

WMO Lead Center for Long-Range Forecast Multi-Model Ensemble

WMO Lead Center for Long-Range Forecast Multi- Model Ensemble (LC-LRFMME)

$$\hat{MME} = \bar{O} + \sum_{i=1}^N a_i (F_i - \bar{F})$$

APEC Climate Symposium 2009
12-15 July, Singapore

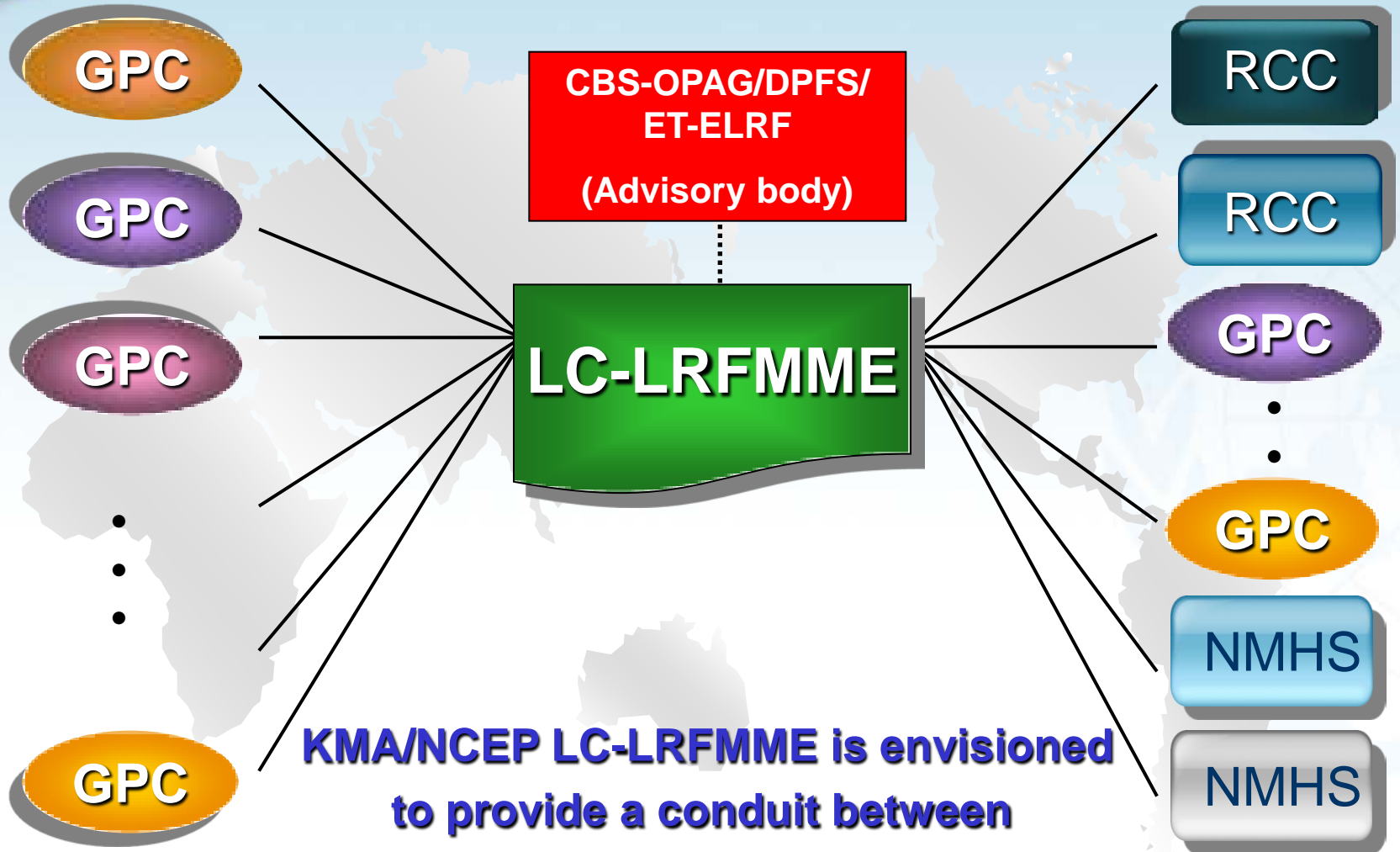
KIM Jeongsun

Climate Prediction Division
Korea Meteorological Administration



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WMO LC-LRFMME



KMA/NCEP LC-LRFMME is envisioned to provide a conduit between GPCs and NMHSs, RCCs, RCOFs etc.



