Seventh WMO International Workshop on Monsoons (IWM-7)

ONLINE TRAINING WORKSHOP ON SUBSEASONAL TO SEASONAL (S2S) PREDICTION OF MONSOONS

1-12 NOVEMBER 2021

AGENDA

Note: Each day's session will be of ~2 hours duration in total, including discussion/interaction with participants. The online sessions will be delivered in two formats simultaneously (videoconference via MS Teams with live interaction, for about 25-30 PR-nominated participants and webcasting by YouTube channel for all the remaining participants with limited live chat facility). All sessions will be recorded and made available on YouTube channel. Links will be provided in due course.

PRE-WORKSHOP ORIENTATION SESSION: 13 & 14 OCTOBER 2021 (WEDNESDAY & THURSDAY)

- Identical sessions on both days, to be scheduled at different times (03:00-0500 UTC on 13 October and 13:00-15:00 UTC on 14 October) *120 min*
- Jointly conducted by *Caio Coelho (CPTEC), Raizan Rahmat (MSS) and Sivananda Pai (IMD)*
- Programme:
  - Brief welcome
  - Brief self-introductions of participants
  - Overview of the workshop programme
  - Familiarization tour of the videoconference platform (MS Teams) and the webcasting channel (YouTube) being used for the workshop and their key features
  - Instructions on installation of R and verification package
  - Q&A

DAY 1: 1 NOVEMBER 2021 (MONDAY) 13:00-15:00 UTC

Session 1: Introduction

- Welcome (*Rupa Kumar Kolli, Susmitha Joseph, IMPO/IITM*) *5 min*
- Opening Remarks (*Zhuo Wang, WGTMR/UIUC, Estelle De Coning, WMO, Mrutyunjay Mohapatra, DGM, IMD & PR of India with WMO, Raghavan Krishnan, JSC-WCRP/IITM*) *30 min*

- Basics of S2S Prediction and Concepts (*Andy Robertson, IRI*) *30 min*
- Operational Aspects of S2S Prediction – Global to National Cascading (*Arun Kumar, NOAA*) *30 min*
- Q & A (Moderator: *Zhuo Wang, WGTMR/UIUC*) *30 min*

Day 2: 2 November 2021 (Tuesday)

Session 2: Regional Case Studies (Two parallel sessions)

Parallel Session 2A 03:00-05:00 UTC

- Asian-Australian Monsoons
  - East Asia (*Yuhei Takaya, JMA*) *30 min*
  - South Asia (*Atul Kumar Sahai, IITM*) *30 min*
  - Southeast Asia (*Thea Turkington, MSS*) *30 min*
- Q & A (Moderator: *Raizan Rahmat, MSS*) *30 min*

Parallel Session 2B 13:00-15:00 UTC

- African Monsoons
  - Sahel (*Philippe Peyrillé, Météo France*) *30 min*
- American Monsoons
  - South America (*Iracema Cavalcanti, CPTEC*) *30 min*
  - North America (*Ángel Muñoz, IRI*) *30 min*
- Q & A and Open Discussion (Moderator: *Ángel Muñoz, IRI*) *30 min*

Day 3: 3 November 2021 (Wednesday) 13:00-15:00 UTC

Session 3: Predictability Sources

- Drivers at Multiple Timescales Impacting Subseasonal Variability and Cross-timescale Interference (*Ángel Muñoz, IRI*) *30 min*
- El Niño/Southern Oscillation (*Michelle L'Heureux, NOAA*) *30 min*
- South Atlantic Convergence Zone (*Leila Carvalho, UCSB*) *30 min*
- Q & A (Moderator: *Thierry Lefort, Météo France*) *30 min*

Day 4: 4 November 2021 (Thursday) 03:00-05:00 UTC

Session 3 contd.: Predictability Sources

- Madden-Julian Oscillations (*Harry Hendon, BoM*) *30 min*
- Boreal Summer Intra-Seasonal Oscillation (*Bin Wang, SOEST*) *30 min*
- Indian Ocean Dipole (*Surya A. Rao, IITM*) *30 min*
- Q & A (Moderator: *Atul Kumar Sahai, IITM*) *30 min*

