



Project Atmospheric Brown Clouds (ABC)



UNEP

Aerosol Particulates



March 21, 1999: Arabian Sea; Thick haze (9.2°N, 73.5°E)



March 25, 1999: Clouds under thick haze (3.0°N, 74.5°E)



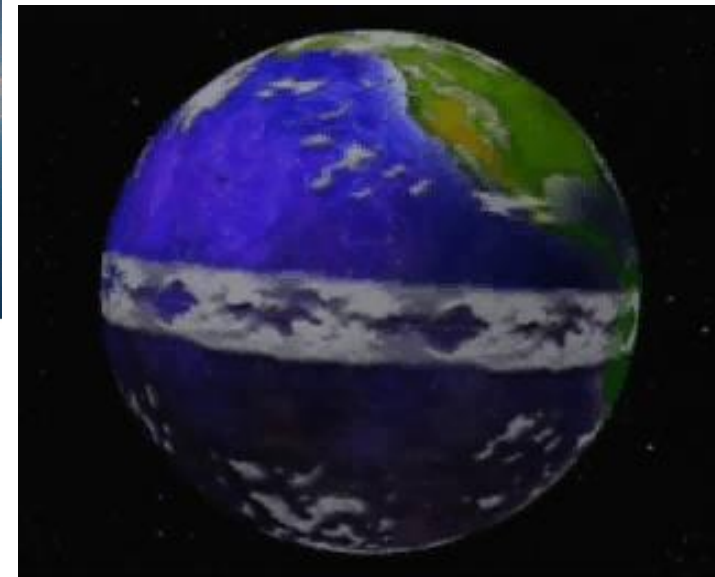
February 24, 1999: Just North of ITCZ;
Haze extends up to top of Cu (0.5°N, 73.3°E)



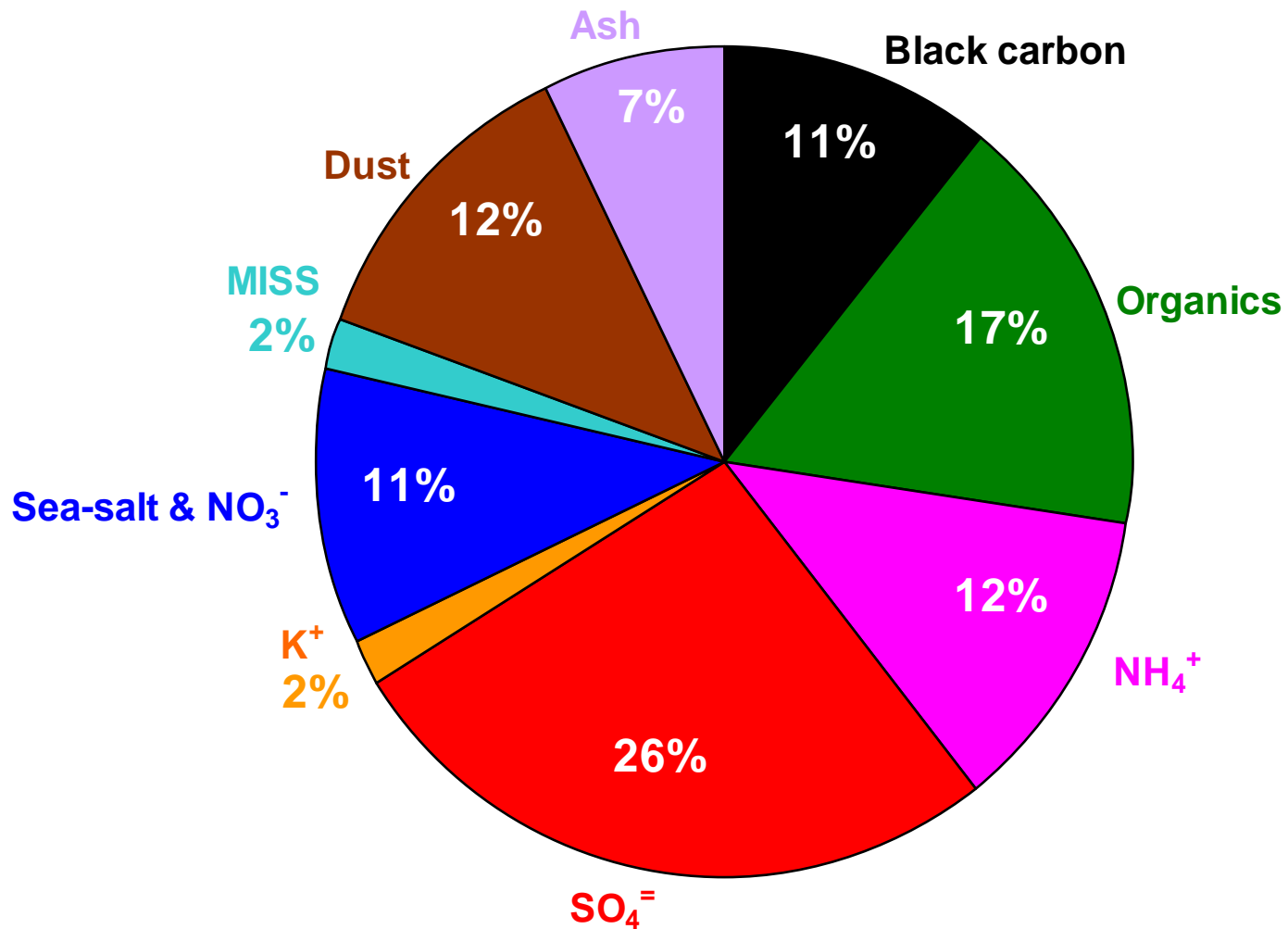
March 24, 1999: South of ITCZ;
Almost pristine clouds (7.5°S, 73.5°E)

