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MONTBLEX data archival centre

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Abstract. A co-ordinated project Monsoon Trough Boundary Layer Experiment (MONTBLEX) to study the atmospheric boundary layer in the monsoon trough region was taken up during 1990. 30-m high instrumented towers were erected at Kharagpur, Banaras, Delhi and Jodhpur. Sophisticated equipment like Doppler sodar and Kytoon were used at Kharagpur. Sodars were exposed at Calcutta, Delhi and Jodhpur. ORV *Sagarkanya* cruises were arranged in the Bay of Bengal. The India Meteorological Department set up new surface and radiation observatories and released special radio-sonde, pilot balloons. Using the above mentioned platforms, data were collected during April – September 1990 and after proper editing the entire data were archived at the Indian Institute of Tropical Meteorology, Pune. The DST-MONTBLEX data bank was started at IITM on 25th November 1991. The paper contains the details of this data.

Keywords. Data centre; MONTBLEX data; boundary layer data.

1. Introduction

The main aim of the co-ordinated project on Monsoon Trough Boundary Layer Experiment was to study the land-locked monsoon trough dynamics. The core measurements included the evaluation of surface fluxes at Kharagpur, Varanasi, New Delhi and Jodhpur using tower-based data. The large scale atmospheric parameters in the monsoon trough region were monitored by the India Meteorological Department and Indian Air Force. The ship observations near the head of the Bay of Bengal, a potential site for development of monsoon depressions, were arranged by the National Institute of Oceanography. Details of the observational programme can be seen in figure 1.

2. Special observations

2.1 *Doppler sodar monostatic sodar observations*

A Doppler sodar was operated by the Indian Institute of Tropical Meteorology, Pune at Kharagpur during April 28th – Sept. 15th, 1990. Monthwise number of observations are as follows.

Month	May	June	July	Aug.	Sept.
Duration in hours	97	206	124	336	99

Frequency of observations of Doppler sodar is as follows.

Hours per day	20	15–20	10–15	5–10	1–5
Number of days	2	11	34	33	13

Monostatic sodars, one each at Calcutta, Banaras, Delhi, Jodhpur, were operated during the MONTBLEX period.

2.2 *Kytoon observations*

A 2·3 m^3 Kytoon was operated by the Indian Institute of Tropical Meteorology, Pune on 28 occasions. Though the Kytoon has the capability to reach 1500 m, the maximum height reached during the course of experimental phase was only 840 m. This constraint was due to high winds prevailing at Kharagpur.

2.3 *Minisonde observations*

Slow-rising minisondes were released by the Indian Institute of Tropical Meteorology to record temperature fluctuations in the boundary layer. During IOP about 7–8 minisondes were released per day. A total of 45 minisondes were released.

2.4 *Marine boundary layer observations*

The National Institute of Oceanography, operated its research vessel *Sagarkanya* during the months of Aug. – Sept. 1990 over Bay of Bengal. The ship was stationed at a fixed point 20°N–89°E for over fifteen days and routine marine observations were collected along with micrometeorological observations arranged by IITM, Pune. The routes of *Sagarkanya* are shown in figure 2.

3. Data archival programme

After successful completion of the Monsoon Trough Boundary Layer Experiment, it was decided that the vast data collected during the main campaign should be archived at one place, and accordingly the Department of Science and Technology sanctioned the proposal on archival of MONTBLEX data at the Indian Institute of Tropical Meteorology, Pune. All the project leaders who actively participated in the experiment were required to transfer their data to the data bank. The data bank became fully operational during February 1992.

3.1 *Data dissemination*

The data from instrumented towers are stored on cartridge tapes. Most of the remaining data are stored on floppies (1·2 MB, DSHD). A small amount of data is held in

