



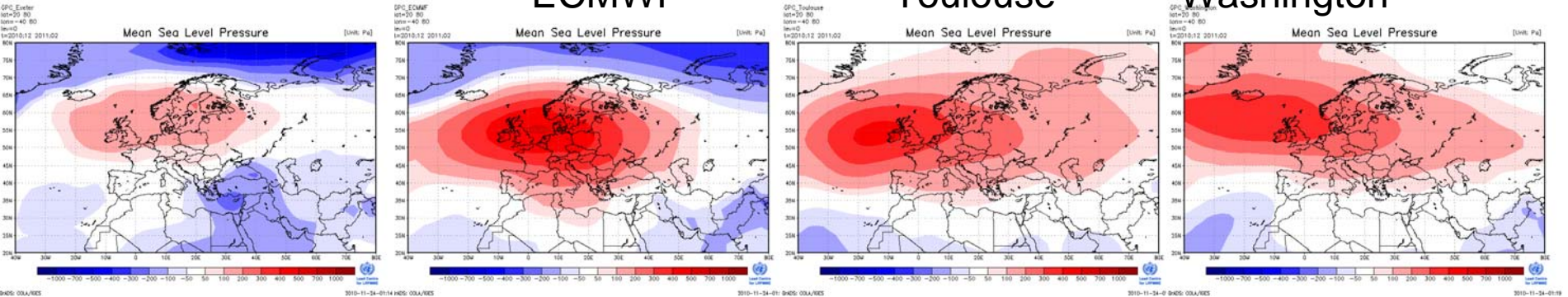
**Met Office**  
Hadley Centre



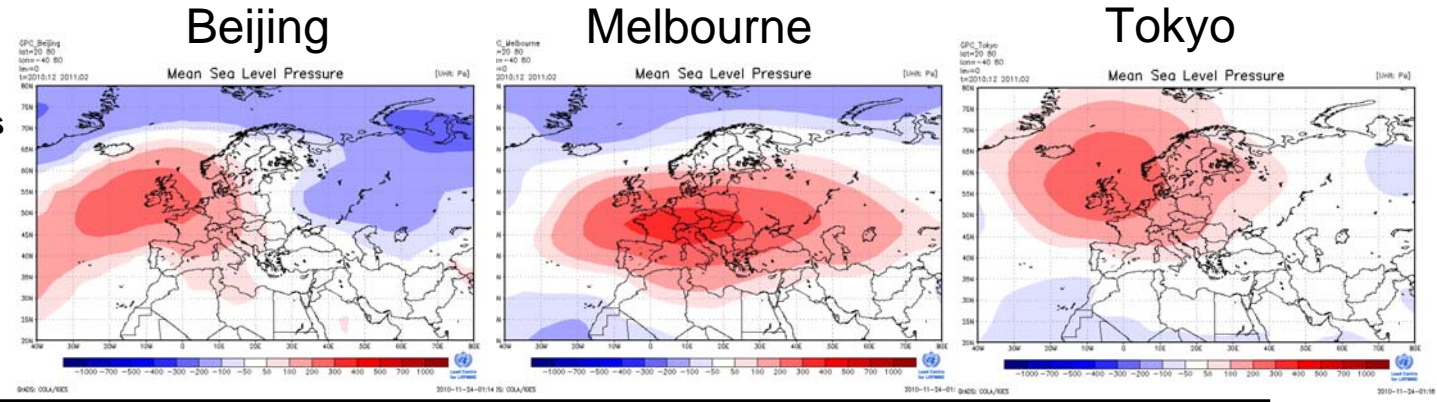
# GPC and LC-LRFMME output: Europe DJF 2010/11

SEECOF winter forum 2010

# GPC forecasts for DJF 2010/11: ensemble mean pmsl anomaly (from LC-LRFMME web)

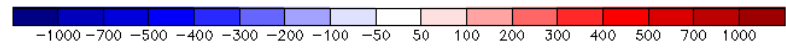
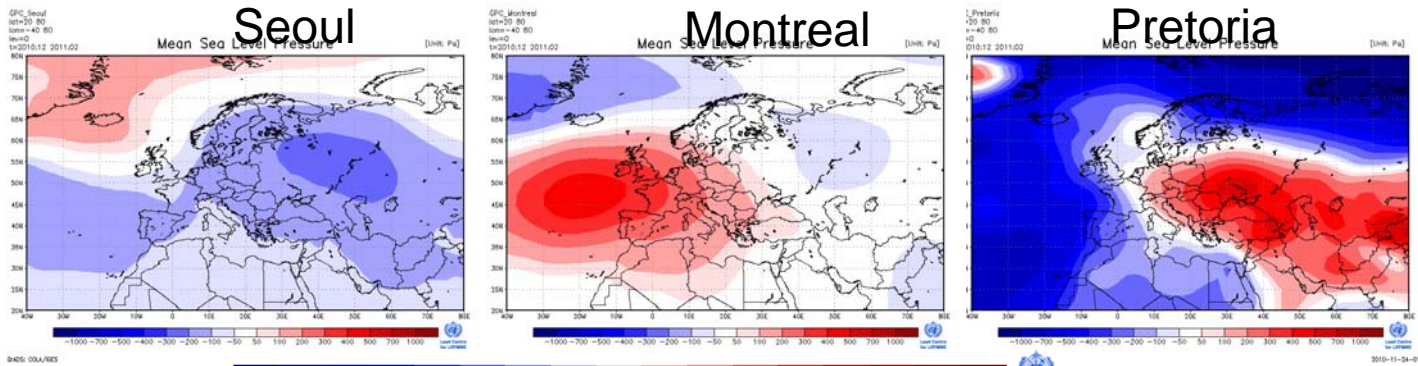


**Coupled systems  
(interactive  
ocean-  
atmosphere;  
evolving ocean)**



**(Moscow)**

**Un-coupled systems (non-  
interactive  
ocean-  
atmosphere;  
'static' ocean)**

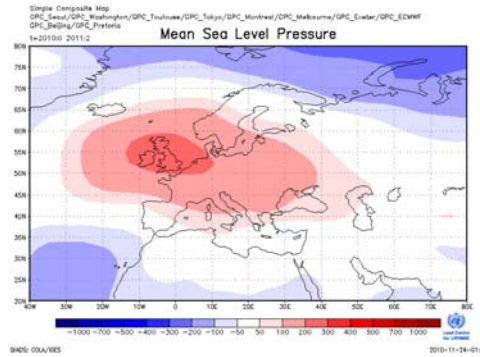




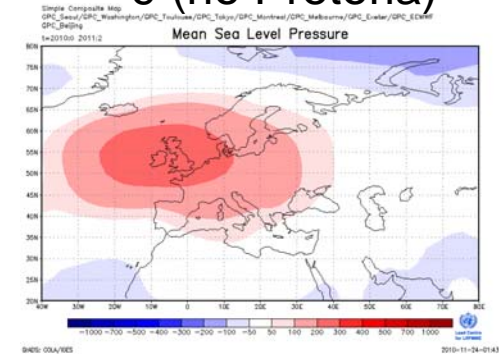
Met Office  
Hadley Centre

# Multi-model GPC pmsl forecasts, DJF 2010/11 from LC-LRFMME website

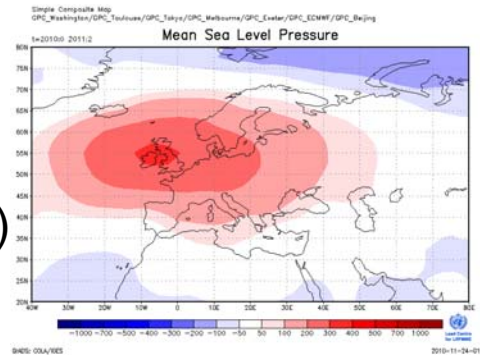
Ensemble mean of 10 GPCs



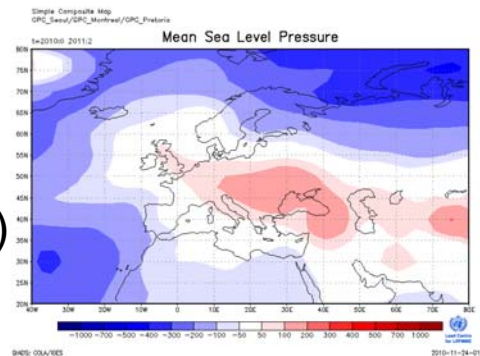
9 (no Pretoria)



Ensemble mean of 7 GPCs (coupled systems)



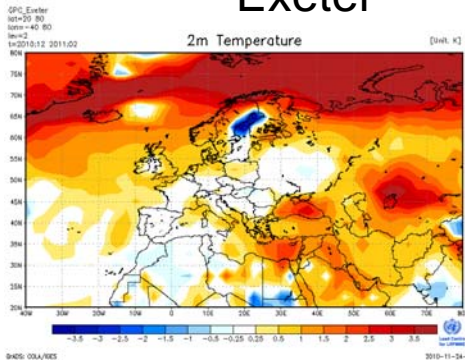
Ensemble mean of 3 GPCs (un-coupled systems)



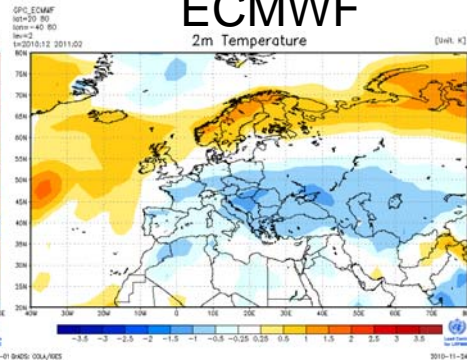
# GPC forecasts for DJF 2010/11: ensemble mean 2mT anomaly (from LC-LRFMME web)



