Earth Systems Science Organization (ESSO)
Ministry of Earth Sciences (MoES)
Government of India
Indian Institute of Tropical Meteorology (IITM)

Call for Research Proposals under "Monsoon Mission"

Earth System Sciences Organization (ESSO) of Ministry of Earth Sciences (MoES), Government of India, launched the "National Monsoon Mission" (NMM), a mission mode project with a vision to develop a state of the art dynamical prediction system for monsoon rainfall on all different time scales. Indian Institute of Tropical Meteorology (IITM) has been given the responsibility of overall execution of the monsoon mission by MoES. The program on Monsoon Mission is proposed to be undertaken through two sub-missions for two different time-scales (i) Monthly, seasonal and extended range time scale (beyond two weeks to one season) to be coordinated by IITM, Pune; and (ii) short to medium range scale (up to two weeks) to be coordinated by NCMRWF. The Indian National Center for Ocean Information Services (INCOIS) will provide the ocean observations, and IMD will implement the research results in operational mode. The participation of academic institutions from national and international organizations will be ensured through extra mural funding. For the mission, IITM, NCMRWF, IMD and INCOIS are collaborating with NCEP (USA), Met Office (UK) and various academic institutions/organizations in India and abroad to improve prediction skill of monsoon rainfall in short, medium, extended and seasonal time scales.

Climate Forecast System (CFS) of NCEP, USA has been identified as the base modelling system for the extended and seasonal time scales, as it is one of the best amongst the currently available coupled models for predicting Indian monsoon rainfall. However, at present, it has a moderate skill for retrospective forecast (hindcast) of seasonal monsoon rainfall and this skill needs to be improved to make the forecasts more useful. Thus, there is an urgent need to develop an Indian model based on the CFS coupled model Version 2.0 with an improved hindcast skill, so that the India Meteorological Department (IMD) can adopt it for generating operational forecasts.

Unified Model (UM) of Met Office (UK) has been identified as the base modelling system for short and medium range prediction, as it is one of the best among the currently used assimilation-modelling system. At present it has moderate skill in predicting wind and rainfall over medium range time scale over India. This skill needs to be improved further up to week-2, to make the forecasts more useful for the end users.

With these objectives, research proposals are invited on the following broad areas:

- Improvement of the CFS model Version 2.0 for improving hindcast skill of dynamical prediction of monsoon rainfall on (short, medium, extended and seasonal time scales) over the Indian region.

- Improvement of UM for improving wind, temperature and rainfall forecast up to week-2, including improved monsoon simulations over Indian region from sub-daily to a season.
- Developing/Integrating various modules of data assimilation especially for catering to current and upcoming earth observations into the UM.
- Better understanding of atmospheric/oceanic processes and improvement of physical parameterization schemes in UM/CFS models.
- Improvement on flexible portability of components of CFS/UM on different computing platforms
- Integrating various Earth system modules into the CFS model

Support from/through IITM/NCMRWF will be available to suitably configure the modelling system for planned research study. Computing facility of IITM/NCMRWF HPC will be available to execute the components of research proposal by researchers from India.

Project proposals are invited from national and international organizations/Universities/Institutes. Format for national and International proposals and other information are available at IITM website at the link http://www.tropmet.res.in/National%20Monsoon%20Mission-121-Page and also at NCMRWF and MoES websites.

Proposals along with all essential endorsement and certificates in the prescribed format may be forwarded through proper channel and should be sent to **The Director**, Indian Institute of Tropical Meteorology (**I.I.T.M.**), Dr. Homi Bhabha Road, Pashan, Pune – 411008, **INDIA**. The envelope should be clearly superscripted "MM PROPOSAL". Softcopy version of the same should be forwarded to the Monsoon Mission Directorate at the e-mail : **monsoon_mission@tropmet.res.in**

It may be noted that **date has been kept OPEN for submission of the proposal to Monsoon Mission**, however, it is advisable to send the proposals as early as possible.

For and behalf of the **Director, IITM, Pune**