

# ECMWF – by Peter Bauer

## Most prominent scalability issues associated with NWP:

- *Data assimilation*: sequential algorithms (control structure), coupling (composition, waves/ocean/ice)
- *Forecast model*: dynamical core (global), physics, coupling, data structures/grids
- *Data*: pre-processing, product post-processing, archiving
- *Computer architecture*: many-core processors/accelerators (CPU/GPU/Mic other)
- *Code adaptation*: languages, compilers, future of OpenMP/MPI

## 2014-2018+ ECMWF scalability project objectives:

1. to develop the future IFS combining a **flexible framework** for scientific choices to be made with maximum achievable parallelism,
2. to prepare for expected **future technologies** and their implications on code structure ensuring efficiency and code readability,
3. to develop environment/metrics for quantitative **scalability assessment**, through
  - coordinating ECMWF-internal resources, R&D strategy,
  - engaging with external partners (Member States, academia, HPC centres, vendors).

1<sup>st</sup> step: 14-15 April workshop:

<http://www.ecmwf.int/newsevents/meetings/workshops/2014/Scalability/>