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

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MEMBER STATE: Denmark

Principal Investigator[1]: Ulas Im

Affiliation: Aarhus University, Department of Environmental Science

Address: Frederiksborgvej 399, 4000, Roskilde, Denmark

Project title: Perturbed Parameter Ensembles using the OpenIFS atmospheric model in frame of the CleanCloud Project

Project account: **SPDKULAS**

Additional computing resources requested for year		**2025**
High Performance Computing Facility	[SBU]	45 000 000
Total DHS Data storage capacity	[GB]	
EWC resources		
Number of vCPUs	[#]	
Total memory	[GB]	
Storage	[GB]	
Number of vGPUs[3]	[#]	

Continue overleaf

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

Technical reasons and scientific justifications why additional resources are needed

In the original proposal, we have used an estimation of around 200 simulations, and by assuming 2 days per a year simulation on one node, 200 simulations amount to 21 000 000 SBUs. We have applied for 25 000 000 SBUs to be on the safe side, such as additional parameters that can come in later in the ensemble design or repeating some simulations due to technical reasons.

However, due to delays in other partners of the CleanCloud project, we decided to run both the pre-industrial and present day simulations, which double this estimate. In addition, initial tests showed that we would need few more parameters to the perturbations, which accounts for 30 parameters in total. Finally, because the OpenIFS cy48 model is still under development, we have made many tests to make sure that the model runs properly, which also costed us XXX SBUs. These test simulations showed that one single simulation uses about 325 000 SBUs, which for the two sets of simulations, even using the original variable space of 121 simulations, would make more than 80 000 000 SBUs.

At the moment, we have about 21 000 000 SBUs left, so with the additional 45 000 000 SBUs, we will end up with 60 000 000 SBUs. This will be sufficient for the majority of the simulations; therefore we plan to finish both sets of simulations (PI and 2010), however with limited number of parameters, to an extent where we use all SBUs. In next year's project, we will perform rest of the parameters to complete the whole parameter set.