SPECIAL PROJECT PROGRESS REPORT

Progress Reports should be 2 to 10 pages in length, depending on importance of the project. All the following mandatory information needs to be provided.

Reporting year	2018
Project Title:	Impact of model Resolution on Ocean Dynamics (IROD)
Computer Project Account:	spitdavi
Principal Investigator(s):	Paolo Davini
Affiliation:	Istituto di Scienza dell'Atmosfera e del Clima, Consiglio Nazionale delle Ricerche (CNR-ISAC)
Name of ECMWF scientist(s) collaborating to the project (if applicable)	……………………………………………………… ………………………………………………………
Start date of the project:	01/01/2018
Expected end date:	31/12/2019

Computer resources allocated/used for the current year and the previous one
(if applicable)
Please answer for all project resources

		Previous year		Current year	
		Allocated	Used	Allocated	Used
High Performance Computing Facility	(units)	0	0	29.5 millions	0.16 millions
Data storage capacity	(Gbytes)	0	0	80,000	0

Summary of project objectives
(10 lines max)

This 2-year special project aims at investigating the impact of both atmospheric and oceanic model resolution on the ocean circulation and dynamics. This will be carried out analysing the Tropical Pacific Ocean and the North Atlantic Ocean, which are the most relevant oceanic regions affecting the global climate. To this aim we will perform both high (T511L91 ORCA025L75) and standard (T255L91 ORCA1L75) resolution coupled simulations with the EC-Earth Global Climate Model (Hazeleger et al. 2010) following the HighResMIP protocol (Haarsma et al. 2016).

Summary of problems encountered (if any)
(20 lines max)

The initial conditions needed for the starting of the simulations (i.e. long term spin-up) has been delayed due to a failure on the HPC where the experiments have been running. They have been released at the beginning of June, allowing the integrations immediately.

Summary of results of the current year (from July of previous year to June of current year)

The project started the 01/01/2018. In this first months the most of the work was devoted to the setup of the EC-Earth global climate model. Both the standard resolution and high-resolution configurations has been compiled on the ECMWF CCA platform. Test runs have successfully completed.
A correct scaling of the EC-Earth at both resolution allowed the best ratio for cores for both the ocean and atmosphere. A supplementary optimization has been possible due to the recent update of the EC-Earth model which now includes ELPiN (Tinto et al, 2017), a basic tool that allows for the correct reparation of the cores in the parallelization procedure of the NEMO oceanic model. This excludes has the power of excluding the cores on land allowing for a significant reduction of number of cores needed achieving the same walltime performance.
The model is now running correctly at both high and standard resolution. A few details including the postprocessing and diagnostic routines has been installed as well (e.g. the Barakuda tool). The suite of programs installed has been prepared in order to minimize the human intervention during the phase of production that will start in the upcoming weeks.

List of publications/reports from the project with complete references

None – The experiments are still running.

Summary of plans for the continuation of the project
In the next months we plan to run the expected integrations starting from the high resolution CTRL-1950 that will be the most expensive in both resources and walltime. In the meanwhile, we will run the standard resolution CTRL-1950.