Current status of operations of Forum on Regional Climate Monitoring, Assessment and Prediction for Regional Association II (FOCRAII)

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Beijing Climate Center

WEATHER CLIMATE WATER
TEMPS CLIMAT EAU

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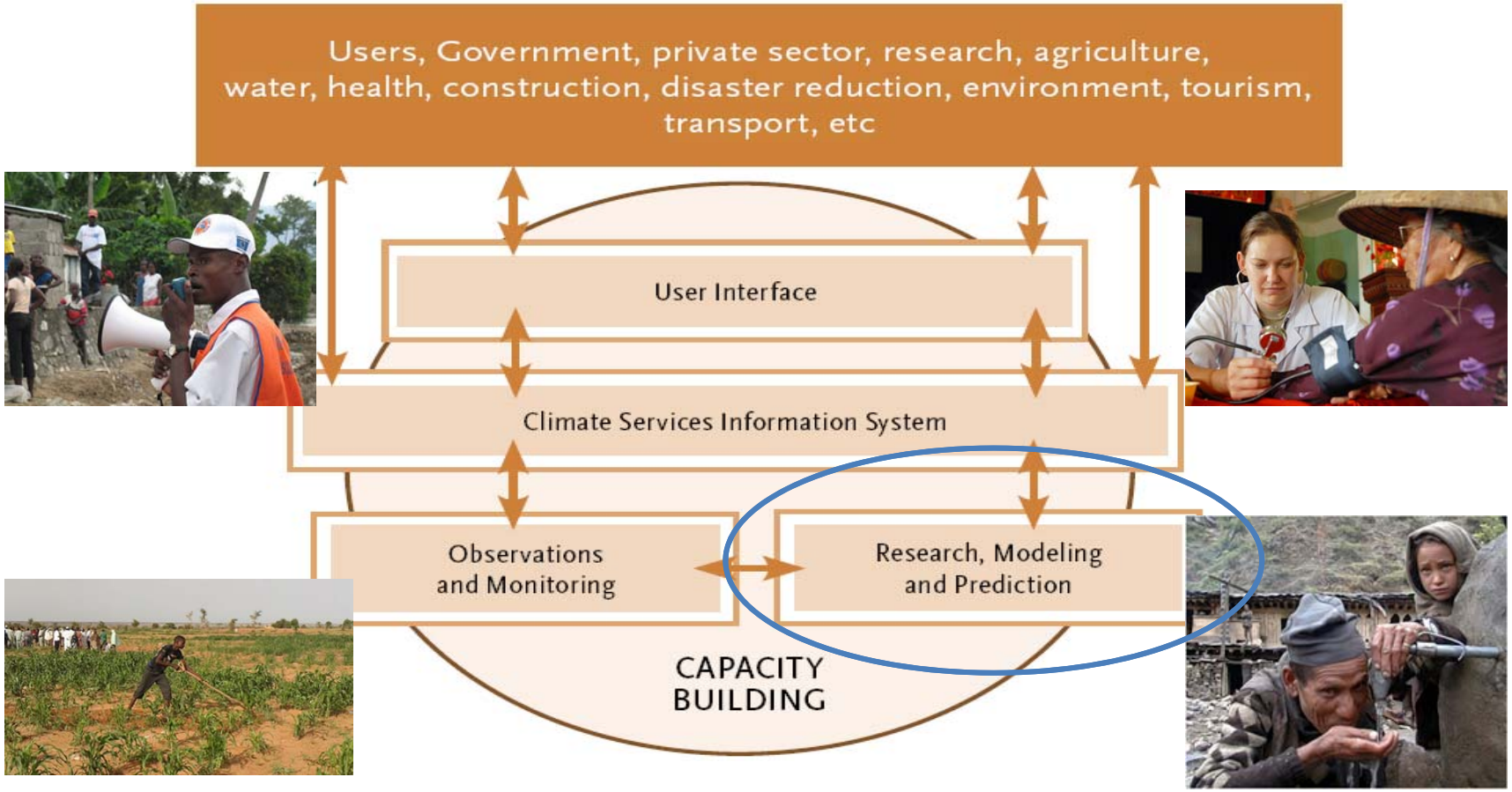
World Meteorological Organization
Organisation météorologique mondiale

WMO International Workshop on Global Review of Regional Climate Outlook Forums, Ecuador, 5 – 7 September 2017

GFCS Pillars



The GFCS has five main components or pillars whose implementation is critical to ensure that the entire value chain for the production and application of climate services is effectively addressed. Climate prediction is one of the bases of the successful implementation of climate services.

Background

Beijing Climate Center (BCC) was established in 2003, based on the National Climate Center of China Meteorological Administration, to better perform its functions as a WMO Regional Climate Centre (RCC).

BCC was designated as a WMO RCC in RA II (Asia) at EC-LXI in June 2009. BCC has the obligations to deliver climate service for neighboring and surrounding countries in Asia and international climate community, and it has the following capabilities as a RCC.

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Platform for products distribution and communication

The Forum on Regional Climate Monitoring-Assessment-Prediction for Regional Association II (RAII)

2005

20

Since 2005, 13 times of Forum on Regional Climate Monitoring-Assessment-Prediction for Asia have been hosted by BBC, which makes it a very important and effective platform for products distribution and communication of climate prediction.

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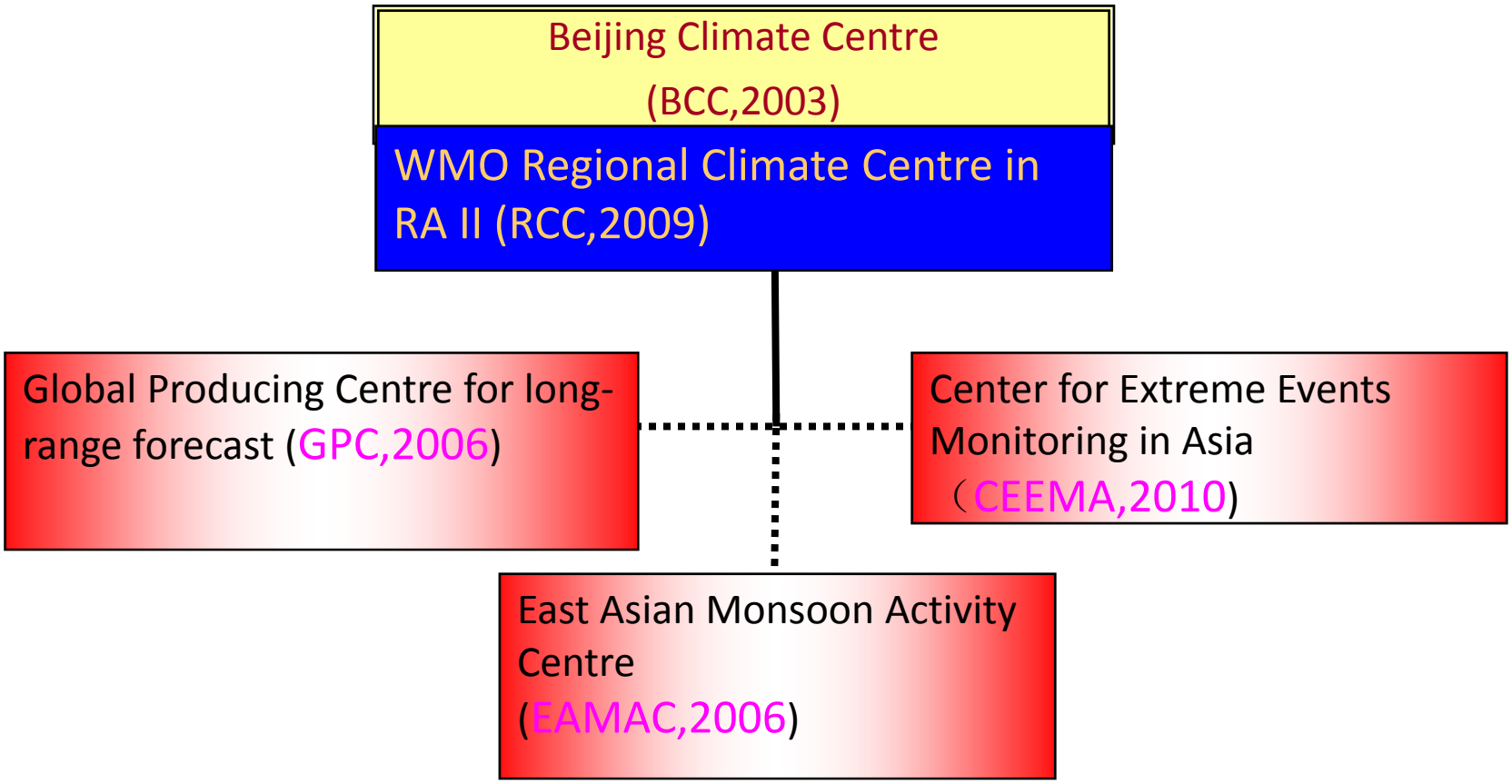
Coordinating institution: **Beijing Climate Center**



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Mission of Beijing Climate Center

- To monitor and diagnose global atmospheric and oceanic conditions, as well as extreme climate events , especially in East Asia
- To issue global climate predictions and impact assessments at monthly, seasonal and inter-annual time scales, particularly over East Asia
- To provide climate services to different users
- To do research on climate and climate change issues

