

621·396·96 (084·1) (267)·(210·5)

RADAR PHOTOGRAPH OF BAY COAST

Instances of unusual cases of abnormal propagation of micro-waves caused by nor'-westers have already been reported by the author in an earlier communication (De 1959). It was shown in the above paper that on some occasions, conditions were favourable for the formation of 'duct' which was responsible for the abnormal propagation of micro-waves.

On 24 April 1959 the routine hourly radar watch at the Main Meteorological Office at Dum Dum airport, was maintained as usual, using a 3-cm high powered (250 KW peak) Japanese Radar (Type NMD-451A). The synoptic situation on this day showed that conditions were favourable for occurrence of moderate thunderstorm activities in the neighbourhood of Calcutta. The radarscope pictures at 1500, 1600 and 1700 IST showed presence of scattered thunderstorm cells in the NE and E sectors at distances of about, 100-200 km from Dum Dum. At 1730 IST the radarscope showed echoes in the SE, S and SW sectors at distances from 65 to 150 km from the observing station, *i.e.*, Dum Dum airfield. These are shown in Fig. 1. The echoes prevailed for about half an hour, after which they started disappearing gradually. These echoes closely resemble the coast of Bay of Bengal. For the sake of comparison, a sketch of the outline of the Bay coast is shown in Fig. 2.

The fact that these echoes were not due to precipitation particles was confirmed by the RHI (Range Height Indication) scope pictures which showed that the heights of these echoes were negligibly small. Subsequent observations based on aircraft reports also revealed that there was no cloud present in the region, *i.e.*, upto about 200 km to the south of Dum Dum, which were capable of producing precipitation echoes.

It may be seen that though distant echoes appeared, the ground clutters were almost normal. The appearance of such distant echoes might be due to the presence of elevated duct. In fact the routine radiosonde ascent taken at Dum Dum airport at 1730 IST showed the presence of S-shaped *M*-inversion (Burrows and Attwood 1949) from 1601 ft to 2845 ft. These data along with the calculated *M*-values are shown in Table 1. Considering the topography of the area and also the fact that the echoes were from 65 to 150 km to the south of Dum Dum it can be said that the echoes were from ground objects located in the Bay coast.

A. C. DE

*Meteorological Office,
Dum Dum Airport
January 16, 1960*

REFERENCES

- Burrows, C. R. and 1949 *Radio Wave Propagation*,
Attwood, S. S. N. D. R. C. Report,
Chap. II, p. 12.
De, A. C. 1959 *Indian J. Met. Geophys.*,
10, 4, pp. 420-424.

TABLE 1

Distribution of pressure, temperature and modified refractive index (*M*-value) as obtained from the routine radiosonde sounding at Dum Dum on 24 April 1959 at 1730 IST

Pressure (mb)	Height (ft)	Vapour pressure (mb)	Temperature (°K)	<i>M</i> -Value
1001	0	30·43	312·2	367
1000	40	29·50	306·8	377
950	1601	19·48	305·4	388
910	2845	10·35	304·0	387
900	3158	9·88	303·2	395
850	4825	8·75	299·0	440