Acknowledgements

I wish to express my profound sense of gratitude and indebtedness to my thesis supervisor Dr. C. V. Devasia for his able guidance and kind co-operation throughout my research period. Without his advice, suggestions, patience and continuous support, it would have been extremely difficult to complete this research work. I offer my sincere thanks for his suggestions and interest shown in preparing this thesis.

I'm very much thankful to Prof. R. Sridharan, Director, Space Physics Laboratory for his continuous encouragement and constructive comments during the tenure of my research.

I would like to extend my sincere indebtedness to Dr. V. V. Somayajulu, former Head, IMP for the encouragement and moral support during the initial period of my research. Also, I wish to express my sincere gratitude to Prof. J. H. Sastri, Senior Professor, Indian Institute of Astrophysics, Bangalore for the encouragement and enquiry on the progress of this thesis work, especially, for Chapter VII of my thesis which would not have come in good shape without his positive feedback and support.

I would like to thank Dr. K. S. Viswanathan and Dr. K. S. V. Subbarao for the constructive criticism and fruitful discussions throughout my research period. My thanks goes to Dr. Sudha Rancidran for the support rendered to me and for the meticulous reading of the manuscript. I also thank Dr. Taran K Pant for the help and suggestions rendered to me during the last stage of the thesis work.

The invaluable suggestions given by the members of Academic Committee, Space Physics Laboratory, Dr. K. Krishna Moorthy, Dr. Anil Bhardwaj, Dr. K. S. Viswanathan, Dr. M. N. Sasi and Dr. Kunhikrishnan are greatly acknowledged.

I'm also grateful to Mr. K. V. Janardhanan, Head ATD and each person of the ATD branch of Space Physics Laboratory for their co-operation and support during the collection of the radar data used in the present investigations. I would also like to express my sincere thanks to all other Scientists/Engineers and administrative staff of the Space Physics Laboratory who helped me directly or indirectly at various stages of my research work. I'm thankful especially to Mr. Jayaprakash, Ms. L. Sarala, Ms. C. Geetha and Ms. P. Susheela for their kind co-operation through out the research period.

I want to thank my fellow colleagues D Bala Subrahmanyan, Divakar Tiwari, Praveena Krishnan, S Veerabuthiran and Preetha S Pillai for their whole hearted support and informal discussions through out my research period. I wish to express my sincere thanks to my seniors Dr. Mary Kutty Michael, Dr. Muvaa Venkata Ramana, Dr. V. Deepa and Dr. Rekha Rajan for providing the help and cooperation during the initial period of my research. Thanks also go to Ajromeet Saha, Sunil Kumar, Sandhya K Nair, Suresh Kumar and Smita V Thanpi who helped me one way or other during the course of my research work.

The financial support provided to me through the research fellowship by Indian Space Research Organization and the library facility provided by Vikram Sarabhai Space Centre are greatly acknowledged.

Finally, the last but not the least I would like to thanks all my family members and relatives for their love and support throughout my research period without which this work would not have been completed.

N. Jyoti