

ULF Waves Observed during the Whole Heliosphere Interval, March 20-April 16, 2008

J. Posch and M. Engebretson • Augsburg College, Minneapolis, MN **M. Lessard** • University of New Hampshire, Space Science Center, Durham, NH,
V. Pilipenko • Institute of Earth Physics, Moscow, Russia **A. Weatherwax** • Siena College, Loudonville, NY **N. Petit** • Augsburg College, Minneapolis, MN

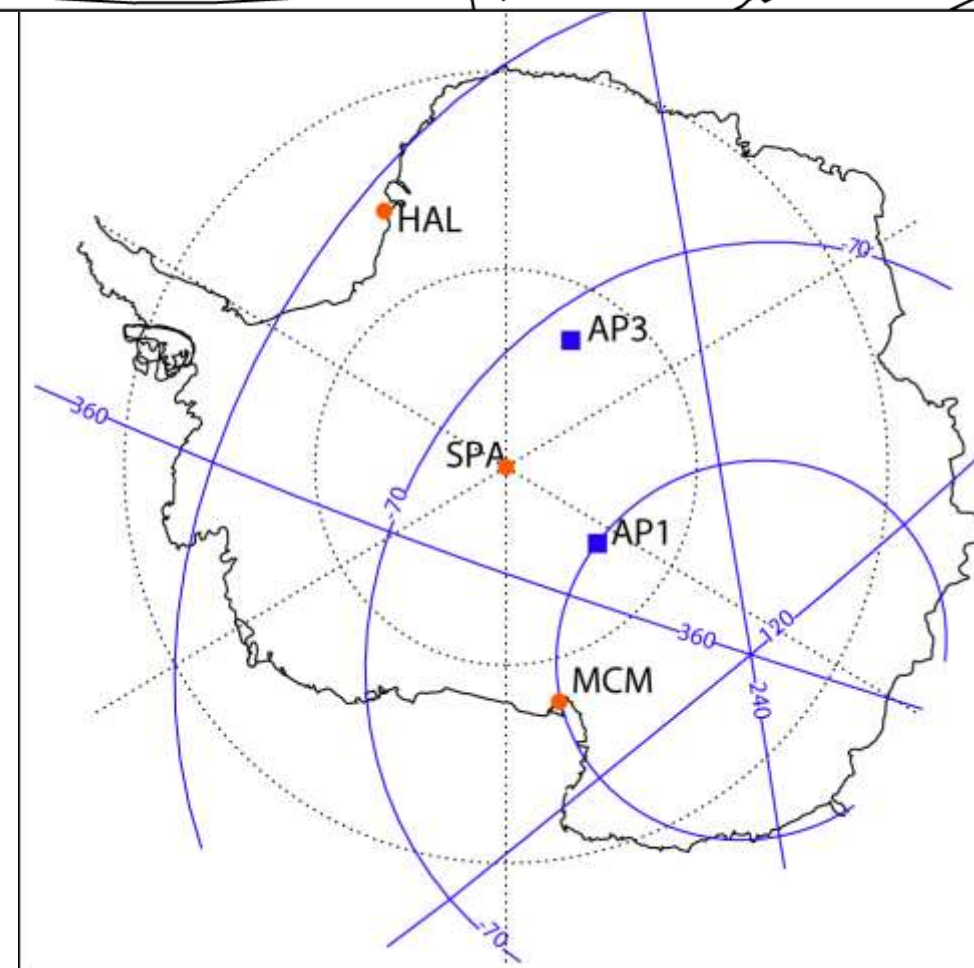
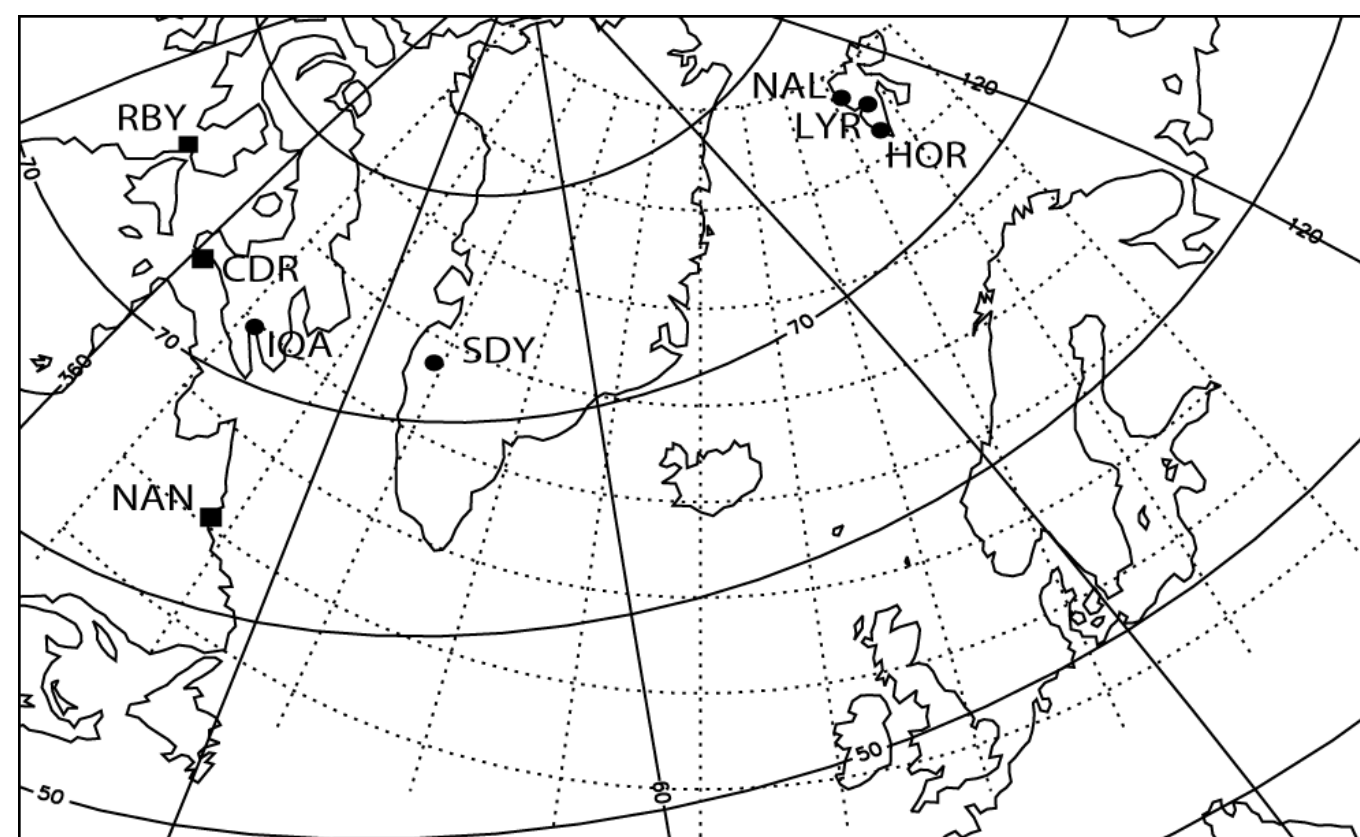
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Abstract

