

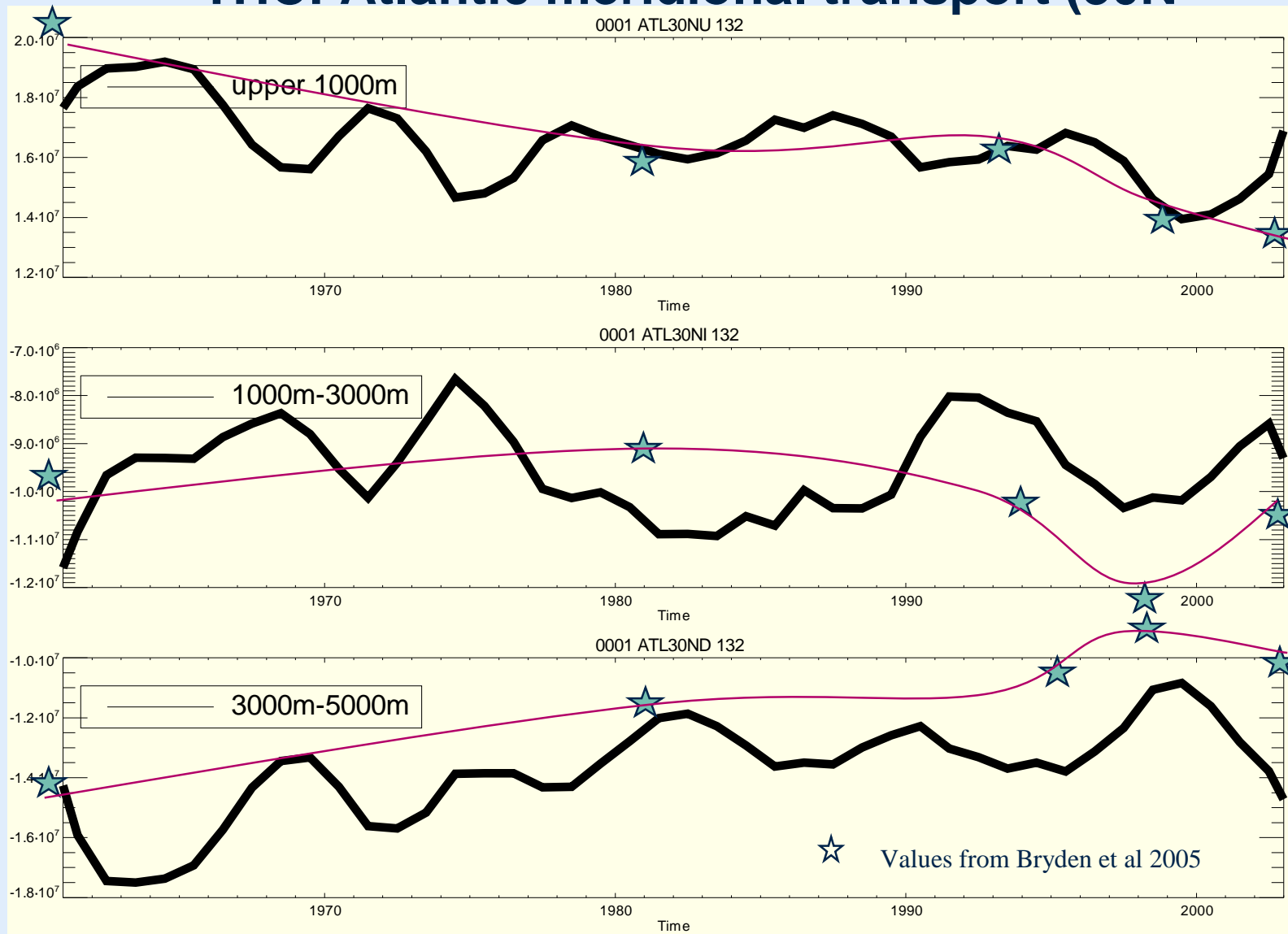
Summary of the working group on seasonal- to-decadal experiments

Ocean analysis

- The observational database EN3 will be ready and available in Aug 2006.
- The ENACT initialisation protocol will be followed as far as possible.
- The current experimental design to generate ocean analyses may not be ideal for multi-annual predictions. Additional thinking and analysis is required (e.g., THC).
- Groups will provide information on plans for the next sets of ocean analyses.
- CERFACS will provide ocean analysis and tools to adapt sets of ocean analysis for the OPA/NEMO community.
- The initial set of common variables will be increased with heat fluxes and volume transports, although not mandatory.

