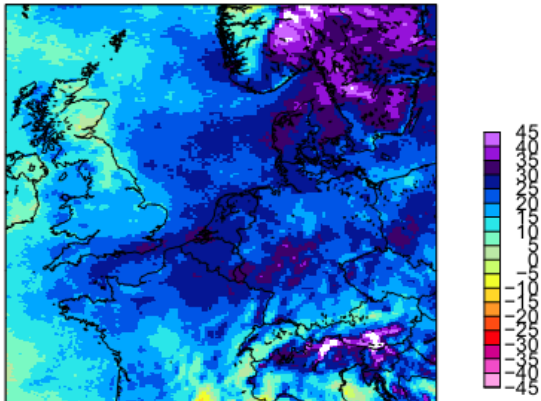
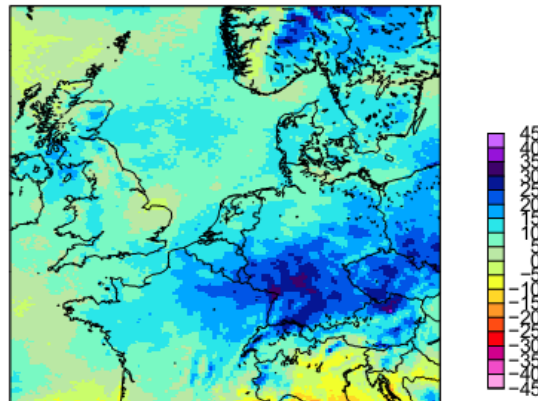


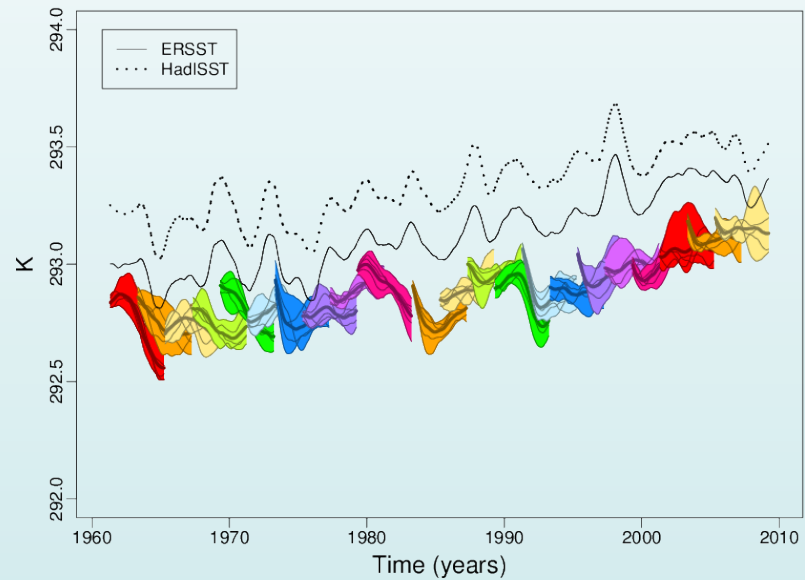
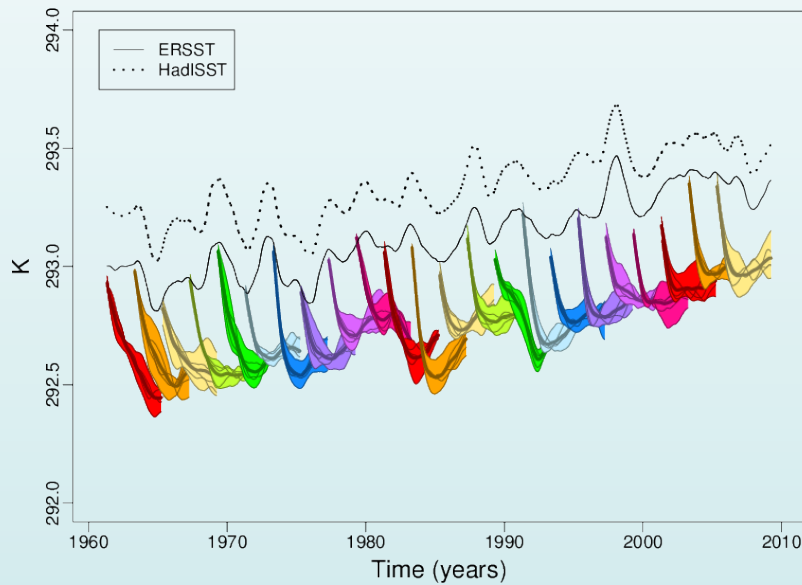
precip mean DJF future (2)



precip mean DJF future (4)



Decadal hindcasts



Hazeleger et al GRL 2013, contributions from IC3, SMHI, KNMI



and CMIP



Distributed consortium of meteorological services, universities and institutes (22 partners, 7 core)

→ Both *scientific AND services* oriented

→ Downscaling capabilities

→ Both long term projections, historical and near-term predictions

→ Rising attention for event attribution

→ Weather regimes, extremes, compound events important

CMIP6 should address contribution to *Climate Services!*

H2020, JPI already point toward that direction

CMIP5 experience



- Set up of simulations went smoothly, but took a while to get concentrations from (single) CTM
- Check for machine dependency (~ 5 HPC systems)
- Data publishing was a nightmare! Central storage at an ESG data node did not work (should have had distributed nodes), cmorrization buggy, adding new variables meant unpublishing, publishing etc...
- Many runs done for internal needs that were never published (30 historical and RCP 8.5 members, yearly restarts near-term predictions; all at ~ 1.1 degree resolution)
- CFMIP useful, but was more work than anticipated

CMIP6



- Address both *science* AND *climate services*
 - address uncertainty systematically (sample initial condition, parameters-processes, forcing – including historical aerosols and land use)
 - Capability for downscaling
 - Step change in resolution: resolve relevant weather regimes (blocking, storm tracks → 20 km globally)
 - near-term projections/predictions at high resolution, annual restarts
 - Historical and projections
 - Time slices at very high resolution (e.g. for event attribution)

CMIP6



- Other points:
 - Keep core-tier structure and leave setup details to relevant panels
 - Long-term simulations simplified in core. E.g. 1%/yr simulation and scaling.
 - Integration with IAMs
 - Issue with reliability of the trends in historical and decadal prediction runs → address amplitude natural variability (too small?), climate response (clouds and aerosols?) and drivers uncertainty (aerosols?)
 - Involve scientists in use cases on data

EC-Earth consortium



The Netherlands

KNMI, U Utrecht, WUR, VU. SARA

Denmark

DMI, Univ Copenh

Ireland

MetEireann,
UCD, ICHEC

Portugal

IPMA, U
Lisbon

Switzerland

ETHZ, C2SM

Spain

AEMET, BSC, IC3

Norway

NTNU, Bjerkn.
C.

Sweden

SMHI, Lund U, Stockholm U,
IRV

Belgium

UCL

Italy

ICTP,CNR,
ENEA

Germany

KIT/GEOMAR

Steering group: W. Hazeleger (KNMI, chair), C. Jones (SMHI), J. Hesselbjerg, Christensen (DMI), R. McGrath (Met Eireann), P. Viterbo (IMPA), E. C. Rodriguez (AEMET), J. Hardenberg (CNR) observer E. Kallen (ECMWF), NEMO-representative