Unusual Observation of Chorus at L=2.6

On 4 August 2010 chorus was observed on Marion Island (L=2.6). This is a very unusual occurrence as chorus is thought to be generated outside the plasmapause, which would only extend to such low L during periods of severe geomagnetic activity. A similar event was observed at Palmer Station, Antarctica (L=2.44) during the Halloween Storms of 2003 [Spasojevic and Inan, 2005]. The 2003 event had a minimum Dst of around -350 nT, while the 2010 event occurred after a significantly smaller storm (Dst ~ -70nT). A further difference between these two events is that the 2003 event occurred during solar maximum, while the 2010 event occurred during a period where the Sun had been unusually quiet. The spatial extent of the 2010 event is discussed and related DEMETER VLF, GPS particle and AARDVARK precipitation data are analysed. A comparison of the two events is made. The empirical model of Carpenter [1967] reveals that Marion Island was within the plasmasphere at the time of the observation. We investigate this possibility using satellite particle data. Preliminary analysis of low resolution VLF data from other mid and high latitude stations show that a similar emission was observed at these sites, but at slightly different times, which indicates that the generation region was moving. This movement is likely linked to the eastward drift of electrons, and also possibly to the plasmapause relaxing to its quiet time position.