REQUEST FOR ADDITIONAL RESOURCES IN THE CURRENT YEAR FOR AN EXISTING EMI R&D PROJECT

Please submit the completed form via https://www.ecmwf.int/en/support (choose *Software and Computing*, then *Gain access to computing resources (create ticket)*) or send to special_projects@ecmwf.int

Country/Organisation: Denmark/Aarhus University……..……..…

Principal Investigator[1]: Carl Svenhag……..……

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Address: Frederiksborgvej 399
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Project title: ……

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Project account: **SPDKSVEN**

Additional computing resources requested for year		**2026**
High Performance Computing Facility	[SBU]	45,000,000
Graphics Processing Unit Cluster - A	[GBU]	
Graphics Processing Unit Cluster - B	[GBU]	
Total DHS Data storage capacity	[GB]	
EWC resources		
Number of vCPUs	[#]	
Total memory	[GB]	

[1] The Principal Investigator is the contact person for this EMI R&D Project

Storage	[GB]	
Number of vGPUs[3]	[#]	

Continue overleaf

Technical reasons and scientific justifications why additional resources are needed

In parallel with this project's ongoing simulations, the OpenIFS/AC cy48 model has continued to undergo substantial development, requiring extensive testing to ensure stable and scientifically robust model performance. Furthermore, a major bug was identified and corrected in spring of 2026 in the model version used for our initial simulations. As a consequence, all previously completed simulations must be repeated to ensure consistency and scientific reliability.

Roughly 50 % of the SBUs from the 2026 allocation have already been somewhat utilized, allowing us to complete an analysis of the initial simulations. However, the remaining half of the current simulations, together with the full suite of pre-industrial simulations and the newly implemented nucleation parameterization sensitivity experiments, still need to be completed. These new sensitivity experiments are particularly important because recent model developments have significantly affected the behavior of the nucleation parameterization in terms of Cloud-Aerosol Radiative Forcing, making direct comparison with the earlier simulations scientifically necessary.

Benchmark test simulations indicate that a single 5-year simulation with spin-up requires approximately 1,950,000 SBUs. Based on the total number of remaining simulations and sensitivity experiments, we estimate that an additional allocation of 45,000,000 SBUs will be sufficient to complete the project objectives.