

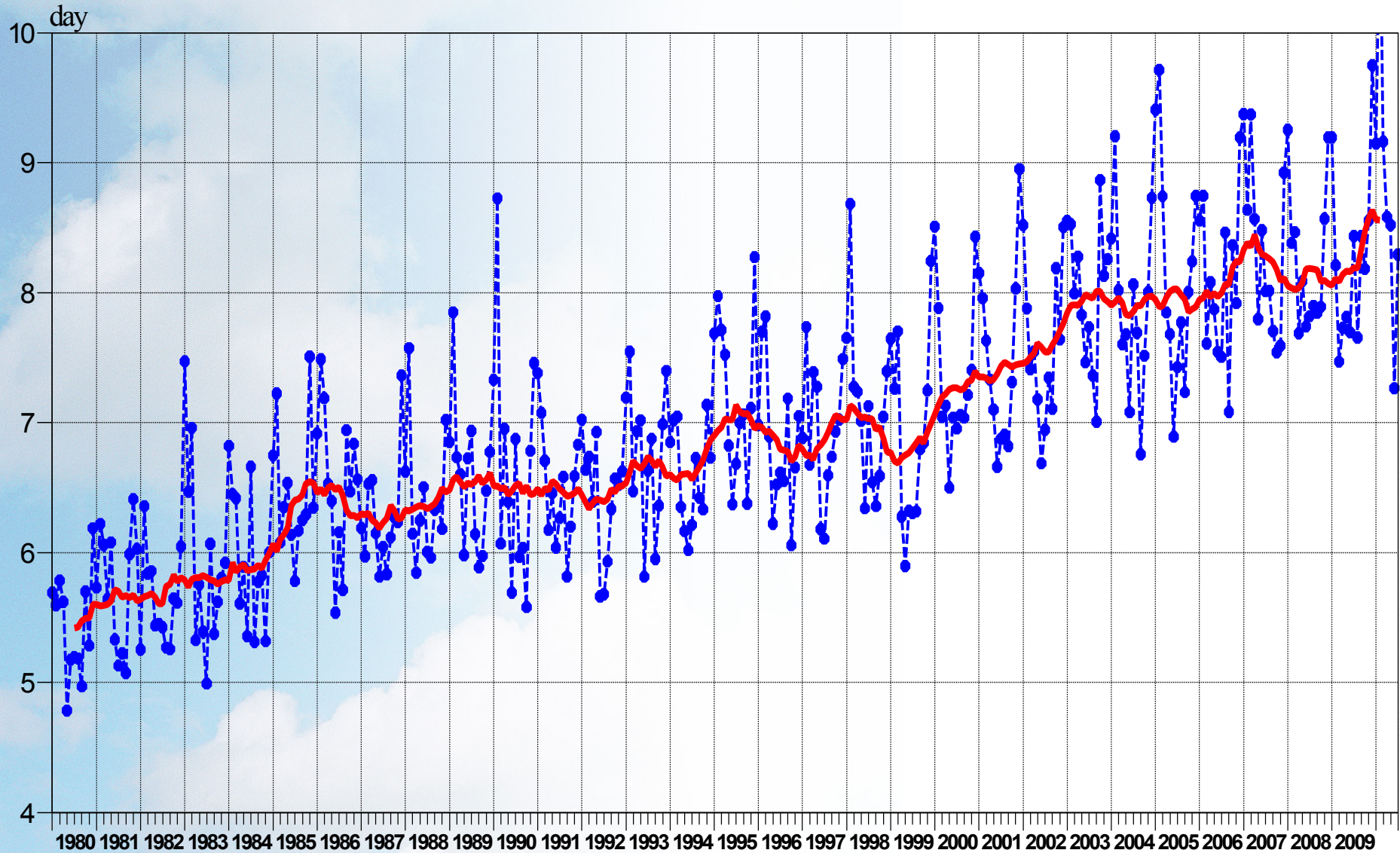
Workshop on Non-hydrostatic modelling 8-10 November 2010