Ocean analysis

THC: Atlantic meridional transport (30N)

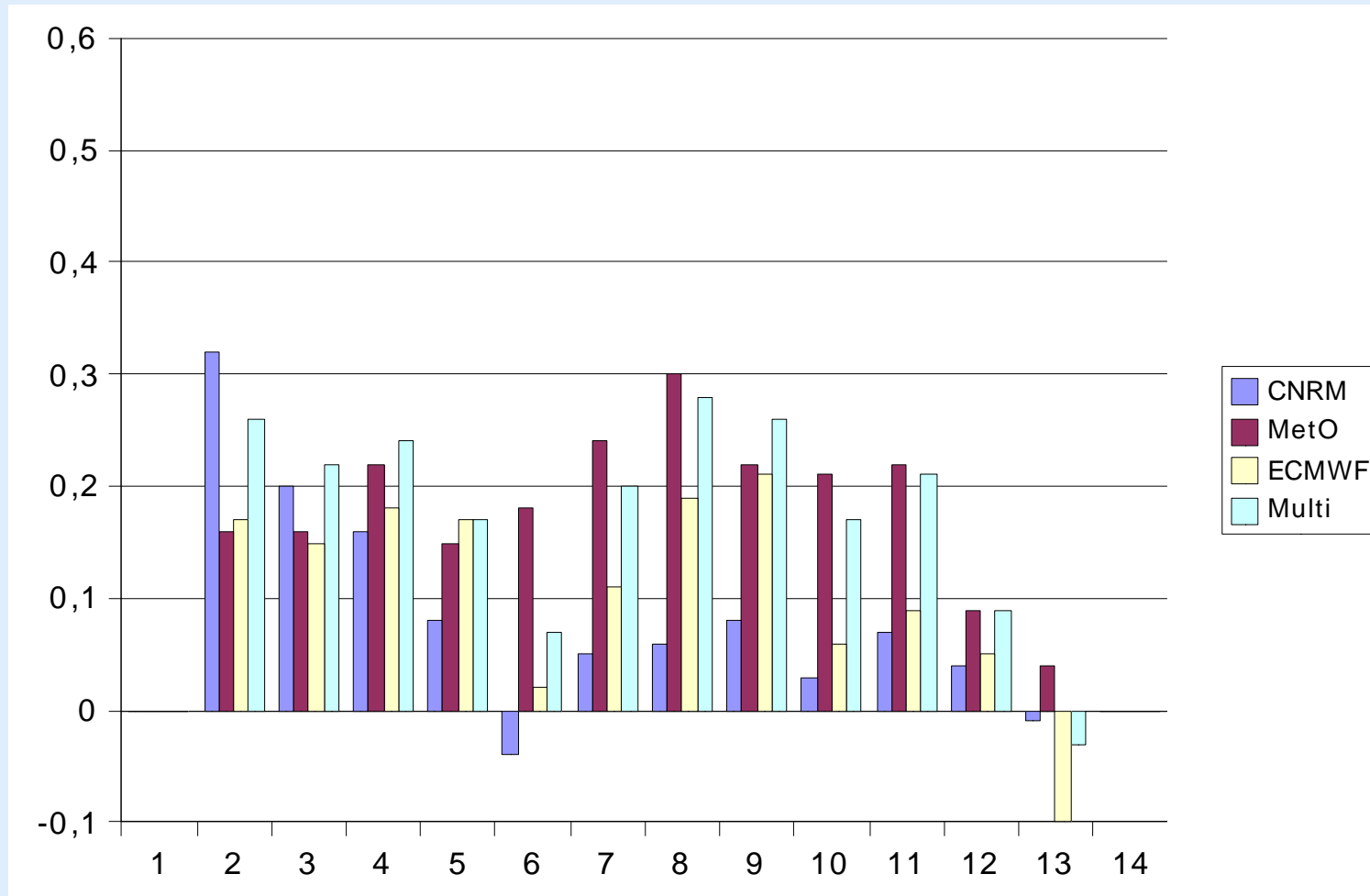


Multi-model

- Seasonal multi-model (3 models) hindcasts (stream 1) show a warm bias in the tropical Pacific.
- Skill (ACC and RMSE) of tropical variability is better than persistence, with a good match to spread (estimated as ensemble standard deviation).
- Interesting recovery in skill has been identified in terms of Northern Hemisphere Z500 variability.
- The annual (14 months) hindcasts indicate a good level of skill (ACC~0.2-0.3).

Multi-model

Seasonal hindcasts 1991-2000, Nov start dates, NH-Z500 ACC, three single models and multi-model



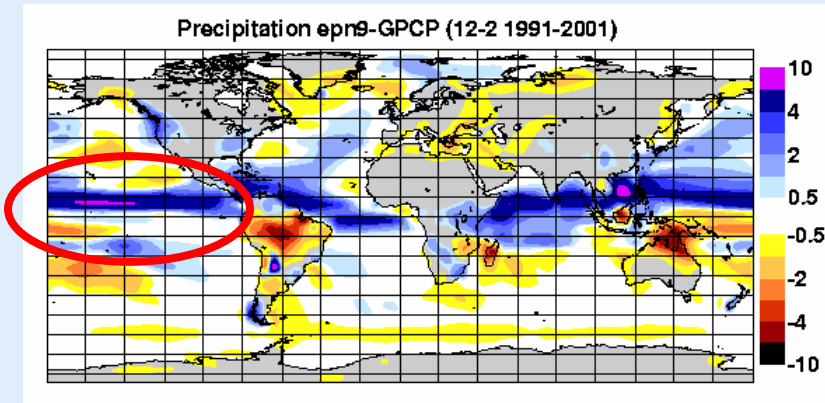
Stochastic physics

- ECMWF uses CASBS, a non-local, quasi-random and state-dependent stochastic physics scheme that backscatters dissipated energy into the resolved flow.
- The Met Office plans to use a similar scheme (with different pattern generation and backscatter criteria) in HadGEM for comparison experiments.
- Stochastic physics show robust beneficial impact in the seasonal and annual hindcasts, especially in terms of tropical precipitation and SST systematic error and intra-seasonal variability over the North Pacific.
- There is also improvement in skill of tropical precipitation and SST skill.
- No improvement is found in decadal integrations.
- There is the possibility of using perturbed parameters and stochastic physics in the same setting.

