Introduction:

My name is Aaron B. Wilson, and I am currently a Research Associate with the Polar Meteorology Group at the Byrd Polar and Climate Research Center at The Ohio State University. I completed my B.S. degree in Geography-Atmospheric Sciences Track in 2002 along with my Masters (2010) and Ph.D. (2013) degrees in Atmospheric Sciences from The Ohio State University. In 2008, I had the honor to attend the FORMOSAT-3/COSMIC Workshop at the 4th Asian Space Conference in Taipei, Taiwan. The experience was tremendously positive, introducing me to the topic of GPS RO and its potential use in the atmospheric sciences. To be given a second opportunity to attend this workshop, the Eighth FORMOSAT-3/COSMIC Data Users’ Workshop, was quite special. It represented an opportunity for me to present my work with other GPS RO scientists and users; to contribute to this important and expanding area of research. Having gained more knowledge about COSMIC and GPS RO since the first trip, I was looking forward to seeing the cutting edge new research topics and results presented by other scientists.

Scientific Experience:

As an atmospheric scientist, my goal is to apply my knowledge of the climate system to the Polar Regions of the Earth. My previous and current research has given me the unique opportunity to investigate weather and climate in both the Arctic and the Antarctic, and through my graduate school experience I have developed the skills necessary to model these challenging environments and to evaluate their performances both statistically and dynamically. Recently, I began using the polar version of the Weather Research and Forecasting (WRF) model with the WRF Data Assimilation system to assess the impact of the Constellation Observing System for Meteorology Ionosphere and Climate (COSMIC) GPS RO profiles in improving surface pressure fields and 3-D atmospheric mass distribution in Antarctica. This is a necessary step toward developing an atmospheric correction for the Gravity Recovery and Climate Experiment (GRACE) that will result in smaller uncertainty in ice mass changes and an improved measure of ice loss from Antarctica. Thus, I was looking most forward to Polar applications of GPS RO at this workshop.

There were an incredible number of fascinating presentations made at the workshop this year. To begin the conference with Louis Uccellini of the US NWS and Alan Thorpe of ECMWF discussing their respective agencies and the impact of GPS RO in their modeling suites was an incredibly engaging start. One of the best presentations for my scientific interest was given by John Le Marshall, who described the incredible impact GPS RO has on improving weather forecasts in the Southern Hemisphere. It is interesting to see how much more of an impact GPS RO has in the Southern Hemisphere than in the Northern Hemisphere. Still, the value of having GPS RO in the Northern Hemisphere is large as it serves as an absolute standard for other satellite measurements, as demonstrated by Lidia Cucurull.

Adrian McDonald’s presentation on cyclones over the Southern Ocean through an analysis of COSMIC was perhaps the most novel example of GPS RO application. Cyclone development in the Southern Ocean is important for surface pressure measurements over Antarctica, a direct application to my work. Other presentations, such as those on the PBL over the Arctic, detecting the El Niño signal from geopotential height and wind derived from GPS RO, and
climate applications all had interesting scientific results that are important for my work in the Polar Regions. To be sure, the scientific application of GPS RO is large in scope, and represents an important area of research in atmospheric sciences.

Finally, the student opportunities associated with this workshop were fantastic. This experienced allowed me to discuss my research with other students and scientists in the field. This helped me refine my message, and discussions with prominent GPS RO researchers will allow me to improve upon my work as I move forward. The student lunch with select members of academia, industry, and government was an opportunity that I only wish more students would have taken part in. To be able to discuss, with researchers already in the field, the funding and academic environments that we early-career scientists are becoming a part of was invaluable. I applaud the organizers for this rare opportunity.

**Conclusion:**
In closing, I very much appreciate the opportunity that I was given to attend the Eighth FORMOSAT-3/COSMIC Data Users' Workshop. Not only was this experience educational, but I was given the opportunity to forge new bridges with peers and researchers in the field. The workshop solidified for me the importance of GPS RO in atmospheric sciences, and brings satisfaction that I am acquiring important skills that will be needed as my career advances in the future. I hope that my next trip to this workshop will find me as a presenter, perhaps with the opportunity to make an impression or help new students find their way in this fascinating field.