

Expression of Interest for a RADAR Consultant
for CAIPEEX Phase-II Second year

Project details:

Indian Summer Monsoon Rainfall (ISMR) is the main source of water for Agriculture, drinking, industry and power generation over Indian region. It shows large interannual and intraseasonal variability. During the weak monsoon years, acute water shortages prevail over the large part of the country. To alleviate the stresses generated by water shortages, cloud seeding experiments for rain enhancements have been carried out by state governments.

The efficiency with which clouds produce rain at the surface varies greatly. Observational study of clouds, aerosols and their interaction is very essential for understanding the various mechanisms which lead to precipitation and also for conducting the precipitation enhancement experiment. The potential for increases in rainfall using cloud seeding is strongly dependent on the natural microphysics and dynamics of the clouds that are being seeded. The microphysics in turn depends on background aerosol levels. It is therefore essential to understand atmospheric aerosols and pollution levels and their effects on the microphysics and dynamics of naturally forming clouds. Indian Institute of Tropical Meteorology (IITM)'s has carried out cloud seeding experiments in the past over India. There are large changes in the atmospheric constituents due to anthropogenic activities and increase in pollution (aerosols) levels after the past experiment. For addressing a series of questions in regard to interactions between aerosol-cloud-precipitation, a carefully designed experiment with all the cloud microphysical and aerosol measurements along with the large scale atmospheric conditions in which the clouds are embedded is required over the different parts of our country.

With this need in mind, IITM has been conducting a national experiment "Cloud Aerosol Interaction and Precipitation Enhancement Experiment (CAIPEEX)" since 2009. All the Indian national Institutions and universities working in the area of aerosol and monsoon are participating in the experiment. The CAIPEEX unites the best scientists of India in the field, and that this national and international cooperation is likely to advance significantly the present knowledge of the ways mankind is affecting clouds, precipitation,

monsoonal circulation and the whole climate system. During the experiment a unique wealth of aerosol and cloud microphysical data is being generated using instrumented aircraft campaigns. Diagnostic, modeling and data analysis studies will also be carried out using this data.

CAIPEEX has two components viz. (1) Cloud-Aerosol interaction and (2) Precipitation Enhancement. Understanding of cloud-aerosol interaction is pre requisite for the second component. Phase-I of the CAIPEEX was conducted during the period from May-September 2009 using an instrumented aircraft equipped with many aerosol and cloud microphysics probes and campaign was carried out many parts of the country. Based on the results obtained from Phase-I, Phase-II first year experiment was conducted in 2010 wherein pilot phase of cloud seeding has been carried out along with the aerosol and cloud microphysics observations. Two aircraft, one seeding and one instrumented research aircraft along with a C band Doppler radar were in operation during the period September-November 2010. Phase-II second year experiment is being planned to be conducted during the monsoon/post-monsoon periods of 2011, wherein a fully randomized cloud seeding experiment along with the aerosol and cloud microphysics observations through two aircraft and Doppler radar are proposed.

Requirement of Radar Consultant

IITM is looking for a Radar consultant who will be able to help during the CAIPEEX Phase-II second year mission in radar calibration, operations and other radar related requirements and training.

The proposed radar consultant is required to assist in the following activities:

- Calibration of Doppler radar signals
- Networking of radars
- TITAN and CIDD software installation and product generation
- Injecting the Doppler radar signals in to TITAN software
- Helping in radar cloud observations and decision making for seeding
- Radio communication with the aircraft involved in seeding and guiding it
- Radar data archival for post processing
- Training IITM scientists in the above areas.
- Submission of a comprehensive report on all the activities.

Consultant should have previous experience in radar data archival, analysis and application of the same in warm cloud seeding procedures. Consultant should have publications in reputed peer-reviewed International journals on the related areas.

Interested persons who are capable of undertaking this type of job may provide the relevant information in regard to the project with full technical/scientific details, past experience etc.

Soft copy of the proposal along with the capability statement may be submitted within 15 days (i.e. up to 18 May 2011 at 12:00 hrs.) of publishing of this advertisement. The EoI shall be as concise and focused as possible to give the evidence of the above requirements and addressed to the Director, IITM. Only those persons pass the pre-selection process will be contacted and invited to submit detailed proposals.

Director

(Kind Attention : Dr. J.R. Kulkarni, Program Manager-CAIPEEX)

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