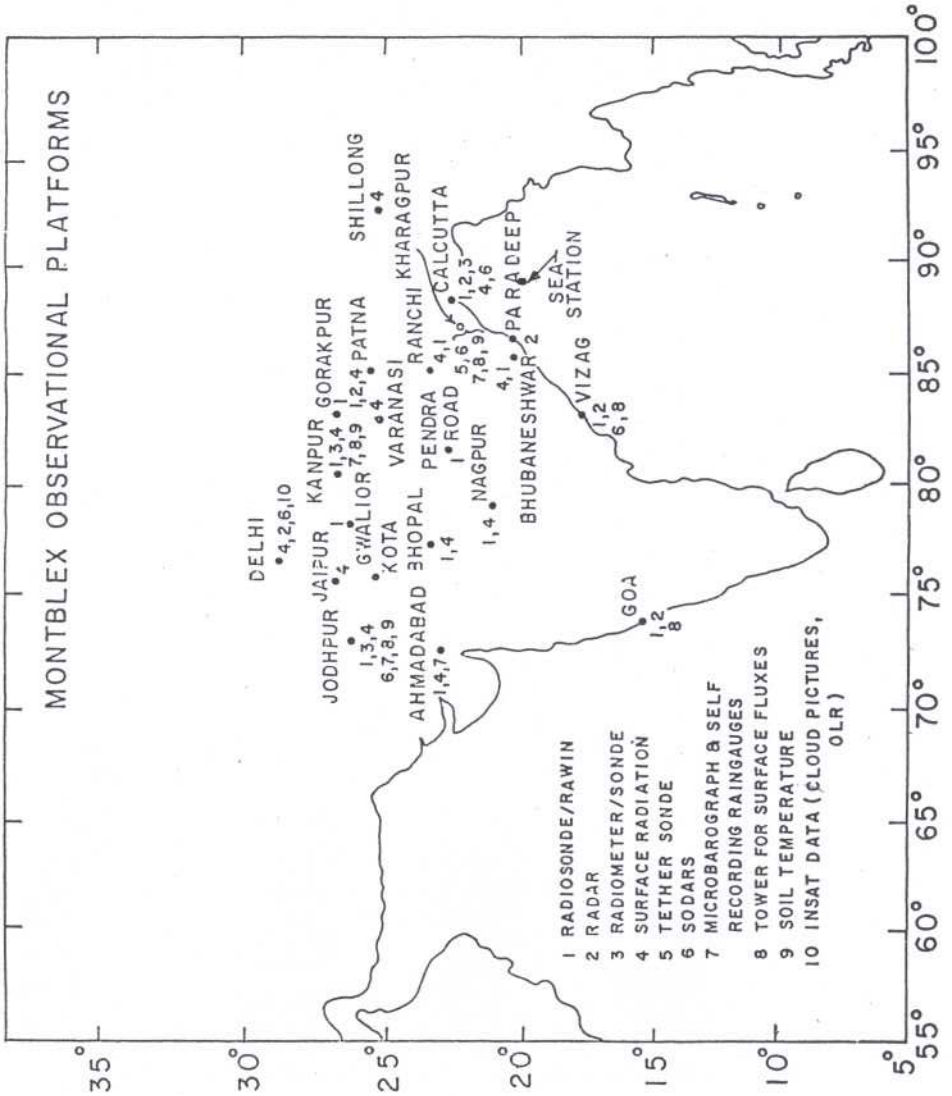
MONTBLEX OBSERVATIONAL PLATFORMS
DELHI
4,2,6,10
JODHPUR
JAIPUR
1
KANPUR
1,3,4
GORAKPUR
1
1,3,4
6,7,8,9
GWALIOR
7,8,9
1,2,4
PATNA
SHILLONG
4
AHMADABAD
1,4,7
BHOPAL
1,4
KOTA
4
VARANASI
4
RANCHI
KHARAGPUR
PENDRA
ROAD
1
4,1
5,6,10
CALCUTTA
1,2,3
4,6
NAGPUR
1,4
7,8,9
4,1
PARADEEP
BHUBANESHWAR
2
SEA
STATION
VIZAG
1,2
6,8
GOA
1,2
8
1 RADIOSONDE/RAWIN
2 RADAR
3 RADIOMETER/SONDE
4 SURFACE RADIATION
5 TETHER SONDE
6 SODARS
7 MICROBAROGRAPH & SELF
RECORDING RAINGAUGES
8 TOWER FOR SURFACE FLUXES
9 SOIL TEMPERATURE
10 INSAT DATA (CLOUD PICTURES,
OLR)
35°
30°
25°
20°
15°
10°
5°
55°
60°
65°
70°
75°
80°
85°
90°
95°
100°

Figure 1.