Day 5: 5 November 2021 (Friday)

Session 4: Data Access and Tools (including practical demonstrations) 13:00-15:00 UTC

- Satellite-based Global High-resolution Rainfall Data (*Moeka Yamaji, JAXA*) *30 min*
- Japan Meteorological Agency (JMA)'s Ocean Data/Products (*Akiko Shoji, JMA*) *15 min*

- JMA's WMO Regional Specialized Meteorological Centre (RSMC) Tokyo for Nowcasting (*Shiro Omori, JMA*) *15 min*
- S2S and SubX Prediction Databases and IRI Data Library (*Andy Robertson, IRI*) *30 min*
- Q & A (Moderator: *Yukari Takayabu, WGTMR/UTokyo*) *30 min*

Day 6: 8 November 2021 (Monday) 13:00-15:00 UTC

Session 4 contd.: Data Access and Tools (including practical demonstrations)

- Tools for S2S Prediction on regional/national scales (e.g., PyCPT, etc.) (*Ángel Muñoz, IRI*) *30 min*
- Use of Parameters with Better Predictability on S2S timescales – SpectralWeather (*Thierry Lefort, Météo France*) *30 min*
- Current/Prospective Operational S2S Products from WMO GPCs-LRF, GPCs-SSF and WMO RCCs (*Arun Kumar, NOAA*) *30 min*
- Q & A (Moderator: *Arun Kumar, NOAA*) *30 min*

Day 7: 9 November 2021 (Tuesday) 13:00-15:00 UTC

Session 5: Model Validation and Verification (including practical demonstrations)

- Cross-validation versus retroactive approaches (*Ángel Muñoz, IRI*) *40 min*
- Forecast Attributes and Metrics (*Caio Coelho, CPTEC*) *40 min*
- Q & A (Moderator: *Andy Robertson, IRI*) *40 min*

Day 8: 10 November 2021 (Wednesday) 13:00-15:00 UTC

Session 5 contd.: Model Validation and Verification (including practical demonstrations)

- Examples and Exercises on Forecast Attributes and Metrics – Some probabilistic metrics: Brier Score, reliability diagram, ROC curve and its underneath area and RPSS. (*Caio Coelho, CPTEC*) *90 min*
- Q & A (Moderator: *Andre Kamga, ACMAD*) *30 min*

Day 9: 11 November 2021 (Thursday) 13:00-15:00 UTC

Session 6: Ensemble Techniques and Calibration

- Local versus non-local calibration techniques. Mean and amplitude bias correction. Pattern-based calibration. Examples: local, ELR, PCR, CCA. (*Ángel Muñoz, IRI*) *90 min*
- Q & A (Moderator: *Caio Coelho, CPTEC*) *30 min*

Day 10: 12 November 2021 (Friday) 13:00-15:00 UTC

Session 7: Climate Applications and Services

- S2S Prediction in climate applications and services in monsoon regions: Some examples (*Govindarajalu Srinivasan, RIMES*) *45 min*
- Q & A (Moderator: *Ajit Tyagi, WGTMR*) *15 min*

Session 8: Good Practices in S2S Prediction and Conclusion

- Operational Schedules, Forecast Process Documentation and Forecast Communication (*D.R. Pattanaik, IMD*) *30 min*
- Q & A (Moderator: *Ajit Tyagi, WGTMR*) *15 min*
- Wrap-up and Way Forward
    - *Yukari Takayabu, Co-Chair, WGTMR, University of Tokyo 5 min*
    - *Andy Robertson, Co-Chair, WCRP/WWRP S2S Project 5 min*
    - *Raghavan Krishnan, Acting Director, IITM & Member, WCRP JSC*) *5 min*
- Vote of Thanks & Close of Workshop (*Susmitha Joseph, IMPO/IITM*) *2 min*