S T U D I E S I N E Q U A T O R I A L A E R O N O M Y

"MORPHOLOGY OF THE ELECTROJET"

Thesis

Presented by

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C E R T I F I C A T E

I hereby declare that the work presented in this thesis is original and has not formed the basis for the award of any degree or diploma by any University or Institution.

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March 7, 1975.

STATEMENT

This thesis is based on the results of experiments conducted at an equatorial station Thumba, India, using a Back-scatter-radar, operating at 54.95 MHz. and Rocket-borne studies with Langmuir probe and magnetometer. The back-scatter-radar at Thumba was made operational in the year 1970 by Satya Prakash, Jain, C.L. and Co-workers. The author has been closely associated with the design and development of some of the radar units including the analog and digital data processing units. Working under the guidance of Prof. Satya Prakash at the Physical Research Laboratory, the author was responsible for analysing the data and interpreting the experimental results.

The main objectives of the present studies have been to understand the nature of distribution of currents in the equatorial ionosphere, to investigate the space and time variation of the electric fields responsible for these currents, and to trace the relationship between the equatorial electrojet and the world-wide Sq current system.

This thesis has been divided into seven chapters. The first two chapters deal with the history of the subject, the basic theory involved, the existing problems in the field and the experimental set-up used for the observations

and data recording. The experimental results are presented in the next four chapters. The concluding chapter deals with the important conclusions that have come out of the present studies.

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