



Towards future high performance computing: What will change? How can we be efficient?

Peter Düben

ECMWF, Research, Reading, United Kingdom (peter.dueben@ecmwf.int)

How can we make the most out of "exascale" supercomputers that will be available soon and enable us to calculate an amazing number of 1,000,000,000,000,000 real numbers operations within a single second? How do we need to design applications to use these machines efficiently? What are the limits?

We will discuss opportunities and limits of the use of future high performance computers from the perspective of Earth System Modelling. We will provide an overview about future challenges and outline how numerical application will need to be changed to run efficiently on supercomputers in the future. We will also discuss how different disciplines can support each other and talk about data handling and numerical precision of data.