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Status of Progress

2005

WMO GPC meeting (October, Korea)

- KMA suggested the need of LC-LRFMME.

WMO CCL meeting (November, China)

- KMA presented the need for establishing LC-LRFMME.

2006

The joint ET of DPFS agreed needs of Lead Center(s) for collection of globally available LRF to build MMEs (April, England).

KMA, jointly with NCEP, completed submission of Lead Center application form to the WMO (September).

WMO CBS-Ext.06 (November, Korea)

- The commission encouraged GPCs to provide their data to LC-LRFMME.

2007

LC-LRFMME established the data exchange system (June).

WMO/KMA GPC Workshop (September, Korea)

- Refining needs for and functions of LC-LRFMME

2008

WMO Meeting of the ET on Extended and LRF (April, China).

- Redefining the goal and functions of LC-LRFMME

2009

WMO CBS-XIV (April, Croatia)

- LC-LRFMME was officially endorsed.



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Goal & Functions

Primary Functions

- Maintains a repository of documentation for the system configuration of all GPC LRF systems
- Collects an agreed set of forecast data from GPCs
- Displays GPCs forecasts in a standard format
- Generates an agreed set of Lead Centre (LC) products
- Redistributes digital forecast data for those GPC's that allow it
- Handles requests for the password for the website and data distribution

Goal of LC-LRFMME

The goal of the Lead Centre is to provide a conduit for sharing the model data for long-term climate predictions and to develop a well-calibrated MME system for mitigating the adverse impact of unfavorable, or to maximize the benefit from favorable climate conditions.



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Activities of LC-LRFMME

Meetings

WMO CBS-Ext.06 (November 2006, Korea)

WMO/KMA GPC Workshop (September 2007, Korea)



WMM Meeting of the Expert Team on Extended and Long-Range Forecasting (April 2008, China)

WMO Meeting of the Expert Team on Research Needs for Intraseasonal, Seasonal and Interannual Prediction (September 2008, USA)