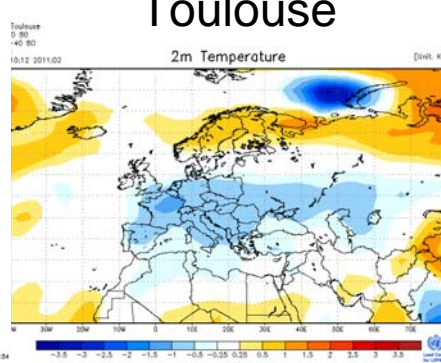
Exeter



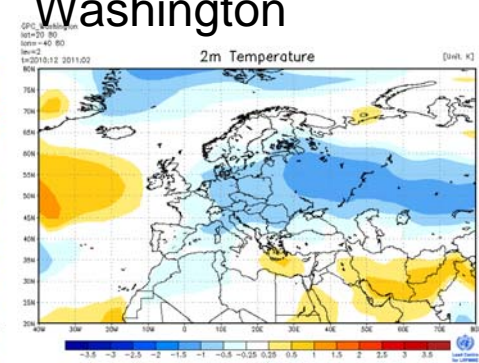
ECMWF



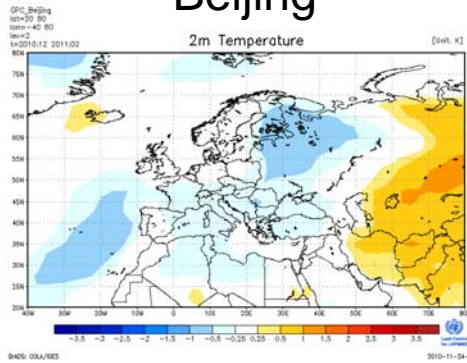
Toulouse



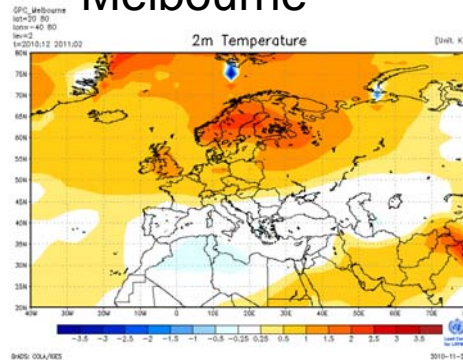
Washington



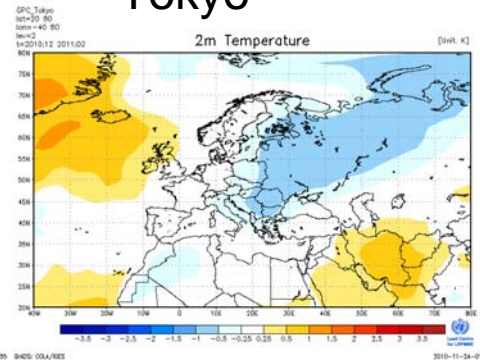
Beijing



Melbourne

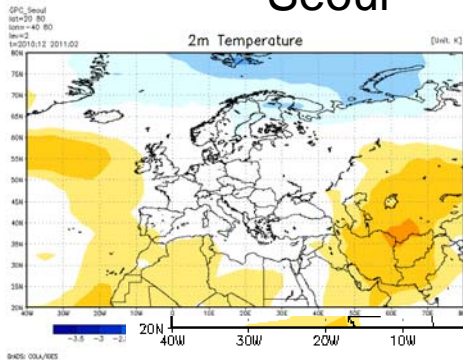


Tokyo

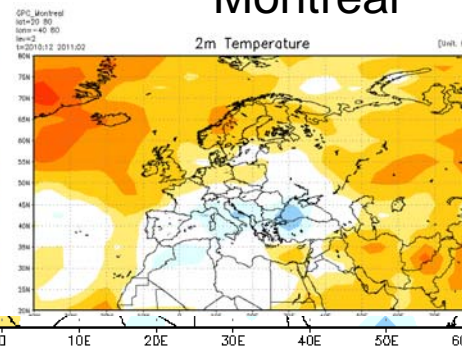


Coupled systems  
(interactive  
ocean-  
atmosphere;  
evolving ocean)

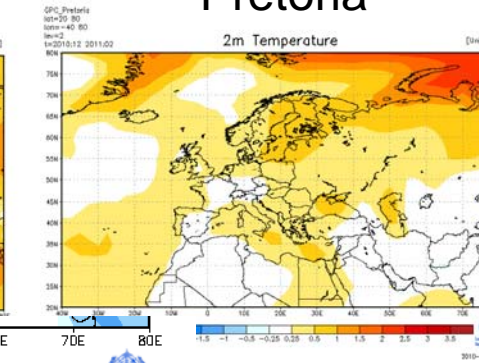
(Moscow)



Seoul

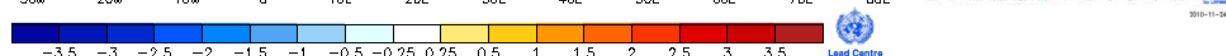


Montreal



Pretoria

Un-coupled systems (non-  
interactive  
ocean-  
atmosphere;  
'static' ocean)

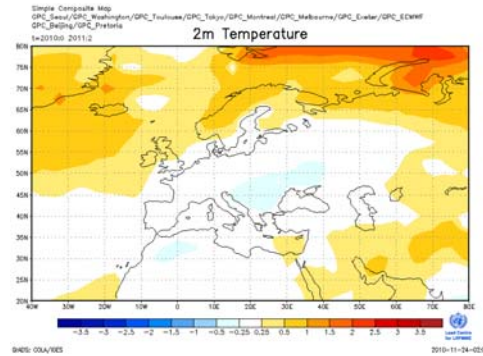




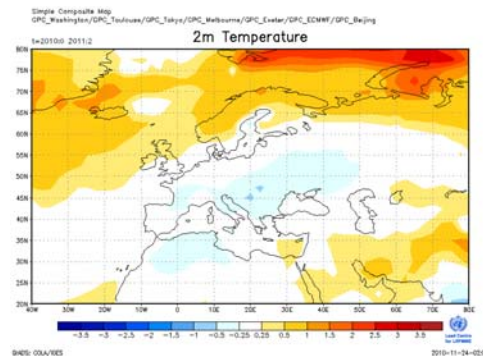
Met Office  
Hadley Centre

# Multi-model GPC 2mT forecasts, DJF 2010/11 from LC-LRFMME website

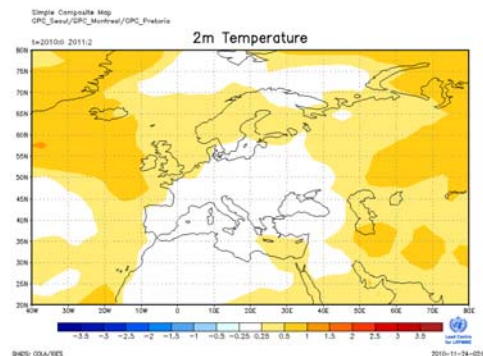
Ensemble mean  
of 10 GPCs



Ensemble mean  
of 7 GPCs  
(coupled systems)



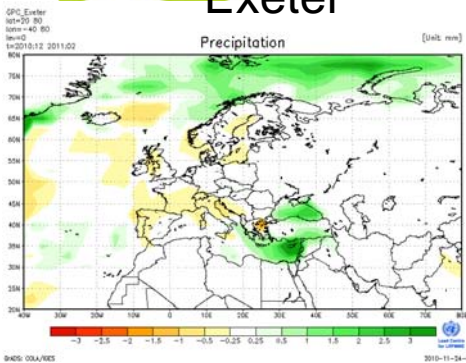
Ensemble mean  
of 3 GPCs (un-  
coupled systems)



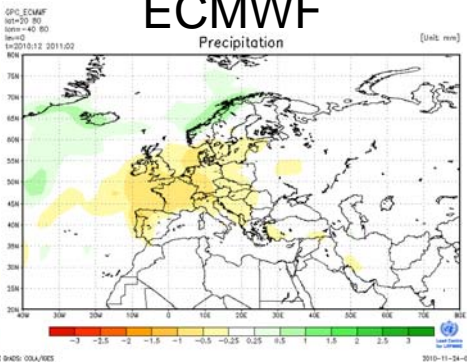
# GPC forecasts for DJF 2010/11: ensemble mean precip anomaly (from LC-LRFMME web)



