Centre of Excellence in Simulation of Weather and Climate in Europe

Summer School on Effective HPC for Climate and Weather

Dear Committee,

I would like to express my interest in taking part in the Summer School on Effective High-Performance Computing (HPC) for Climate and Weather. I have a degree in Physics and a master's degree in Meteorology, both received in Brazil. I am currently in my first year of PhD studies at Technical University of Denmark, Department of Wind Energy, and I hold an interest in learning how to make effective use of HPC environments, specially focused on Climate Studies.

The focus of my PhD project is to develop an optimal way to provide time series relevant to power system analyses while considering climate change projections towards 2050, helping to go a step further towards decarbonisation. The hypothesis is that variable renewable energy generation will feasibly produce most of the energy consumption in a future highly interconnected and sector coupled European power system. To ensure that, an understanding of the weather dependencies and its impacts on energy system is required. Therefore, a power system analysis needs time series of meteorological variables, such as wind speed, solar radiation and temperature, which are further converted into electrical power variables. These data need to meet some requirements to enable the study, such as high spatial and temporal resolution which are not usually delivered by climate scenarios. Running a mesoscale model forced by different global climate models and representative concentration pathways and dealing with a huge amount of data in such high resolution will certainly require techniques to optimize time and computational resources.

I have been working for almost ten years on atmospheric modeling for different topics such as numerical weather prediction, climate change and more recently, renewable energy. Considerable part of this time I have worked in HPC environment without having received a proper training for that. I would say that it was due a lack of opportunity, but also it would be a bit intimidating taking a course in computational topics if it was not aimed for climate and weather scientists. In this sense this summer school fits exactly my needs and it is clear that the knowledge gained both by the theoretical lectures and the group-project sessions would be invaluable for me and for the development of my PhD project.

I appreciate you taking the time to review my application

Yours sincerely,

Graziela Luzia da Costa