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Activities of LC-LRFMME

Support for RCOFs

In the spring of 2009

*PRESAO, GHACOF,
FOCRAII*

WMO
LC-LRFMME

Support for epidemic control

In the winters of 2007 and 2008

climate prediction for the African region

WMO, IRI, SADC Drought Monitoring Centre

Training

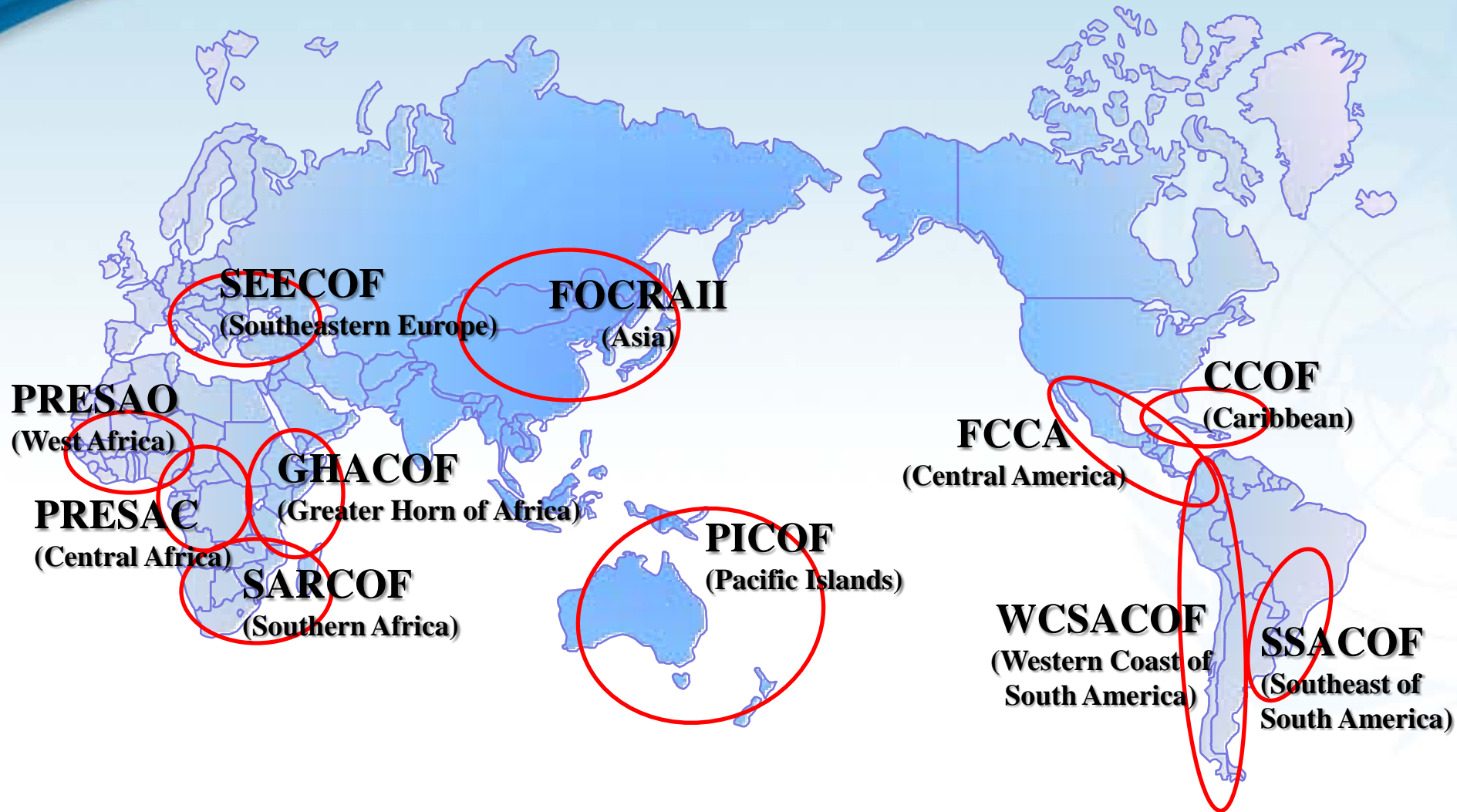
Improvement of Meteorological Disaster Responsiveness for African Countries (May 2009)

Climate Variability and Predictions in South Asia, Eastern and Southeastern Africa (June 2009)



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Regional Climate Outlook Forums