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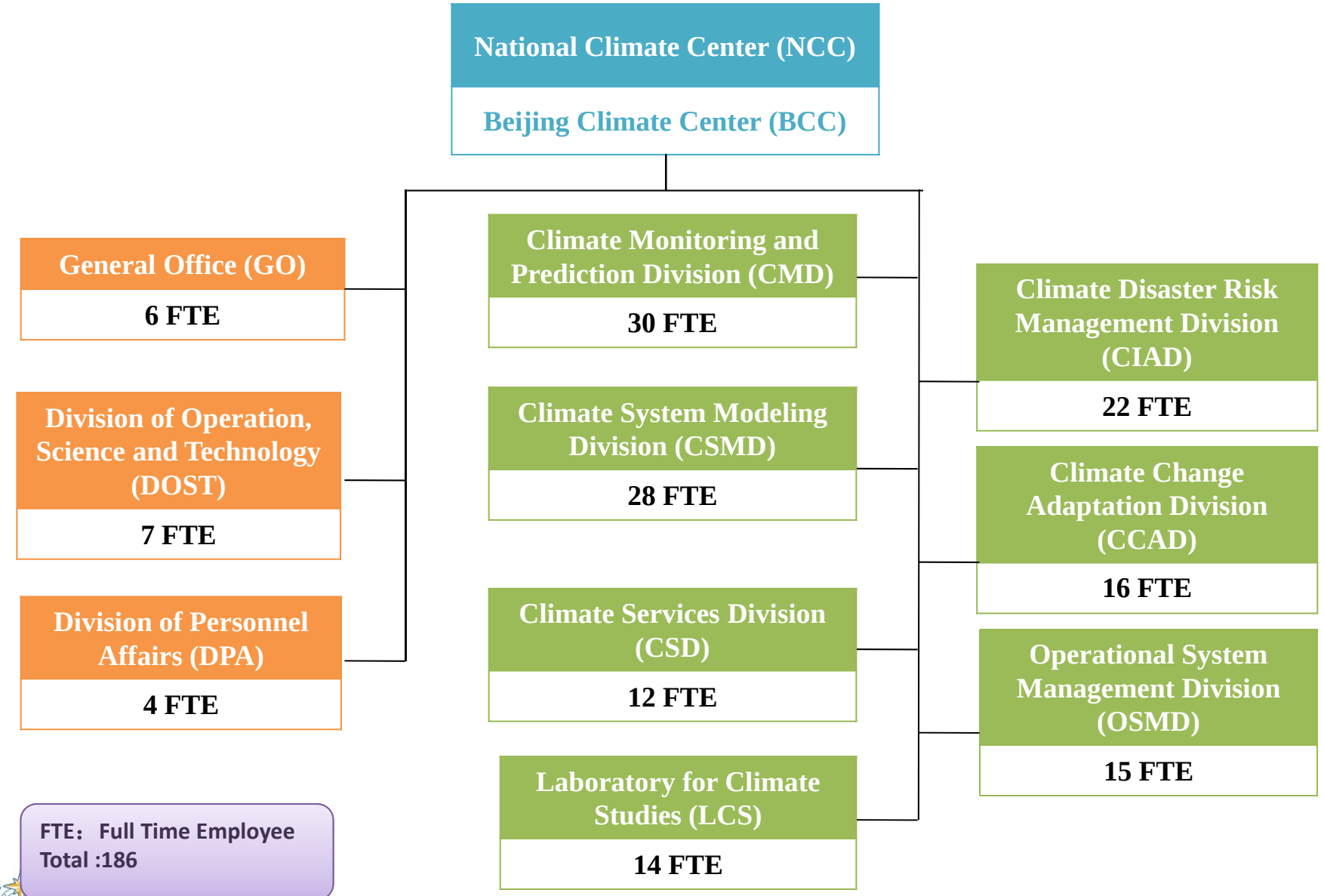
Organization



FTE： Full Time Employee
Total :186

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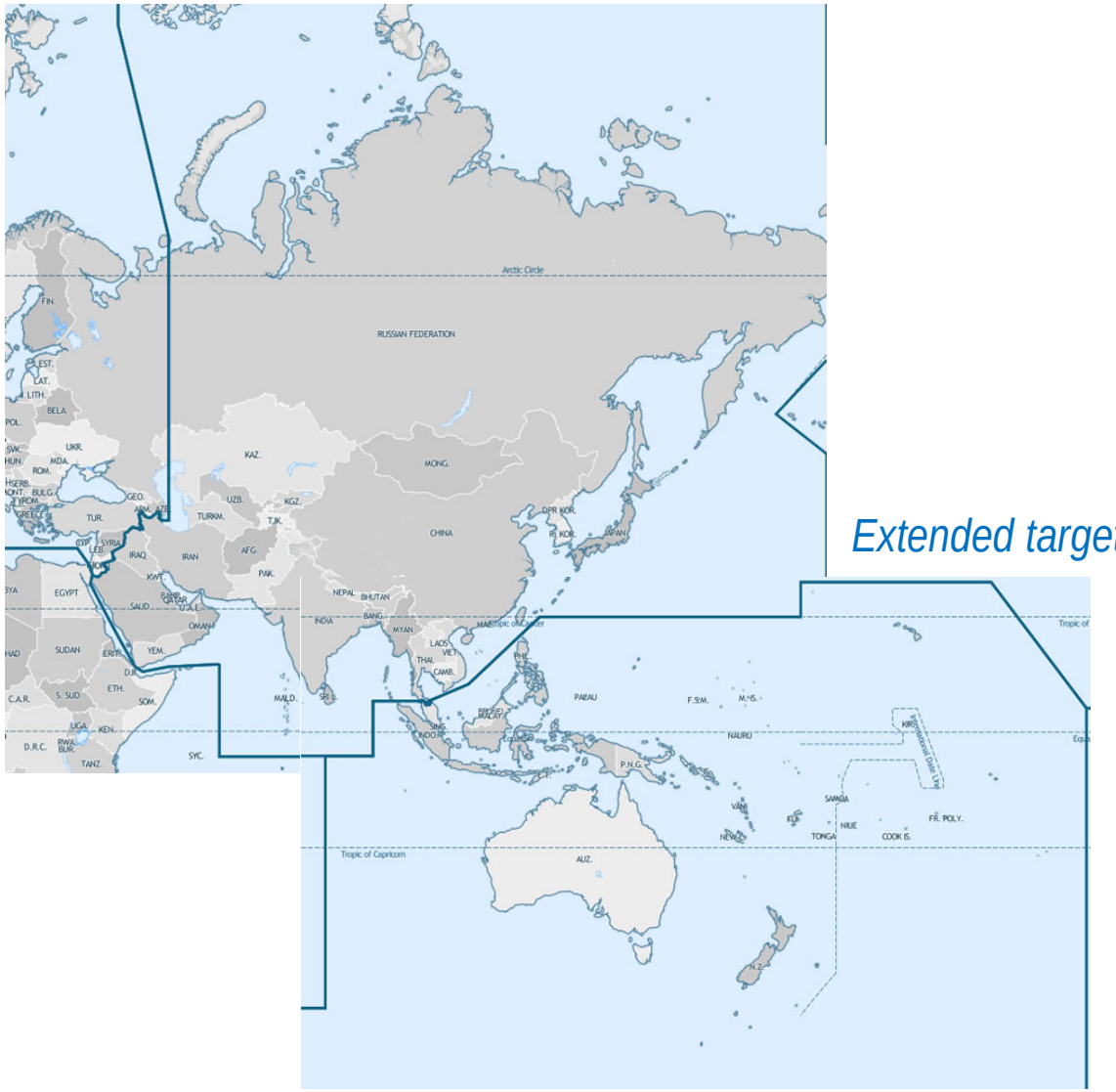
FOCRAII is fully supported by divisions of BCC

Original target region:



Extended target region:

FOCAII frequency, Once a year

Sources of funding, Regular International Cooperation Fund of CMA

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Potential applications of seasonal outlooks

Agriculture and food security

In an era of rapid population growth, food security remains a major concern. Agriculture is vulnerable not only to market fluctuations but also to climate variability and climate change and

Disaster risk reduction

Most natural hazards are caused by weather and climate. This exemplar illustrates how user-friendly climate services can help countries and communities build greater resilience

Energy

Energy systems are the engine of economic and social development. Energy generation and planning of operations are markedly affected by meteorological events and energy systems

Health

Climate variability and climate change have important repercussions on public health. Temperature and rainfall conditions influence the spread of communicable diseases

Water

Water is vital for life, but an over or under supply can threaten life, societies and economies. The amount and availability of water is strongly influenced by climate variability and

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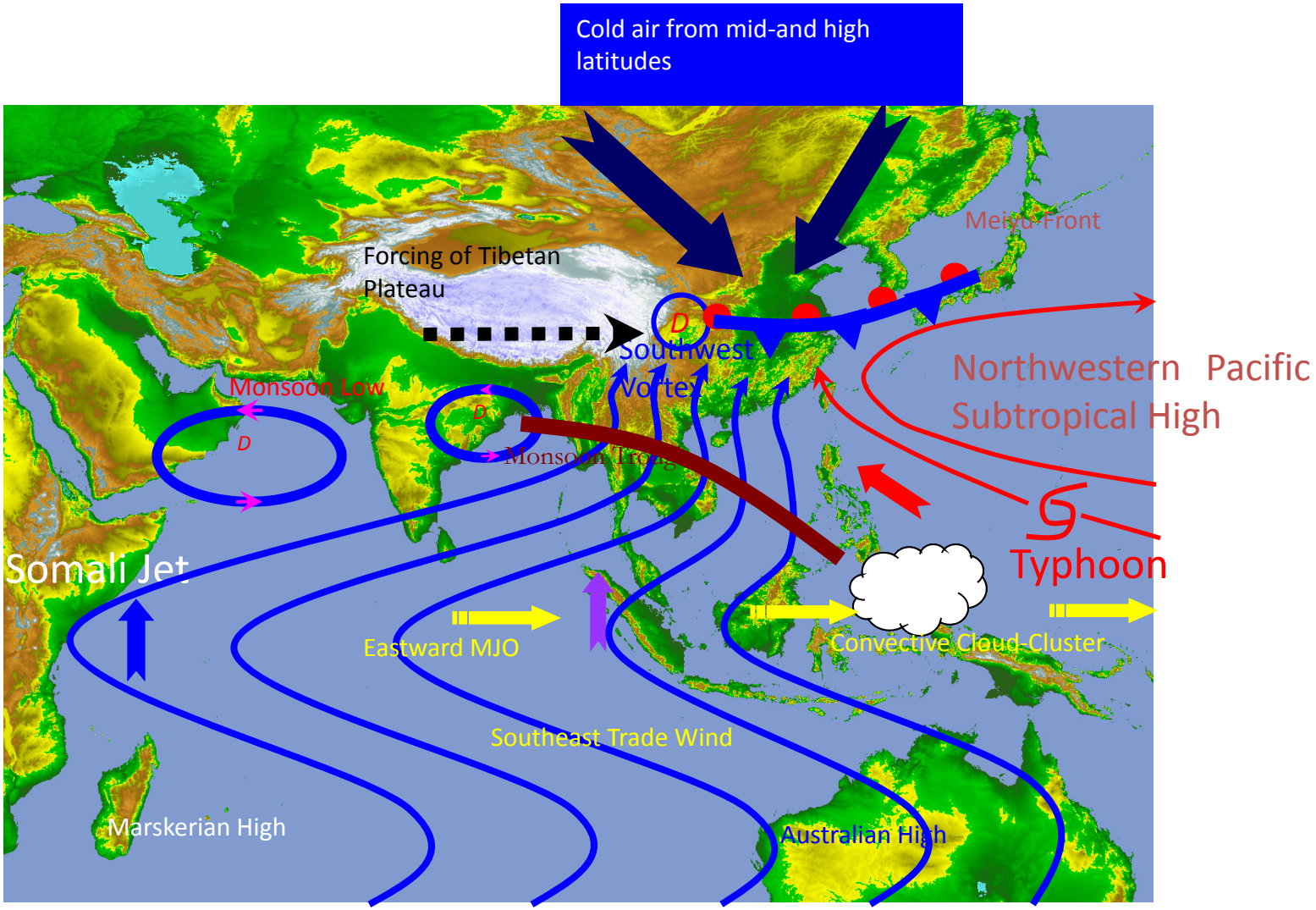
Major forcings on the regional climate



