

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

Please email the completed form to [special\\_projects@ecmwf.int](mailto:special_projects@ecmwf.int).

**MEMBER STATE:** .....ITALY.....

**Principal Investigator<sup>1</sup>:** .....Stefano Federico.....

**Affiliation:** .....ISAC-CNR (Institute for Atmospheric Sciences and Climate - National Research Council).....  
.....

**Address:** .....  
Via del Fosso del Cavaliere 100, 00133 Rome  
.....

**Other researchers:** .....Claudio Transerici.....  
.....

**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	2019
High Performance Computing Facility (units)	2,500,000
Data storage capacity (total) (Gbytes)	/

*Continue overleaf*

<sup>1</sup> The Principal Investigator is the contact person for this Special Project

## **Technical reasons and scientific justifications why additional resources are needed**

During the year 2019, there was the need to explore the performance of lightning data assimilation for a long period of time (1 year) and to evaluate this performance for the Very-Short-term Forecast (VSF) of precipitation (3h) compared to the control run, without lightning data assimilation. In this project, the model performance was assessed for twenty cases study of HyMeX-SOP1 (Hydrological cycle in the Mediterranean Experiment – First Special Observing Period) showing good result for very short-term forecast of the precipitation field when lightning data assimilation is performed. Different model configurations were explored and an optimal setting of RAMS@ISAC was found. The HyMeX-SOP1 period, however, occurred in fall 2012 (occurring from 6 September to 5 November) and it is important to evaluate the RAMS@ISAC performance, with or without lightning data assimilation, for different seasons.

A numerical experiment was set-up for this purpose. The RAMS@ISAC is run with 3km horizontal resolution over Italy and with 42 vertical levels for this experiment. The simulation of a whole day (8 VSF of 3 h each) takes 7.500 SBU. Considering that two simulations must be taken for each day a total of 15.000 SBU is needed for each day. As a consequence, we need about 5,500,000 SBU for the whole year.

The idea is to divide the experiment between this year and the next year, which is the reason for asking for two and half millions additional SBU for this year.