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LC-LRFMME Website

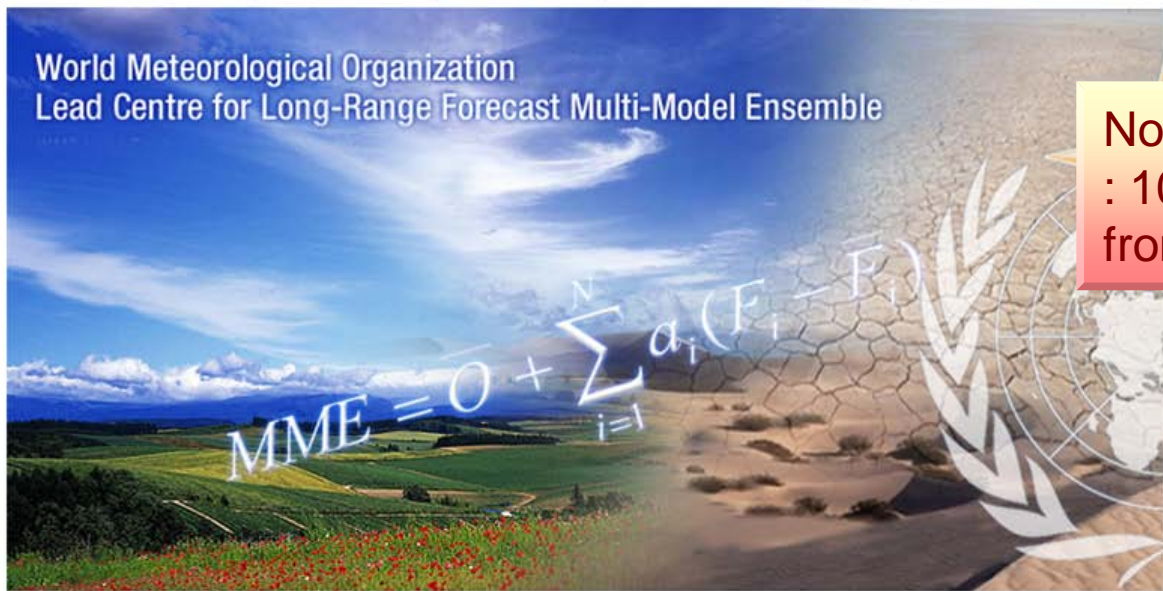
<http://www.wmolc.org>



Home | About Us | News | Multi-Model Ensemble | Data | TeleConference | Related Sites

Introduction | Deterministic MME | Probabilistic MME | Verification Measures | Energetics | References

World Meteorological Organization Lead Centre for Long-Range Forecast Multi-Model Ensemble



No. of Members
: 109 members
from 43 countries

Links to
12 GPCs

WMO Global Producing Centres



GPCs

Beijing	ECMWF	Exeter
POAMA Melbourne	Canada Montreal	Seoul
Tokyo	Toulouse	Washington
MOSCOW CENTRE OF RUSSIA	CPTC CPTC	Pretoria

News

- Please verify and modify your ac... 2009.07.02
- CBS's endorsement for LC-LRFMME2009.05.20
- Forecasts for JJA 2009 uploaded 2009.05.19

WMO Lead Center for SVSLRF



Counter Total : 4,328 / Today : 29





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The List of Current GPCs

- **System configuration information**

GPC	System Config.	Res. (Atm.)	Hindcast Period
Beijing	Coupled	T63/L16	1983-2004
ECMWF	Coupled	T159/L62	1981-2005
Exeter	Coupled	2.5x3.75/L19	1987-2001
Melbourne	Coupled	T47/L17	1980-2006
Montreal	Tier-2	4 Models	1969-2004
Seoul	Tier-2	T106/L21	1979-2007
Tokyo	Tier-2	T63/L40	1984-2005
Toulouse	Coupled	T63/L31	1993-2003
Washington	Coupled	T62/L64	1981-2004
Moscow	Tier-2	1.125x1.40625/L28	1979-2003

500hPa GPH

lat=30.00 lon=2009.06 2009.08 500hPa GPH [Unit: gpm] 90N




850hPa Temperature

lat=30.00 lon=2009.06 2009.08 850hPa Temperature [Unit: K] 90N



Mean Sea Level Pressure

lat=30.00 lon=2009.06 2009.08 Mean Sea Level Pressure [Unit: Pa] 90N

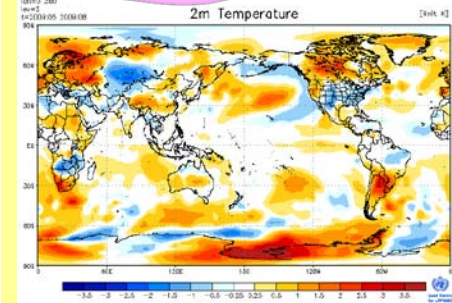
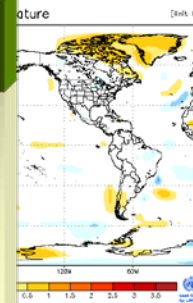


