This dissertation would not have been possible without the help of so many individuals. First and foremost, I cannot thank my advisor, Timothy H. Dixon, enough for guiding and supporting me over the years. I’m grateful to have such an inspiring and encouraging advisor and I truly admire his enthusiasm for sciences. I would like to thank my committee. To Rocco Malservisi, thank you for helping me with GPS processing and numerical modeling. To Don Chamber, thank you for your vital contribution to Chapter 4. To Ping Wang, thank you for your support throughout the stages of this dissertation.

Thanks to my scientific collaborators Shimon Wdwinski, Paul G. Myers, Jennifer Bonin, M.R. van den Broeke, Weon Shik Han, Wenliang Zhao, Falk Amelung who contributed greatly to this dissertation. To Denis Voydenko, thank you for helping me to solve many technical issues. To Fanghui Deng, thank you for helping me on writing the InSAR part in Chapter 2. To Laura Connor, thank you for maintaining the computer systems at the geodesy lab. To every member in the geodesy lab, thank you for creating such a positive work environment.

I would like to thank my friends. To Amanda Piggot, thank you for helping me to improve my English and driving me to school the first semester when I was in the US. To Meng Wang and Wen Zhao, thank you for taking me in your place and driving me to school when I visited Tampa.

Last, but certainty not least, I would like to thank my families. To my parents and my grandma, thank you for your endless love and support. To my beloved husband Peng Li, thank you for being so loving and making me complete.