Planned experiments within ESSENCE

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ESSENCE I

DEISA project (Distributing European Infrastructure for Supercomputing Applications – FP6 funded)

1.2 Mcpu-hours on SX-8 at HLRS

Expected output ≈ 100 TB

ESSENCE II

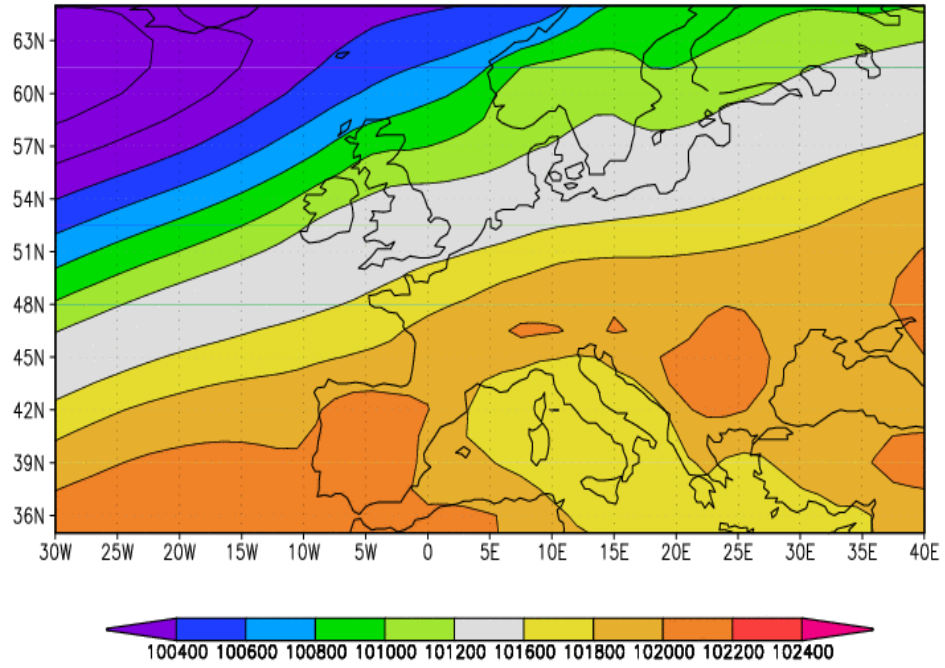
Large ensemble (as in CHALLENGE) of coupled climate model

