

EMI R&D 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 2026

Project Title: Future droughts in Mediterranean climate regions

Computer Project Account: SPITCHER

Principal Investigator(s): Annalisa Cherchi (Andrea Alessandri, Marco Possega, Vincenzo Senigalliesi, Giulia Salmaso)

Affiliation: CNR-ISAC

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

Start date of the project: 01/01/2026

Expected end date: 31/12/2027

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	(SBU)			24500000	2545128
Data storage capacity	(Gbytes)			53400	2670

Summary of project objectives (10 lines max)

The project aims to assess how droughts in Mediterranean climate regions (MCRs) are likely to evolve under the latest future climate scenarios and policies. It focuses on understanding projected increases in frequency and severity of droughts, using the updated EC-Earth model within the CMIP7 framework. The ultimate goal is to improve knowledge of aridification processes and their drivers, in order to support effective climate adaptation policies for MCRs.

Summary of problems encountered (10 lines max)

Nothing specific to report here at this stage

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

The project will continue as planned, starting from the recently initiated historical simulation (1850–2021) with CMIP7 forcing. This run will provide the baseline for comparison with three, hopefully five, future scenario simulations (2022–2100) spanning low, medium, and high emission pathways. Once completed the experiments, the analysis will focus on differences in climate response across scenarios over Mediterranean climate regions. Particular attention will be given to changes in drought occurrence, intensity, duration, and seasonality using selected drought indices. The study will also investigate persistence, recurrence, and potential abrupt transitions in drought behavior. Finally, results could be compared with CMIP6 SSP scenarios to assess consistency and sensitivity to updated emission pathways.

List of publications/reports from the project with complete references

Not available yet. The planned simulation just started and will continue in the coming weeks

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 worked on the setup of the model and scripting configuration. CMIP7 setup and forcing has been implemented for EC-Earth3-ESM-1. This is the version of the model we are using and that we plan to use in the following months. We are still working on the configuration and workflow setup to proceed with the planned simulations. As testbed an historical simulation just started.