WMO LC-LRFMME

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

Background

13 WMO-designated Global Producing Centres (GPCs) for long-range forecasts

- adhering to agreed procedures/ standards in delivery of global long-range forecasts (e.g. products, timeliness, verification/ validation info, system documentation)

Linkage is needed among GPCs and other organizations including NMHSs, RCCs and RCOFs to ensure wider and more effective use of LRF

History

2005 – Oct

» WMO GPC meeting
(October, Korea)

KMA suggested the need of LC-LRFMME

2006 – Apr

» Expert Team on LRF
(April, England)

Objectives and functions of the LC were defined by ET of WMO / CBS / DPFS

2006 – Nov

» WMO CBS-Ext.06
(November, Korea)

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

2007 – Jun

» **LC-LRFMME established the data exchange system**
(June)

History

2009 — Apr

» WMO CBS-XIV
(April, Croatia)

LC-LRFMME was officially endorsed

2011 — Apr, May

» WMO Cg-XVI
(May, Switzerland)

Cg-XVI requested to expand its role to include exchange of extended-range predictions

» **LC-LRFMME started to provide Probabilistic MME predictions in terms of tercile-based categorical probabilities** (April)

2016 — **Present**

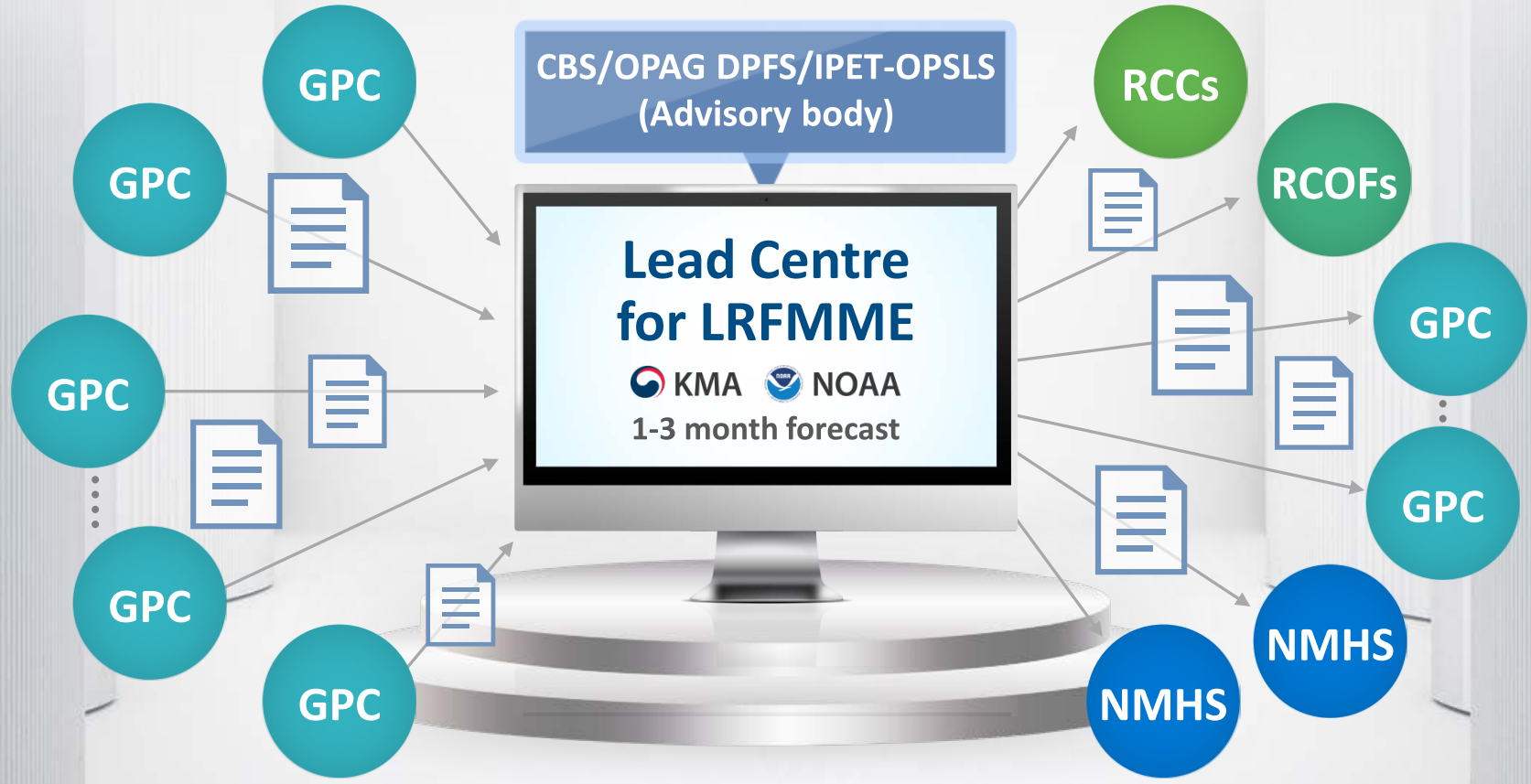
» **LC-LRFMME has developed the pilot real-time MME system for sub-seasonal forecast**

