

**Centre for Atmospheric & Oceanic Sciences  
Indian Institute of Science  
Bangalore**

**Brief Outline of Department**

The Centre for Atmospheric Sciences was established in 1982 and became the Centre for Atmospheric and Oceanic Sciences in 1996. There are nine faculties and one honorary faculty. Research in CAOS has revolved around the central theme of understanding monsoons and their variability. The analysis of data from rain gauges and satellites have revealed the complex spatial and temporal structure of monsoon variability. We have demonstrated the critical role played by the clouds in modulating the tropical climate. The impact of heat release on entrainment in the clouds has been studied through Laboratory experiments. The dynamics and thermodynamics of oceanic circulation in Bay of Bengal and Arabian Sea have been examined by using numerical models of the ocean.

**Teaching & Research Activities**

CAOS offers M.Sc. (Engg) and Ph.D programs. Some of the questions being addressed in research include (i) what controls the variability of Indian Monsoon? (ii) What influence does the oceans around India have on the monsoon? (iii) how do cloud processes modulate the monsoon? (iv) can aerosols alter the monsoon? and (v) the impact of monsoon on agriculture? We use theoretical, experimental and numerical approaches. Experimental work has been a tradition at CAOS and continuous measurements of weather and climatic variables are being made using the state of the art instruments both outside and within the campus. Computer simulations of the ocean and the atmosphere are being carried out using simple as well as complex models. These efforts are supplemented by the analysis of data from a variety of sources including satellite and *in situ* observations, field experiments and outputs from comprehensive numerical models. In the last two decades, important knowledge has emerged about the present climate of the earth and its dramatic changes in the past. New observations from field experiments, satellites and ocean buoys, together with

theoretical calculations and powerful computer models, aid in understanding the complexities of climate.

### **Facilities Created**

- (1) Flat Array SODAR XFAS with Acoustic enclosure
- (2) Power Supply, RASS Extension and Spare Parts Set, For XFAS  
(Purchased in July 2003)

Sodars of the Scintec FAS Series are advanced instruments for the remote measurement of wind and turbulence in the lower atmosphere. Areas of applications include meteorological research and monitoring, wind energy siting, diffusion analysis at industrial plants, wind shear detection at airports and optical propagation through turbulence. Sodars vertically emit sound pulses and derive the output information from the frequency and amplitude of the atmospheric echoes. Besides wind speed and direction, a variety of information is provided about the characteristics and structure of boundary layer turbulence.



### **For further details contact:**

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