Beijing

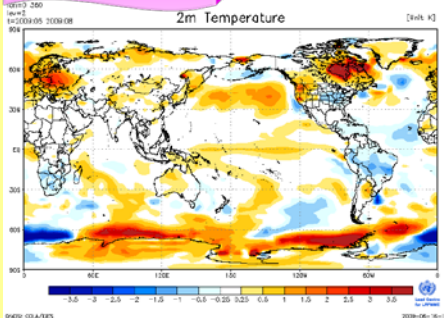
10 GPCs

Beijing, ECMWF, Exeter, Melbourne, Montreal, Moscow, Seoul, Tokyo, Toulouse, Washington

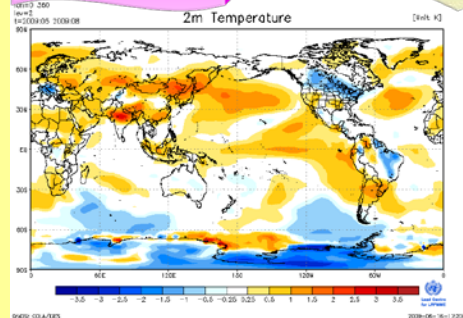
ECMWF



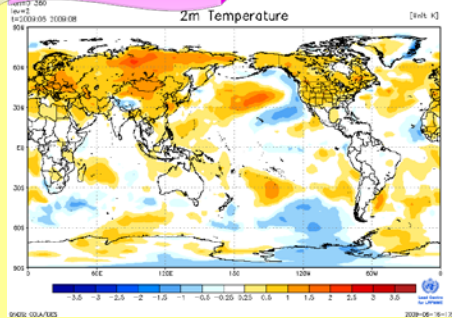
Exeter



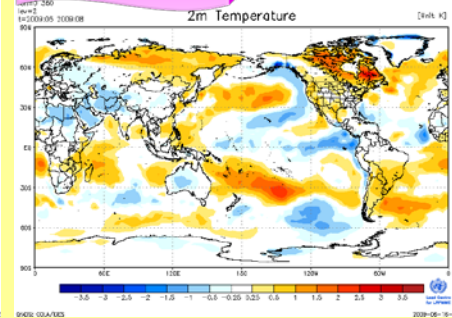
Melbourne



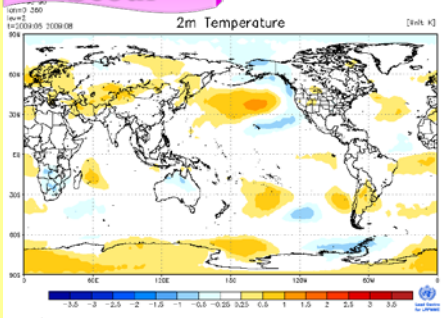
Montreal



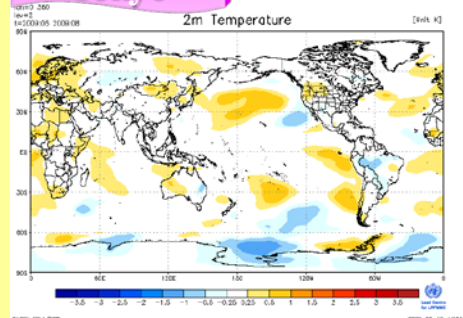
Moscow



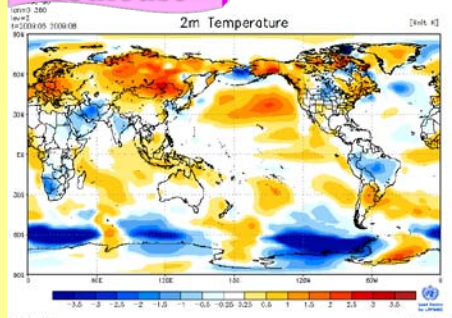
Seoul