Objectives

- From the end-user perspective, the sub-seasonal to seasonal time range is a very important one, as many management decisions in agriculture and food security, water, disaster risk reduction and health fall into this range.
- Improved LRFs can help reduce socioeconomic losses associated with seasonal variability and protect life and property.
- The LC-LRFMME aims to support collecting and sharing GPCs forecast information to increase the reliability of Long-range Forecasts.

Functions

LC-LRFMME provides a conduit between GPC and NMHS, RCC, RCOF, etc.



GPC Global Producing Centre

RCCs Regional Climate Centres

RCOFs Regional Climate Outlook Forums

NMHS National Meteorological and Hydrological Services

13 WMO GPCs for LRF

WMO Global Producing Centres

- **Beijing:** China Meteorological Administration (CMA) / Bejing Climate Center (BCC)
- **CPTEC:** Center for Weather Forecasting and Climate Research / National Institute for Space Research (INPE), Brazil
- **ECMWF:** European Centre for Medium-Range Weather Forecasts
- **Exeter:** Met Office, United Kingdom
- **Melbourne:** Bureau of Meteorology (BOM), Australia
- **Montreal:** Meteorological Service of Canada (MSC)
- **Moscow:** Hydrometeorological Centre of Russia
- **Offenbach:** Deutsher Wetterdienst Wetter und Klima aus einer Hand
- **Pretoria:** South African Weather Services (SAWS)
- **Seoul:** Korea Meteorological Administration (KMA)
- **Tokyo:** Japan Meteorological Agency (JMA) / Tokyo Climate Center (TCC)
- **Toulouse:** Météo-France
- **Washington:** Climate Prediction Center (CPC) / National Oceanic and Atmospheric Administration (NOAA), United States of America

Summary of data provided by the GPCs

Information on the data configuration supplied by the 13GPCs

GPC	Beijing	CPTEC	ECMWF	Exeter	Melbourne	Montreal	Moscow	Offenbach	Pretoria	Seoul	Tokyo	Toulouse	Washington
Forecast system	1-tier	2-tier	1-tier	1-tier	1-tier	1-tier	2-tier	1-tier	1-tier	1-tier	1-tier	1-tier	1-tier
Forecast													
Ensemble size	24	15	41	42	33	20	10	30	40	42	51	41	40
Hindcast													
Period	1991-2010	1979-2001	1981-2010	1993-2015	1981-2011	1981-2010	1986-2010	1981-2010	1981-2001	1991-2010	1981-2010	1979-2007	1982-2010
Ensemble size	24	10	15	28	99	20	10	15	10	12	10	11	20
Digital data	◎	◎	×	×	◎	◎	◎	◎	◎	◎	×	×	◎

An "×" indicates that data is not currently available in LC-LRFMME, because of GPC's data Policy

Products

Digital products

Both forecast and hindcast of monthly mean anomalies of the GPCs' ensemble mean for lead time of 1~3 month, following the month of submission.