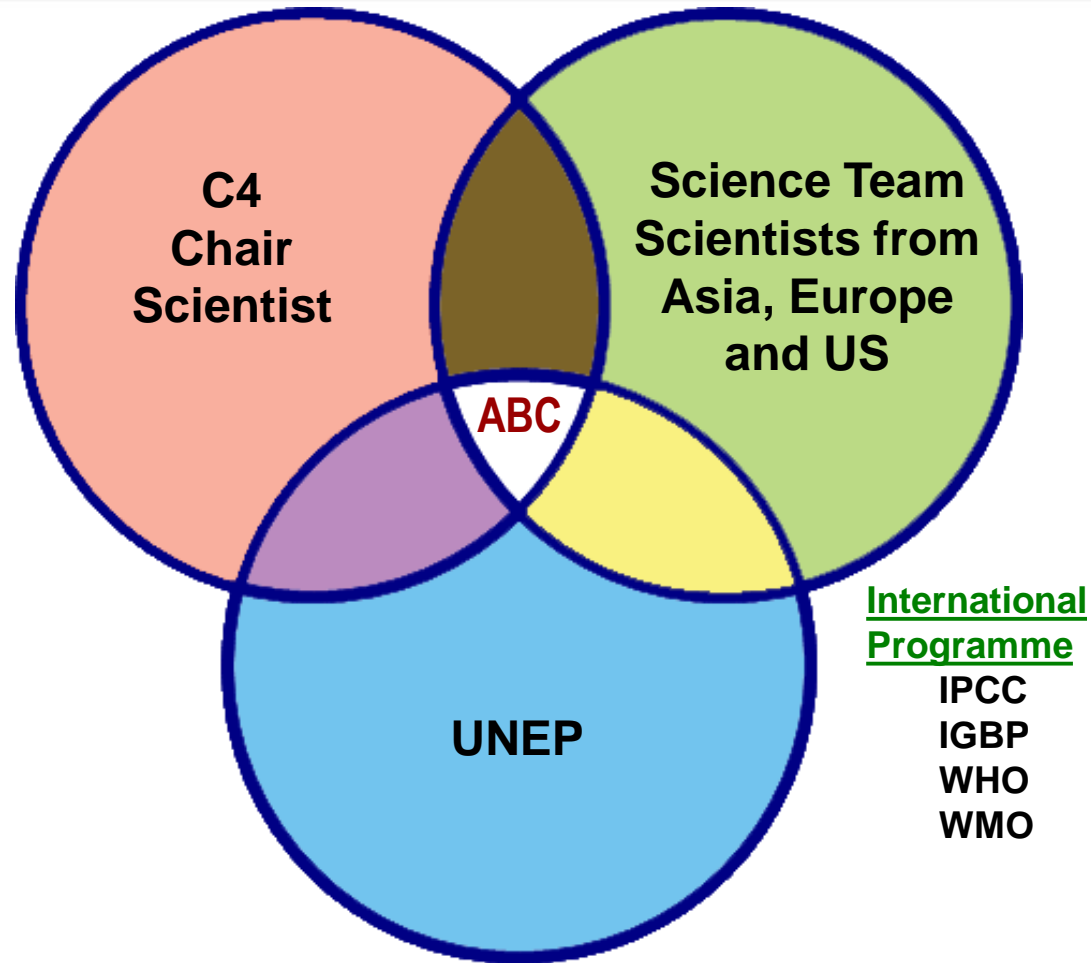
Photo credit: Center for Clouds, Chemistry and Climate; Scripps Institution of Oceanography; University of California, San Diego
Image available at: http://sio.ucsd.edu/supp_groups/siocomm/pressreleases/Indoexagu.html