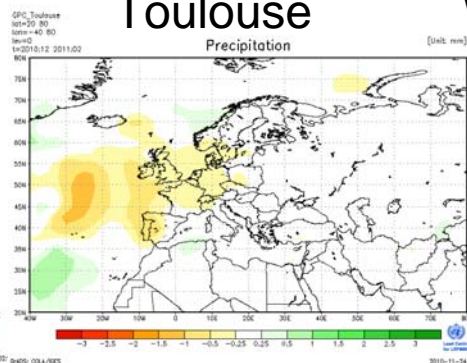
Exeter



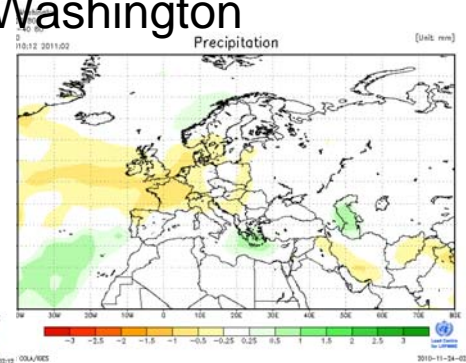
ECMWF



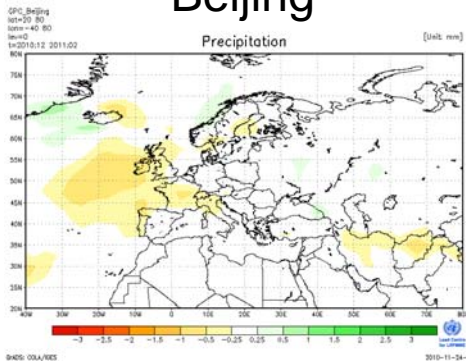
Toulouse



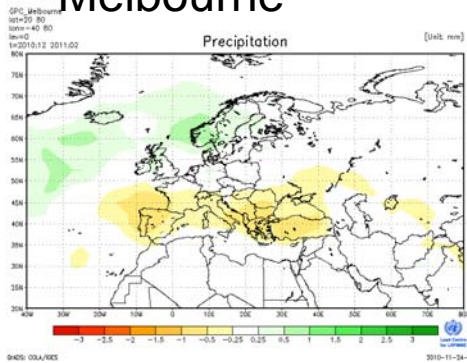
Washington



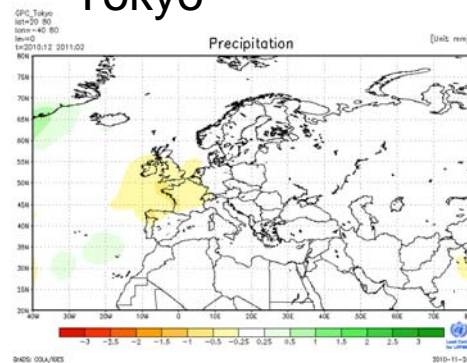
Beijing



Melbourne

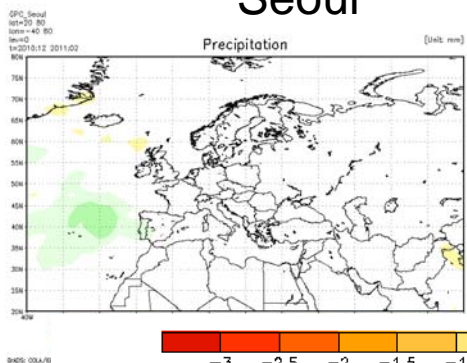


Tokyo

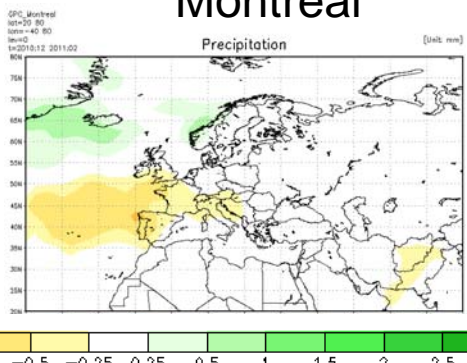


(Moscow)

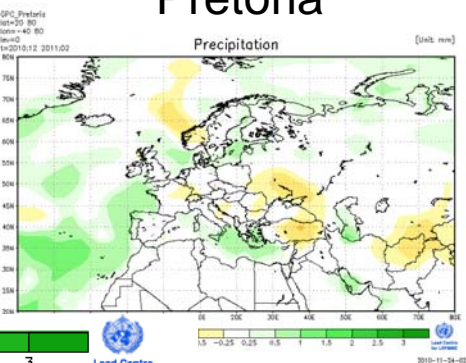
Seoul



Montreal

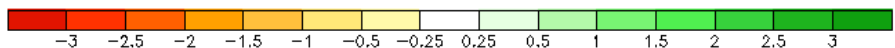


Pretoria



Coupled systems  
(interactive  
ocean-  
atmosphere;  
evolving ocean)

Un-coupled  
systems (non-  
interactive  
ocean-  
atmosphere;  
'static' ocean)

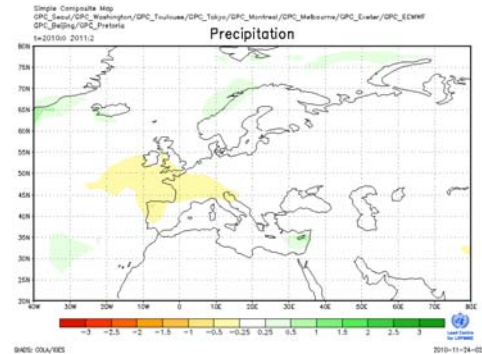




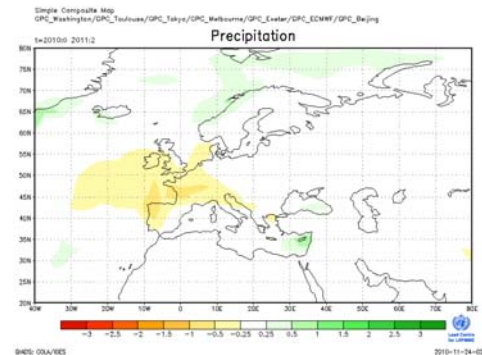
Met Office  
Hadley Centre

# Multi-model GPC 2mT forecasts, DJF 2010/11 from LC-LRFMME website

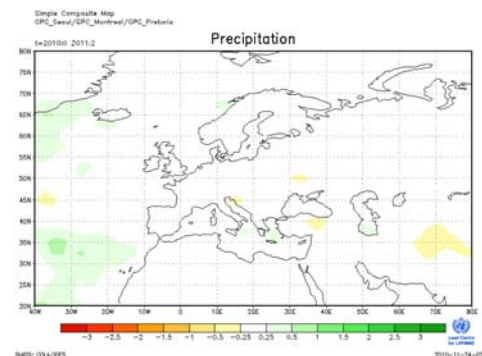
Ensemble mean  
of 10 GPCs



Ensemble mean  
of 7 GPCs  
(coupled systems)



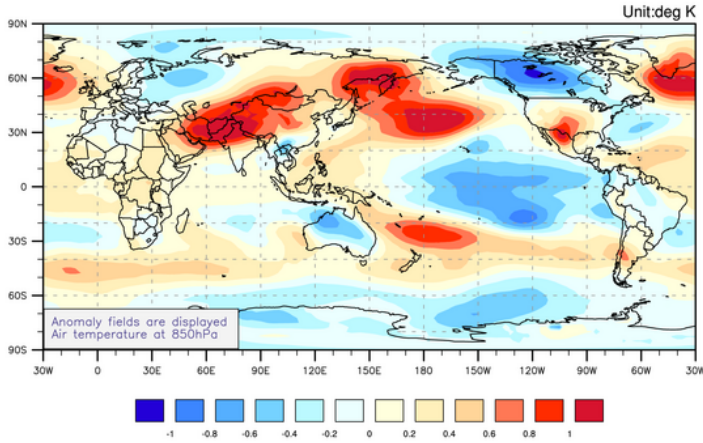
Ensemble mean  
of 3 GPCs (un-  
coupled systems)