- 2m surface temperature
- Precipitation
- Mean sea level pressure
- 850hPa temperature
- 500hPa geopotential height
- Sea surface temperature

Graphical products

Individual forecast

- Plots for each GPCs' forecast anomalies in common graphical format (Rectangular, Time series, Stereographic type, etc.)
- Consistency map
- SST Plume (Nino3.4 SST anomalies)

Deterministic MME

- Simple composite mean(SCM)
- Regular Multiple Regression
- Sigular Value Decomposition(SVD)
- Genetic Algorithm(AG)

Probabilistic MME

- Tercile-based categorical probabilities

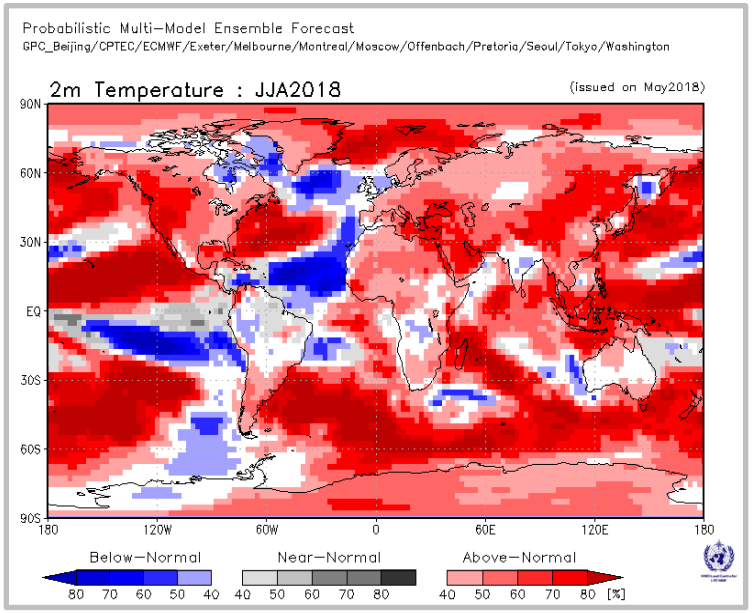
Verification

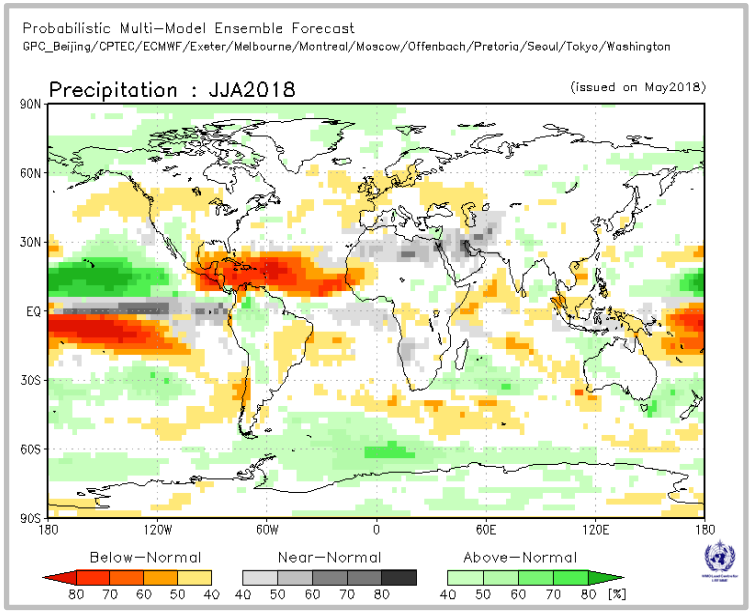
- Hindcast for both MME and Individual GPCs
- Forecast for MME