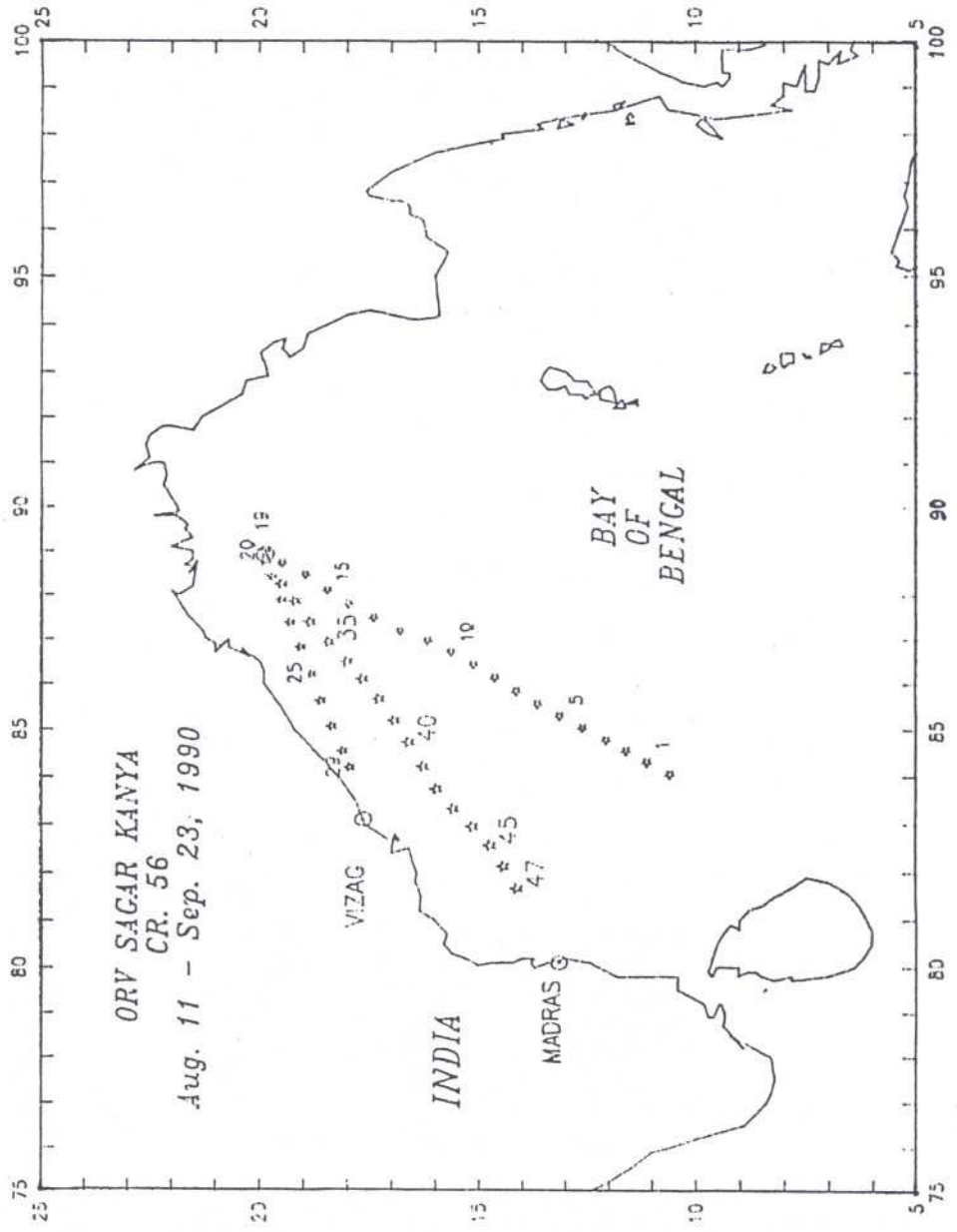

Figure 2. MONTBLEX-90 station locations; ★ – XBT Stations; ⊙ – Stationary position.

manuscript form only. Research scientists interested in availing the MONTBLEX data can obtain them by supplying the appropriate magnetic media. Two workshops on the results of the MONTBLEX experiment were held; first at IISc, Bangalore during 16th–17th January 1992 and the second at IITM, Pune during 16th–17th March 1993.

MONTBLEX data has been supplied to the following organizations: DST New Delhi, IITM Pune, IMD Pune, IISc Bangalore, BARC Bombay, NPOL Cochin, JNU New Delhi, ISI Calcutta, NCMRWF New Delhi, BHU Banaras, IAF New Delhi, IIT New Delhi and Jadhavpur University, Calcutta.

3.2 *Details of the data*

The bulk of the data is from instrumented towers. The entire slow and fast data are held on 65 cartridges of 40 MB each. The details of this data can be obtained from the authors. The details of other data archived at Data Centre are as follows.

Doppler sodar data

1) Scientist	:	K G Vernekar, IITM, Pune.
2) Data type	:	Doppler sodar data.
3) Brief description of the data	:	Wind components (u, v, w) at 30 m interval up to 1500 m. Reliability assessment for wind components.
4) Period	:	15th May – 8th Sept. 1990.
5) Station	:	Kharagpur.

Details of the data

The entire data are available on 7 floppies of 1·2 MB capacity. Data contain information on all the three components of winds up to 1500 m at an interval of 30 m Standard deviation of all the three components is also available. The data reliability for each component of wind is specified.

Monostatic sodar data

1) Scientist	:	S P Singal, NPL, New Delhi.
2) Data type	:	Monostatic sodar data.
3) Brief description of the data	:	Inversion height, types of inversions and thermals.
4) Period	:	30th May – 30th Aug. 1990.
5) Station	:	Jodhpur.

Details of the data

The quantized data are available on one (360 KB) floppy. The fascimile records are available on 10 pages.