But: extra experiments

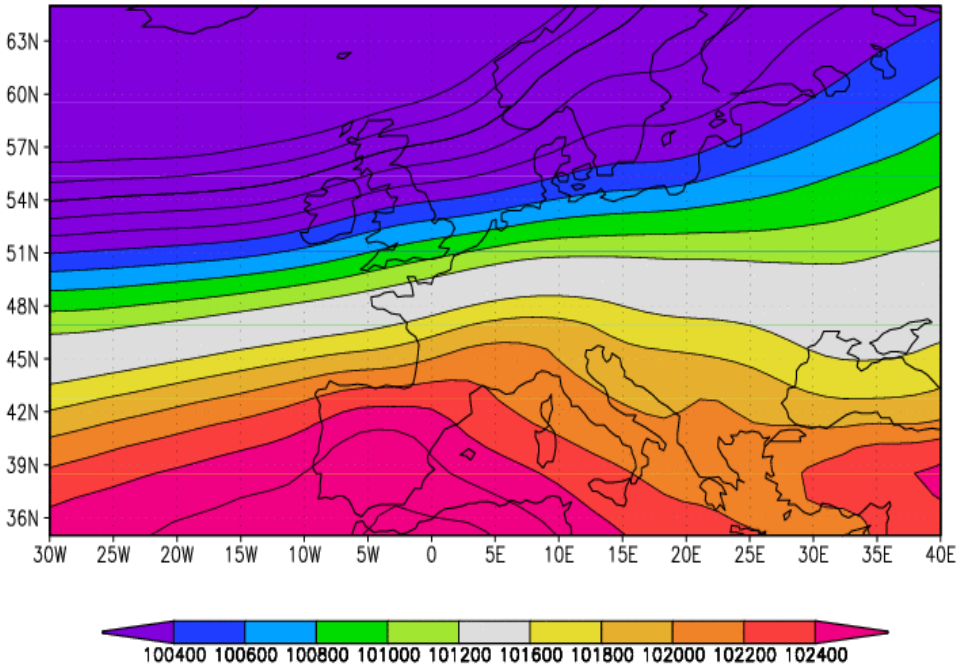
Initial plan: CSM3.0, but

ECHAM5/MPI-OM1 better

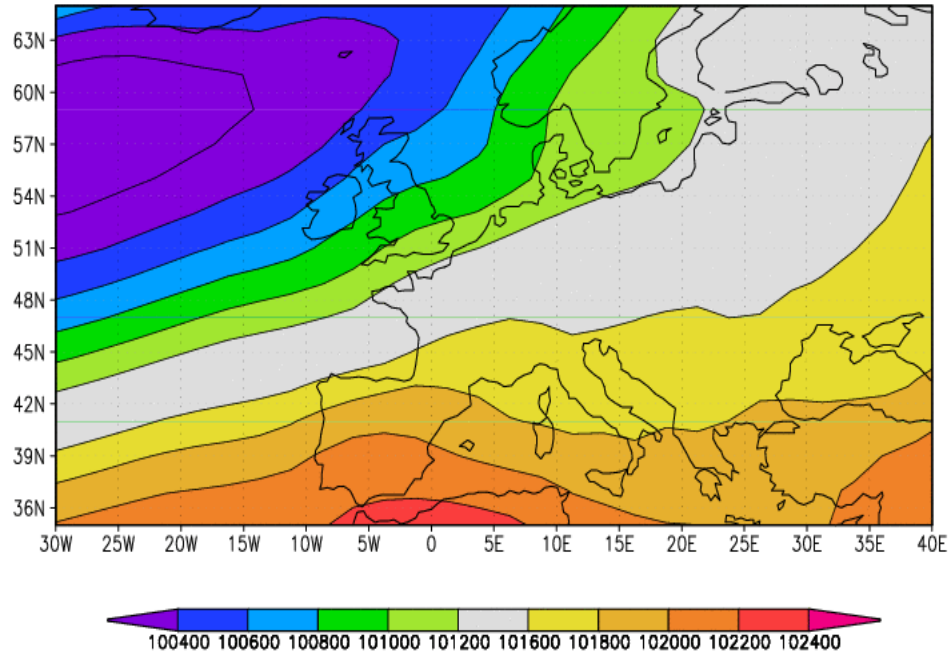
mean Dec–Feb averaged ERA40 sea–level pressure



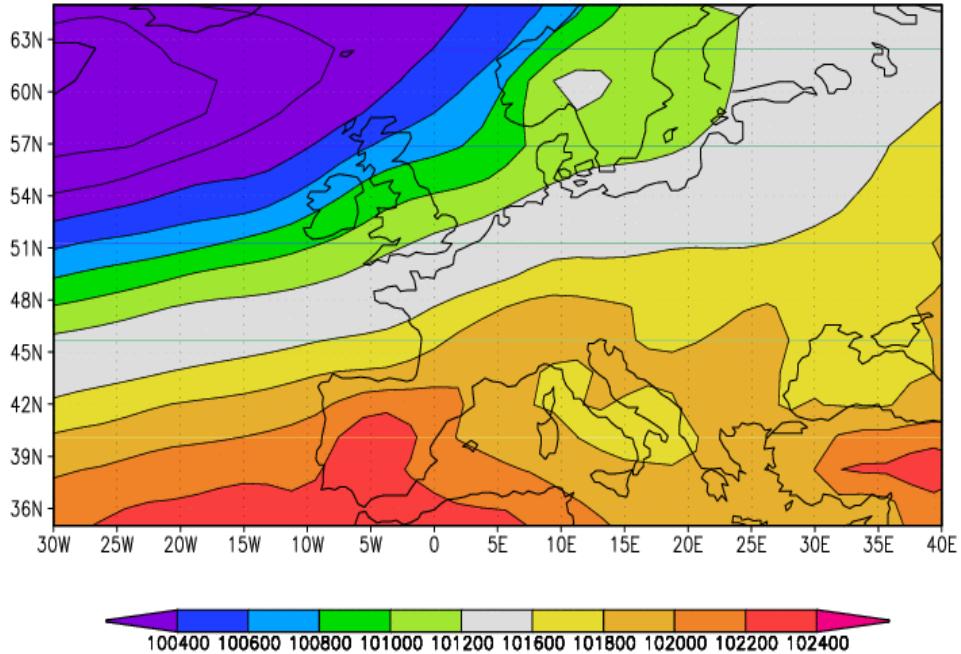
mean Dec–Feb averaged ccsm 3.0 20c3m psl