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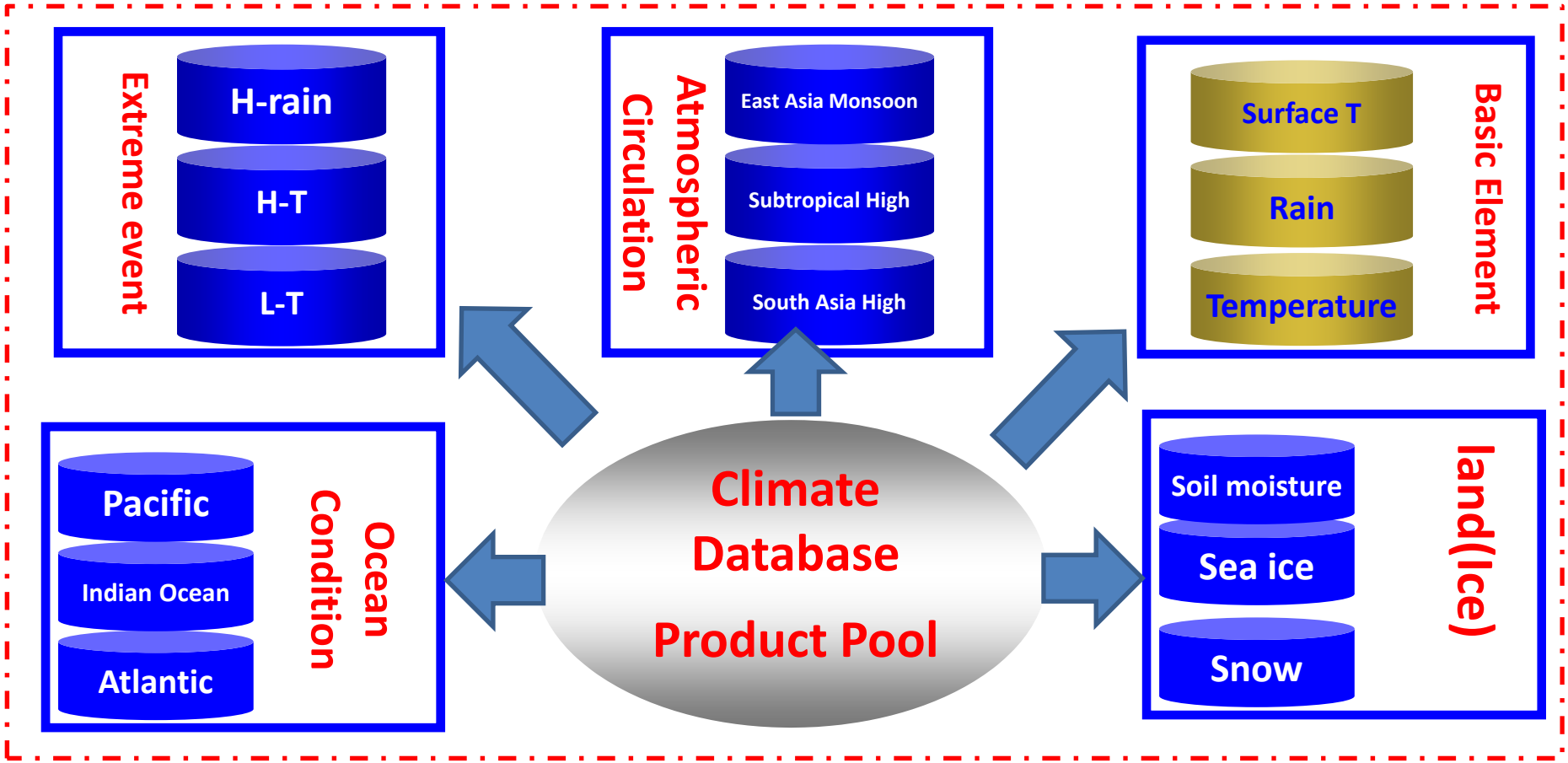
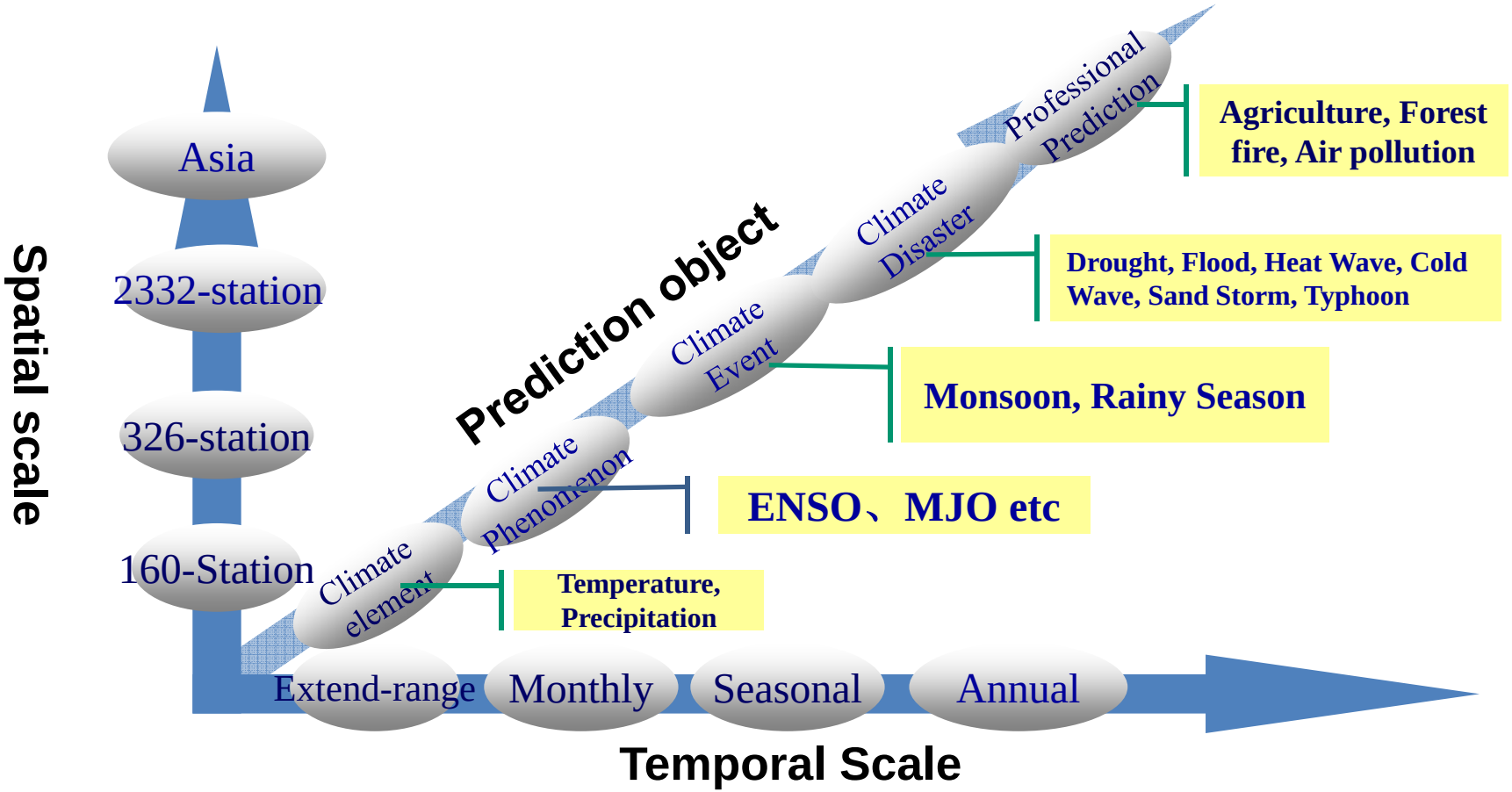
Climate Monitoring System



Monitoring of current conditions in the outlook;

Climate data is available for the sub-region of interest at extend-range, monthly and seasonal scales.