- Haze at 5km; up to 3km high
- Size of continental US
- Covering Indian Ocean, South Asia, Southeast Asia and China



Brown Cloud Chemical Composition

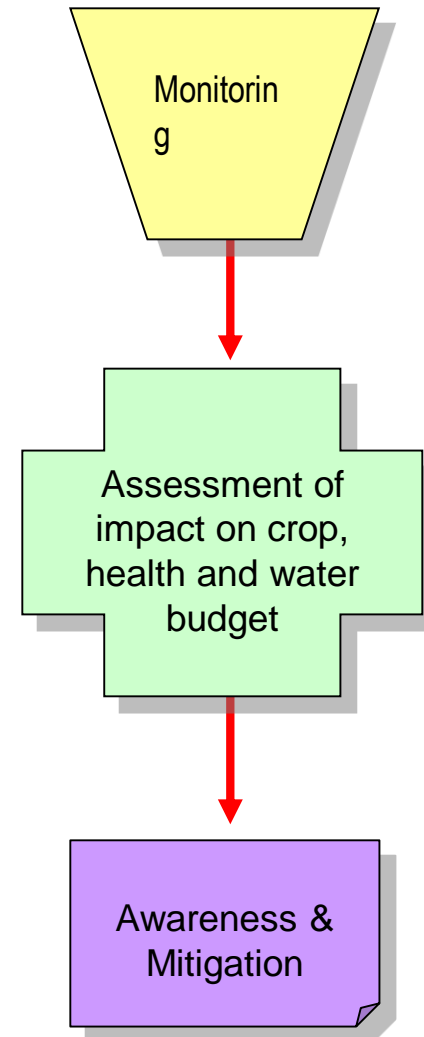




Major Components of Project ABC

The project ABC comprised of 3 major programmes:

- **Observation**: establishment of a network of ground based monitoring stations across the Asia and Pacific region for data collection and capacity building.
- **Impact assessment**: assessment of the potential impacts of ABC on agriculture, water, and health using the data from the monitoring stations.
- **Awareness and mitigation**: provide science-based information for policy makers to mitigate atmospheric pollution.



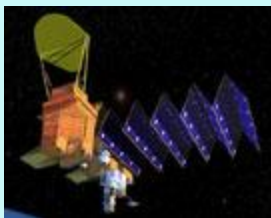
Observatories

- ✓ Established new observatories
- ✓ Upgraded existing observatories



Source: V. Ramanathan

Observatories are fully equipped with a suit of state-of-the-art instruments to monitor:



Aerosol properties
Precipitation chemistry
Gaseous species
Solar radiation
Meteorological parameters

Pioneer Effort - UAVs

UAVs

- Dornier aircraft sampled air masses from almost all regions of Asia.

Recent Field campaigns

- **Maldives Autonomous Unmanned Aerial Vehicles Campaign (MAC) in South Asia; March 2006**
- **East Asian Regional Experiment (ABC-EAREX2005) in East Asia; Feb.-Apr. 2005**
- **ABC-Post Monsoon Experiment (APMEX-2004) in South Asia; Oct.-Nov. 2004**