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

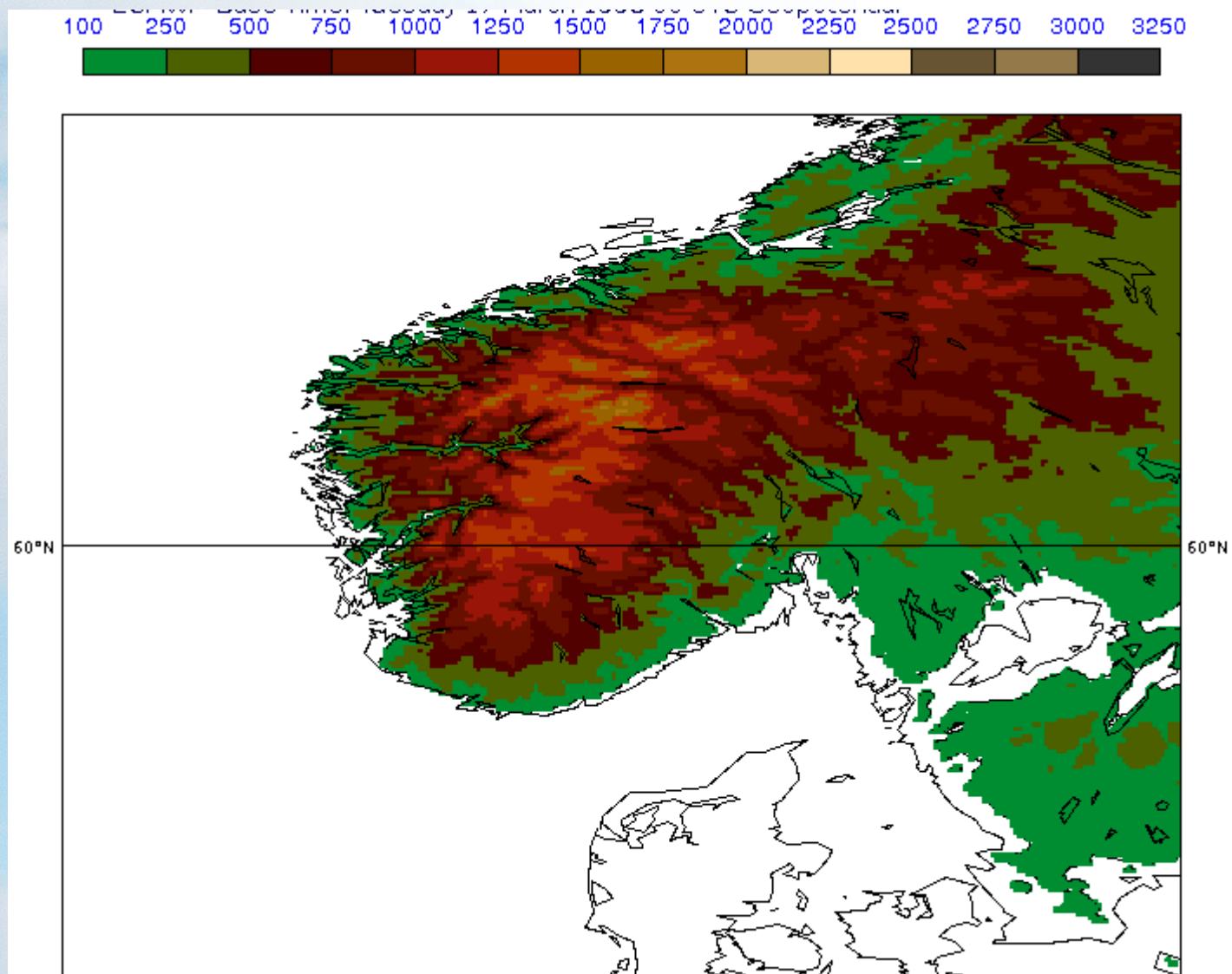
(500 hPa height, anomaly correlation > 0.6, N. Hemisphere)