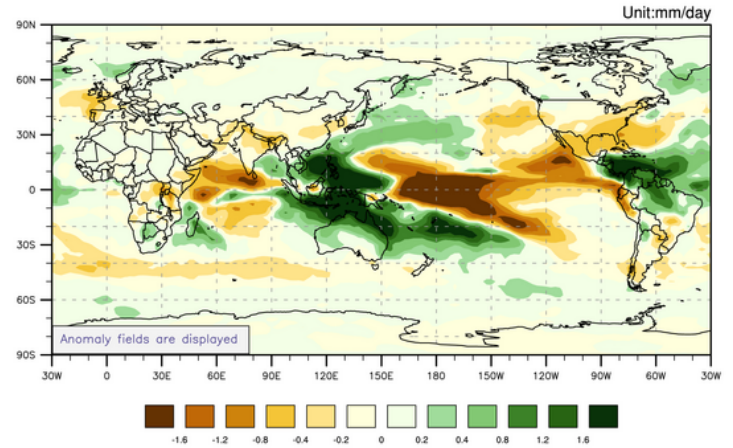
# APCC

### Temperature for DEC 2010



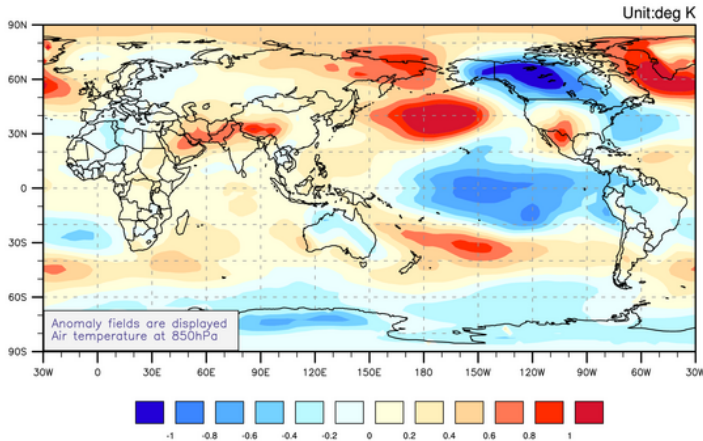
© APEC Climate Center

### Precipitation for DEC 2010



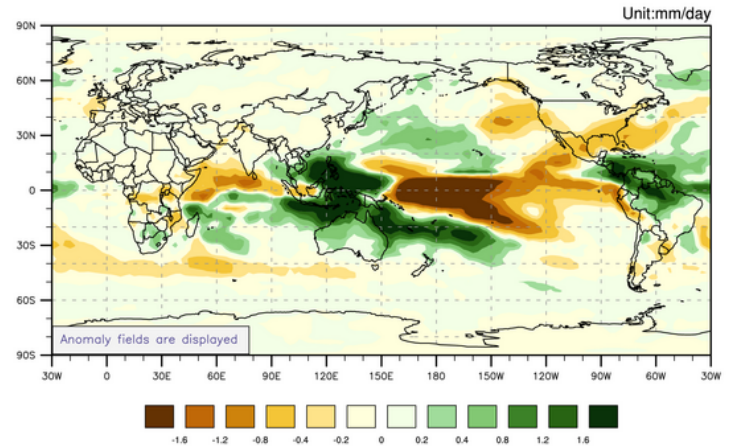
© APEC Climate Center

### Temperature for JAN 2011



© APEC Climate Center

### Precipitation for JAN 2011



© APEC Climate Center





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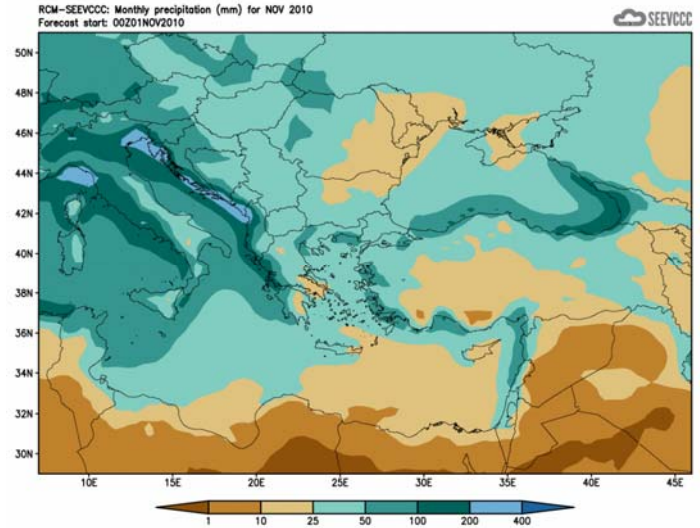
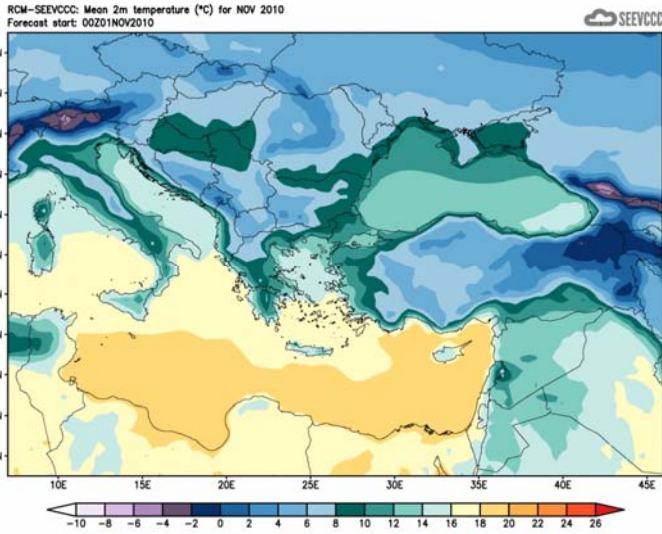
# Regional models - SEEVCCC

# Monitoring: November 2010

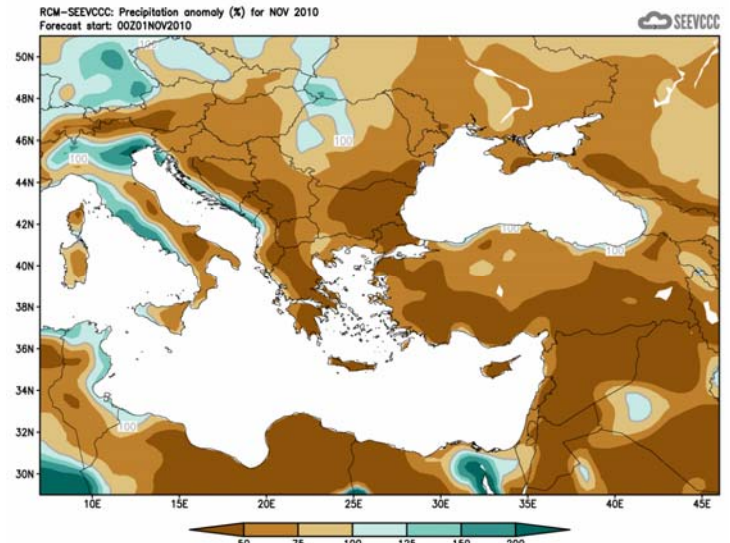
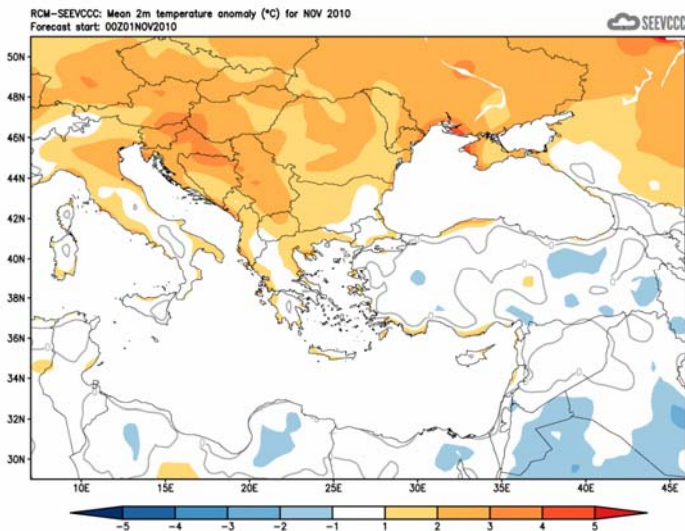
temperature

precipitation

absolute

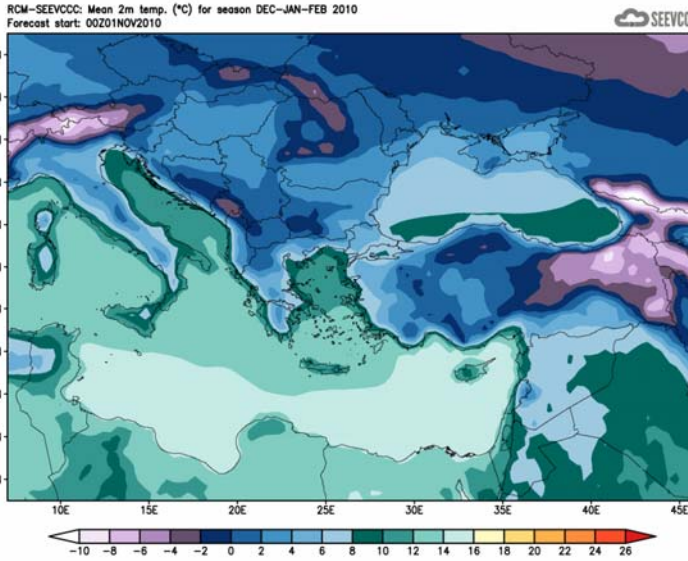


anomaly

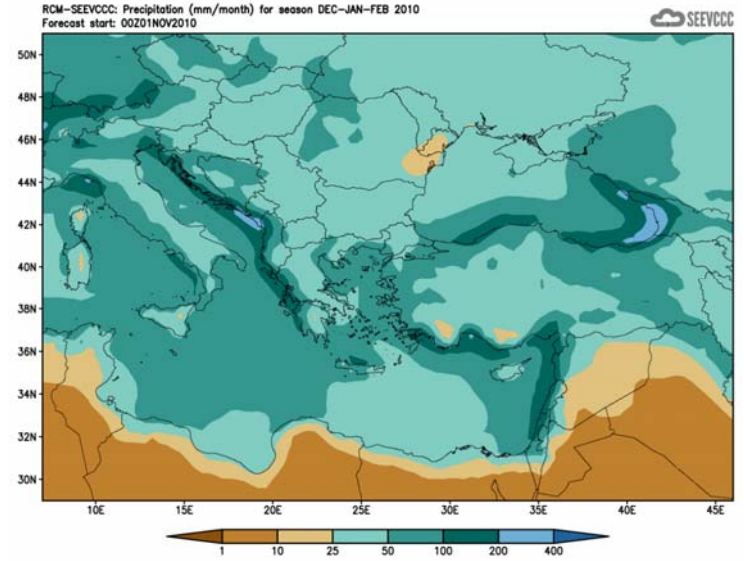


# Prediction: seasonal mean, ensemble mean

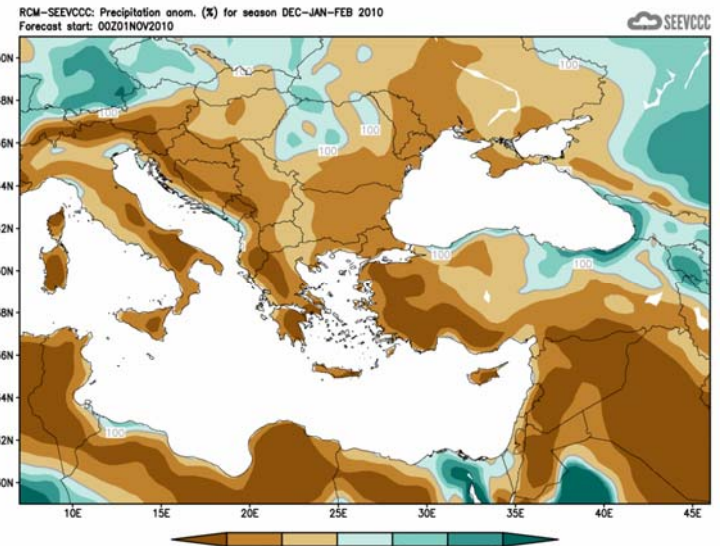
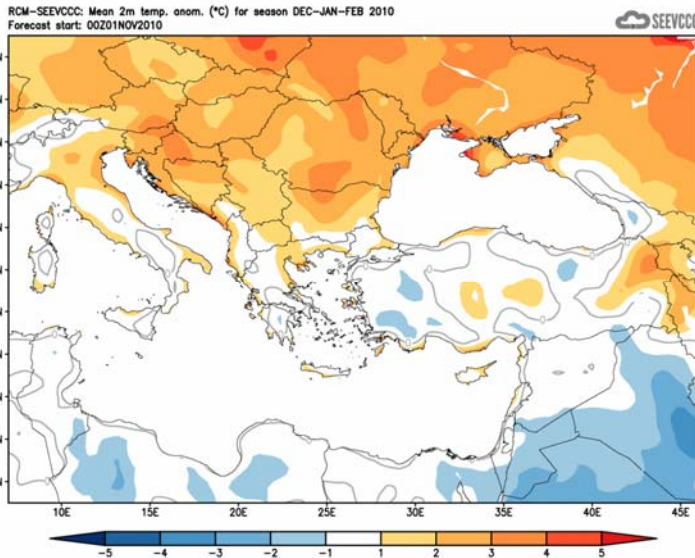
temperature