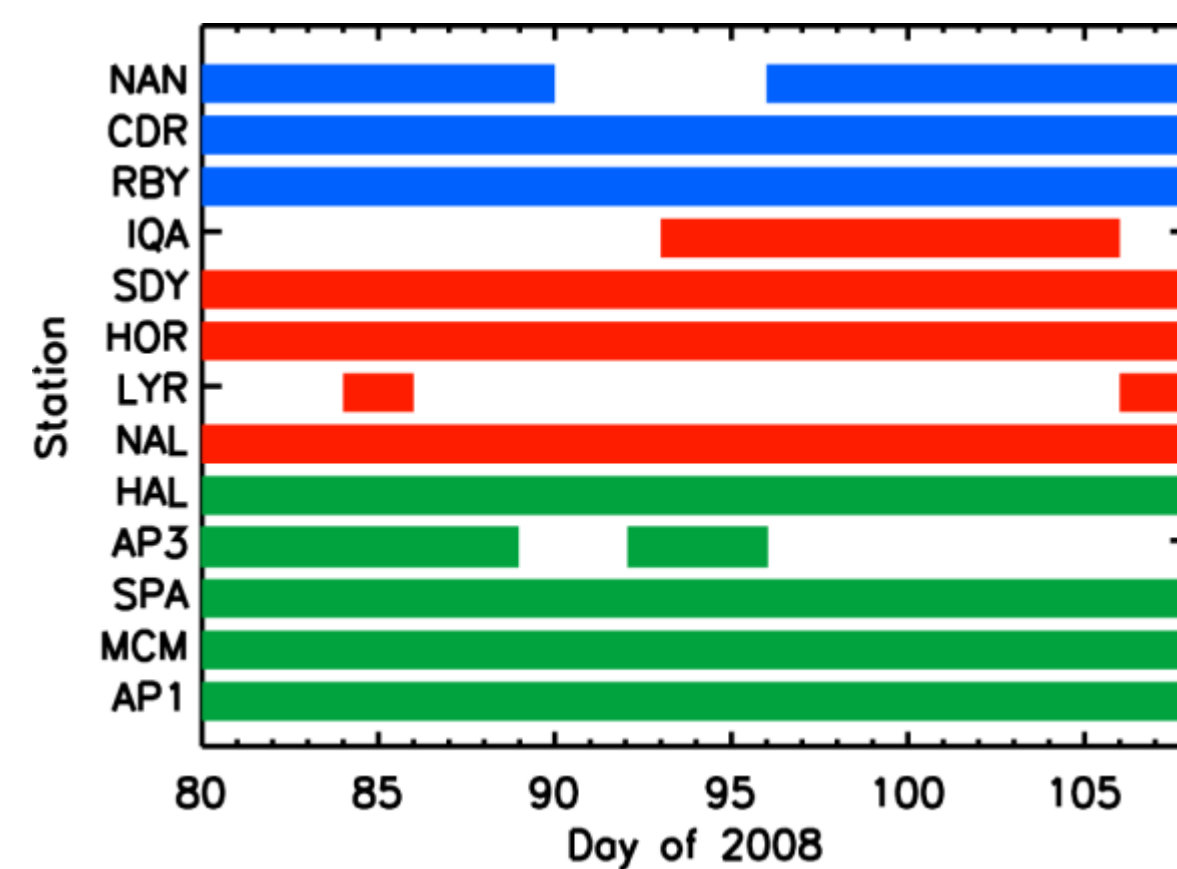
We present data from arrays of search coil magnetometers deployed at high latitudes in both polar regions obtained during the Whole Heliosphere Interval, March 20-April 16, 2008 (yeardays 80 - 107), in conjunction with high sampling rate fluxgate magnetometer data from MACCS (the Magnetometer Array for Cusp and Cleft Studies) in Arctic Canada at magnetic latitudes ranging from 64° to 79°. Antarctic search coil magnetometers are located at Halley, South Pole, McMurdo and US AGOs P1 and P3 which range from -62° to -80° MLAT. In the Arctic regions search coils are deployed at Iqaluit, Canada, Sondrestromfjord, Greenland and at three sites on Svalbard located from 73° to 76° MLAT. These instruments will provide information on storms and substorms, ULF waves at latitudes from the plasmopause to the polar cap, and large scale magnetospheric perturbations induced by transients in the solar wind and magnetosphere.