Products

Graphical products

Examples of Products

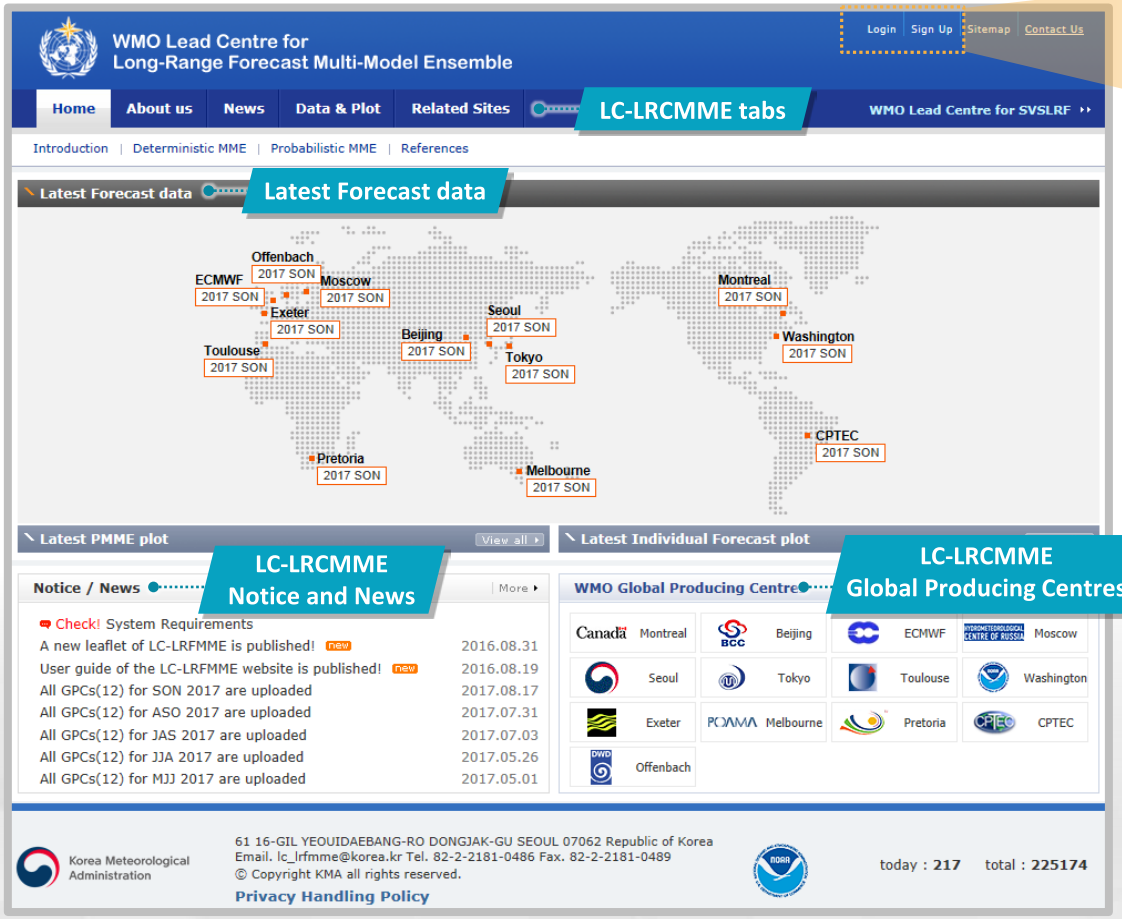




Probabilistic forecasts for the season June-July-August 2018.
The tercile category with the highest forecast probability is indicated by shaded areas.
The most likely category for below-normal, above-normal and near-normal is depicted in blue, red and grey shadings respectively. White areas indicate equal chances for all categories in both cases.

How to register on the WMO LC-LRFMME

http://www.wmolc.org



- **Sign up:** You can register on the website after signing up.
- **Login:** You can log in to LC-LRFMME homepage by clicking this button and entering your ID and password.