Increasing resolution

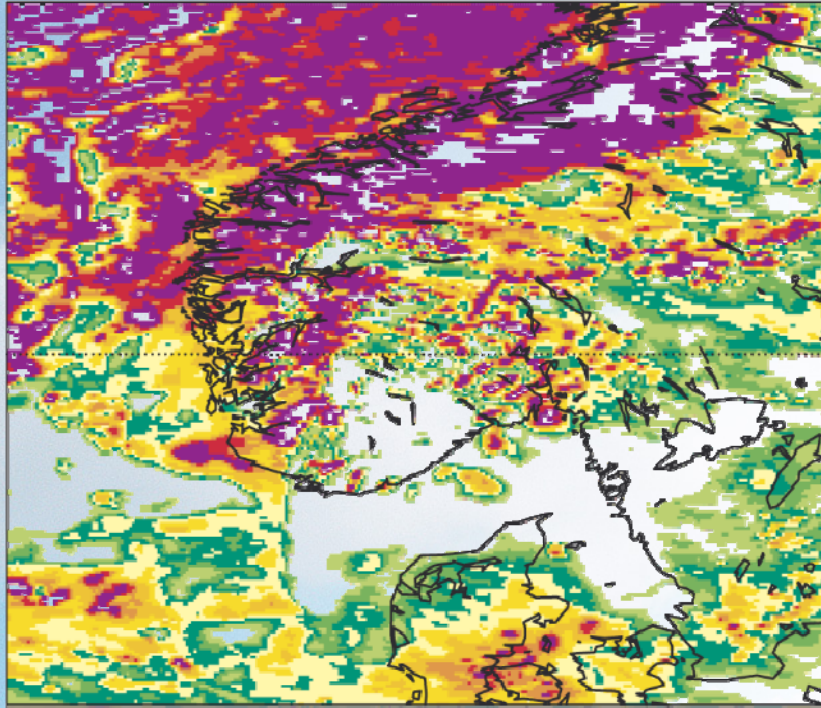
- Vertical resolution
 - 91 → 135 levels by year 2011
- Horizontal resolution
 - 16 → 10 km by year 2015
- Beyond 2015
 - 10 km → 5 km (\approx year 2020)
- Non-hydrostatic model formulation, “grey zone”
- Fast Legendre transforms

Orography T3999 (~5km)

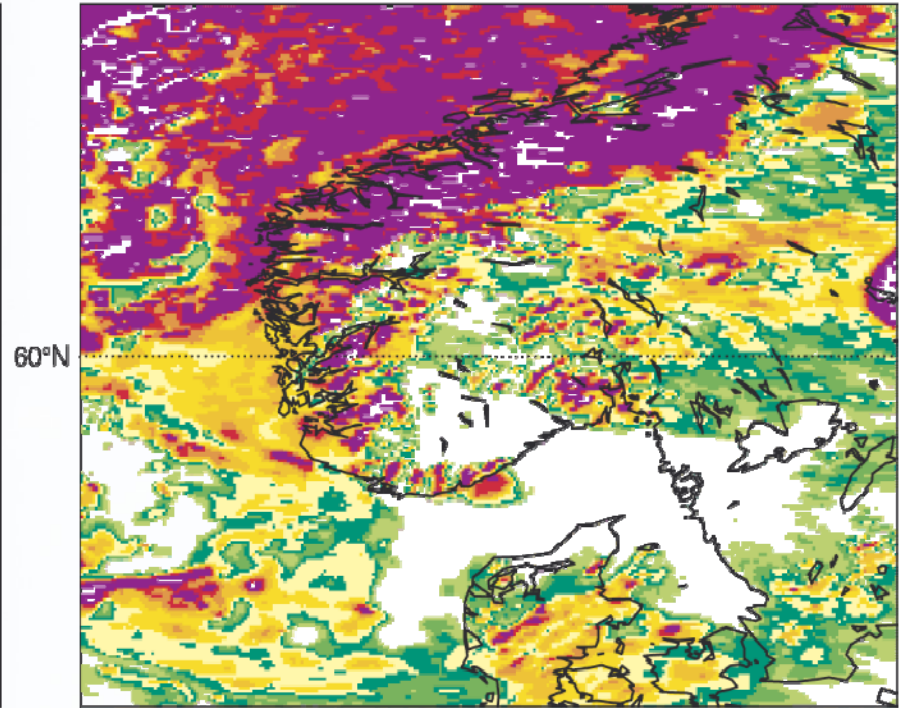


Cloud cover 24h forecast T3999 (~5km)

