Workshop on Non-hydrostatic modelling
8-10 November 2010
Present main operational forecast models

- **Global forecast model**
  - 16 km grid point distance
  - 91 vertical levels
  - Hydrostatic
  - Forecast range: 10 days

- **Ensemble Prediction System**
  - 51 parallel forecasts
  - Perturbed initial conditions and stochastic model error
  - 32 km grid point distance
Forecast quality – Days of useful skill
(500 hPa height, anomaly correlation>0.6, N. Hemisphere)
Increasing resolution

● Vertical resolution
  - 91 → 135 levels by year 2011

● Horizontal resolution
  - 16 → 10 km by year 2015

● Beyond 2015
  - 10 km → 5 km (≈ year 2020)

● Non-hydrostatic model formulation, “grey zone”
● Fast Legendre transforms
Orography T3999 (~5km)
Cloud cover 24h forecast T3999 (~5km)
Computational Cost at $T_L 3999$

- **other**
  - H - IFS: 0
  - NH - IFS: 100

- **Physics**
  - H - IFS: 1000
  - NH - IFS: 100

- **TRANS**
  - H - IFS: 2000
  - NH - IFS: 3000

- **SP_DYN**
  - H - IFS: 1000
  - NH - IFS: 2000

- **GP_DYN**
  - H - IFS: 500
  - NH - IFS: 1500

**Total cost increase for 24h forecast:** H 50min vs. NH 150min