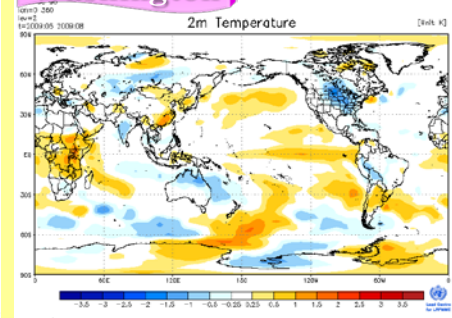
Tokyo



Toulouse



Washington





Products of LC-LRFMME

Consistency map

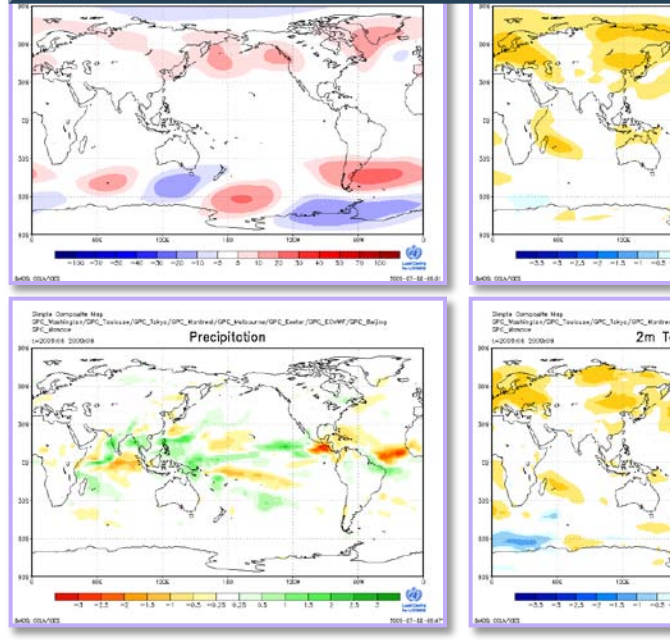
GPC_washington/seoul/melbourne/montreal/beijing/moscow/ecmwf/exeter/toulouse/tokyo
SST : GPC_washington/seoul/melbourne/beijing/ecmwf/exeter/toulouse/moscow
May2009 + JJA forecast

SST plume

Forecast of Nino3.4 SST Anomalies
Jun2009 to Feb2010

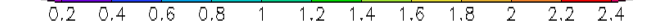
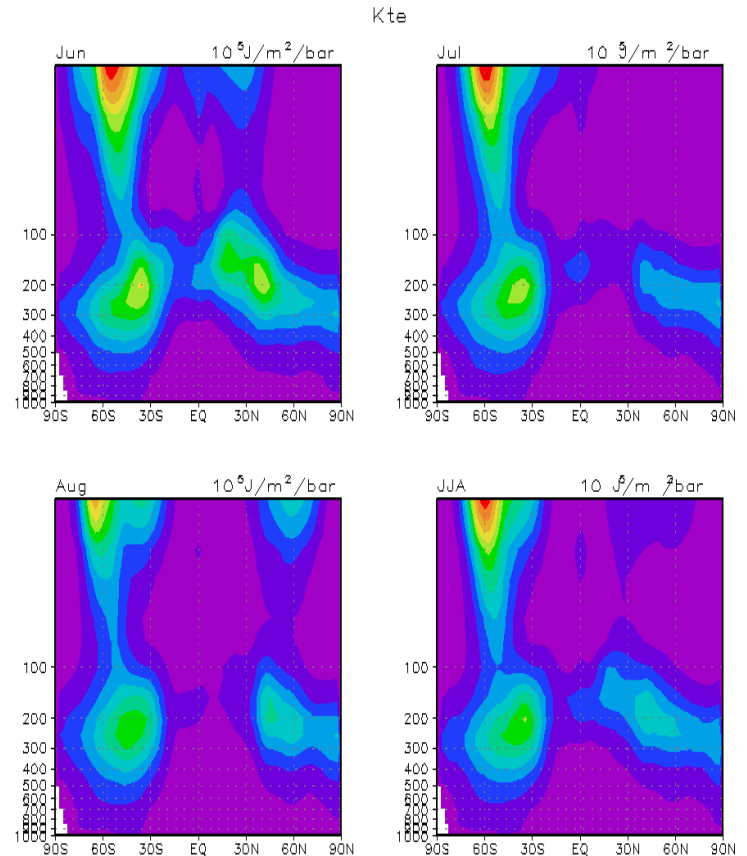
Indexes

