ACKNOWLEDGMENTS

It is a great privilege for me to express my gratitude to all those who helped me in their best possible ways during the course of this research study.

I am extremely grateful to my Ph.D. guide Dr. P. C. Joshi, Head, Atmospheric Sciences Division, Meteorology and Oceanography Group, Space Applications Centre (SAC), Ahmedabad, for accepting me as his student, providing me consistent guidance and encouragement throughout the course of this research work. It was his excellent supervision, critical comments and suggestions that really helped me to achieve this goal. I am obliged to him for his guidance, support for the work, comments and suggestions on the thesis and above all sparing his valuable time in my endeavour.

I feel deep sense of gratitude to Dr. Ranganath R. Navaigund, Director, SAC, for providing me necessary guidance and support for my research work. It was his critical comments and evaluation of my work at the early stage of my research career, which put my efforts on the right track of research and publication and for that I again express my sincere thanks to him.

I am indebted to Dr. J. S. Parihar, Deputy Director, Remote Sensing Applications Area, SAC, for his constant guidance and support. It was his encouragement that helped in registration of my Ph.D. He has been one of the guiding forces for me from day one of my research career.

I express my sincere thanks to Dr. Sushma Panigrahy, Group Director, AFEG, SAC, who has provided me the necessary guidance and support whenever I needed without any hesitation. I am obliged to her for providing me a necessary umbrella to complete my research work. It is her support without which this work would have not been completed.

I owe my deep gratitude to Dr. V. K. Dadhwal, then Head, CMD, SAC and presently Dean, IIIRS, Dehradun, with whom I started my research career at SAC. I am grateful to him for providing me excellent direction and opportunity throughout my career. It was his capable guidance with which I have been able to put research findings into the words and thus in the thesis.

I am thankful to Dr. George Joseph, former Director SAC, for his blessings, inspiration and encouragement to carry out various studies addressed in the thesis.

I am extremely grateful to Dr. R. P. Singh, Scientist, SAC, who supported me constantly throughout my research work as an elder brother. I owe my sincere gratitude to him for understanding the gap areas, planning various studies, supporting in field experiments, analysing various results, writing manuscripts and providing critical comments and suggestions on the thesis.

I express my sincere thanks to Shri K. N. Chaudhari, Scientist, SAC, for his simple but effective way of help in carrying out studies involving field experiments as well as modelling activities. I thank him for providing me a great moral support during my research work as a guardian.
I am grateful to Dr. V. N. Sridhar for reading the thesis and providing suggestions/corrections in it. I thank Dr. M. P. Oza, Scientist, SAC, for his critical and valuable comments, which really encouraged me to initiate some of the studies. I thank Shri T. V. R. Murthy, Shri D. R. Rajak and Shri Hiren Bhatt, Dr. Sandip Oza, Scientists, SAC for their necessary help and moral support.

I express my deep sense of gratitude to Dr. Ram Rattan, Associated Director, SAC, Shri A. S. Kirankumar, Deputy Director, SEDA, SAC, Dr. Ajai, Group Director, MESG, SAC for their able guidance and support during the course of this thesis.

I would like to thank Shri C. M. Nagrani, Retd. Scientist, SAC for his great help whenever I needed, for scholarly discussions and sparing his time for educating me several fundamentals of remote sensing.

I take this opportunity to thank my seniors and colleagues Dr. N. K. Patel, Dr. S. S. Ray, Shri K. R. Manjunath, Dr. Aloe Mathur, Shri C. Patnaik, Shri S. A. Sharma, Dr. S. P. Vyas, Shri H. B. Chauhan, Dr. B. K. Bhattacharya for their support.

I thank my friends and colleagues Shri P. Jayaprasad, Dr. S. Maity and Dr. P. K. Gupta for their excellent support and help throughout my research studies and bearing me as their roommate. I sincerely thank Dr. Arun Bhardwaj and Shri B. N. Sharma for their help and moral support during my research work. I specially thank Shri C. P. Singh for his support and providing me basic material on remote sensing.

I thank Dr. Rajesh Sharma, Dr. G. D. Bairagi and Shri N. Sharma, Scientist, MPRSAC, Bhopal, India for extending great help in carrying out field experiments in Madhya Pradesh.

I am also thankful to Shri J. G. Patel, Scientist, SAC for his support and encouragement, Shri H. I. Andharia, Manager, RCFM, SAC, Shri Amit and Shri Ritesh for providing me help in computer systems. I thank Shri J. P. Vankar for his excellent assistance during my thesis work.

I acknowledge the LP-DAAC, USA for providing MODIS data and science products.

I express gratitude and regards to my parents Smt. Suhasini and Shri Rameshchandra Pandya, who saw this dream and provided great support to achieve it. Without their blessings it would have not been possible to complete this endeavour.

My family, especially my wife Trupti deserves compliments for maintaining pleasant atmosphere at home and for keeping me always in high spirits despite several odd situations. I acknowledge the love and support of my wife and my kids Aditi and Vedant in achieving this goal.

Mehul R. Pandya