

METEOROLOGICAL ACTIVITIES IN ANTARCTIC, DURING THE AUSTRAL SUMMER OF 1986-87

A.A. FARUQII
India Meteorology Department,
New Delhi, India

Following observations were undertaken :

- (a) Surface meteorological observations at the Indian permanent station at Dakshin Gangotri.
- (b) Upper air soundings (Radiosonde and Omegasonde)
- (c) Radiometersonde ascents.
- (d) Surface Potential Gradient measurements.
- (e) Atmospheric turbidity measurements.
- (f) Reception of facsimile charts
- (g) Reception of cloud imageries from polarorbiting weather satellites.
- (h) Ozone observations including surface ozone measurements and ozonesonde ascents.
- (i) Onboard synoptic observations.

OBSERVATIONS

1. Three hourly surface observations were regularly recorded at the Indian permanent station Dakshin Gangotri, SYNOP for main synoptic hours at 00,06,12, & 18 GMT.
2. Upper Air Observations : During the summer period five radiosonde ascents were taken at Dakshin Gangotri. The performance results of these ascents are included in Table 1.
3. On average six weather charts were received each day over radio fascimile to study the prevailing synoptic situation over the station and to predict local weather conditions during next two to three days.
4. Satellite Imageries Reception : Cloud pictures transmitted from polar orbiting weather satellites NOAA-9 and NOAS-10 were regularly received on the APT ground equipment installed at Dakshin Gangotri.
5. Atmospheric Turbidity Measurement : Sun photometer observations were taken during sunshine periods. The observations were initially taken at every two hours and later at hours of fixed air masses. Here air mass signifies the path-length traversed by the solar radiation.
6. Ozone Measurements : Five ozone ascents were successfully taken during January - February, 1987. Out of these four ascents were good. The summary of ascents along with the preliminary results of the inter comparison are presented in Table 2.

In addition to these ozonesonde ascents, continuous recording of surface ozone was also made.

7. Surface Electrical Potential Gradient: Equipment for PG measurement could be commissioned only towards the end of the summer period. Trial measurements were successfully recorded for a period of about a week before the departure of the summer team.

WEATHER SUMMARY AT DAKSHIN GANGOTRI

This time, the weather has been exceptionally good in Antarctica during its summer. There was only one occasion of blizzard, that too very moderate with the maximum wind speed staying at 40 kts. only. The blizzard lasted just for two days (February 7 & 8). In the month of January, the diurnal variation in temperature used to be from +ve to -ve. The maximum temperature recorded was 6°C on January 20 & 27. The minimum recorded was -12°C on January 7. The prevailing winds were easterly/south-easterly. Most of the days were cloudy/partly cloudy with one or two clear ones in between. There were two occasions of moderate snowfall on January 8 and 22. There were three days of distant fog (January 16, 17, 18) and two of fog at the station (January 19 & 27). Except on a few days, wind speed used to vary from moderate to calm. February was relatively colder., Except on 1st February, all along temperature remained below 0°C. The maximum temperature recorded was -0.5°C on 12.2.87 and minimum was -17.0°C recorded on 15.2.87, the last day of observations made by the summer team. Prevailing winds remained to be easterlies blowing with weak to moderate intensity except on blizzard days. Snow-fall took place on February 3 & 4 and there was a lone occasion of snow drift viz. on 10.2.87. There was cloudiness throughout the fortnight.

Table. 1

SUMMARY OF THE RADIOSONDE ASCENTS AT DAKSHIN GANGOTRI
(70°, 05°S, 12°E)

DAY	TIME (GMT)	MAXIMUM HT. Mb	REPORTED °C	FREEZING LEVEL Mb	TROPOPAUSE Mb	°C
January, 1987						
3	15	23	-22.7	984 (surface)	353	-47.5
10	13	16	-16.3	990	270	-52.3
31	14	13	-26.9		282	-57.3
February, 1987						
5	14	51	-36.1	—	331	-46.7
14	15	29	-33.1		297	-48.3

23

Table 2

SUMMARY OF THE OZONESONDE ASCENTS

DATE & TIME	MAXIMUM OZONE		PARTIAL PRESSURE (Umb)	-MAXIMUM OZONE LEVEL COMPARISON WITH THE STATION		
	LEVEL CURRENT (Mb)	(UA)		SYOWA	NOVO	TEMP. (°C)
17.1.87 0133 GMT	67.6	3.5	129.07	-	-	-
21.11.87 1347 GMT	47.0	4.0	149.9	-39.1	62.9 Mb	-
28.1.87 1250 GMT	67.0	5.55	131.64	-36.1	-	64.2 Mb 115 Umb
04.2.87 1600 GMT	Ascent could not be computed before departure of the summer team.					

Table 3

CLIMATOLOGICAL DATA (5.1.87-15.2.87)

2

Month	Air temperature °C		Atm. stn level pressure		Wind speed (Kt)		
	Ave	Highest	Ave	Highest	Ave	Max.	
	Max.	Min.		Max.	Min.		
Jan.	-1.9 (20.1.87)	6.0 (7.1.87)	-12.0 (7.1.87)	998.8	1009.3 (20.1.87)	976.9 (7.1.87)	09 3fi (8.1.87)
Feb.	-6.0 (1.2.87)	1.2 (15.2.87)	-17.0 (15.2.87)	996.4	1010.3 (1.2.87)	984.3 (15.2.87)	13 40 (7.2.87)