precipitation



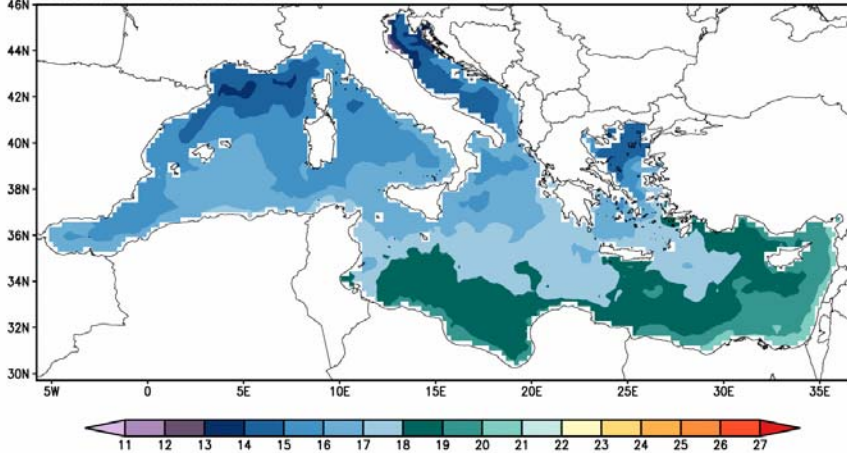
absolute



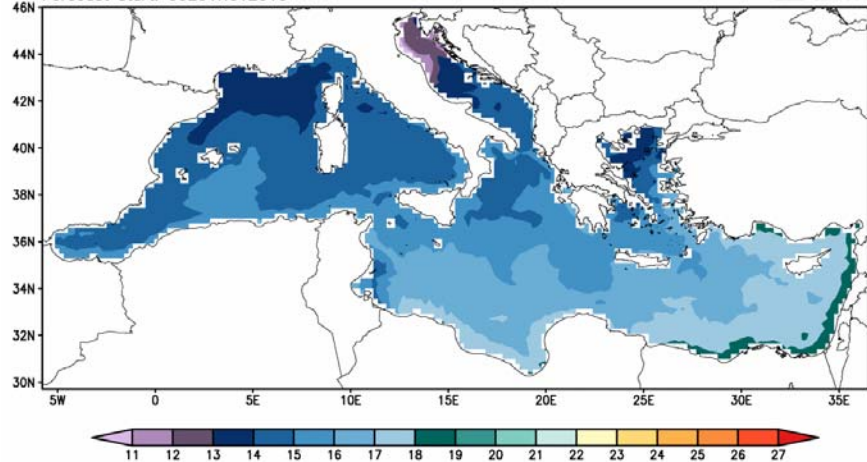
anomaly

# Prediction: monthly means, SST

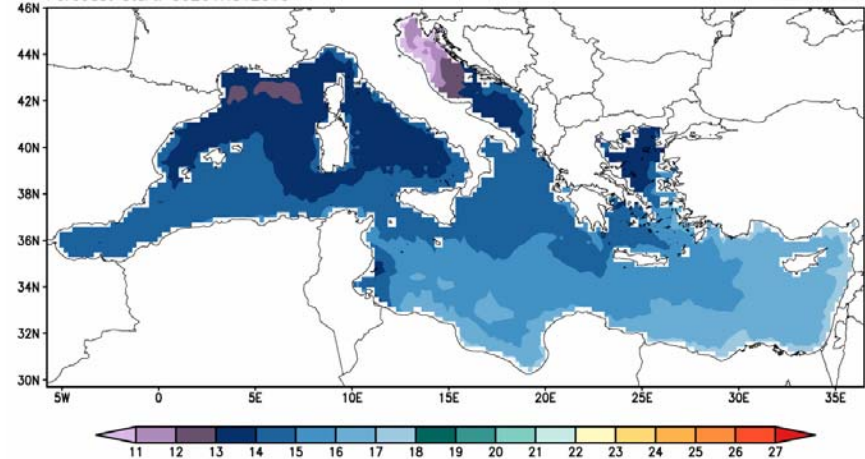
RCM-SEEVCCC: Sea surface temperature (°C) for DEC 2010  
Forecast start: 00Z01NOV2010



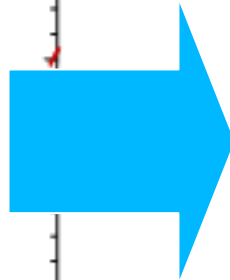
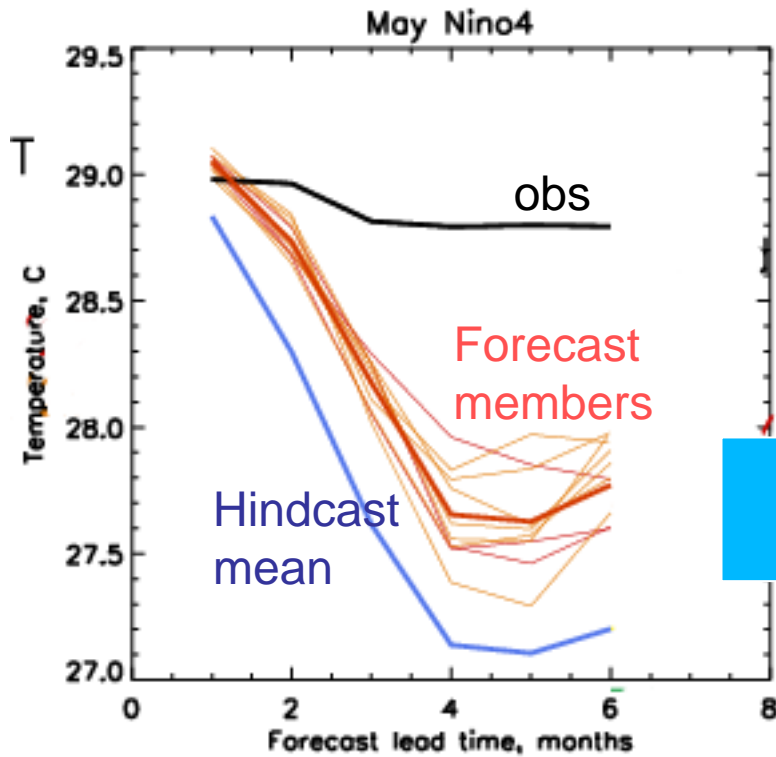
RCM-SEEVCCC: Sea surface temperature (°C) for JAN 2011  
Forecast start: 00Z01NOV2010



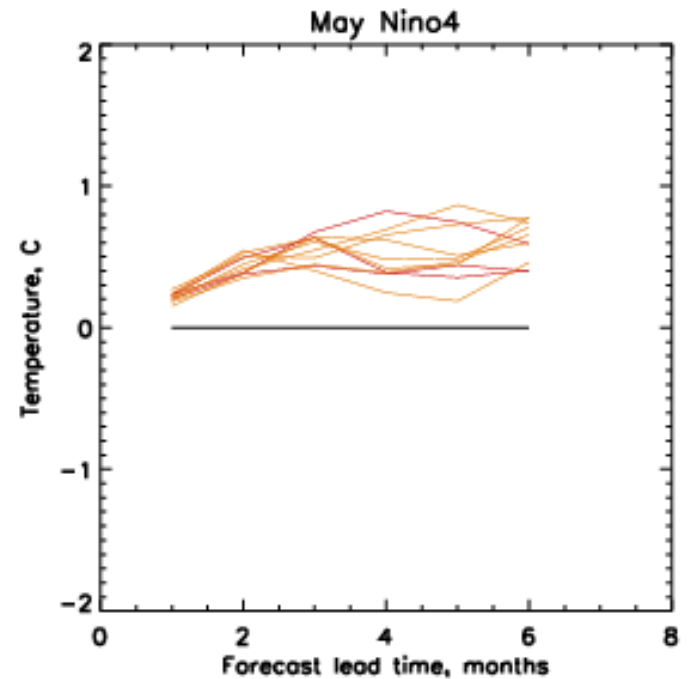
RCM-SEEVCCC: Sea surface temperature (°C) for FEB 2011  
Forecast start: 00Z01NOV2010