Target season: Climate Prediction(Summer)

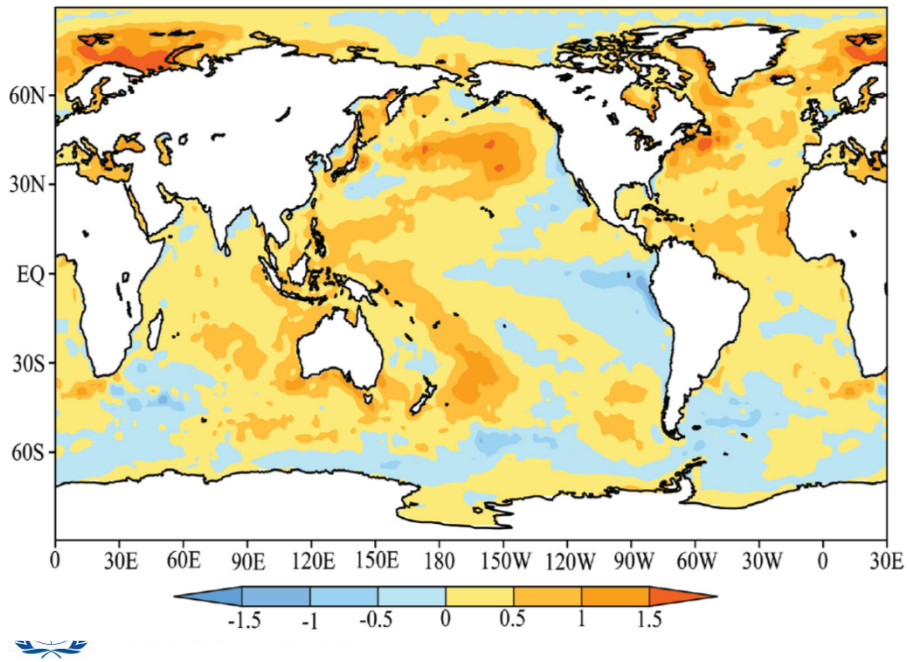


Prediction resolution has been developed from 160 station to 2332 station;
Prediction temporal scale covers from the extend-range to annual scales, prediction object includes the climate element, climate phenomenon, event, disaster etc.
FOCRAII mainly works on the summer prediction in terms of Precipitation and Temperature.

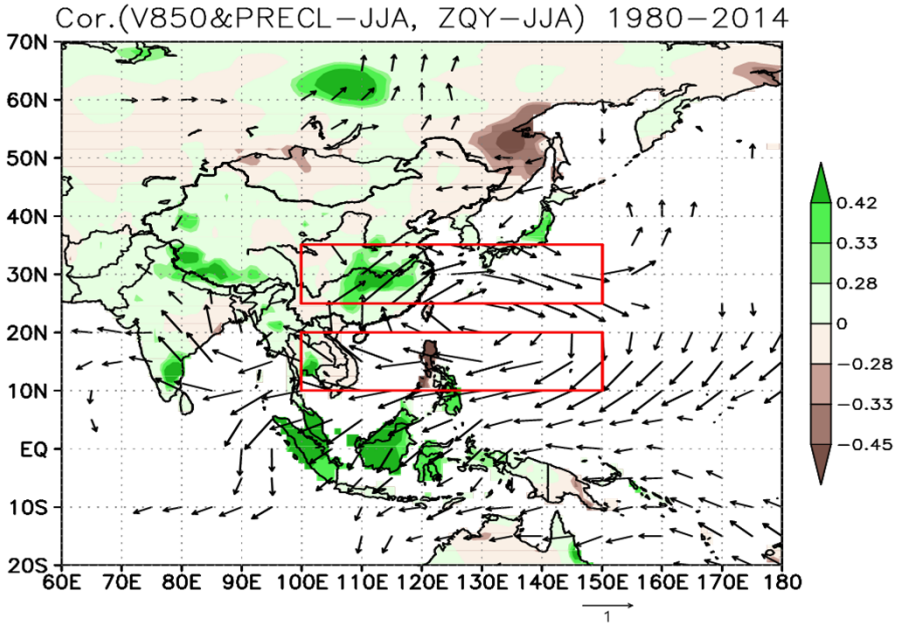
Target element: Climate Prediction

1) ENSO Outlook
2) Indian Ocean SST Outlook
3) EASM Outlook
4) Precipitation and Temperature Outlook
5) **Tropical Cyclones Outlook**

SST Anomalies



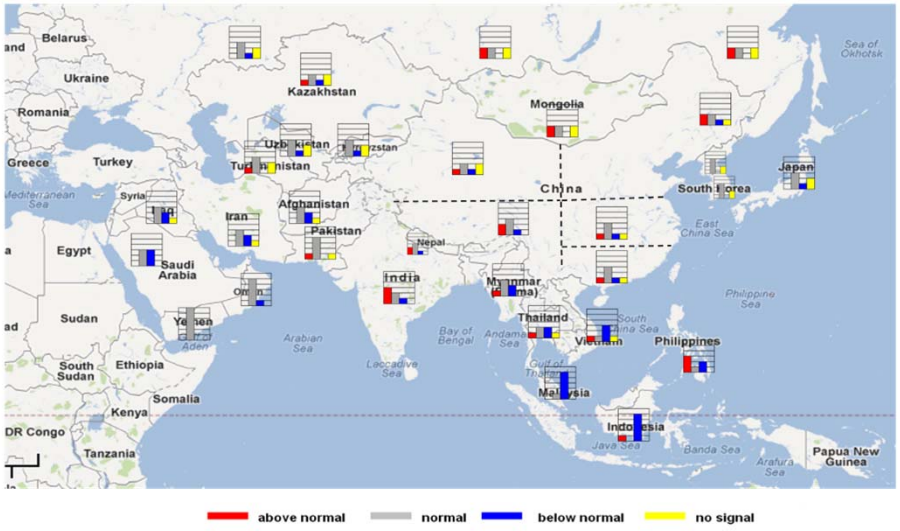
EASM System Anomalies



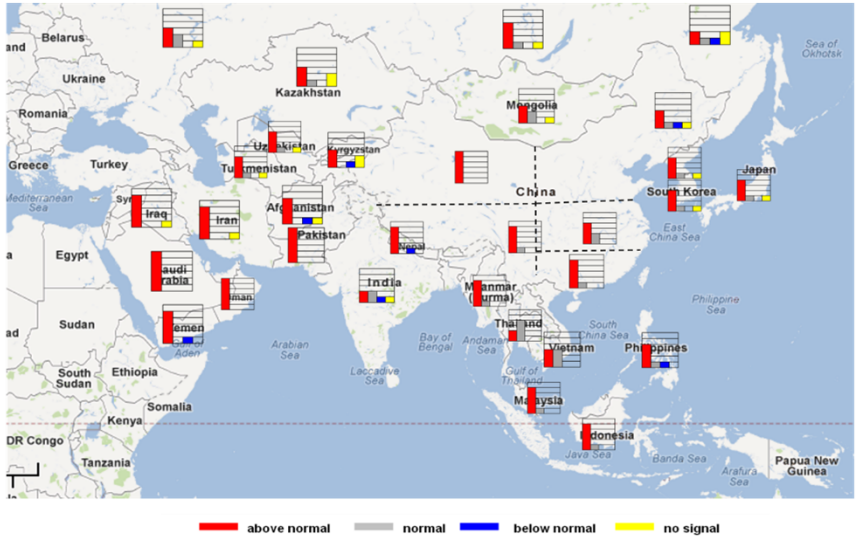
BCC EASMI=U850(10-20N, 100-150E)-U850(25-35N,100-150E)

Probability Outlook

2017 JJA Precipitation Prediction from Dynamical Models



2017 JJA Temperature Prediction from Dynamical Models



	ECMWF	APCC	MetOffice	CFSV2	JMA	BCC_CSM1.1	A	B	N	NS	A	B	N	NS
JAPAN	NS	A	A	N	A	A	4	0	1	1	66.66667	0	16.66667	16.66667
D.P.R.Korea（朝鲜）	NS	A	A	N	A	A	4	0	1	1	66.66667	0	16.66667	16.66667
Republic of Korea（韩国）	NS	A	A	N	A	A	4	0	1	1	66.66667	0	16.66667	16.66667
Mongolia（蒙古）	NS	A	A	N	A	N	3	0	2	1	50	0	33.33333	16.66667
China(东北)	Ns	A	A	N	A	B	3	1	1	1	50	16.66667	16.66667	16.66667
China（长江流域）	A	A	A	N	A	N	4	0	2	0	66.66667	0	33.33333	0
China（华南）	A	A	A	N	A	A	5	0	1	0	83.33333	0	16.66667	0
China（西北）	A	A	A	A	A	A	6	0	0	0	100	0	0	0
China（西南）	A	A	A	N	A	A	5	0	1	0	83.33333	0	16.66667	0
Philippines（菲律宾）	A	A	A	N	A	B	4	1	1	0	66.66667	16.66667	16.66667	0
Indonesia（印度尼西亚）	A	A	A	N	A	A	5		1	0	83.33333	0	16.66667	0
Malasia（马来西亚）	A	A	A	N	A	A	5	0	1	0	83.33333	0	16.66667	0
Vietnam（越南）	N	A	A	N	A	N	3	0	3	0	50	0	50	0
Thailand（泰国）	N	N	A	N	A	N	2	0	4	0	33.33333	0	66.66667	0