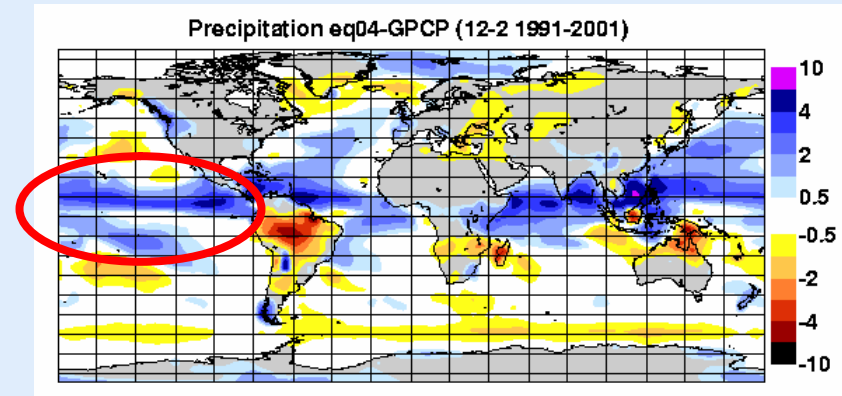
Stochastic physics

Systematic error, DJF precipitation, Nov start date

control – GPCP

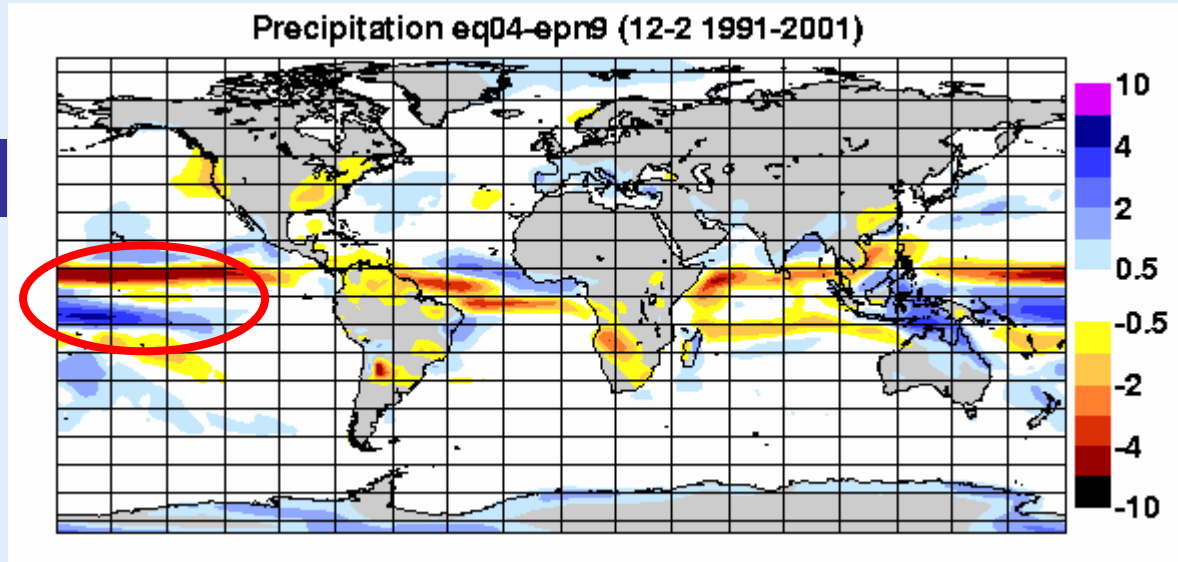


CASBS – GPCP



CASBS – control

- improved tropical precipitation



Perturbed parameters

- Builds on DePreSys from the Met Office and QUMP and runs ensemble hindcasts up to 10 years.
- Within DePreSys, the assimilation of observed initial conditions slightly improves the skill.
- However, DePreSys overconfidence of hindcasts suggests model error should be sampled -> PPE.
- PPE has less skill and too much spread when compared to the multi-model and DePreSys. Some imbalance between initial conditions and perturbed model version?

Archiving and dissemination strategy

Hindcasts run/archived at ECMWF (access to member state users)

MARS

common data
atmosphere

additional data

ECFS

common data
ocean

ECMWF firewall

ENSEMBLES public data server (5 Tb)

common data
atmosphere

common data
ocean

MARS client

OPeNDAP
server

diagnostics

Climate
Explorer

Public dissemination: link to the Climate Explorer

<http://climexp.knmi.nl>

- Development in collaboration with RT5
- Reference datasets: station data, climate indices, obs, reanalyses, seasonal forecasts, scenario runs
- Calculation of basic statistics including correlations and EOF analysis
- New feature: forecast skill assessment of DEMETER data
- In a few weeks: link to the ENSEMBLES OPeNDAP server at ECMWF and extreme event analysis (RCLIM) tools

The screenshot shows the Climate Explorer interface for 'Field verification' of 'Demeter ensemble feb T2m'. It includes a navigation menu on the right with sections like 'Introduction, results', 'Select a time series', 'Select a field', 'Investigate this field', and 'Feedback'. The main content area is titled 'Verifying Temperature field' and contains a table of data selection options. An orange arrow points from the text 'List of forecast quality measures available' to the 'Map verification measures' section at the bottom of the interface.

