

STUDIES ON RADIO-WAVE COMMUNICATION OF VARYING FREQUENCIES DURING THE ANTARCTIC SUMMER OF 1986-1987

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Ionospheric studies carried out from Maitri field camp and included Riometer observations and VLF propagation studied along different paths.

Cosmic noise at 30 MHz was monitored, uninterrupted. Apart from the expected diurnal variations in the received cosmic noise, there were periods of intense absorptions. The geomagnetic data for some of these periods indicated geomagnetic storms and hence the intense absorptions. The Riometer observations will be continuously recorded during the winter, from Dakshin Gangotri station.

VLF propagation at 12.0, 12.3 and 12.9 KHz from omega stations in Liberia, La Reunion and Argentina, were studied, uninterrupted. This propagation is through a duct formed by earth's surface and the D-Region. The phase of the received signal was continuously compared against that of a standard frequency from atomic standard. The phase difference as also the amplitude of the received signal was recorded. The received signal showed diurnal variation in phase and amplitude and is used for the study of ionospheric D-region.'

Lower Atmospheric Studies—Microbarograph-The. be used to locate natural or man-made explosions apart from Ozone Studies-Following experiments were conducted:

1. Ultra-violet Photometer: A UV photometer was used to measure ground level UV-B at wave-length of 280, 290, 300 and 310 nm. The scanning of these four filters, take place automatically. Each filter stays in position for 1 minute and the ultra-violet level measurement gets printed every minute alongwith the time of absorption. The measurements started during the austral summer are being continued through winter, also.
2. Sun Photometer: The turbidity measurement at 360,500, 675 and 778 nm were taken on all clear days. Data generated reveals the content of aerosols which are responsible for ultra-violet radiation entering earth's atmosphere is partly absorbed and partly scattered by aerosols. Thus knowing the aerosol content, a regular monitoring of ground level ultra-violet radiations will lead to ozone column present.
3. Gas Chromatograph : For analyzing, methane and carbon monoxide in the Antarctic atmosphere, a gas chromatograph was intalled at Dakshin Gangotri staion and preliminary observations were carried out. The air samples will be analyzed periodically during the Antarctic wintesr. Quantitative analysis of atmospheric gases will throw light on the probable causes of ozone depletion.