# Caveat: model bias



## Calibrated forecast



At long range, predict anomalies



**Met Office**  
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# Probabilistic forecasts

# Summary: DJF

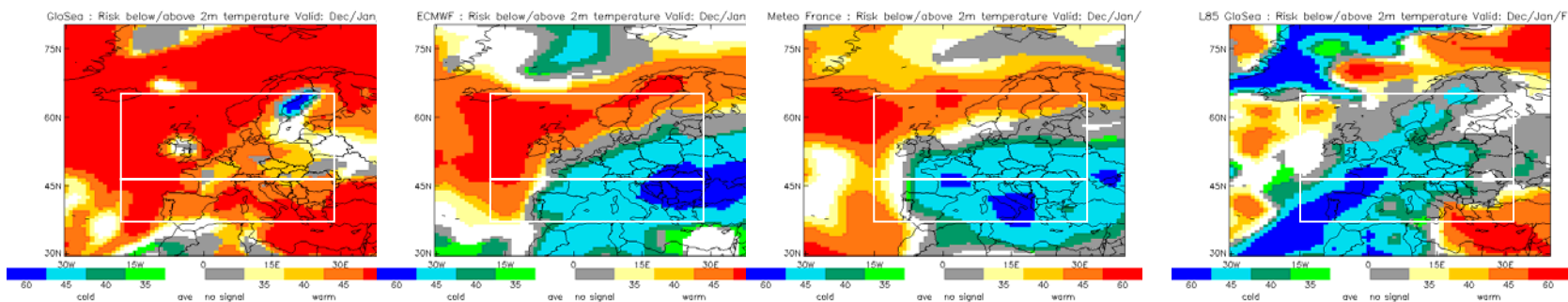
GloSea4

ECMWF

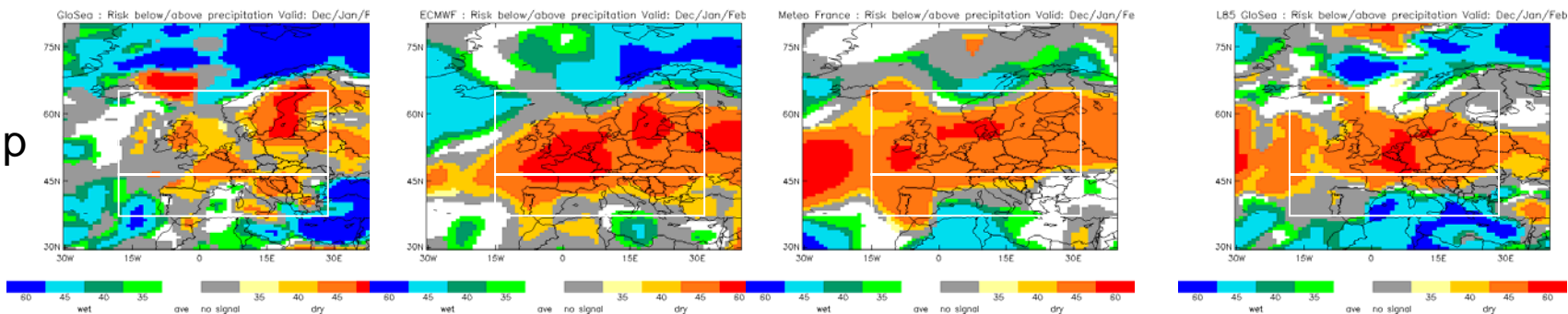
Meteo France

L85 GloSea

temp



precip





# Summary – N.Europe area-averaged probabilities

## Temperature

- GloSea Above 55%, Near 25%, Below 20%
- ECWMF Above 40%, Near 25%, Below 35%
- Met France Above 30%, Near 35%, Below 35%
- L85 GloSea Above 25%, Near 35%, Below 40%

Anomaly GI +0.50, EC -0.03, MF -0.14 L85 -0.35

## Rainfall

- GloSea Above 25%, Near 30%, Below 45%
- ECMWF Above 20%, Near 30%, Below 50%
- Met France Above 20%, Near 30%, Below 50%
- L85 GloSea Above 20%, Near 30%, Below 50%

Anomaly GI -0.18, EC -0.30, MF -0.28, L85 -0.27



# Summary – S.Europe area-averaged probabilities

## Temperature

- GloSea Above 55%, Near 30%, Below 15%
- ECWMF Above 20%, Near 30%, Below 50%
- Met France Above 20%, Near 35%, Below 45%
- L85 GloSea Above 25%, Near 30%, Below 45%

## Rainfall

GloSea	Above 35%, Near 30%, Below 35%
ECMWF	Above 30%, Near 30%, Below 40%
Met.France	Above 30%, Near 35%, Below 35%
L85 GloSea	Above 40%, Near 30%, Below 30%



