



## **16<sup>th</sup> CAS-TWAS-WMO Forum**

**International Symposium on Advances in Seasonal to Decadal Prediction**

September 18-20, 2017

Yuanchenxin International Hotel, Beijing, China

### **Organized by**

CAS-TWAS Center of Excellence for Climate and Environment Sciences (ICCES)

### **Hosted by**

CAS-TWAS Center of Excellence for Climate and Environment Sciences (ICCES)  
Institute of Atmospheric Physics, Chinese Academy of Sciences

### **Supported by**

Chinese Academy of Sciences (CAS)  
The World Academy of Sciences for the advancement of science in developing  
countries (TWAS)

➤ **Scientific Committee:**

- Francisco Doblas-Reyes (BSC, Spain)
- Yosuke Fujii (MRI/JMA, Japan)
- Noel Keenlyside (Univ. Bergen, Norway)
- Jing-Jia Luo (Australia)
- Annarita Mariotti (NOAA, USA)
- Adam A. Scaife (Met Office, UK)
- Emilia Sanchez-Gomez (CERFACS, France)
- Fei Zheng (ICCES, IAP/CAS, China)

➤ **Contact**

CTWF Secretariat

MS. Jin Xiao

CAS-TWAS Center of Excellence for Climate and

Environment Sciences (ICCES)

Institute of Atmospheric Physics (IAP)

Chinese Academy of Sciences (CAS)

Beijing 100029, China

E-mail: [ctwf@mail.iap.ac.cn](mailto:ctwf@mail.iap.ac.cn);

Tel: +86 10 82995124

Fax: +86 10 82995123

## Welcome Message

Dear Participants:

Since established in 2000, CAS-TWAS-WMO Forum has organized a series of Symposiums and workshops. Its overall aim is to bring together high level experienced scientists related to climate sciences to exchange ideas, discuss scientific problems in depth and develop suitable solving methods by joint efforts.

Due to the considerable socio-economic and ecological impacts of the climate, many efforts have been made to predict year-to-year climate variability (e.g., ENSO) and climate changes over the past decades. In particular, advanced data assimilation techniques have been applied to weather-climate forecasting systems in order to generate realistic ensemble initial conditions for improved predictive skill. However, major challenges remain in reducing uncertainties in the initial conditions and errors in forecast models and external forcing, and in assessing predictability limit associated with multi-scale climate processes and nonlinearity. In this context, Advances in seasonal to decadal prediction have been selected as the topic for this year's international conference of CAS-TWAS-WMO Forum on Climate Science (CTWF).

We sincerely welcome you to participate in the symposium, and wish you enjoy your stay in Beijing this September.

Sincerely Yours,

Local Organizing Committee

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### Program

#### Monday, September 18, 2017

<b>Opening Ceremony</b>  <b>Chair:</b> Dr. Fei Zheng	<b>08:30-09:00</b>	<b>Opening Speeches</b>
	<b>09:00-09:20</b>	<b>Group Photo</b>
	<b>09:20-10:00</b>	The inter-decadal variability of the East Asian winter monsoon and its relationship with the global climate change  - keynote speech <i>Yi-Hui Ding, NCC, China</i>
<b>10:00-10:30</b>	<b>Coffee Break</b>	
<b>Session 1:</b> Mechanisms for atmosphere-ocean variability-A  <b>Co-chairs:</b> Dr. Noel Keenlyside Dr. Yosuke Fujii	<b>10:30-11:00</b>	ENSO predictability, model biases and the tropical Pacific observing system  - Invited speech <i>Arun Kumar, NOAA/NCEP, USA</i>
	<b>11:00-11:30</b>	Subdecadal modulation in the Pacific relevant to global warming hiatus  - Invited speech <i>Takashi Mochizuki, JAMSTEC, Japan</i>
	<b>11:30-12:00</b>	The recent intensification of the Pacific-Atlantic climate connectivity  - Invited speech <i>Jin-Yi Yu, UCI, USA</i>
<b>12:00-13:30</b>	<b>Lunch</b>	
<b>Session 2:</b> Understanding of the fundamental limits of predictability	<b>13:30-14:00</b>	Inter-basin sources for two-year predictability of the multi-year La Niña event in 2010-2012  - Invited speech <i>Jing-Jia Luo, Australia</i>

