ACKNOWLEDGEMENTS

First of all, I would like to express my immense gratitude to my Guide Dr. Abhijit Sarkar for his continuous support and guidance in my study and research, for his kindness, patience, motivation, and for imparting valuable knowledge. I am greatly indebted to him for all the countless time he spent in guiding and supporting me throughout the research. His direction and advice helped me to develop my skill in objectively preparing scientific documentation and writing this thesis. Without his support and guidance, I would not have been able to complete my thesis.

I am sincerely and heartily grateful to my Supervisor Dr. B.S. Gohil who acted not only as my supervisor for PhD but also as a mentor to me. I am grateful to him for his consistent guidance, suggestions and help in my research work. He taught me very important basic concepts of scatterometry. His expertise and unsurpassed knowledge in scatterometry improved my research skills and prepared my foundation for working in this field. ! Thanks a lot for being my teacher.

I am immensely thankful to, Mr A. S. Kiran, Director, Space Applications Centre (SAC) and Dr. J. S. Parihar, Dy. Director, Earth, Ocean, Atmosphere, Planetary Sciences and Applications Area (EPSA)/SAC, Dr. P. K. Pal, Group Director, Atmospheric and Oceanic Sciences Group (AOSG)/EPSA/SAC, Dr. Raj Kumar, Head, Oceanic Science Division/EPSA/SAC and the AOSG scientists for their constant support and encouragement in my research during my stay at SAC. I would also like to convey thanks to the Space Application Centre for providing the research fellowship and laboratory facilities.

Special acknowledgement goes to my colleagues Aabha, Anoop, Bijoy, Bhasha, Inderpreet, Iswari, Manisha and Remya. They made my stay at SAC one of the memorable days of my life. I acknowledge Imran for his help in explaining the concepts of computer programming. Heartiest thanks to Mrs. Suchandra Aich Bhowmick, Mr. Munn Vinayak Shukla and Mrs. Smitha Ratheesh for their support, advice and encouragement in handling the difficult situations I faced during my work. The invaluable assistance of Mr. Rajesh Sikhakolli, Dr.
Thomas Mathew and Sanjeev are also gratefully acknowledged. I would also like to thank the whole staff of DWD for the computer-related and other technical assistance in Lab. The staff of SAC library is acknowledged for providing informative books and literature during my research work. I would like to acknowledge Mr. M. Damodaran, Mr. N. Bhatnagar and all administrative staff for their help during my stay at SAC.

I would also like to convey my heartiest thanks to Dr. Munmun Das Gupta, Senior Scientist, National Centre for Medium Range Weather Forecasting (NCMRWF) for guiding me. She provided me valuable knowledge on data assimilation and continuously supported me during my writing phase. Support of Dr. Indira Rani S, NCMRWF is also acknowledged here for sharing the literature and invaluable assistance. I am thankful to Dr. Swati Basu, Director, NCMRWF for encouragement in my research while working in the National Centre for Medium Range Weather Forecasting.

I would like to express my deepest regards and gratitude to my parents and to my parents-in-law for their continuous support, patience, encouragement and help throughout my research period. I sincerely acknowledge the love and care of my sister-in-law, my sister and my brother. I am heartily thankful to my husband for his unconditional love, support, patience and understanding which acted as the source of my strength. Thanks for listening to my problems, encouraging me to be better and to reach my full potential.

And finally, I am really thankful to my son Paarth without whose love I would not have finished this thesis.

Ahmedabad,

February, 2013

Priti Sharma