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22 -28 Nov

# Europe T2m / precip terciles probabilities

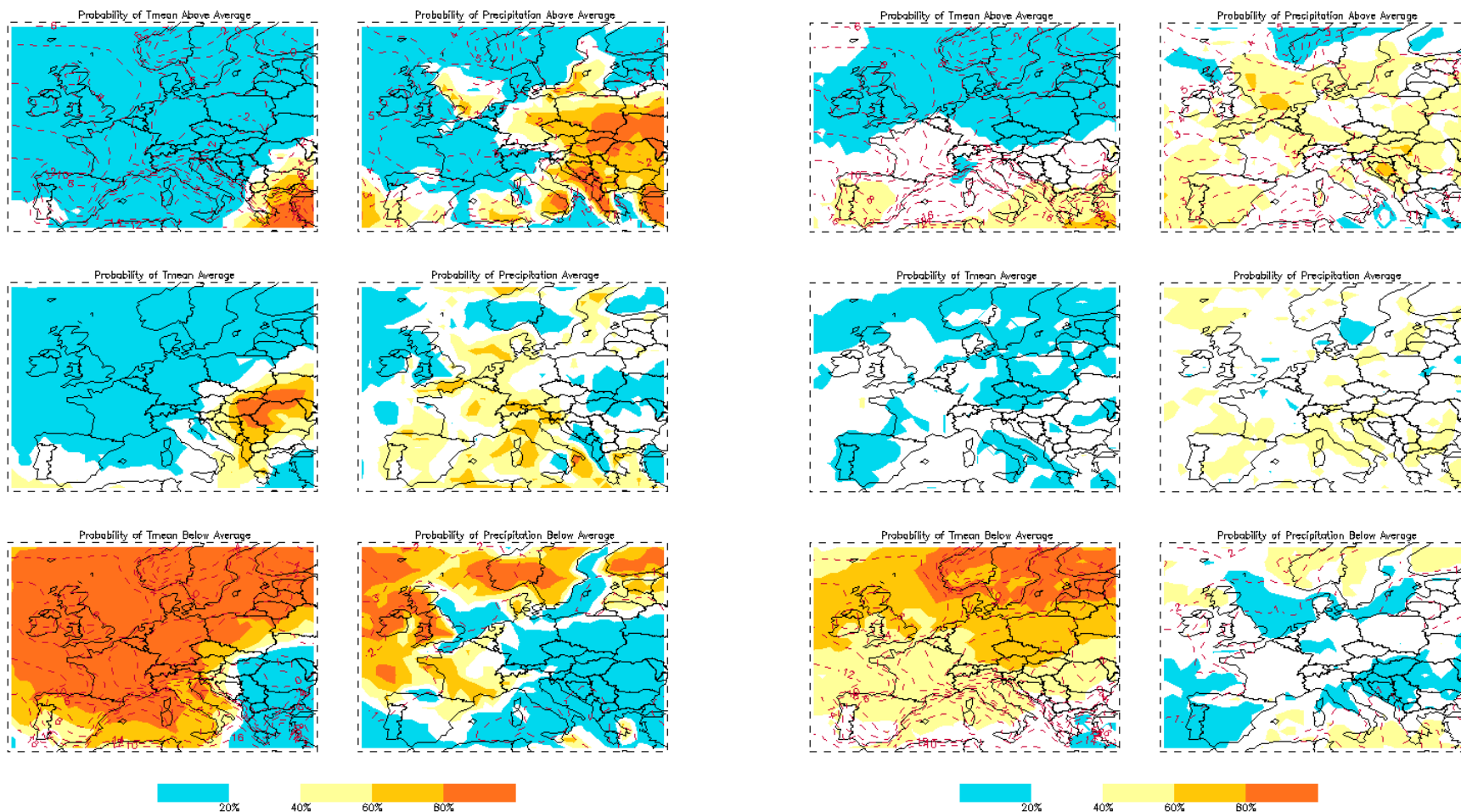
29 Nov – 5 Dec

The Monthly Outlook for Europe

Days 05–11: 22 November 2010 – 28 November 2010

The Monthly Outlook for Europe

Days 12–18: 29 November 2010 – 05 December 2010

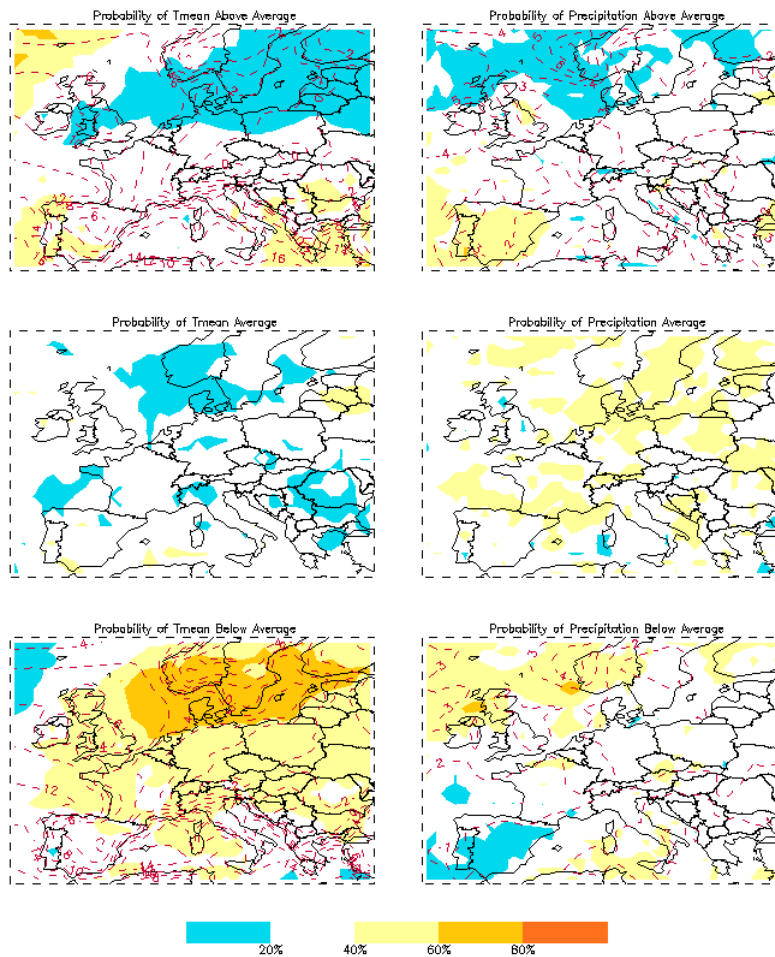


# Europe T2m / precip terciles probabilities

6-19 Dec

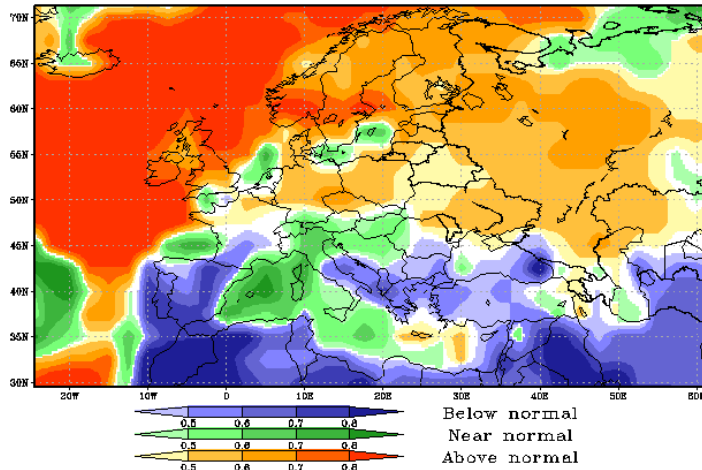
The Monthly Outlook for Europe

Days 19–32: 06 December 2010 – 19 December 2010

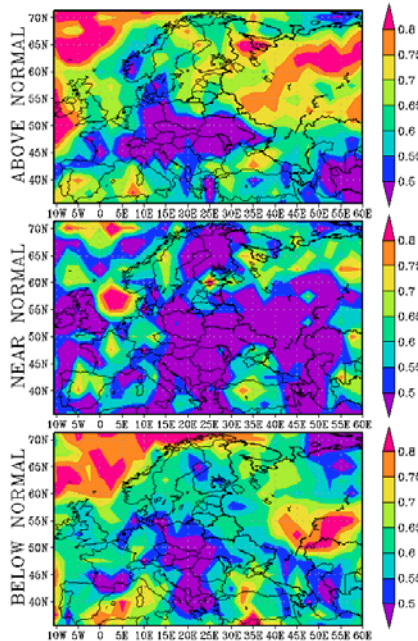


# HMC

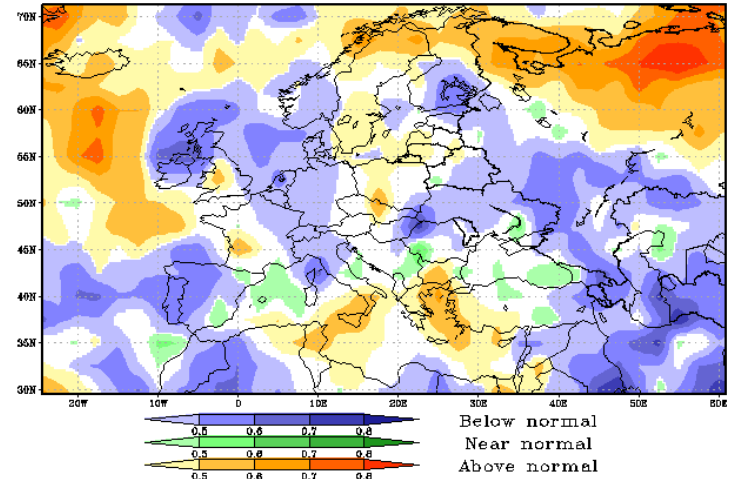
Composite probabilities of categorical forecast outcomes for T2m seasonal anomalies. Producer: HMC  
Forecast period: December\_January\_February\_2010



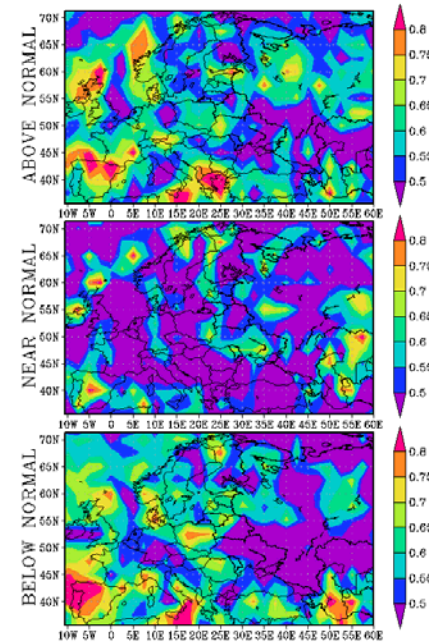
ROC score for T2m seasonal anomalies. Period: DJF (1979-2003). Lead time: 0



Composite probabilities of categorical forecast outcomes for Precipitation seasonal anomalies. Producer: HMC+MGO  
Forecast period: November\_December\_January\_2010

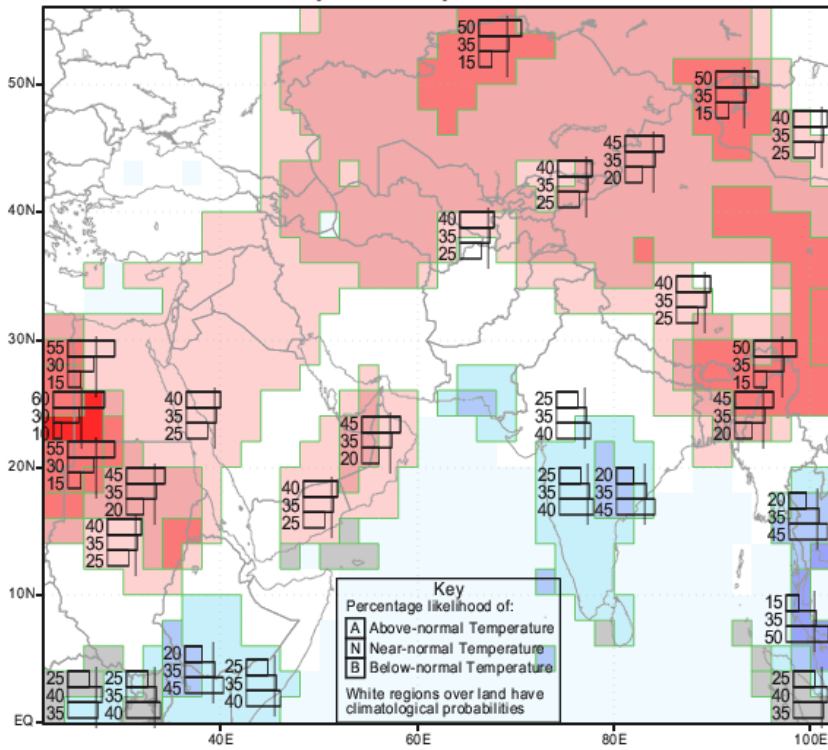


ROC score for Precipitation seasonal anomalies. Period: DJF (1979-2003). Lead time: 0

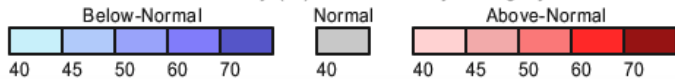


# IRI (for Asia)

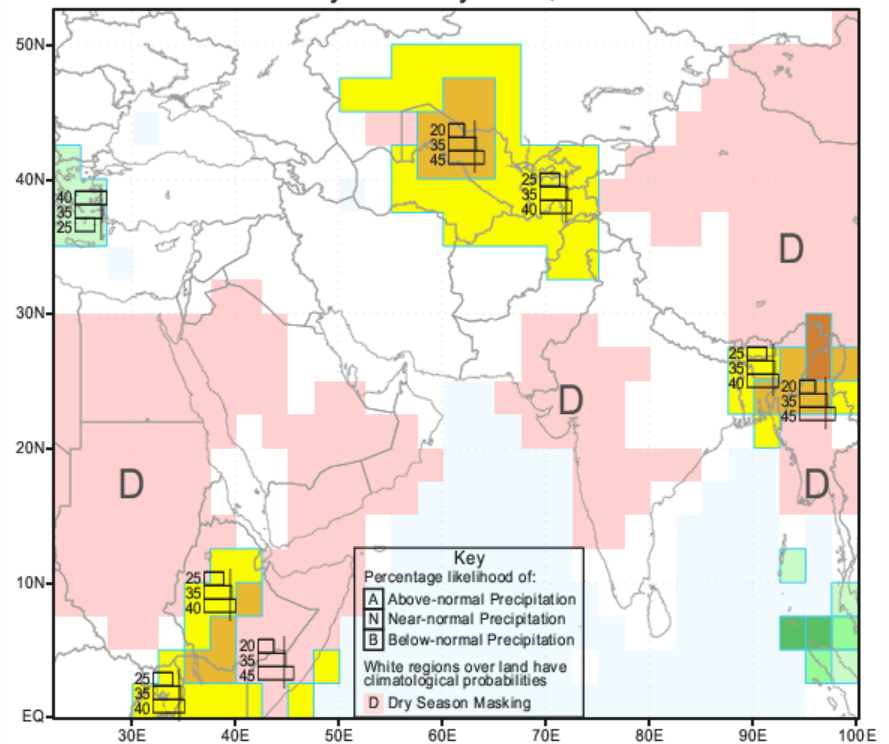
IRI Multi-Model Probability Forecast for Temperature for December-January-February 2011, Issued October 2010