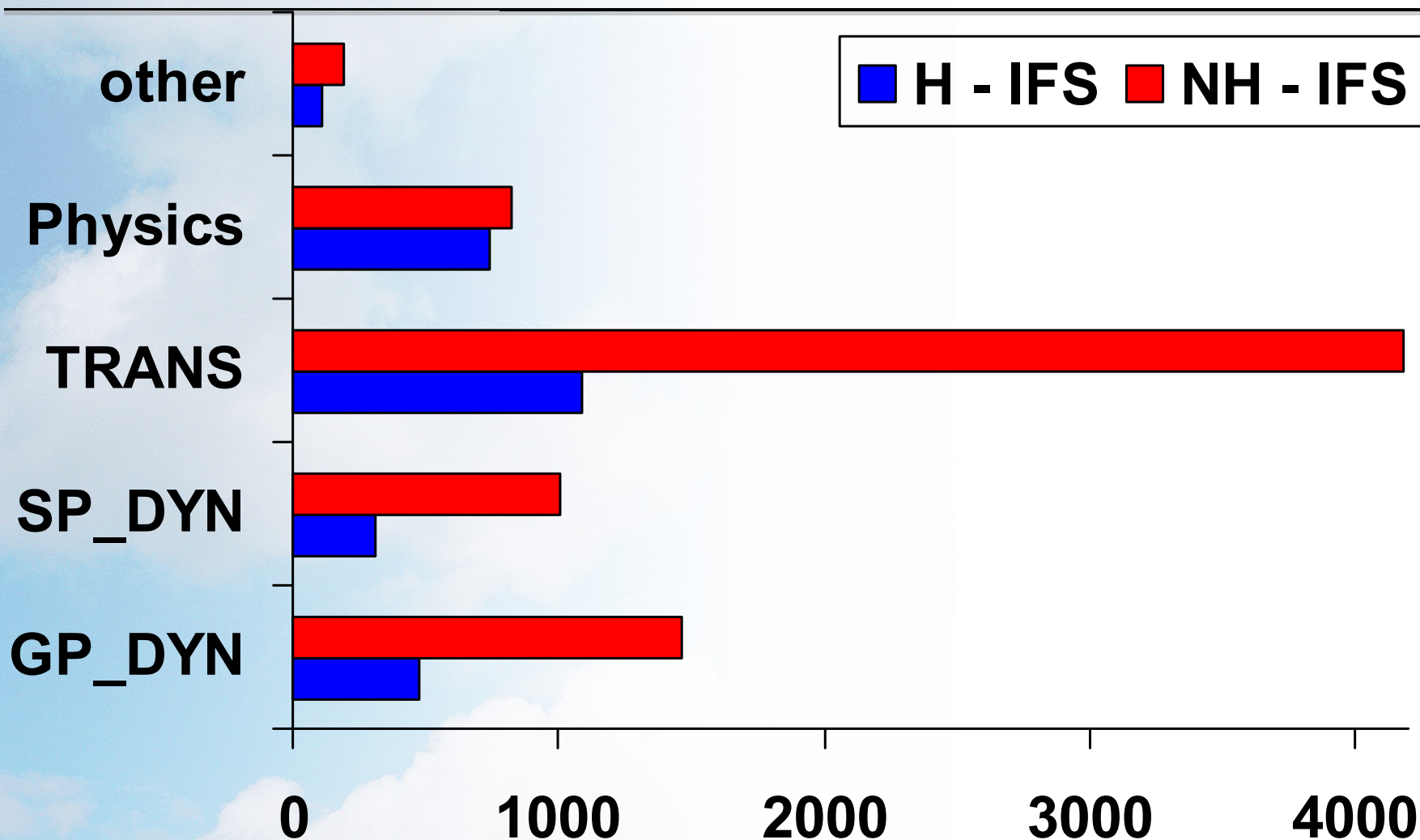
a Non-hydrostatic simulation



b Hydrostatic simulation



Computational Cost at T_L3999



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