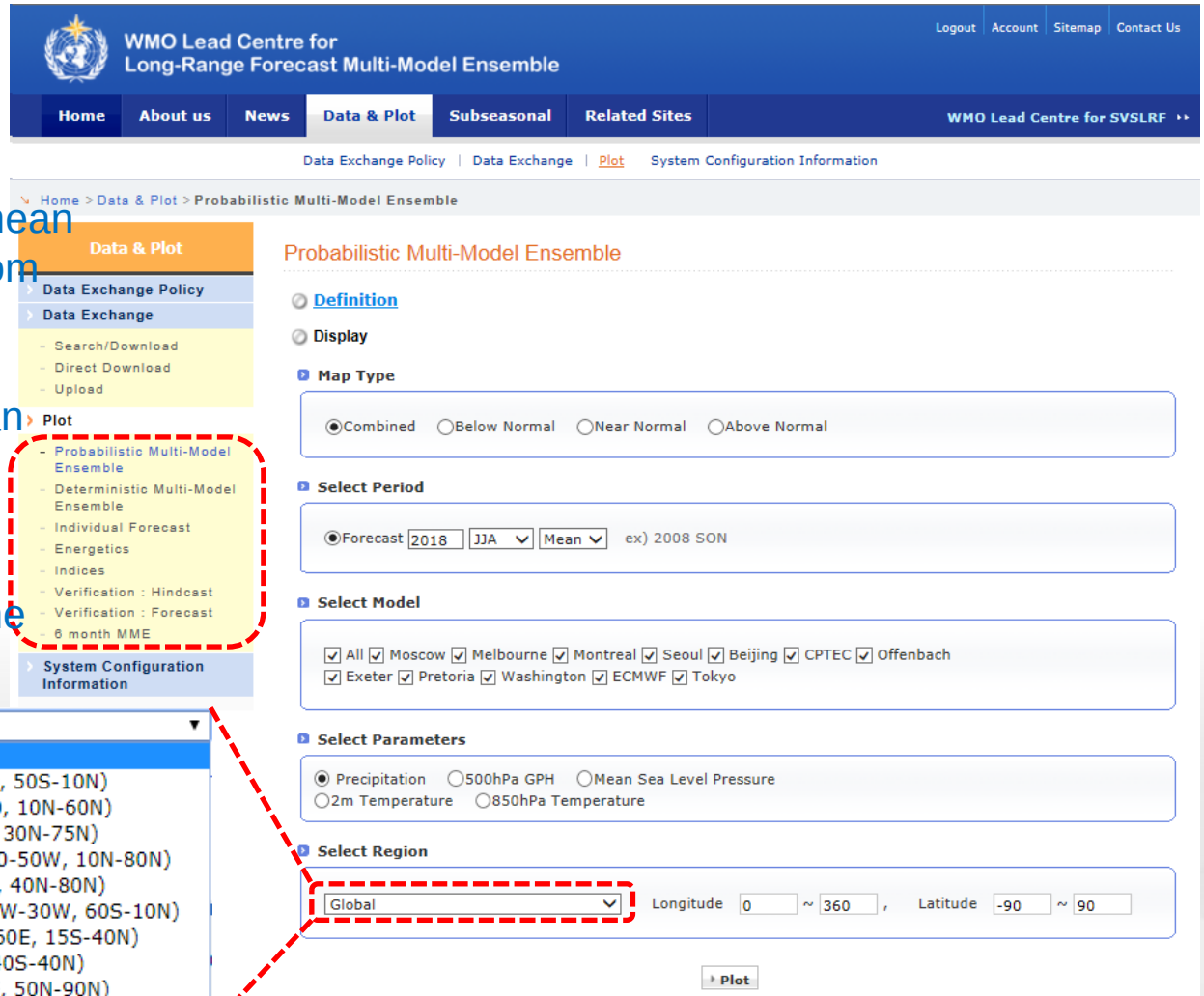
For more information in detail

Please see the WMO LC-LRFMME Website User Manual in **Notice and News**

WMO LC-LRFMME Website

http://www.wmolc.org

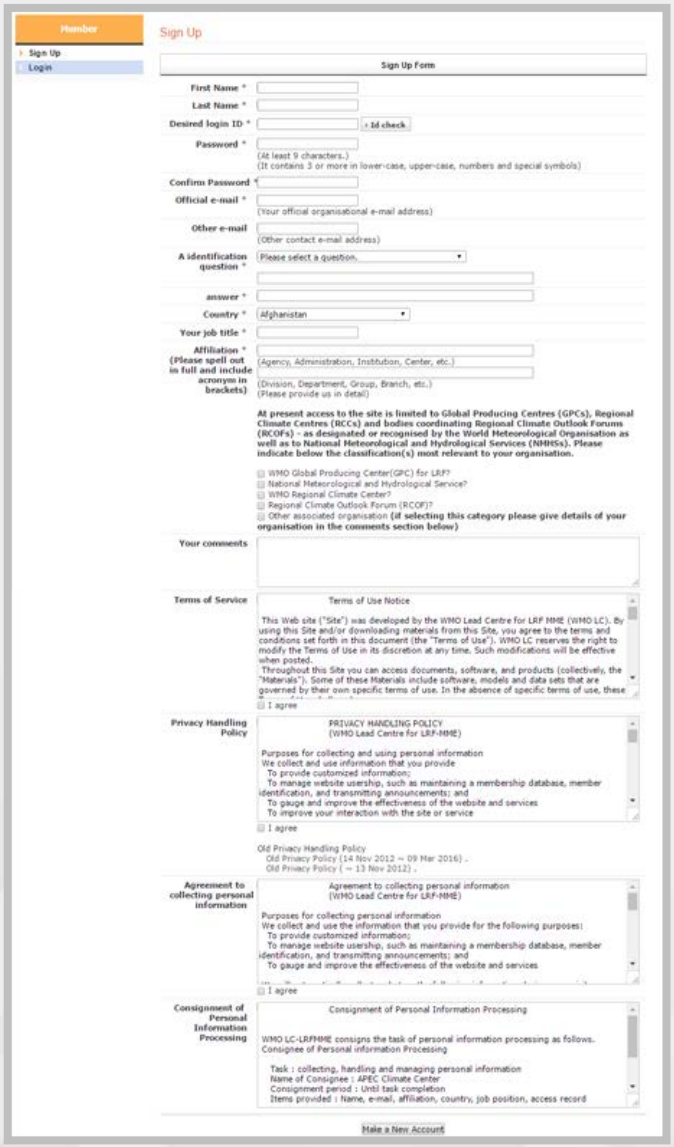
- LC provides 3-month mean based forecast plots from website basically.
- In addition this, user can select the each month.
- Also, user can select the regions.



