



## TARGETED TRAINING ACTIVITIES (TTAs)

In 2004, the ICTP Physics of Weather and Climate Section initiated a new programme of educational activities called "Targeted Training Activities" (TTAs).

TTA's distinguishing feature is its team-oriented nature, with the aim of putting together groups of scientists to collaborate on a specific goal in a Developing-Country institution. Such goals can be of different kinds:

- ***Development*** of an *educational team* on climate sciences in a university environment;
- ***Expertise building*** on the use of *numerical weather forecasting, seasonal prediction products* or *climate-scenario simulations* made available to the international community by institutions such as ECMWF, NCEP, IRI, IPCC;
- ***Implementation*** of a *project* on the application of *short- and long-term climate predictions to the management of hydrological or agricultural resources*.

To achieve this goal each TTA will be "targeted" to a limited number of institutions (from 2 to 5). From each institute, a group of scientists (lead by a co-ordinator) will be chosen. A limited number of "observing students" from Developing Countries may also be allowed to attend. The duration of the TTAs is expected to be between ***two*** and ***four weeks***, with a mixture of formal lectures, laboratory sessions and project work.

***Faculty:*** Lecturers from a number of institutions, with at least one external Director. Joint organization with one specific institution from a Developed Country (acting as a co-sponsor) is welcomed.

***Kick-off edition in 2004: 'Course on Climate Dynamics for Climate Research Centers and University Lecturers', August 9 - 27.***

The ***Center for Ocean-Land-Atmosphere Studies*** (COLA, Maryland, USA) is the partner organization for all the TTAs.

## 2006 - 2010 Editions

Targeted Training Activity (TTA) on  
*"Seasonal Predictability in Tropical Regions: Research and Applications"*  
August 7 - 18, 2006  
TTA Directors: J. Shukla, I-S Kang; Local Organizer: J. Pal & J.-H. Yoo

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Targeted Training Activity (TTA) on  
*"Seasonal Predictability of South Asian Monsoon"*  
August 6 - 10, 2007  
TTA Directors: J. Shukla, I-S Kang; Local Organizer: J.-H. Yoo

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Targeted Training Activity (TTA) on  
*"Seasonal Predictability in Tropical Regions"*  
followed by Workshop on  
*"Multi-scale Predictions of the Asian Summer Monsoon"*  
August 4 - 15, 2008  
TTA Directors: J. Shukla, I-S Kang; Local Organizer: J.-H. Yoo  
Workshop Director: F. Molteni; Local Organizer: A. Tompkins

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Targeted Training Activity (TTA) on  
*"Predictability of Weather & Climate: Theory & Applications to Intra-Seasonal Variability"*  
July 27 - August 7, 2009  
TTA Directors: J. Shukla, I-S Kang; Local Organizer: J.-H. Yoo

including the  
*South Asian Climate Outlook Forum* (DG Meeting)  
August 6, 2009  
Co-sponsor and partner organization:  
*World Meteorological Organization (WMO Geneva)*  
Organizers: J. Shukla (ICTP); K. Kumar (WMO)

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Targeted Training Activity (TTA) on  
*"Statistical Methods in Seasonal Prediction"*  
August 2 - 13, 2010  
TTA Directors: J. Shukla, T. DelSole; Local Organizer: J.-H. Yoo

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## 2012 Edition Trieste, Italy

Targeted Training Activity (TTA) on  
*"El Nino Southern Oscillation Monsoon in the Current and Future Climate"*  
July 30 - August 10, 2012  
TTA/Mtg. Directors: J. Shukla, B.N. Goswami, E. Sarachik, J.M. Wallace ; Local Organizer: F. Kucharski

including the  
*High-level Meeting on "The Looming Environmental Crisis and Global Sustainability"*

Co-sponsors and partner organization: **Indian Institute for Tropical Meteorology (IITM), Ministry of Earth Sciences - Pune, India; International Union of Geodesy and Geophysics (IUGG) - Denmark; Center for Ocean-Land-Atmosphere Interactions (COLA) - USA**

**2013 Edition  
Pune, India**

**Targeted Training Activity (TTA) on  
"Intraseasonal Monsoon Predictability and Prediction"**

**January 14 - 25, 2013**

**TTA Directors/Organizers: B.N. Goswami, J. Shukla, S. Anguluri ; ICTP Organizer: F. Kucharski**

**Co-sponsors and partner organizations: the Abdus Salam International Centre for Theoretical Physics (ICTP), Italy; Indian Institute for Tropical Meteorology (IITM), Ministry of Earth Sciences - Pune, India; Center for Ocean-Land-Atmosphere Interactions (COLA) - USA**

**2014 Edition  
Trieste, Italy**

**ICTP-IITM-COLA Targeted Training Activity (TTA) on  
"Challenges in Monsoon Prediction"**

**June 23 - July 4, 2014**

**TTA Directors/Organizers: B.N. Goswami, J. Shukla, S. Anguluri ; ICTP Organizer: F. Kucharski**

**Co-sponsors and partner organizations: the Abdus Salam International Centre for Theoretical Physics (ICTP), Italy; Indian Institute for Tropical Meteorology (IITM), Ministry of Earth Sciences - Pune, India; Center for Ocean-Land-Atmosphere Interactions (COLA) - USA**

**2015 Edition  
Pune, India**

**ICTP-IITM-COLA Targeted Training Activity (TTA) on  
"Modelling and Prediction of Asian Monsoons: Improving Physical Processes"**

**February 9 - 20, 2015**

**TTA Directors/Organizers: B.N. Goswami, J. Shukla, S. Anguluri ; ICTP Organizer: F. Kucharski**

**Co-sponsors and partner organizations: the Abdus Salam International Centre for Theoretical Physics (ICTP), Italy; Indian Institute for Tropical Meteorology (IITM), Ministry of Earth Sciences - Pune, India; World Meteorological Organization (WMO, Geneva); Center for Ocean-Land-Atmosphere Interactions (COLA/GMU at George Mason University) - USA**

**2016 Edition  
Trieste, Italy**

**ICTP-IITM-COLA Targeted Training Activity (TTA)  
"Towards Improved Monsoon Simulations"**

**June 13 - 17, 2016**

**TTA Directors/Organizers: J. Shukla, M. Rajeevan, & S. Rao (IITM, India), H. Annamalai (U. Hawaii);  
ICTP Organizer: F. Kucharski**