<b>Co-chairs:</b> Dr. Francisco Doblas-Reyes Dr. Jin-Yi Yu	<b>14:00-14:30</b>	ENSO as a potential source for global seasonal climate predictability: From Yangtze River flooding events to Indian Ocean Dipole variability to the 2016 extreme low Antarctic sea ice extent - Invited speech <i>Malte Stucker, University of Washington, USA</i>
	<b>14:30-15:00</b>	Relating model errors to seasonal prediction skill - Invited speech <i>Noel Keenlyside, GFI, Norway</i>
	<b>15:00-15:10</b>	Introduction of IAP Journals <i>Zheng (Jenny) Lin, IAP, China</i>
<b>15:10-15:40</b>	<b>Coffee Break</b>	
<b>Session 3:</b> Mechanisms for atmosphere-ocean variability-B  <b>Co-chairs:</b> Dr. Jing-Jia Luo Dr. Emilia Sanchez-Gomez	<b>15:40-16:10</b>	Predictability and mechanisms of NAO variability - Invited speech <i>Rosie Eade, Met Office, UK</i>
	<b>16:10-16:40</b>	The Atlantic Multidecadal Variability: from its driving mechanisms to its climate impacts - Invited speech <i>Yohan Ruprich-Robert, GFDL, USA</i>
	<b>16:40-17:10</b>	The mid-20th century North Atlantic cooling: skill and uncertainty in CMIP5 historical simulations. - Invited speech <i>Alessio Bellucci, CMCC, Italy</i>
	<b>17:10-17:25</b>	Modulation of Bjerknes feedback on the interannual and decadal variations of ENSO <i>Xiang-Hui Fang, Fudan Uni., China</i>
	<b>17:25-17:40</b>	Possible feedback of Pacific Decadal Oscillation simulated by ECHAM5/MPI-OM <i>Hao Luo, IAP, China</i>
	<b>17:40-17:55</b>	On the “spring predictability barrier” for strong El Niño events as derived from an intermediate coupled model ensemble prediction system <i>Qian-Qian Qi, IAP, China</i>
	<b>17:55-18:10</b>	Projection of surface air temperature over East Asia during summer: Role of natural variability and external forcings <i>Nath Debashis, IAP, China</i>
	<b>18:10-18:30</b>	<i>Discussion</i>
<b>19:00</b>	<b>Welcome Reception</b>	

**Tuesday, September 19, 2017**

<b>Session 4:</b> Model development and its applications-A  <b>Co-chairs:</b> Dr. Fei Zheng Dr. Yosuke Fujii	<b>08:30-09:00</b>	Overview of IAP seasonal prediction system - Invited speech <i>Zhao-Hui Lin, IAP, China</i>
	<b>09:00-09:30</b>	Advancements and setbacks in the development of a decadal climate prediction system - Invited speech <i>Wolfgang Müller, MPI, Germany</i>
	<b>09:30-10:00</b>	Development of QNLM's High-Resolution Earth Prediction System: An Adaptive Strategy to Global Change - Invited speech <i>Shaoqing Zhang, POL/OUC, QNLM</i>
<b>10:00-10:30</b>	<b>Coffee Break</b>	
<b>Session 5:</b> Seasonal-Decadal Prediction-A  <b>Co-chairs:</b> Dr. Shaoqing Zhang Dr. Xing-Ren Wu	<b>10:30-11:00</b>	Dynamical Prediction of the Climate over the Maritime Continent and Adjacent Regions - Invited speech <i>Song Yang, SYSU, China</i>
	<b>11:00-11:30</b>	Seasonal forecast Skill investigation of ACCESS-S/UKMO GloSea5 model over China - Invited speech <i>William Wang, BOM, Australia</i>
	<b>11:30-12:00</b>	Seasonal prediction skill of the Norwegian Climate Prediction Model - Invited speech <i>Yi-Guo Wang, NERSC, Norway</i>
<b>12:00-13:30</b>	<b>Lunch</b>	
<b>Session 6:</b> Applications of Data assimilation  <b>Co-chairs:</b> Dr. Emilia Sanchez-Gomez Dr. Yi-Guo Wang	<b>13:30-14:00</b>	Coupled Atmosphere-Ocean Data Assimilation System Reanalysis in JMA/MRI - Invited speech <i>Yosuke Fujii, JAMSTEC, Japan</i>
	<b>14:00-14:30</b>	Climate prediction system applying ocean data assimilation based on Ensemble Optimal Interpolation - Invited speech <i>YoungHo Kim, KIOST, Korea</i>
	<b>14:30-14:45</b>	A short-term climate prediction system using a weakly coupled assimilation: results for summer rainfall prediction of China