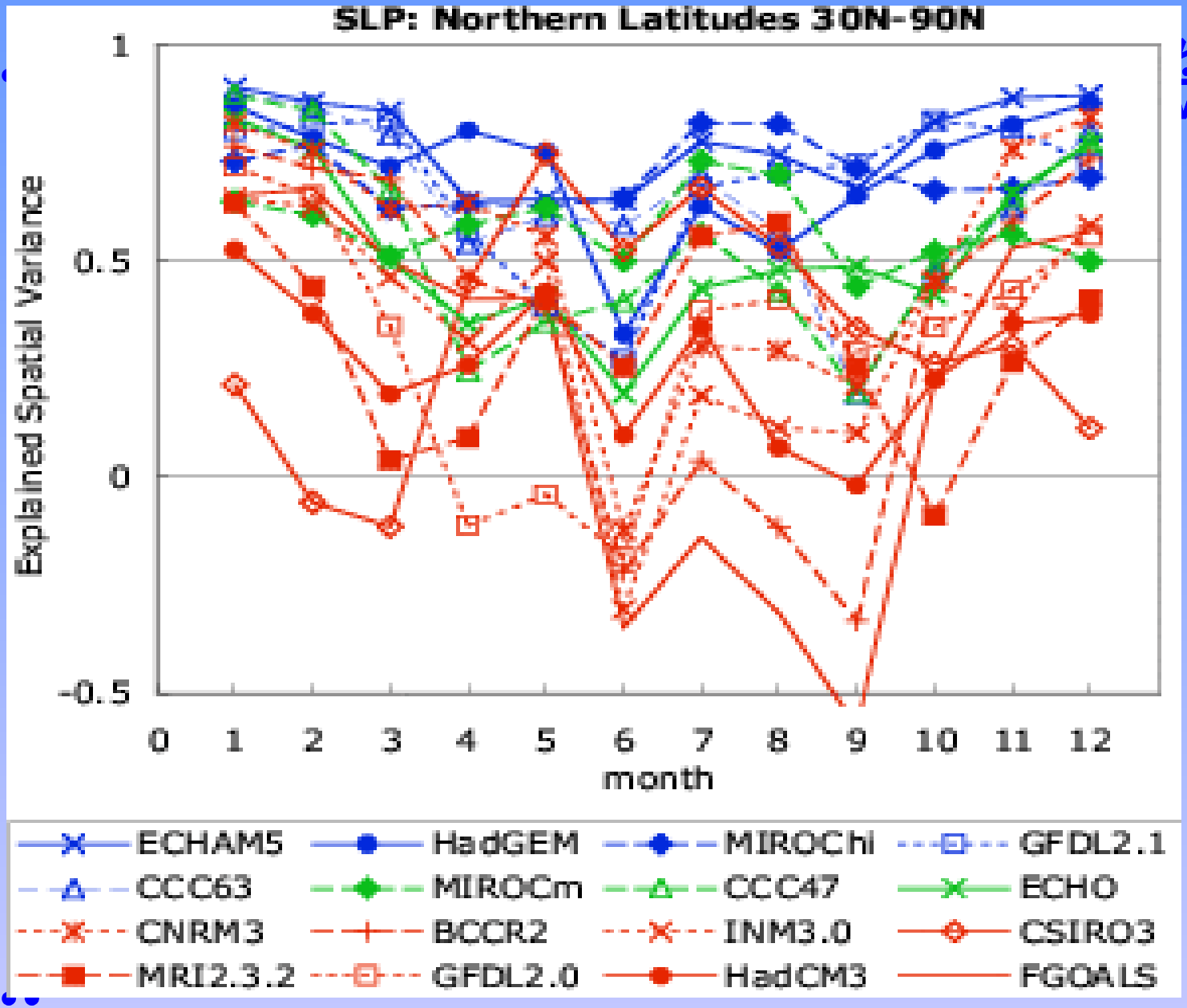


mean Dec–Feb averaged gfdl 2.0 20c3m psl



mean Dec–Feb averaged mpi echam5 20c3m psl





RUNS

50-member standard ensemble

1940-2000: Observed CO_2 + SO_4 concentrations

2001-2080: SRES scenario A1B

2081-2200: GHG constant

11-year solar cycle via O_3

10 x 5 experimental runs

=> total of 100 runs

Projects/Experiments I

Standard runs:

- Solar cycle
- Storm tracks
- PDO & AMO
- Albedo effects
- Hadley circulation
- Extremes
- Weighted mean of ensemble members
- Nonlinear relations
- Weather regimes

Projects/Experiments II

Extra experiments

- Soil drying (hot summers)
- THC collapse (hosing + vert. mixing)
- Boundary Layer parameterization
- Clouds
- Horizontal ocean mixing