IITM – *Sagarkanya* data

1) Scientist	:	K G Vernekar, IITM, Pune.
2) Data type	:	Ship tower data.
3) Brief description	:	Wind speed, temperature, at two levels

of the data	:	and sea surface temperature (SST).
4) Period	:	11th Aug. – 22nd Sept. 1990.
5) Stations	:	48 stations in Bay of Bengal.

Details of the data

The data are available on 13 floppies (360 KB each) for wind speeds and temperatures at two levels (bow level and 1·65 m above). Reliability of the data is poor.

Kytoon data

1) Scientist	:	K G Vernekar, IITM, Pune.
2) Data type	:	Kytoon data.
3) Brief description of the data	:	Wind speed, direction, dry bulb temperature, wet bulb temperature and mixing ratio profiles.
4) Period	:	22nd May – 28th June 1990.
5) Station	:	Kharagpur.

Details of the data

In all, 26 kytoon flights were conducted at Kharagpur. The data contain profiles of dry bulb temperature, wet bulb temperature, wind speed, wind direction, relative humidity and mixing ratio. The printed data are available on 100 pages (120 columns, 60 lines/page).

Minisonde data

1) Scientist	:	K G Vernekar, IITM, Pune.
2) Data type	:	Minisonde data.
3) Brief description of the data	:	Temperature profile data.
4) Period	:	26th May – 12th July 1990.
5) Station	:	Kharagpur.

Details of the data

The data contain profiles of 46 minisonde flights. Four to six sondes were released per day during IOP periods. As there was no height sensor, a constant ascent rate was assumed during day time. The printed data are available on 21 pages.

NIO – *Sagarkanya* data

1) Scientist	:	Panakkala Rao, NIO, Goa.
2) Data type	:	Oceanic data and surface data.
3) Brief description of the data	:	Conductivity, salinity, surface meteorological data, SST data and upper air data.
4) Period	:	11th Aug. – 22nd Sept. 1990.
5) Station	:	Over Bay of Bengal.

Details of the data

1) Conductivity, temperature and depth (CTD) up to 1000 m.
2) Salinity, temperature and depth (STD) up to 300 m.
3) Surface meteorological observations.
4) Upper air observation at synoptic hours in August 1990.
The data are available on 2 floppies (360 KB each).

Tower data

1) Scientist : A Prabhu, IISc, Bangalore.
2) Data type : 30 m tower data at 6 levels
3) Brief description of the data : Tower data at 1, 2, 4, 8, 15, and 30 m levels.
4) Period : Mid May – mid Sept. 1990.
5) Stations : Kharagpur, Varanasi, Jodhpur and Delhi.

Details of the data

Tower data at 1, 2, 4, 8, 15 and 30 m on wind speed, wind direction, dry temperature (slow response), dry temperature (rapid response), wet bulb temperature are recorded. Data from Gill propeller, soil temperature at 10, 20, 60 cm below the surface and sonic anemometer (at 8 m at Kharagpur, 4 m at Jodhpur and Varanasi) are also recorded. The tower data for Kharagpur, Varanasi, Jodhpur and Delhi stations are available on 65 cartridges (40 MB capacity).

RS/RW low level, pilot balloon and surface data (IMD)

1) Scientist : S K Srivastava, IMD, New Delhi.
2) Data type : Surface data.
3) Description : All elements covered under surface data.
4) Period : 25th May – 15th Sept. 1990.
5) Stations : Stations covered under MONTBLEX area.

Details of the data

	Calcutta	Bhubaneshwar	Ranchi	Delhi	Jodhpur
Total observations	116	139	109	82	79
Routine	65	78	55	42	44
Low level sondes	51	61	54	40	35

Pilot balloon data for Gaya, Jamshedpur, Raipur, Bhubaneshwar, Gopalpur, Jharsuguda, Balasore and Panagarh along with surface data are available. This data from India Meteorological Department are available in 7 bound volumes and also available on 1 floppy (1·2 MB).

Indian Air Force data

1) Scientist : N. Natarajan.
2) Brief description of the data : Air-borne meteorological parametres and surface observations.

3) Period	:	1st May – 15th Sept. 1990.
4) Stations	:	Bhatinda, Kalaikunda, Gwalior, Bareilly, Hindon, Bombrauli, Agra, Lucknow, Jodhpur, Gorakhpur, Suratgarh and Kanpur.

Details of the data

The following data are available: 1) The take-off time, 2) time of observations, 3) station co-ordinates, 4) height above mean sea level, 5) wind speed and direction, 6) temperature, 7) cloud observations. Pilot balloon observations and surface observations for a few stations are also available. The data are recorded on 5 floppies (1·2 MB).

Monostatic sodar data

1) Scientist	:	J Das.
2) Type of data	:	Monostatic sodar data.
3) Brief description of the data	:	Inversion heights, types of inversions and thermals.
4) Period	:	28th May – 3rd Sept. 1990.
5) Station	:	Varanasi.

Details of the data

The complete quantized data are on 50 typed pages.