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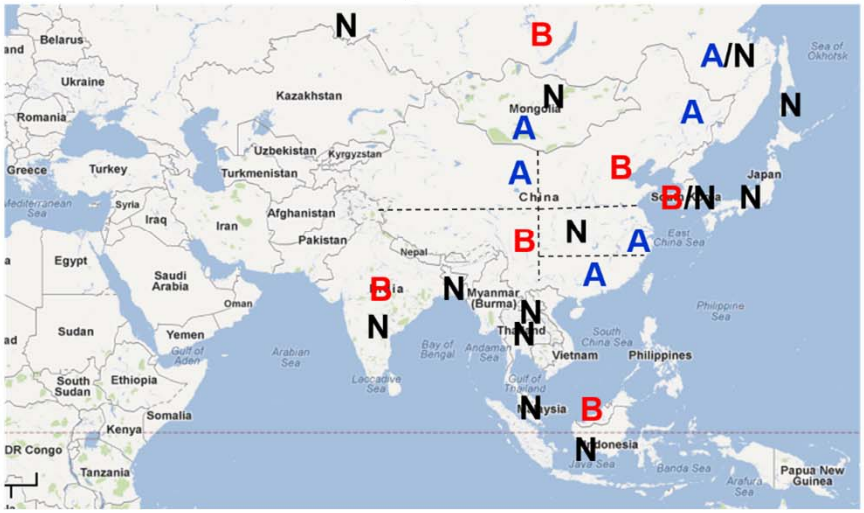
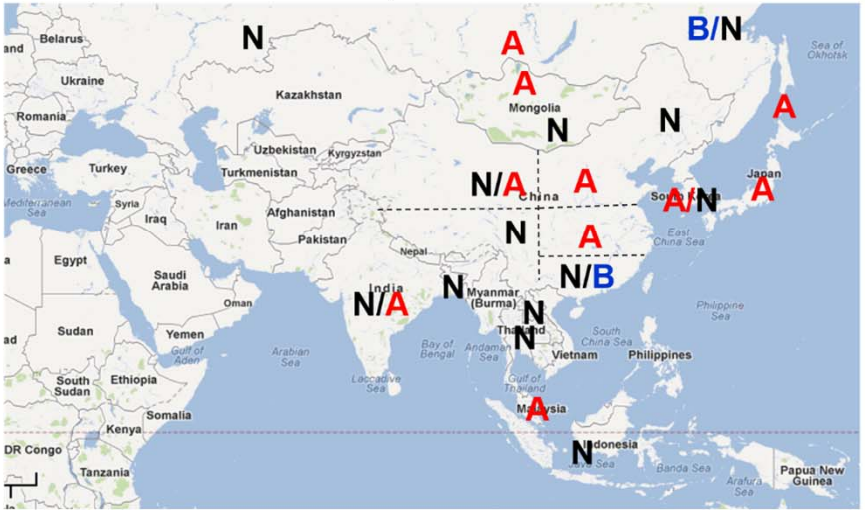
Deterministic forecast of temperature

2017 JJA Deterministic Precipitation Prediction from Feedback



2017 JJA Deterministic Temperature Prediction from Feedback



These two figures are synthesized deterministic forecast from the surveys.

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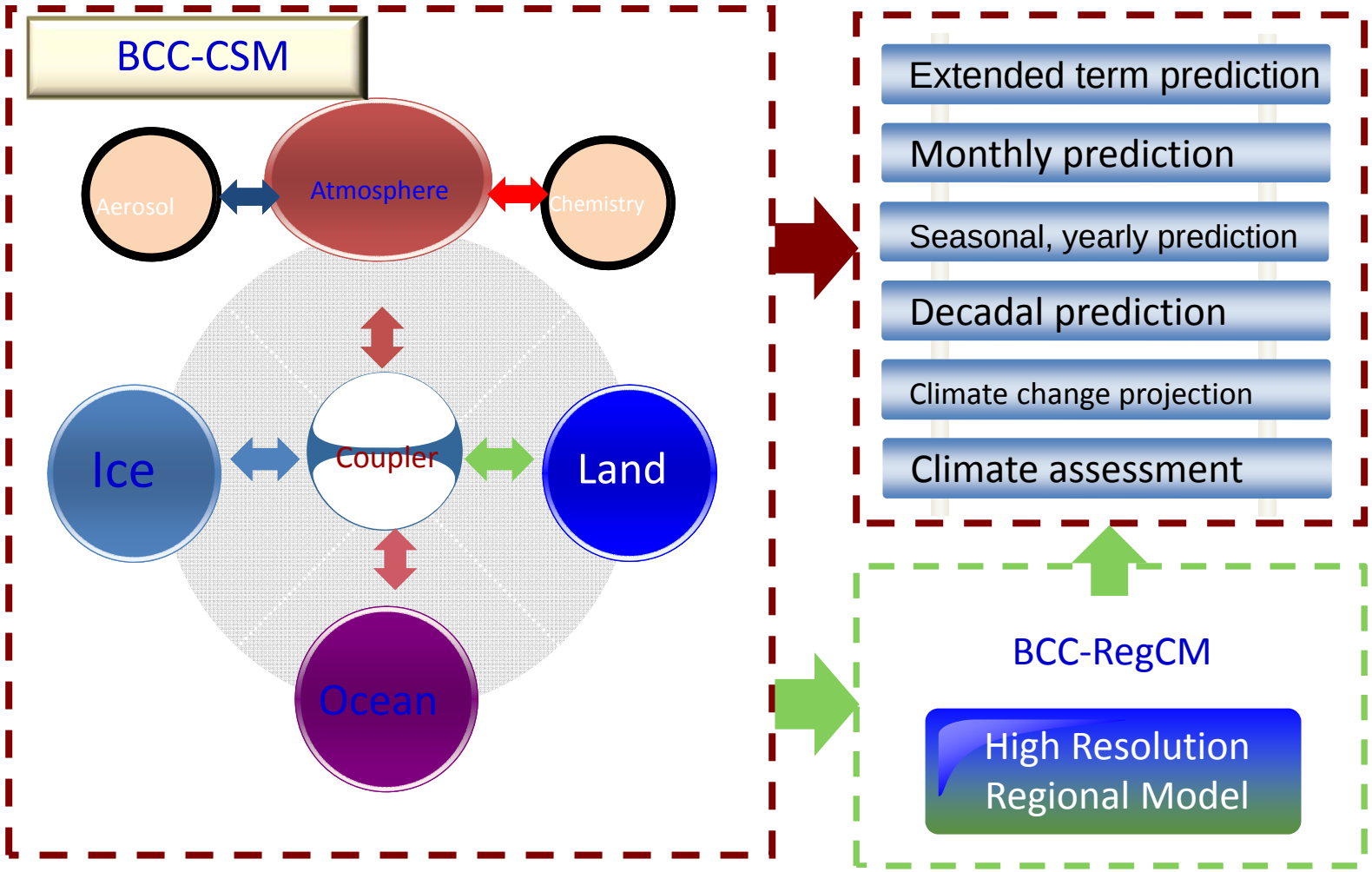
Climate Prediction Model System



Improve physical process and model resolution

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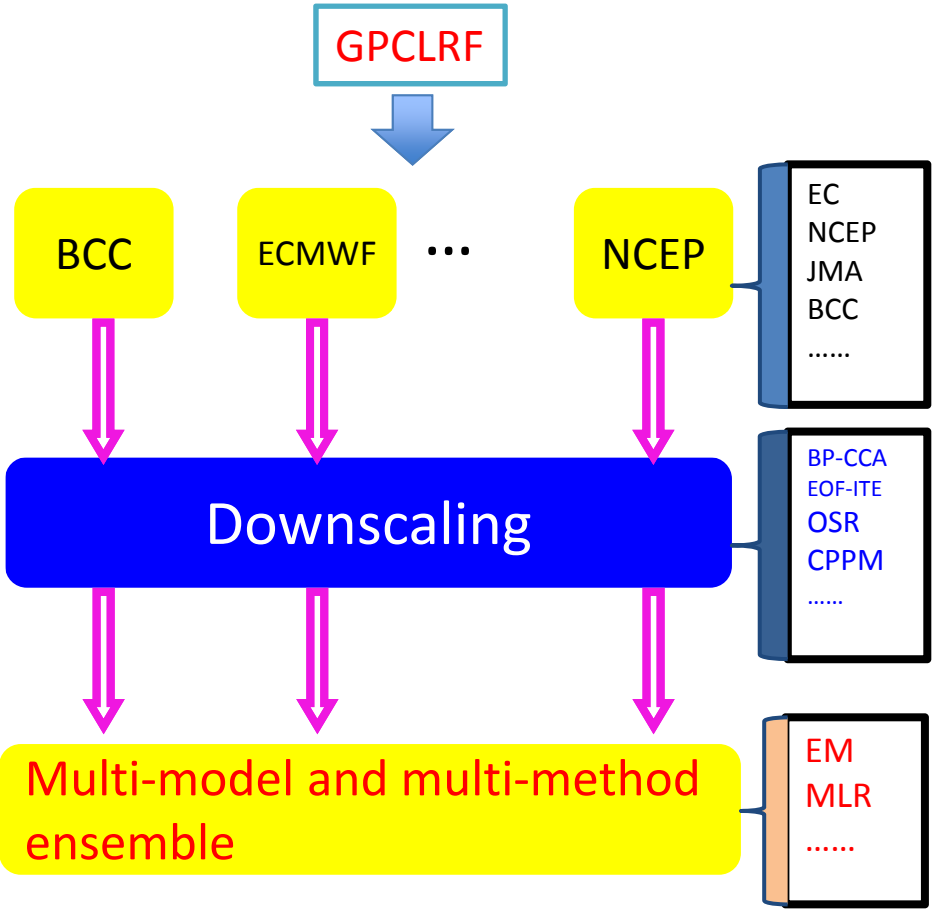
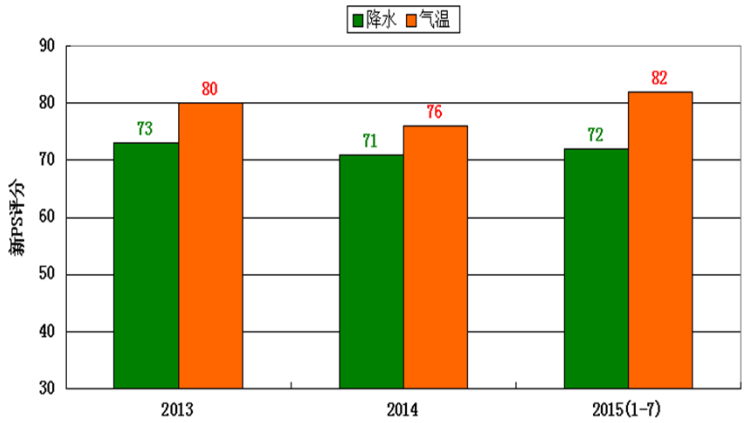
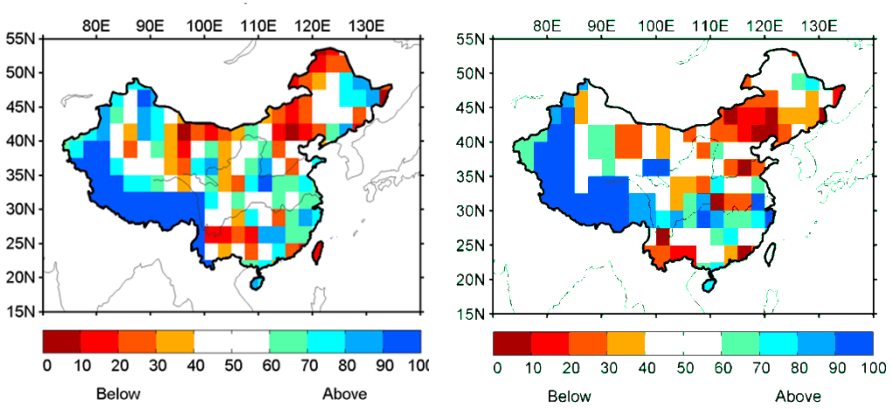
Multi-Model Downscaling Ensemble System (MODES)



