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Reduced Precision Computing for Numerical Weather Prediction

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Reduced precision can be used to better allocate computational resources in numerical models. Seemingly large rounding errors may be tolerated in numerical models because of the inherent uncertainty in subgrid-scale processes which are typically represented by stochastic schemes. There are now many examples in numerical weather prediction of models using single precision (instead of double) giving significant run time improvements with no change in forecast skill. However, studies with more idealised chaotic models have shown that precision could be reduced much further than single precision. This talk will give a summary of the ongoing work in Oxford looking at reduced precision in more complex models. This work is broken down into separable components of numerical weather prediction models such as data assimilation, individual physics parametrizations, and different scales in spectral space.

Affiliation

University of Oxford

Primary author: Dr SAFFIN, Leo (University of Oxford)

Co-authors: Dr CHANTRY, Matthew; Prof. PALMER, Tim; Dr MCRAE, Andrew (University of Oxford); Dr ACKMANN, Jan

Presenter: Dr SAFFIN, Leo (University of Oxford)

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