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The semi-Lagrangian, semi-implicit technique of the ECMWF model

Wednesday, 11 March 2020 09:15 (1 hour)

The aim of this session is to describe the numerical technique that is used for integrating the governing equations of the ECMWF Numerical Weather Prediction model IFS. We will present an overview of the semi-Lagrangian method and how can be combined with semi-implicit time-stepping to provide a stable and accurate formulation for the IFS.

By the end of this session you should be able to:

• describe the fundamental concepts of semi-Lagrangian advection schemes, their strengths and weaknesses
• describe semi-implicit time-stepping and its use in IFS
• explain the important role these two techniques play for the efficiency of the current IFS system
• understand the impact that future super-computing architectures may have in the applicability of the semi-Lagrangian technique in high resolution non-hydrostatic global NWP systems.

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