How to register on the WMO LC-LRFMME

Key Information

Agreement



Step 1 To register with the website, click on the **"Sign Up"** button. Then fill out your basic information.

Step 2 Please read the Terms of Service, Privacy Handling Policy, and Agreement, and check each box **"I agree"** to confirm that you agree with the terms. Then click **"Make a New Account."**

Step 3 After signing up, click on a hyperlink **"[LINK]"** in your email message that you filled in the "Sign up" page.

Step 4 At this link page, you will get authentication after entering logging in with your ID, password.

Step 5 The administrator will give you **a membership grade,** such as grade A, B or C, depending on your affiliation.

Membership Grade

		A (GPCs)	B (NMHSs and RCCs)	C (Others)
Digital data	Upload	◎		
	Download	◎	◎	
~~Image plots~~	~~Upload~~			
	~~Download~~	⊖	⊖	
~~Multi-model ensemble image plots~~				⊖

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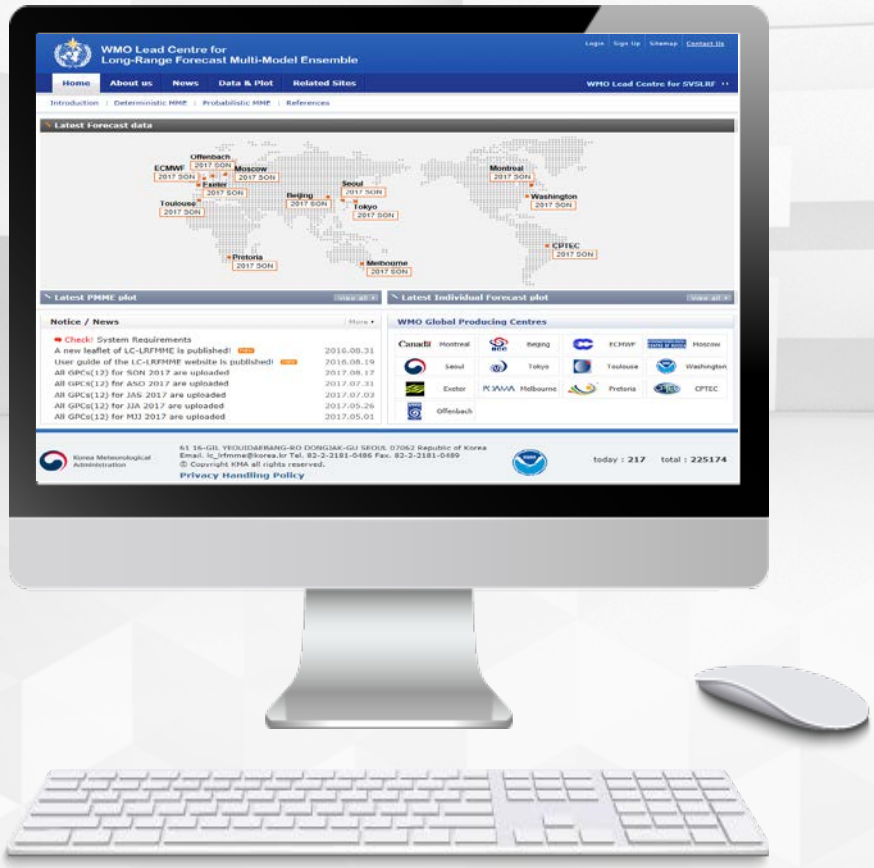

For more Information, Please contact !

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Thank you

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