

REQUEST FOR ADDITIONAL RESOURCES IN THE CURRENT YEAR FOR AN EXISTING SPECIAL PROJECT

Please email the completed form to special_projects@ecmwf.int.

MEMBER STATE:ITALY.....

Principal Investigator¹:Stefano Federico...(user cm4).....

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Other researchers: Claudio Transerici (account cmn).....

Project title: Study of different configurations of the RAMS model for precipitation and lightning forecast over Italy at high horizontal resolution.

Project account: SPITFEDE _

Additional computer resources requested for	2020
High Performance Computing Facility (units)	3,000,000
Data storage capacity (total) (Gbytes)	3000

¹ The Principal Investigator is the contact person for this Special Project

Continue overleaf

Technical reasons and scientific justifications why additional resources are needed

During this project, the best setting of the meteorological model RAMS@ISAC with lightning data assimilation was found for Italy at 3km horizontal resolution. In this setting, the lightning is assimilated from the lifting condensation level to the -25°C isotherm. It is worth remembering that this system is made to deliver very short term forecast (0-3h), even if a recent research, developed in the framework of this special project, shows that the setting found for the model is useful at least up to 6h forecast.

Now, while the objectives of this project were achieved, it would be interesting to test the model in a real-time context, especially considering that the fall season approaching is characterized by heavy rainfall events in the Mediterranean.

For this purpose, 3 million of SBU units are required to simulate the months from September (the remaining part) to December.

Each day, 8 VSF (Very short-term forecasts) of 10 hours simulation time each will be run over Italy. Each run is composed by 6h spin-up time, when lightning is assimilated, and of a 4h free-forecast (1 hour more than the usual setting, considering the results of recent studies). Each run takes 1.5 hours of computing time on cca using 108 cores (3 nodes).

The simulations will be stored on ECFS and the model output will be saved every 1h to consider in more detail the most intense phases of the storm. This justify the request for additional 3 TB on ECFS.