Simple MME



Energetics

FORECAST MODEL : seoul

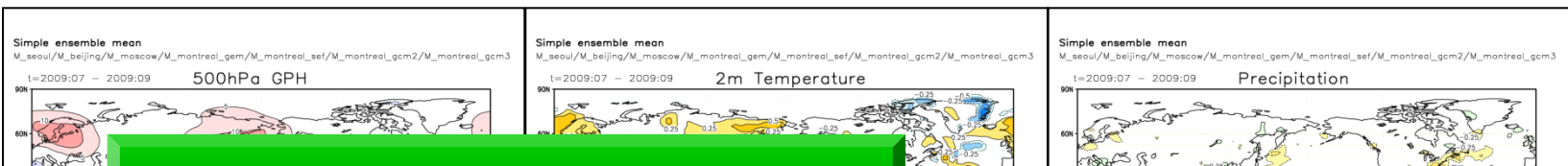




MME Products

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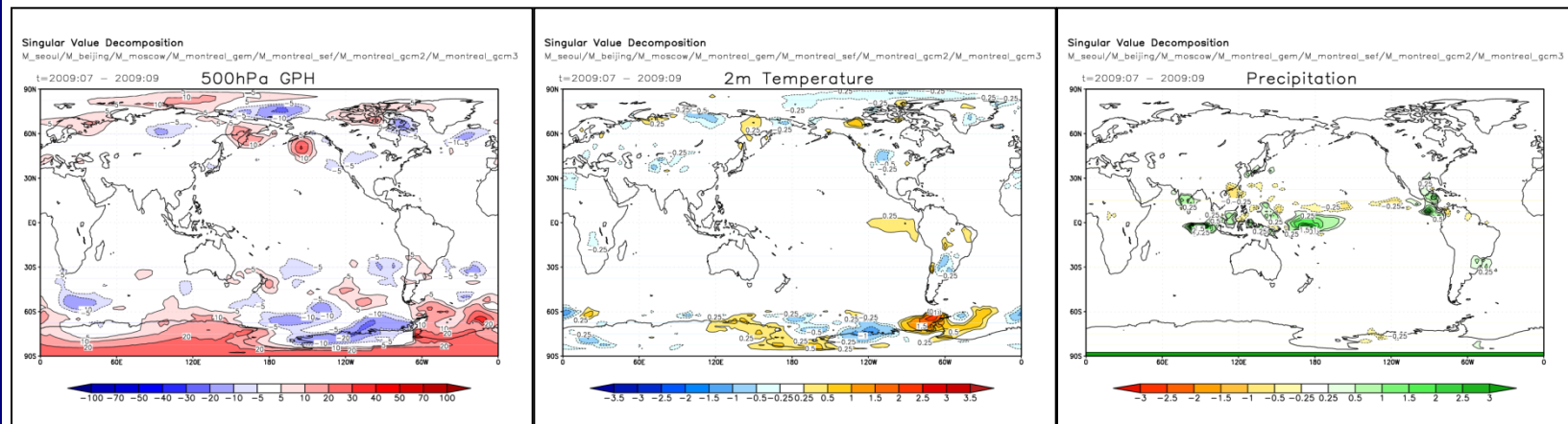
Biased-Corrected Ensemble Mean



Regular Multiple Regression







Singular Value Decomposition





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Summary

-  **LC-LRFMME established by GPC-Seoul and GPC-Washington is fully functional and meets the requirements set by the “Expert Team on Extended and Long-Range Forecasts (ET-ELRF)”**
-  **LC-LRFMME standardizes GPCs’ data for better usage of WMO Members and has already entertained requests from RCOFs**
-  **LC-LRFMME would be a valuable asset to the long-range forecast communities**
-  **LC-LRFMME makes an important contribution to increasing the resources available for disaster prevention and mitigation, and for better social-economic planning**

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Thank you!

