

Indian Institute of Tropical Meteorology (IITM)

Press release (25th November 2019):

International Workshop on Prediction skill of extreme Precipitation events and tropical cyclones: Present status and future Prospect (IP4) & Annual Climate Change Workshop

Dates: 25th-28th November 2019

Location: Indian Institute of Tropical Meteorology, Pune

Live video link: <https://coact.live/iitm/webcast.php>

Highlights of the Workshop:

The workshop addresses following:

- Improving extreme event/ rainfall forecast
- How to further improve the tropical cyclone forecasts particularly the intensity?
- What should be the future roadmap of improving model prediction?

Meghdhoot Hall, IITM; 25.11.2019: International Workshop on Prediction skill of extreme Precipitation events and tropical cyclones: Present status and future Prospect (IP4) & Annual Climate Change Workshop was inaugurated on the 25th November 2019 by the Chief Guest Dr. M. Rajeevan, Secretary, MoES, Government of India in the presence of Guests of Honours Prof. Kerry Emanuel, Cecil & Ida Green Professor of Atmospheric Science and Co-Director, Lorenz Center, MIT, USA and Prof. Graeme Stephens, Director of the Centre for Climate Sciences JPL, NASA, USA and the Director of IITM, Prof. R. S. Nanjundiah along with the Executive Director for the Centre for Climate Change Research (CCCR), Dr. R. Krishnan and the Convener of the IP4 workshop, Dr P. Mukhopadhyay.

The Director of IITM welcomed the dignitaries from 10 different countries that will be attending the four day workshop. Prof. Kerry Emanuel highlighted the importance of extreme events prediction saying ‘Three times as many people live along the coasts as compared to 1971. This is much higher than the rate of population growth and highlights the need for better cyclone predictions’. Prof. Stephens said that ”precipitation all over the world will increase as a global mean with further warning. But regional changes will not be the same. Precipitation changes will be non-linear”. These two issues show the need to improved prediction skill of extreme precipitation events and tropical cyclones. Dr. M. Rajeevan showed the improvement in India saying that “our predictions of weather and climate have improved over the last few years because of improved data assimilation and better computer models. We now have ensemble simulations at par with any other country. In fact, this unusual monsoon season had five cyclone and we were able to predict them all in advance and with high accuracy”. Dr. Krishnan highlighted the 10th annual climate change workshop, which will be a part of the four days. The workshop gives an opportunity to highlight the developments of the earth system model developed by CCCR. “We are very happy to report that CCCR has developed the first model to be a part of the international Coupled Model Inter-comparison Project Phase 6 (CMIP6) contributing the Intergovernmental Panel on Climate Change sixth assessment report”. The reason to conduct the 10th annual climate change workshop along with IP4 was to make the most of the international expertise attending the IP4 workshop.

Over the next four days, several experts from around the world will deliberate on these and related topics and lead to exchange of knowledge across different institutions globally. Around **100**

participants from India and abroad viz., Canada, USA, UK, Italy, Korea and Japan are attending the International workshop.

Agenda: <https://www.tropmet.res.in/ip4/Agenda-of-the-IP4.pdf>

Contact details: **Mrs Shompa Das**, Head LIP (shompa@tropmet.res.in/ 7507843555)/ PRO, **Dr. Anoop Mahajan**, (pro@tropmet.res.in; 020-25904526).

Workshop related queries:

IP4: **Dr P. Mukhopadhyay**, mpartha@tropmet.res.in / [020-25904221](tel:020-25904221)

Annual Climate Change workshop: **Dr. R. Krishnan**. krish@tropmet.res.in / 020- 25904302

Background Information about IP4

During 2017 November/December and during monsoon season of 2018, the southern state of India: Kerala experienced unusually extreme weather systems causing unprecedented damage of public property and loss of life. The event that struck during 29 November – 6 December 2017, was the tropical cyclone (TC) “Ockhi”. TC “Ockhi” was a very severe cyclonic storm that devastated the state of Kerala. Although climatologically, tropical cyclone over lower latitude near Kerala coast are relatively rare, this event posed a challenge to the numerical forecaster, as it required enhancing the model fidelity to predict such rare extreme event with sufficient lead time. The other event that shook the whole globe was the exceptionally heavy rainfall over Kerala during the month of August 2018. The state received around 164% more rainfall than its climatology during 1-19 August. Such unprecedented and exceptionally heavy rain caused wide spread flooding over the whole state of Kerala and caused loss of precious life and immense damage to public property. Apart from these events, there were other extreme events over Mega cities Mumbai, Chennai and many other places over India such as Uttarakhand heavy rain and flood etc., which posed the challenge of accurate forecasting of extremes with longer lead time.

While the numerical prediction did provide guidance of heavy rainfall during the period, there appears to be room for improving the forecasts. Keeping these high impact and exceptionally unusual weather events in background, the present workshop emphasizes and focuses on following eleven topics:

1. Present skills of Global operational model in predicting extreme rainfall events
2. Challenges in enhancing the skill of forecasting extreme events.
3. Role of Physical parameterization, dynamical core, assimilation, resolution, land use land cover in numerical model in improving the skill of extreme rain events.
4. What are the future roadmaps in improving the lead time of forecast of extreme precipitation events?
5. Probabilistic prediction and stochastic physics on improving the forecast skill.
6. Current status of forecast skill of Tropical Cyclone genesis, track and intensity.
7. Whether propagating MJO prediction with longer lead time can help in predicting TC genesis.
8. Roadmaps and future prospect of improving next generation TC forecast model
9. Latest observational platform and their role in improved monitoring and better data assimilation for extreme precipitation events and tropical cyclone forecast.
10. Lessons learnt in understanding extreme precipitation events and tropical cyclones in the backdrop of climate change
11. New approach of Deep learning/machine learning for breaking the parameterization deadlock

Experts will deliberate on these and related topics during 25-28 November 2019 and come out with recommendation at the end of the workshop for possible improvement and future development of model for enhancing the skill of forecast. Students/postdocs will be given opportunities to display their posters to the National and International experts.

This workshop is a follow up of an earlier International workshop (INTROSPECT) held during Feb 2017 on improving the physical process parameterization of the model.