Verifying Temperature field		
Temperature	<input type="radio"/> 1850-now anomalies: HadCRUT3 (Jones & Parker T2m/SST analysis) ref com <input type="radio"/> variance adjusted, <input type="radio"/> HadCRUT2, <input type="radio"/> HadCRUT2v	
Land	<input type="radio"/> 1850-now anomalies: CRUTEM3 (Jones T2m analysis) <input type="radio"/> number of stations, <input type="radio"/> variance adjusted, <input type="radio"/> CRUTEM2, <input type="radio"/> nr, <input type="radio"/> CRUTEM2v. ref com	
	1901-2000: CRU2 New 0.5° analysis (land only) <input type="radio"/> Old World, <input type="radio"/> New World ref com	
Air Temperature	<input type="radio"/> 1800-1997: COADS Tair ref com	
T2m	1958-2002: <input type="radio"/> 1.5°, <input type="radio"/> 2.5° ERA-40 ref com	
	1948-now: <input type="radio"/> NCEP/NCAR ref com	
t200	1958-2002: <input type="radio"/> 1.5°, <input type="radio"/> 2.5° ERA-40 ref com	
	1948-now: <input type="radio"/> NCEP/NCAR ref com	
t300	1958-2002: <input type="radio"/> 1.5°, <input type="radio"/> 2.5° ERA-40 ref com	
	1948-now: <input type="radio"/> NCEP/NCAR ref com	
t500	1958-2002: <input type="radio"/> 1.5°, <input type="radio"/> 2.5° ERA-40 ref com	
	1948-now: <input type="radio"/> NCEP/NCAR ref com	
t700	1958-2002: <input type="radio"/> 1.5°, <input type="radio"/> 2.5° ERA-40 ref com	
	1948-now: <input type="radio"/> NCEP/NCAR ref com	
t850	1958-2002: <input type="radio"/> 1.5°, <input type="radio"/> 2.5° ERA-40 ref com	
	1948-now: <input type="radio"/> NCEP/NCAR ref com	

Map verification measures

- Correlation of the ensemble mean
- Root mean square error (RMSE) of the ensemble mean
- Mean absolute error (MAE) of the ensemble mean
- Brier score (alternative)
- Resolution
- Reliability
- Uncertainty
- BSS wrt climatology (including [bias correction](#) for finite ensemble size)
- Tercile RPS
- Tercile RPSS wrt climatology, Quintile RPSS wrt climatology (including [bias correction](#) for finite ensemble size)
- Area under the ROC curve, R alternative, C alternative

List of forecast quality measures available

Link to Task Force Seasonal Prediction-WCRP

- Clear links between ENSEMBLES s2d and TFSP exist, e.g. in the domain of constructing and disseminating datasets or in the link to end users.
- ENSEMBLES is a prototype in the design of NetCDF headers for the efficient dissemination of operational s2d ensemble forecasts.
- A joint TFSP/ENSEMBLES RT1RT2A meeting is proposed for summer 2007. Possible venues are Madrid, Barcelona and Geneva. The meeting is expected to be ~3.5 days for TFSP and 1.5 for RT1RT2A.

Stream2 Simulations

- Original Proposal
 - 1960-2001
 - 9-ensemble members
 - 2 Seasonal forecast per Year
 - At least one Multi-annual every 5-years
- A number of issues raised
 - Computer resources (9-ensembles members for 10 yrs)
 - Fit in with other programs EuroSIP, TFSP
 - A case study (2005/6 Winter)
 - Teething problems need to be resolved
- Current Proposal
 - Follow original proposal until multi-annual
 - Extended to 2005
 - Define the multi-annual setup by Feb 2006

