

Indian Institute of Tropical Meteorology, Pune

Press Release:

CAIPEEX - Scientific Cloud Seeding Experiment 2018



Seeder and Research aircraft for cloud seeding experiment



C Band Radar and instrumented Tower at NBNSCOE, Solapur



Rain gauge, Aerosol and upper air observations at NBNSCOE, Solapur

Highlights:

- Experiment started from 3rd July 2018
- The aircraft observational base will be Aurangabad
- Experiment duration will be 120 days during the monsoon season
- Established an observational facility at NBNSCOE, Solapur, Maharashtra
- Established a dual polarimetric C-band radar in Solapur
- A seeder and an instrumented research aircraft are being used to seed clouds and record the changes in clouds, leading to rainfall
- For the first time, such science experiment is being conducted in the convective clouds over the tropics

IITM Pune, 3 July 2018: Monsoon rainfall is quite heterogeneous and there is considerable interest to do cloud seeding by the state governments, when drought conditions are imminent. The Project titled “Cloud Aerosol Interaction and Precipitation Enhancement Experiment” (CAIPEEX) is a program of Ministry of Earth Sciences (MoES), that aims at understanding various processes related to tropical clouds. Indian Institute of Tropical Meteorology (IITM), a constituent unit of MoES, has taken up the scientific investigation of cloud seeding under CAIPEEX. The main objective of this experiment is to investigate suitable conditions under which cloud seeding works. It is expected to give scientific guidelines for rain enhancement and to make recommendations for such activities over the arid rain shadow regions of Western Ghats. The main goal of the observational campaign of 2018-19 is to provide high quality observations of cloud and precipitation related processes in natural and seeded clouds over the rain shadow region. This is CAIPEEX Phase IV experiment, which has started on 3rd July 2018 and will be conducted for 120 days, depending on availability of suitable clouds

Since 2009, CAIPEEX research experiments gathered airborne observations of clouds. These CAIPEEX observational datasets have contributed in the formulation of the present cloud seeding science experiment. A scientific study of cloud seeding requires suitable infrastructure to select, seed and monitor clouds and evaluate their enhancement in precipitation. In view of this, IITM has established an observational facility at Savitribai Phule Shikshan Prasarak Mandal’s N. B. Navale Sinhgad College of Engineering (SPSPM’s NBNSCOE), Solapur, and at Shri Tulja Bhavani College of Engineering, Tuljapur, Maharashtra. A dual polarimetric C-band radar has been installed and made operational in Solapur to monitor clouds and rain in an area of 200 km radius. Two aircraft; a seeder and an instrumented research aircraft are being used to seed clouds and document the changes in clouds, leading to rainfall.

Aurangabad has been selected as the base for aircraft observations since it is an IFR airport available within the radar range. Major efforts in 2018 will be to seed areas north of Solapur,

within the radar range. **Scientific cloud seeding experiment - 2018 has started from 3rd July 2018.** During these experiments, both seeder and research aircraft are being guided by radar observations to seed the clouds and make observations within the coverage of radar. For scientific evaluation, the seeded clouds will be monitored to document the cloud and rain drops using instrumented research aircraft.

IITM has set up a network of 120 rain gauges over the region to monitor rainfall received at the surface. For documenting thermodynamic structure of the atmosphere, various other instruments, including microwave radiometer profilers, radiosonde balloon ascents, are being operated from Solapur. The wind measurements over the observational area will be carried out using wind profilers at SPSPM's NBNSCOE Solapur and Shri Tulja Bhavani College of Engineering, Tuljapur during the period. The aerosol and chemistry measurements are also being conducted from Solapur.

All the scientific inputs / information generated through this, will be useful in assessing the suitability of hygroscopic cloud seeding. Accordingly, the seed material will be introduced at the cloud base with the help of aircraft.

This is for the first time, such a science experiment is being conducted in the convective clouds over the tropics. Further evaluation of the experiment will be done with the help of radar, rain gauges and aircraft observations, assisted by numerical modelling.

Long term observations and evaluation are mandatory for the success of this program.

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