Monthly Prediction



2014-2015 Summer prediction



2014 2015

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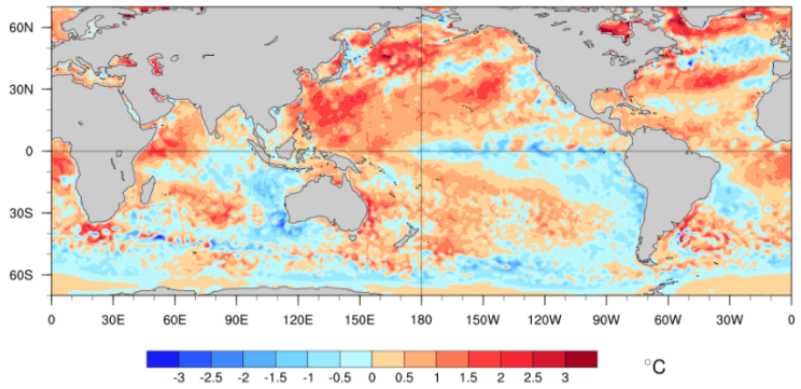
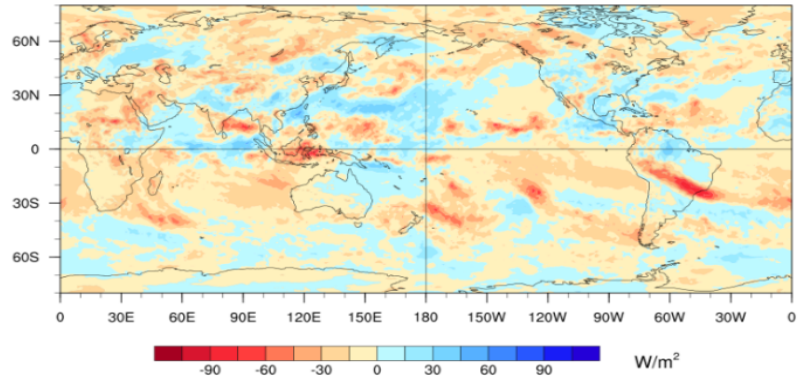
ENSO Monitoring and Forecast System

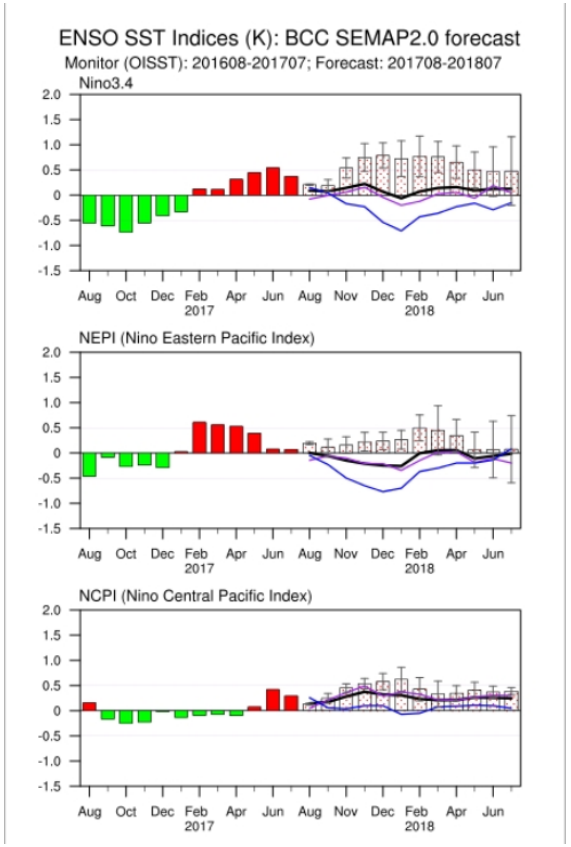
Global SST Monitoring



Satellite based SST Mentoring



BCC_CSM based ENSO Forecast System



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Distribution

- Summer outlook is mainly distributed through the Email at the regional level.
- CMA is going to establish the Asia GMAS, which may be another kind platform to share our prediction products.

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Capacity Development Activities

- To enhance existing capabilities to provide climate services more effectively by establishing the mechanism and workflow in the areas such as improving the data sharing and collaborative products releasing, deepening the cooperation and exchange between different sectors, strengthening cooperative R&D activities and joint training, and optimizing the operational service system and distribution.

- International Seminar on Climate System and Climate Change (ISCS)
- International Training Seminar on Methods for Short-term Climate Prediction
- International training workshop for climate service
- Training and International Visiting Scholar Program

Gaps:

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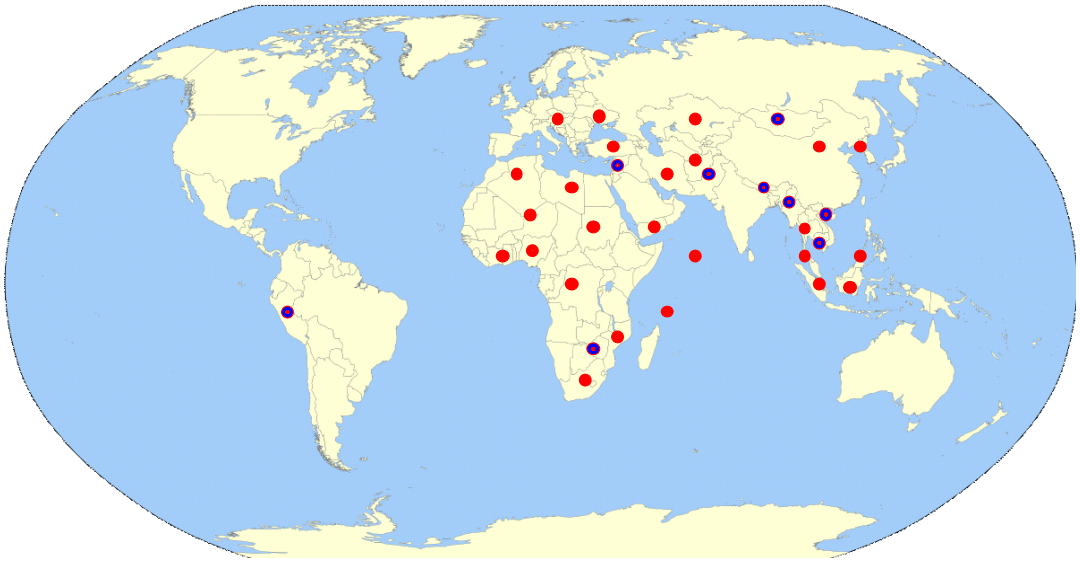
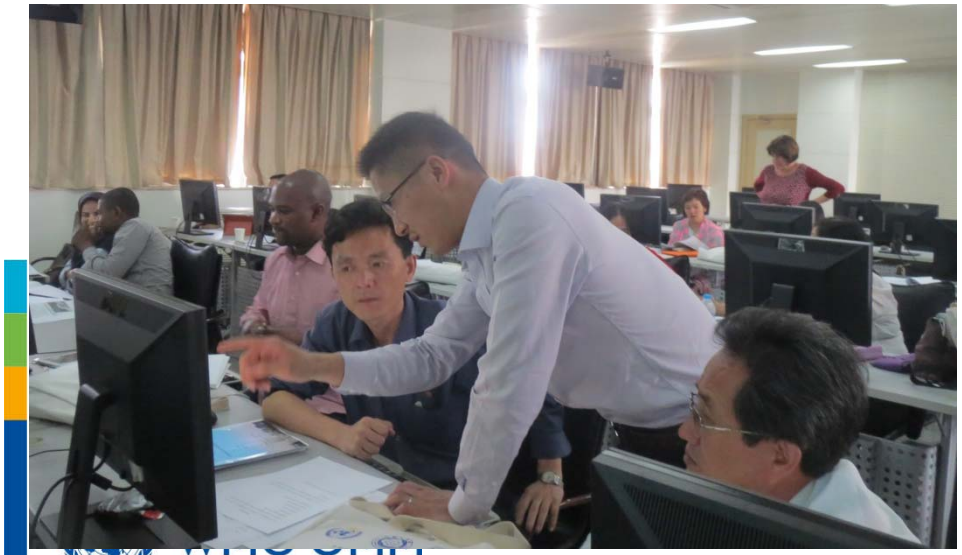
Climate Prediction Tool Training

International Training Course on Global Framework for Climate Services 2015 - 2017



