "High-resolution ocean modelling for coupled seamless predictions"**

**13 – 15 April 2016, Met Office, Exeter, UK**

**Organisers: David Ferreira (University of Reading), Adrian New (National Oceanography Centre ), Mike Bell, Malcolm Roberts, Helene Hewitt (Met Office)**

**Scope:** the scientific development of ocean models and global coupled prediction systems at resolutions of order $1/12^{o}$ for seasonal to decadal prediction and short-range weather forecasting.

**Objectives/themes:**

- Identification of expected improvements to processes and performance
- Development of coherent designs and collaborations for experiments and diagnostics
- Clarification of the key choices for ocean model configurations and parametrisations

**Outcomes**: A short "white" paper covering the issues and recommendations will be submitted for publication following the meeting.

**Format**: For each objective/theme there will be invited and selected oral presentations, a poster session and a discussion of issues with chair and moderators.

**Session 1**: Why is high resolution required? What are the expected improvements to processes and science outcomes (David Ferreira, Arnaud Czaja, David Marshall)

- What processes are we trying to resolve (better) and why are they important ?
- What do we expect the impacts to be on seasonal means (e.g. in the Southern Ocean), the dominant modes of natural variability (e.g. ENSO, monsoons and diurnal cycles) or key events (e.g. the warming hiatus)

**Session 2**: Development of coherent designs and collaborations for experiments (Helene Hewitt, Baylor Fox-Kemper, Geoff Vallis)

- How should we initialize the coupled models and diagnose their drifts?
- How can/should we assess/validate high-resolution ocean model simulations?
- How do we design experiments to assess the impact on specific phenomena (e.g. MJO, monsoon, TIW, opening of polynyas)

**Session 3**: What are the numerical, HPC and parametrisation challenges of high resolution (Adrian New, Julie McLean, Julien le Sommer)

It will not be possible to do many experiments with the high-resolution coupled system and the lengths of the integrations will be limited. How do we use our experience to help us set things up "right first time"?

- Which aspects of the models are key to performance (e.g. mixed layers, representation of overflows, control of near grid-scale mixing)
- What are the main challenges and limitations we face exploiting modern HPCs (data management issues)
- How should we choose the atmosphere-ocean resolution ratio and ensure the fidelity of atmosphere-ice-ocean coupling