

Tropical Weather and Climate Dynamics (TWCD) Workshop

9-12 October, 2013

East-West Center, Honolulu, Hawaii, USA

East Asia and western North Pacific, with unique location connecting to Eurasia Continent and the Indo-Pacific warm pool, encounters frequently natural hazards such as torrential rainfall and floods, severe droughts, cold surges and heat waves. These extreme weather events are associated with tropical cyclones (TCs), monsoon depressions, multi-scale tropical disturbances, extra-tropical cyclones, and cold fronts. These synoptic systems are further influenced by monsoon intraseasonal and interannual variations, El Nino-Southern Oscillation (ENSO), interdecadal oscillations, and global warming.

Mechanisms by which tropical perturbations and unorganized convective cloud clusters evolve into tropical storms, known as TC genesis, remains largely unclear and the prediction of it is one of the most challenging problems in atmospheric science. While the prediction of TC track in the past 30 years was steadily improved, the forecast of sudden TC track changes and rapid TC intensification (or decaying) is still challenging. Low-frequency climate variations can affect TC activity through change of background state of the atmosphere and ocean (e.g., ocean eddy fields and heat content). The so-induced TC change may further influence the background state through its impact on meridional heat transport and nonlinear oceanic and atmospheric processes.

ENSO is the most important predictability source for seasonal prediction. While significant progress has been made in El Nino prediction in the past 20 years, there is still difficulty in predicting El Nino onset and termination. Recent studies showed that there are two types of El Ninos (i.e., EP and CP El Nino or canonical and Modoki El Nino) and the two types of El Ninos have differing impacts on climate over East Asia, Indian Ocean and North America. Current climate models fail to reproduce the two types of El Ninos. To improve the seasonal forecast skill, it is critical to understand processes that control the two modes. Besides, understanding ENSO and Indian Ocean Dipole (IOD) teleconnection patterns, their climate impacts and their interactions with other timescale motions such as the Pacific and Atlantic interdecadal oscillations is critical for regional climate prediction.

The intraseasonal oscillation (ISO) is most significant variability between day-to-day weather and ENSO. Current operational models have low skills in predicting ISOs in general. Understanding and improving the representation of ISO in general circulation models can help bridge the gap between short-range weather and seasonal climate prediction. It has been shown that ISO exerts a great influence on higher-frequency modes. However, how and to what extent the higher-frequency modes feed back to ISO and lower-frequency climate oscillations remains unclear.

The objective of the TWCD workshop is to bring scientists together to exchange latest research results and stimulate new ideas in tropical weather and climate research through discussing emerging issues and challenges and novel concepts. The workshop will also foster closer collaborations on tropical and climate dynamics research among Asian-Pacific regions.

• **Workshop organizing committee**

Chairs

- Tim Li (University of Hawaii)
- Yukio Masumoto (JAMSTEC)

Members

- S. Behara (JAMSTEC)
- Yukari Takayabu (AORI, University of Tokyo)
- Masahiro Watanabe (AORI, University of Tokyo)
- K.-J. Ha (Pusan National University)
- Soon-Il An (Yonsei University)
- J.-S. Kug (Korea Institute of Ocean Science and Technology)
- R. Wu (Chinese University of Hong Kong)
- Jianping Li (IAP, CAS)
- Tianjun Zhou (IAP, CAS)
- Liguang Wu (Nanjing University of Information Science and Technology)
- C.-C. Wu (NTU)
- C.-H. Sui (NTU)
- H.-H. Hsu (RCEC, Academia Sinica)
- Bin Wang (University of Hawaii)
- Fei-Fei Jin (University of Hawaii)

Local Organizing Committee

- Xiouhua Fu (University of Hawaii, Chair)
- Kazu Kikuchi (University of Hawaii)
- Hiro Murakami (University of Hawaii)
- June-Yi Lee (University of Hawaii)
- Baoqiang Xiang (University of Hawaii)

- **Themes**

Session 1 Dynamics of intraseasonal-to-interdecadal variability

Session 2 Typhoons and high-impact weather

Session 3 Monsoon variability and predictability

Session 4 Climate modeling, prediction and future projection

Session 5 Roles of ocean and air-sea interaction in climate variation and change

- **Abstract submission**

All abstracts should be submitted to Workshop Secretariat (xfu@hawaii.edu). Please state clearly to which session the abstract is submitted. The abstract submission deadline is **31 May 2013**.

- **Hotel**

IPRC will reserve a block of rooms at discount rate (\$121 plus tax) at Pagoda Hotel (www.pagodahawaii.com, phone: 808-948-8369 or 808-948-8370). A special website will be set up for participants to book the hotel with the discounted rate (to be announced soon). All the participants need to bear their own travel expenses and accommodation.

- **Registration Fee**

Registration fee is \$200.

- **Venue**

The workshop will be held in the Pagoda Hotel Conference Hall.