

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

Please submit the completed form via <https://www.ecmwf.int/en/support>

MEMBER STATE: Ireland

Principal Investigator¹: Tido Semmler

Affiliation: Met Éireann

Address: 65/67 Glasnevin Hill, Dublin 9, D09Y921, Ireland

Project title: Freshwater influence on the Atlantic Meridional Overturning Circulation

Project account: SPIESEMM

Additional computing resources requested for year		2024
High Performance Computing Facility	[SBU]	43750000
Total DHS Data storage capacity	[GB]	50000
EWC resources		
Number of vCPUs	[#]	-
Total memory	[GB]	-
Storage	[GB]	-
Number of vGPUs ³	[#]	0

Continue overleaf

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

Technical reasons and scientific justifications why additional resources are needed

To get the simulations with the AWI – CM (Alfred Wegener Institute Climate Model) running, a lot of test simulations had to be carried out to investigate the reason why the computational performance was extremely poor compared to a very similar machine levante at the German Climate Computing Centre DKRZ. With technical support from both ECMWF and AWI colleagues, the climate model is now running with reasonable computational efficiency but still using around 25% more SBU's than anticipated.

At this stage, 73 out of 100 model years planned for this calendar year have been performed and the SBU budget has been exceeded by 10 Mio SBUs. One model year uses 1.25 Mio SBUs. Considering the 27 remaining model years, 33.75 Mio SBUs are needed to complete the 100 model years. For this reason, $33.75 \text{ Mio SBUs} + 10 \text{ Mio SBUs} = 43.75 \text{ Mio SBUs}$ are needed until the end of this year, and we herewith apply for these extra computing resources. An extension of the storage allowance on the \$SCRATCH directory by 50000 GB (= 50 TB) would be helpful to manage the amount of output data.

The influence of increasing freshwater from Greenland on the intensity and regional manifestation of the Atlantic Meridional Overturning Circulation is discussed internationally in peer reviewed literature and in the media because of the relevance for the climate especially in the northwest of Europe but even globally. It is therefore imperative to carry out the planned advanced simulations to narrow down the uncertainty in the climate projections.