		<i>Ren-Ping Lin, IAP, China</i>
	<b>14:45-15:45</b>	<b>Introduction for Poster (2 min each)</b>
<b>15:45-16:15</b>	<b>Coffee Break &amp; Poster</b>	
<b>Session 7:</b> Impact of model systematic error on forecasts  <b>Co-chairs:</b> Dr. Malte Stucker Dr. William Wang	<b>16:15-16:45</b>	Model drift analysis to understand the causes of systematic errors in climate prediction systems - Invited speech <i>Emilia Sanchez-Gomez, CERFACS, France</i>
	<b>16:45-17:15</b>	Effects of stochastic model error and systematic bias on ENSO prediction - Invited speech <i>Fei Zheng, IAP, China</i>
	<b>17:15-17:30</b>	Climate prediction and agriculture sector: current situation and future challenges in the developing countries <i>Zakaria F.F HASSAN, National Research Centre, Egypt</i>
	<b>17:30-17:45</b>	An Application of Multi Model Ensemble System for Seasonal Prediction of Summer Monsoon Rainfall over Eastern Belt of Pakistan using Coupled General Circulation Models <i>Khalid Bushra, International Islamic University, Islamabad</i>
	<b>17:45-18:00</b>	<b>Discussion</b>
<b>19:00</b>	<b>Dinner</b>	

### Wednesday, September 20, 2017

<b>Session 8:</b> Model development and its applications-B  <b>Co-chairs:</b> Dr. Yuhei Takaya Dr. Swadhin Behera	<b>08:30-09:00</b>	NCEP Unified Global Coupled System for Sub-seasonal to Seasonal Prediction - Invited speech <i>Xing-Ren Wu, NCEP, USA</i>	
	<b>09:00-09:30</b>	Downscaling climate prediction over east Asia - Invited speech <i>Jian-Qi Sun, IAP, China</i>	
	<b>09:30-10:00</b>	Developing agro-climatic services based on seasonal climate forecast - Invited speech <i>Andrea Toreti, JRC, Italy</i>	
<b>10:00-10:30</b>	<b>Coffee Break</b>		
<b>Session 9:</b> Seasonal-Decadal Prediction-B  <b>Co-chairs:</b> Dr. Jian-Qi Sun Dr. Hong-Li Ren	<b>10:30-11:00</b>	Decadal Prediction of Sahel rainfall - Invited speech <i>Elsa Mohino, UCM, Spain</i>	
	<b>11:00-11:30</b>	Skillful multi-year predictions of tropical trans-basin climate variability - Invited speech <i>Yoshimitsu Chikamoto, USU, USA</i>	
	<b>11:30-12:00</b>	Seasonal and near-term climate predictions using JMA seasonal prediction system - Invited speech <i>Yuhei Takaya, JMA, Japan</i>	
<b>12:00-13:30</b>	<b>Lunch</b>		
<b>Session 10:</b> Seasonal-Decadal Prediction-C  <b>Co-chairs:</b> Dr. Rosie Eade Dr. Elsa Mohino	<b>13:30-14:00</b>	Seasonal to decadal climate predictions and applications based on SINTEX-F - Invited speech <i>Swadhin Behera, JAMSTEC, Japan</i>	
	<b>14:00-14:30</b>	Climate prediction operational system and applications in Beijing Climate Center - Invited speech <i>Hong-Li Ren, NCC, China</i>	
	<b>14:30-15:00</b>	A test-bed for joint climate prediction and services research - Invited speech <i>Francisco Doblas-Reyes, BSC, Spain</i>	
	<b>15:00-15:30</b>	<b>Coffee Break</b>	
	<b>15:30-15:45</b>	Improving Multimodel Medium Range Forecasts over the Greater Horn of Africa Using the FSU	



