

WP 02

WP 02 attendees at this meeting:

Torben Koenigk (SMHI), Eleftheria Exarchou (BSC), Frank Selten (KNMI), Sybren Drijfhout, (KNMI), Retish Senan (ECMWF), Remko Klaver (KNMI), Panos Athanasiadis (CmCC), Marie Estelle Demory (UREAD), Benoir Vanniere (UREAD), Louis Philippe Caron (BSC), Chiara Cagnazzo (CNR), Dian Putrasahan (MPI), Jeremy Grist (NOC), David Docquier (UCL)

Science issues (A)

- AMOC/ AMO – causes (surface heat fluxes, winds, freshwater, deep convection), consequences (heat transports to the north), atmospheric heat transport, local and remote drivers
- Surface gradients, position of Gulf Stream/ NAC (in NE Atlantic) —> effect on storm tracks, Europe
- air-sea interactions —> effects on atmosphere and from atmosphere on air-sea interactions
- Ocean heat content, ocean heat uptake and air-sea fluxes
- Linkages NA-Arctic (both directions, mass, freshwater, heat fluxes and impacts)
- Sea ice – variations, trends, ice exports, interactions with lower latitudes

Science issues (B)

- Interannual to decadal variations (but runs are short), related to WP5
- Storm tracks, blocking
- Atmospheric moisture transport
- Tropical cyclones and extra-tropical transitions + teleconnections
- Deep ocean bias and drifts
- Effects on Europe!

Technical issues

Development of diagnostics:

Issues:

- 3-d fields, particularly HR on different ocean grids,

Solution: calculate 3-d diagnostics separated for each model on original grids.

- cdf-tools for NEMO but no comparable tool for AWI, MPI-model

- certain data (e.g. daily, sub-daily in pre-PRIMAVERA) only available in a single/few models)

- eddy transports need daily data for ocean

- 3-d data atmosphere, sub-daily (6-hourly), e.g. needed 1000mb, 5-vertical levels below 500mb

→ Calculate diagnostics that needs high-frequency temporal data only for models where the data exists.

- homogenous masks, mesh descriptions, basin-masks, land masks

- user support for JASMIN, how to install needed tools, modules

- Data availability of Stream 1, WP3/experiments (for D2.2, D2.3)

Timescales

- What are the main cut off dates or time periods for your WP (over the next 12 months)?
- D2.2 (M24) relies on Stream 1 coupled and AMIP simulations, needed by summer (use pre-PRIMAVERA data until then and wrap up)
- D2.3 (M28) relies on input from improvements and sensitivity experiments in WP3, needed late summer/ early autumn.
- Deadline for development of high and low-priority metrics and diagnostic together with WP1 (Nov 2016/ Nov. 2017)
- WP5 simulations available around month 24.

External science interactions

- EGU: SMHI, UCL, KNMI, CMCC, UREAD, BSC
- IUGG
- Common papers:
 - Paper based on D2.1 and pre-PRIMAVERA runs (or topic-papers first?) Impact of high resolution on climate processes of the North Atlantic-Arctic region?
 - Specific papers: - TC-paper (UREAD, MetOffice, BSC)
 - 1 paper per topic (drafted or submitted before summer)
 - AMOC+related?
 - Sea ice and linkages to lower latitudes?

Deliverables and Milestones over the next year

- **D2.1** Assessment of the **benefits of increased resolution on the North Atlantic ocean** dynamics and processes and the **Arctic sea ice** conditions and their robustness across the pre-PRIMAVERA multi-model ensemble listed in milestone MS1 (**M15, lead UCL**)
- **D2.2** Quantification of the **benefits of increased resolution in the atmosphere only versus in the coupled system**, as well as their robustness across **WP6 Stream 1 simulations**, for processes which impact European weather and climate such as atmospheric blocking, ocean-sea ice-atmosphere interactions in the Arctic and for tropical cyclones and their extratropical transition (**M24, lead ECMWF**)
- **D2.3** Based on **WP2 findings and initial sensitivity experiments in WP3**, quantification of the **relative merits of increased resolution** and model developments on the North Atlantic, Arctic, Pacific and tropical climates and their robustness across the PRIMAVERA models to provide recommendations to WP6 for the Stream 2 design (**M28, lead CMCC**)
- **MS6** Plan and tools for co-ordinated process-based analysis of the core-simulations (WP1, WP2, **M12, lead SMHI**) – will be submitted after GA
- **MS3** Assess performance of metrics package for Stream 1 and WP3 integrations (WP1, 2, 3, **M24, lead UREAD**)

