SPECIAL PROJECT PROGRESS REPORT

All the following mandatory information needs to be provided. The length should *reflect the complexity and duration* of the project.

Reporting year

2023

Project Title:

Investigations of climate change in post-CMIP6 EC-Earth3 simulations over the Mediterranean climate regions

Computer Project Account:

SPITCHER

Principal Investigator(s):

Annalisa Cherchi
(Paolo Davini, Valerio Lembo, Susanna Corti, Jost von Hardenberg, Federico Fabiano, Virna Meccia, Alessio Bellucci, Giuseppe Zappa)

Affiliation:

CNR-ISAC

Name of ECMWF scientist(s) collaborating to the project
(if applicable)

N/A

Start date of the project:

01/01/2023

Expected end date:

31/12/2025

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)	n/a	n/a	4000000	234584
Data storage capacity	(Gbytes)	n/a	n/a	13240	188

Summary of project objectives (10 lines max)

The objective of this special project is to investigate the climate change response over the Mediterranean climate regions (MCRs), particularly sensitive and vulnerable to the process of subtropical drying and expansion, using the post-CMIP6 version of EC-Earth3 and considering newly available climate scenarios with the most recent climate policies.

Summary of problems encountered (10 lines max)

Nothing specific to report here

Summary of plans for the continuation of the project (10 lines max)

To complete the project and achieve the objectives we first identified a roadmap of simulations to perform. The set of planned experiments will consist of off-line (land-only and atmosphere-only) simulations, and of fully coupled historical and scenarios experiments. The full set of experiments will be analysed to identify differences in the climate response over the Mediterranean climate regions across different scenarios, investigating the attribution of changes in the occurrence of extreme events and shifts in MCRs to different global warming levels and assessing the effect of realizing the Paris Agreement vs. overshooting the global warming level targets. Dominant circulation patterns related to extreme events in MCRs will be identified, evaluating changes in their occurrence comparing the different scenarios considered.

List of publications/reports from the project with complete references

Not available yet. The planned simulation will start in the following weeks/months.

Summary of results

If submitted **during the first project year**, please summarise the results achieved during the period from the project start to June of the current year. A few paragraphs might be sufficient. If submitted **during the second project year**, this summary should be more detailed and cover the period from the project start. The length, at most 8 pages, should reflect the complexity of the project. Alternatively, it could be replaced by a short summary plus an existing scientific report on the project attached to this document. If submitted **during the third project year**, please summarise the results achieved during the period from July of the previous year to June of the current year. A few paragraphs might be sufficient.

So far, we mostly worked on the setup of the model and scripting configuration. In 2022 the EC-Earth global climate model experienced a huge number of updates since the version that has been used for the CMIP6 simulations. We started to configure and run a few experiments with the most updated GCM version mostly as testbed to verify the configuration and the workflow setup.