

ICESTAR: CONJUGATE ULF OBSERVATIONS FROM AURORAL LATITUDES TO THE INNER MAGNETOSPHERE

E. Zesta¹, A. Boudouridis¹, D. Berube², M. Moldwin², A. Weatherwax³

¹*UCLA - Dept of Atmospheric and Oceanic Sciences, Los Angeles, California, United States,*
²*UCLA - IGPP, Los Angeles, California, United States,* ³*Sienna College, Loudonville, New York, United States*

The Antarctica continent, the only landmass in the southern polar region, offers the unique opportunity for observations that geomagnetically range from polar latitudes to well into the inner magnetosphere, thus enabling conjugate observations in a wide range of geomagnetic latitudes. The newly installed SAMBA (South American Meridional B-field Array) chain is a meridional chain of 11 low latitude magnetometers at L=1.1 to L=2.5 along the coast of Chile and in the Antarctica peninsula, and one auroral zone magnetometer at L=6.5. Five of the SAMBA magnetometers at L=1.7 to L=2.5 are directly conjugate to an equivalent number of northern hemisphere magnetometers of the MEASURE (Magnetometers along the Eastern Atlantic Seaboard for Undergraduate Research and Education) chain. A unique characteristic for both the SAMBA and the MEASURE chains is that their magnetometers are set up as pairs of stations making it possible to determine the local field-line resonance (FLR) from conjugate points. In an initial study we determined the conjugate FLRs for four days out of a 60-day period (May 23 to July 24, 2003) with complete data coverage from conjugate pairs of stations at L=1.6-1.74. One of the four events occurred during a moderate storm, while the remaining three events occurred during quiet times. From our two conjugate pairs we found, surprisingly, that the derived mass density between those two very close L values dropped at a rate that could not be predicted by any of the existing models or from past observations. We now further test the generality of this conclusion. Finally, we examine conjugate observations from our newly installed magnetometer at the West Antarctic Ice Sheet Divide (WSD) and its conjugate station of Poste de la Balaine in Canada. Both of these stations are at auroral latitude and well-suited for the conjugate observation of any major auroral disturbance, like nightside substorms or dayside ULF waves.