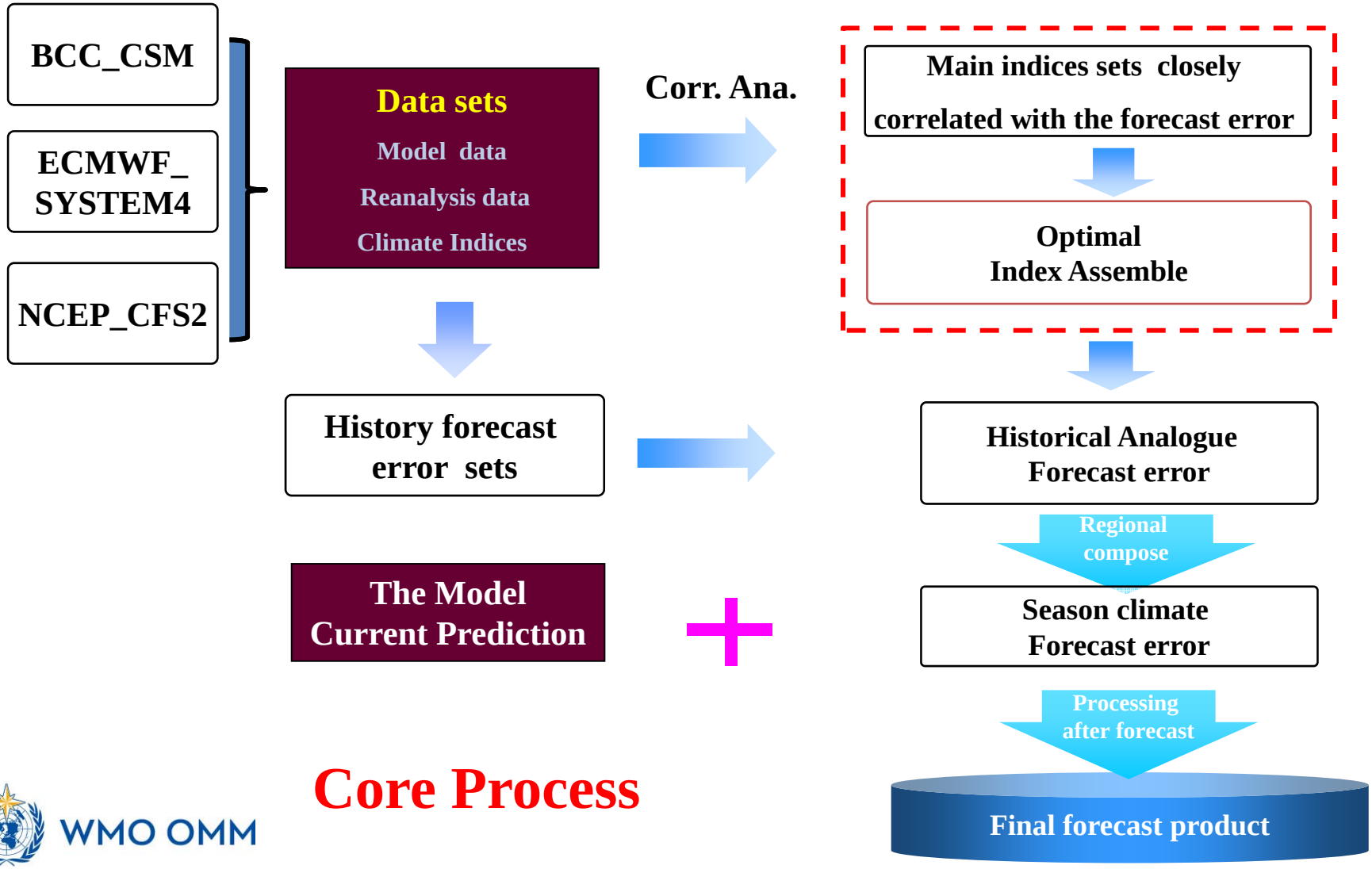
Since 2015 The FODAS has been introduced to the international students participating the GFCS training course from more 30 countries, i.e., Thailand, Bhutan, Mongolia, North Korea, Africa etc.

More than 10 countries are studying the use of this tool for their operational work.



The Forecast System on Dynamic Analogue Skills (FODAS)

Concept note, Using the historical prediction Error to Correct the Current Output, transforming the direct model prediction to the model error estimation.



Core Process

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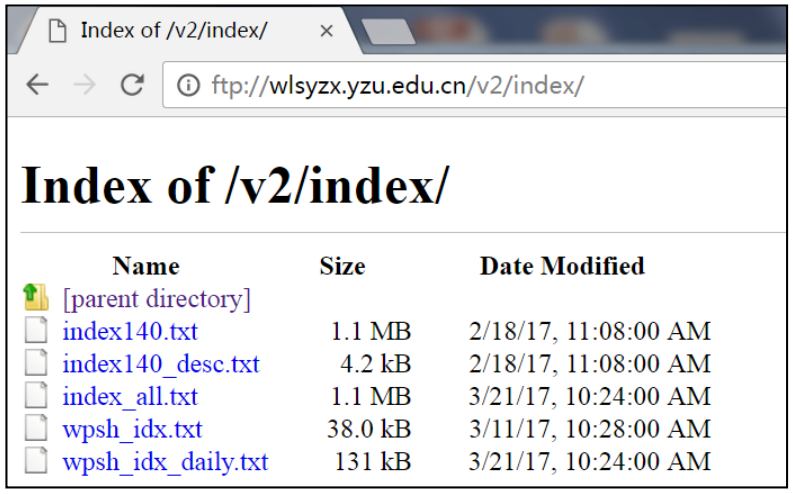
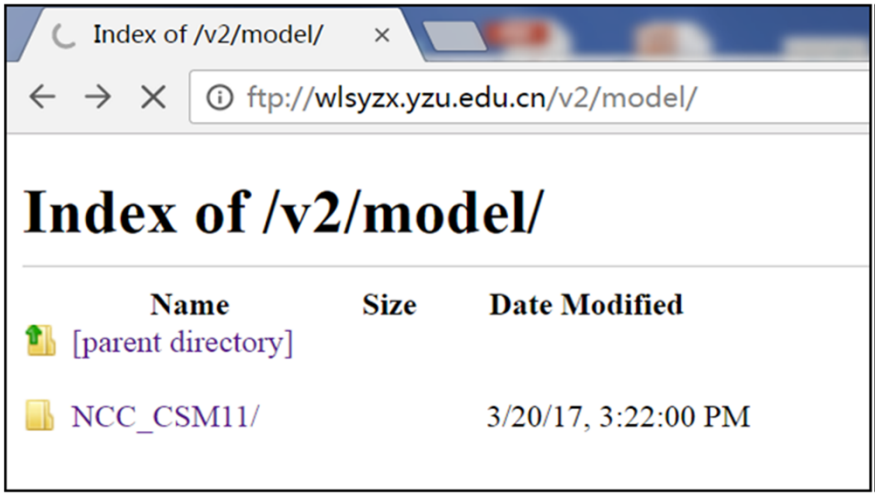
The Forecast System on Dynamic Analogue Skills (FODAS)

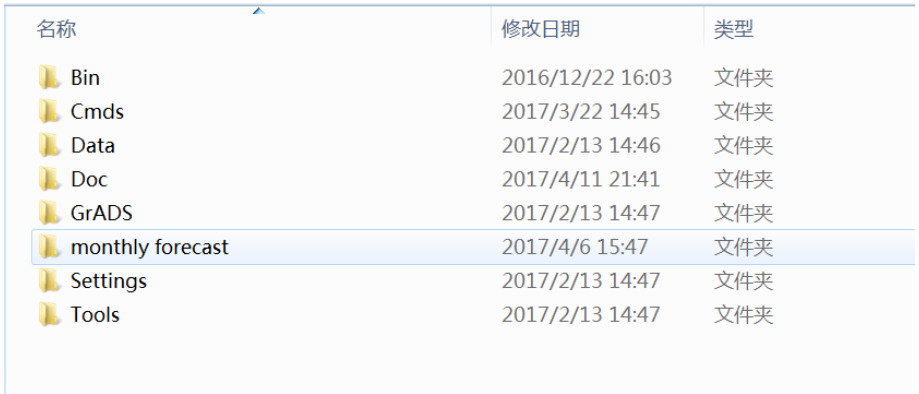
Sever: ftp://wlsyzx.yzu.edu.cn/
User name： FODAS， Code： NCC+FODAS

Component Part I

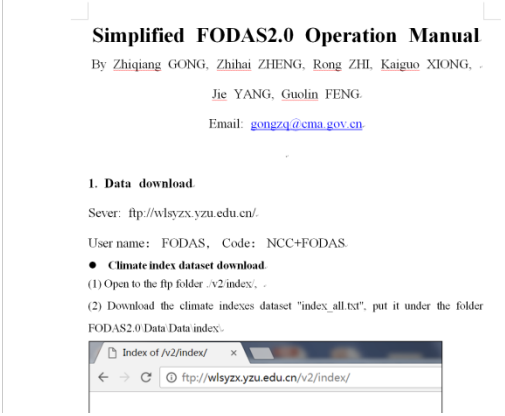




Component Part II



Manual


Simplified FODAS2.0 Operation Manual

By Zhiqiang GONG, Zhihai ZHENG, Rong ZHI, Kaiguo XIONG, Jie YANG, Guolin FENG.

Email: gongzq@cma.gov.cn.

1. Data download.

Sever: ftp://wlsyzx.yzu.edu.cn/.