Probability (%) of Most Likely Category



IRI Multi-Model Probability Forecast for Precipitation for December-January-February 2011, Issued October 2010



Probability (%) of Most Likely Category





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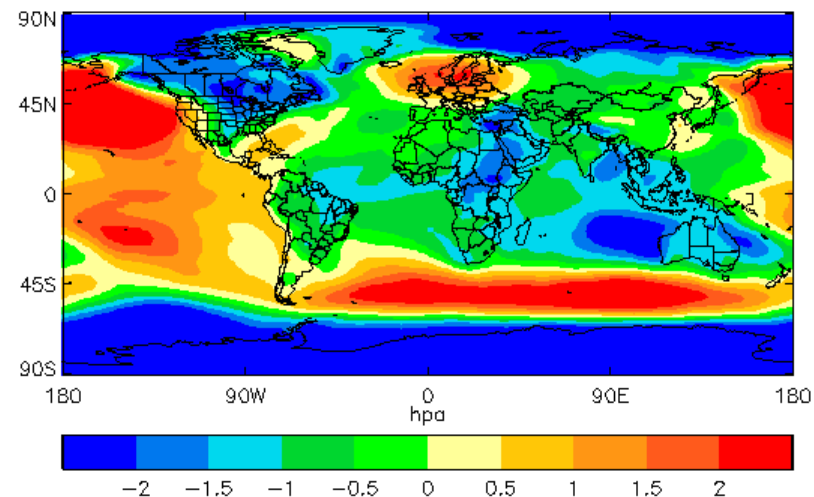


Longer lead-time

# Sea-level pressure – ensemble mean

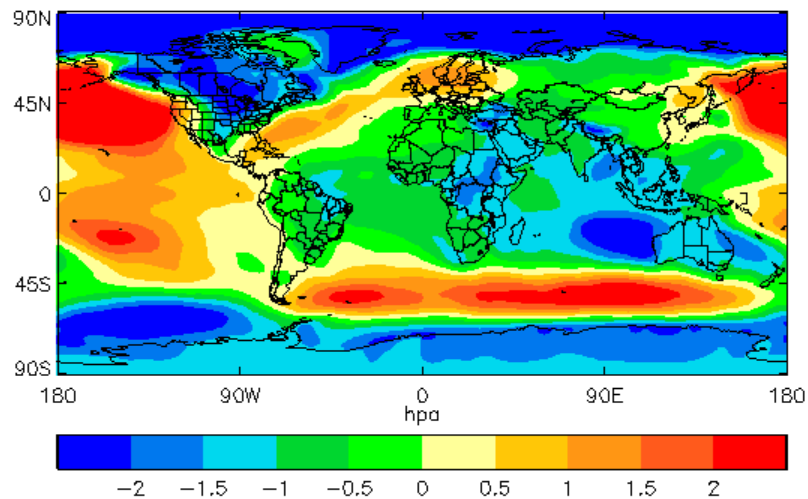
## DJF

Ensemble mean anomaly : mean sea level pressure : Dec/Jan/Fe  
Issued November 2010



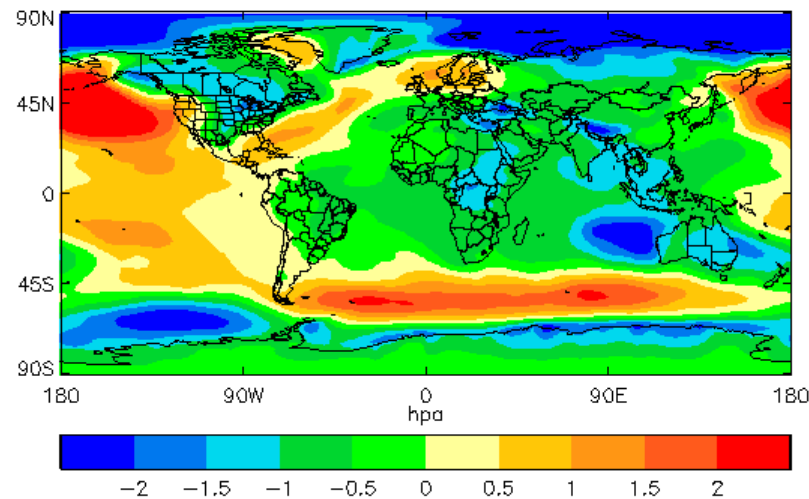
## JFM

Ensemble mean anomaly : mean sea level pressure : Jan/Feb/Ma  
Issued November 2010



## FMA

Ensemble mean anomaly : mean sea level pressure : Feb/Mar/Ap  
Issued November 2010





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# Discussion



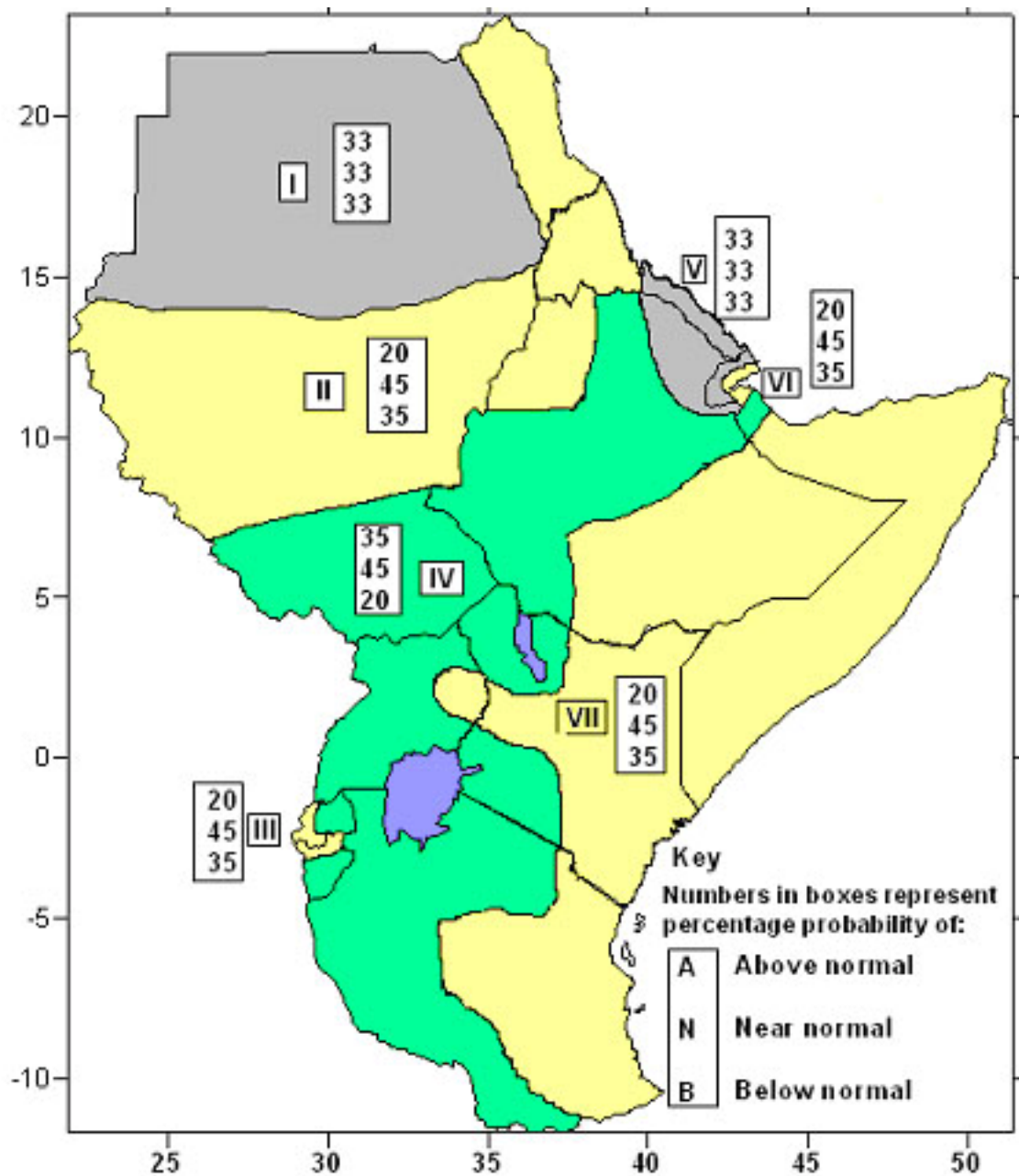


**Met Office**  
Hadley Centre



# Consensus

LATITUDE (°N/S)



Key  
Numbers in boxes represent percentage probability of:  
A Above normal  
N Near normal  
B Below normal

25 30 35 40 45 50

LONGITUDE (°E)

# Temperature



# Precipitation