October – November 2004; February – March 2006 in Hanimadhoo, Maldives

Successful flight with UAV for air sampling



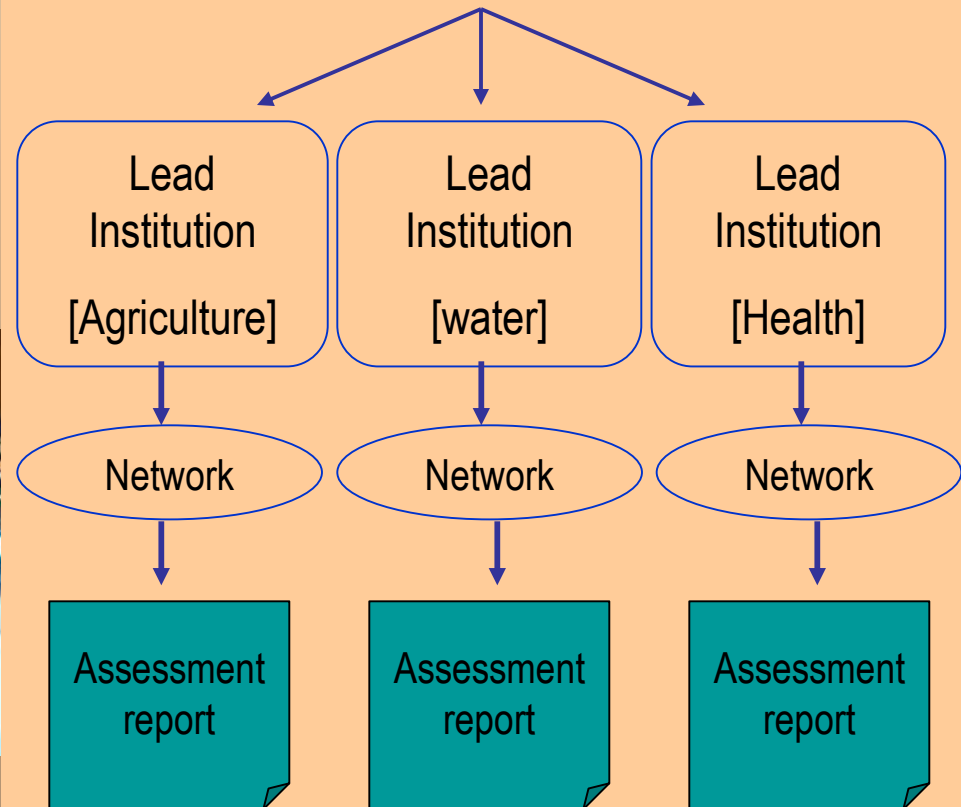
Impact Assessment

- **First Impact Assessment workshop, December 2005, Bangkok, Thailand**
- **Established an ABC Impact Assessment Team**



PROCEDURE

Science Team Chair and Vice Chair



ABC Training School 2006



INTERNATIONAL TRAINING SCHOOL

ATMOSPHERIC BROWN CLOUDS (ABC)

December 2006, Bangkok (Thailand) and Hanimaadhoo (Maldives)



ANNOUNCEMENT

PROJECT ABC

Atmospheric Brown Clouds (ABC), widespread layers of brownish haze due to gaseous and particulate pollutants emitted from various sources, such as fossil fuel combustion and biomass burning, reduce the amount of solar energy reaching the earth's surface. ABC can significantly impact the regional temperature, water budgets, agriculture and health. To address these concerns, project Atmospheric Brown Clouds (ABC) - Asia was initiated jointly by UNEP and a group of prominent scientists from Asia, Europe and USA.

TRAINING SCHOOL

Project ABC encompasses capacity building in the region and training of young scientists and senior research students as one of its key programmes. As a part of the ongoing ABC project, jointly funded by the NSF, NOAA, Sida, UNEP and the Ministry of Environment, Energy and Water Resources, Government of Maldives, an ABC International Training School will be organized for a period of 11 days in 4-14 December 2006 at UNEP RRCAP, Bangkok (Thailand) and at the Maldives Climate Observatory at Hanimaadhoo (Maldives), an ABC super observatory.

TRAINING

The participants will be given classroom lectures and tutorials on various aspects of

atmospheric brown clouds, as well as hands-on training on operation of a variety of state-of-the-art instruments for atmospheric aerosols, precipitation chemistry, trace gases, radiation and meteorological measurements, and thus be facilitated on collection, analysis and interpretation of data obtained. Prominent atmospheric scientists and experts from USA, Sweden, Germany and Japan, among others, will deliver the lectures and training, through teleconferencing if required.

PARTICIPANTS

Senior students, Post Doctoral Fellows and young scientists involved in atmospheric research, preferably from the Asian countries, are encouraged to apply by attaching their curriculum vitae (CV) and a brief description of their research by 30 September to the address given below:

ABC_Training-School@ucsd.edu, or

ABC_Training-School@rcap.unep.org

All selected participants will be informed by 15 October.

FINANCIAL SUPPORT

The participants will be paid for the travel and living expenses during the training period.



Center for
Global
Change &
Climate



National Science Foundation



Sida