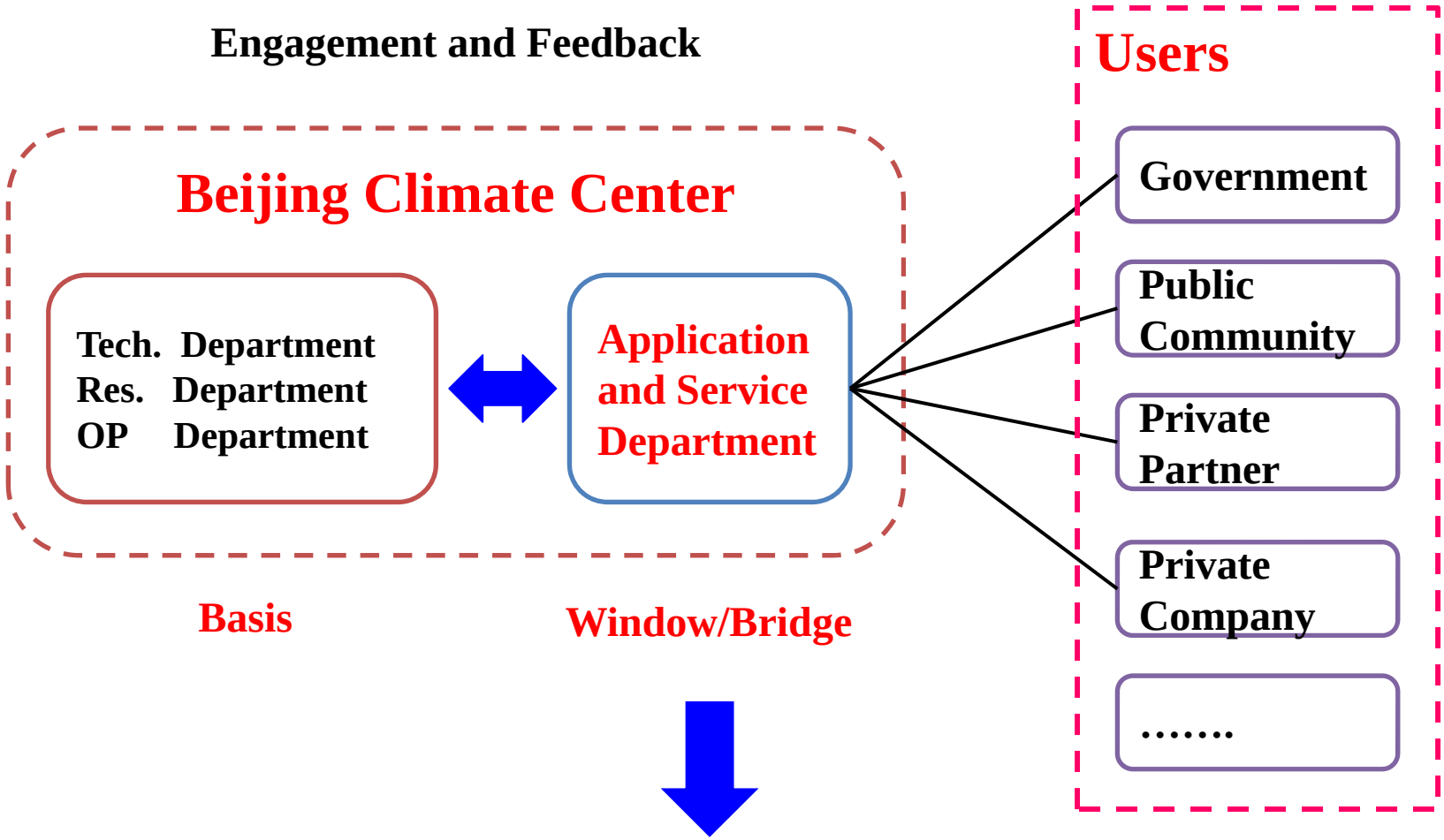
User name： FODAS， Code： NCC+FODAS.

- Climate index dataset download.

(1) Open to the ftp folder ./v2/index/.

(2) Download the climate indexes dataset "index_all.txt", put it under the folder FODAS2.0\Data\Data\index\.

User Involvement



Engagement, Feedback, monitoring and evaluation are essential for capturing the user's experience and hence improving the service and its utility.

SWOT analysis

Strength:

The platform has been established and operated as a routing work;

Contributions from GPCs.

Weakness:

Limited prediction accuracy especially in mid-high latitude regions;

Lacks of a common platform to distribute the outlook;

The outlook is limited at seasonal scale;

Lacks of passion to transform climate outlook to climate services.

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Way Forward

Issue on climate prediction on Sub-seasonal to Seasonal (S2S) time scale:

- Climate predictability for East Asian monsoon, MJO, extreme climate and precipitation and etc.
- Sharing methods related to climate prediction, such as model initializing, ensemble prediction, ocean data assimilation and etc.

Multi-Model Ensemble prediction and products verification;

More Climate Prediction Model products from GPCs.

Make engagement with users to transform prediction to services.

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WEATHER CLIMATE WATER
TEMPS CLIMAT EAU

Thank you
Merci

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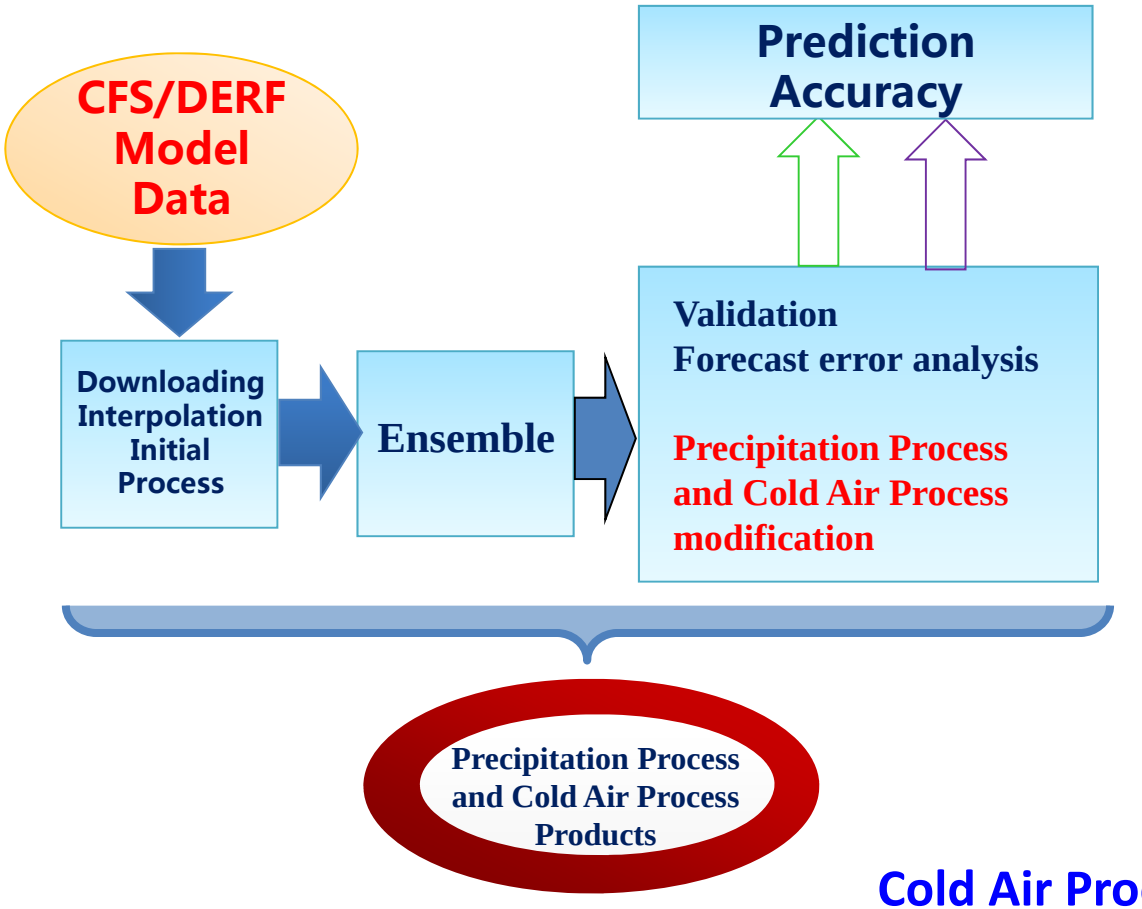
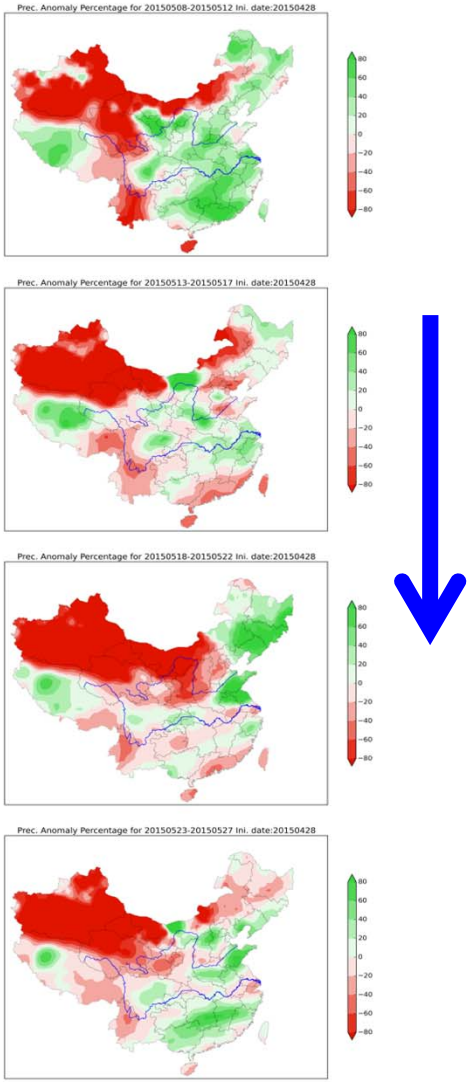
World Meteorological Organization
Organisation météorologique mondiale

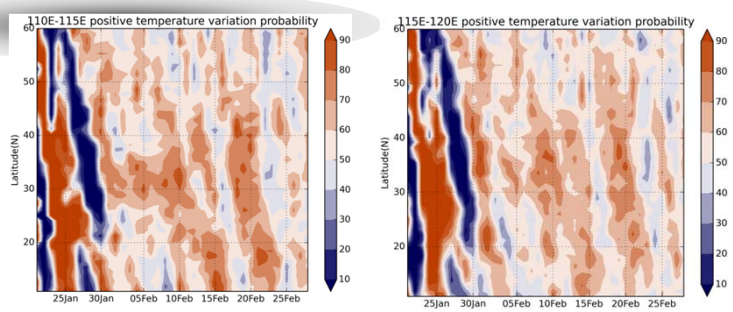
The Extend-range Forecast System



Precipitation Process Forecast



Cold Air Process



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