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Balloon and Satellite Observations of Substorm Activity BRANDON REDDELL, EDGAR BERING, University of Houston, PPB TEAM — The first campaign of the Polar Patrol Balloon (PPB) experiment (1st-PPB) was carried out at Syowa Station in Antarctica during 1990-1991 and 1992-1993. Based on the results of the 1st-PPB experiment, the next campaign (2nd-PPB) was carried out in the austral summer of 2002-2003. This paper will present an overview of substorm, convection and ULF activity during the 2nd-PPB experiment. In that experiment, two balloons were launched for the purpose of upper atmosphere physics observation. Payloads of these 2 flights were identical with each other, and were launched as close together in time as allowed by weather conditions to constitute a cluster of balloons during their flights. Such a “Balloon Cluster” is suitable to observe temporal evolution and spatial distribution of phenomena in the ionospheric regions and boundaries that the balloons traversed during their circumpolar trajectory. Balloon separation varied from 60 to 500 km. More than 20 days of simultaneous fair weather 3-axis electric field data were obtained at geomagnetic latitudes ranging from sub-auroral to the polar cap. This paper will present the observations of substorms that occurred on January 25th, 2003, with emphasis on the temporal and spatial variations.

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