		Superensemble <i>Kipkogei Oliver, ICPAC</i>
	<b>15:45-16:00</b>	Implementation of long-term trend preserving bias correction methods (DQM and QDM), for extreme climatic and hydrological events over Pakistan <i>Shaukat Ali, GCISC, Ministry of Climate Change, Government of Pakistan</i>
	<b>16:00-16:15</b>	A process prediction model for seasonal droughts in China using atmospheric and oceanic Standardized Anomalies <i>Zhen-Chen Liu, Hohai University, China</i>
	<b>16:15-16:30</b>	Fundamentals of Weather Predictability and estimation of a few Forecasting Terms <i>Naeem SADIQ, University of Karachi Pakistan</i>
<b>16:30-18:00</b>	<b><i>Concluding Discussions and Closing Remarks</i></b>	
<b>19:00</b>	<b>Dinner</b>	

**Poster Session:**

P1 Wajid NASIM

*Future Risk Assessment by Estimating Historical Heat Wave Trends with Projected Heat Accumulation Using SimCLIM Climate Model in Pakistan*

P2 Samia KHSIBA

*Kalât Andalous harbor lagoon sediments, quality and Characteristics*

P3 Chandima GOMES

*LIMITATIONS OF ELIMINATING MODEL ERRORS IN CLIMATE PREDICTION MODELS: HOW TO COPE WITH NON-ERROR-FREE MODELS*

P4 Mahmoud Molanejad

*Statistical Analysis of Dust Storm in Khuzestan Province in 2000-2015*

P5 Salim BOUAKLINE

*Analysis of the Historical shoreline variations (1959-2017) to aid forecasting the futures positions. Application in the Western part of Algiers coast - Algeria.*

P6 Rashed MAHMOOD

*Decadal summer rainfall variability in Pakistan: observations and model simulations*

P7 Wasiu Gbolahan BALOGUN

*Heterocyclic amine in the environment; Multidirectional approach to assessing the toxic effects on the earthworm (*Eudrilus eugeniae*)*

P8 Muhammad Younis LAGHARI

*Climate Change: Threat to fishes*

P9 Gabriel O. OYERINDE

*Design of a Data Acquisition and Logging System for Air Pollution Monitoring and Meteorology Application*

P10 Ibrar HUSSAIN

*Phenology of 'Tupy' and 'Xavante' blackberries grown in subtropical area*

P11 Reshmita NATH

*CMIP5 multi-model projections of extreme weather events in the Humid Subtropical Gangetic Plain region of India*

P12 Shaymaa SHEDEED

*Improving user engagement, uptake of climate services and prediction of weather and climate in developing countries*

P13 Shiva EBRAHIMI

*Evaluation of TRMM 3B42 v7 product using gauge-based precipitation at different temporal resolution over Tibetan plateau*

P14 Sana KHUSHI

*Rapid urbanization in Punjab: A real challenge to soil protection and food security*

P15 Hao LUO

*Evaluation of oceanic surface observation for reproducing the upper ocean structure in ECHAM5/MPI-OM*

P16 Meng-Jiao DU

*The preliminary research of sea temperature climatological data assimilation in climate mode*

P17 Xiang-Hui FANG

*Simulating two types of enso by a simple coupled model*