Arctic Region

Station	Code	GEO-LAT	GEO-LON	CGM-LAT	CGM-LON	L-Value	MLT MidN in UT	MLT Noon in UT
MACCS – Fluxgate Magnetometers								
Nain	NAN	56.4	298.3	63.99	21.98	5.3	3:41	15:41
Cape Dorset	CDR	64.2	283.4	73.35	1.76	12.4	4:55	16:55
Repulse Bay	RBY	66.52	273.77	75.83	345.19	-	5:52	17:52
Search Coil Magnetometers								
Iqaluit	IQA	63.8	291.5	72.19	14.54	10.9	4:10	16:10
Sondrestromfjord	SDY	66.99	309.05	72.59	39.65	11.6	2:26	14:26
Hornsund	HOR	77.00	15.55	74.31	108.76	13.9	21:03	9:03
Longyearbyen	LYR	78.15	16.03	75.37	111.27	15.9	20:54	8:54
Ny-Ålesund	NAL	78.93	11.95	76.38	110.29	-	20:58	8:58



Data Availability



- In the data availability graph to the left, the currently available MACCS fluxgate data are represented by the blue bars.
- The red bars indicate available search coil data from the Arctic regions.
- The green bars indicate available search coil data from the Antarctic regions.
- Data from AP1 And AP3 may contain multiple data gaps within each day.

Antarctic Region

Station	Code	GEO-LAT	GEO-LON	CGM-LAT	CGM-LON	L-Value	MLT MidN in UT	MLT Noon in UT
Search Coil Magnetometers								
Halley	HAL	-75.6	343.7	-62.91	34.32	4.9	2:24	14:24
AGO P3	AP3	-82.8	28.6	-72.05	40.37	10.7	2:03	14:03
South Pole	SPA	-90.0	0.0	-74.22	18.49	13.8	3:30	15:30
McMurdo	MCM	-77.9	166.7	-79.95	326.70	-	7:01	19:01
AGO P1	AP1	-83.9	129.6	-80.26	16.67	-	3:47	15:47

Finding the Data

- All MACCS fluxgate data are available as 0.5 second ASCII files, 0-1 Hz spectrograms, and line plots. As more data from MACCS stations becomes available they will be added to the site listed below
- All search coil data are available as 0.1 second ASCII files, 0-1 Hz spectrograms, and 0-5 Hz spectrograms.

These files can be found at:

<http://space.augsburg.edu/space/whi/>

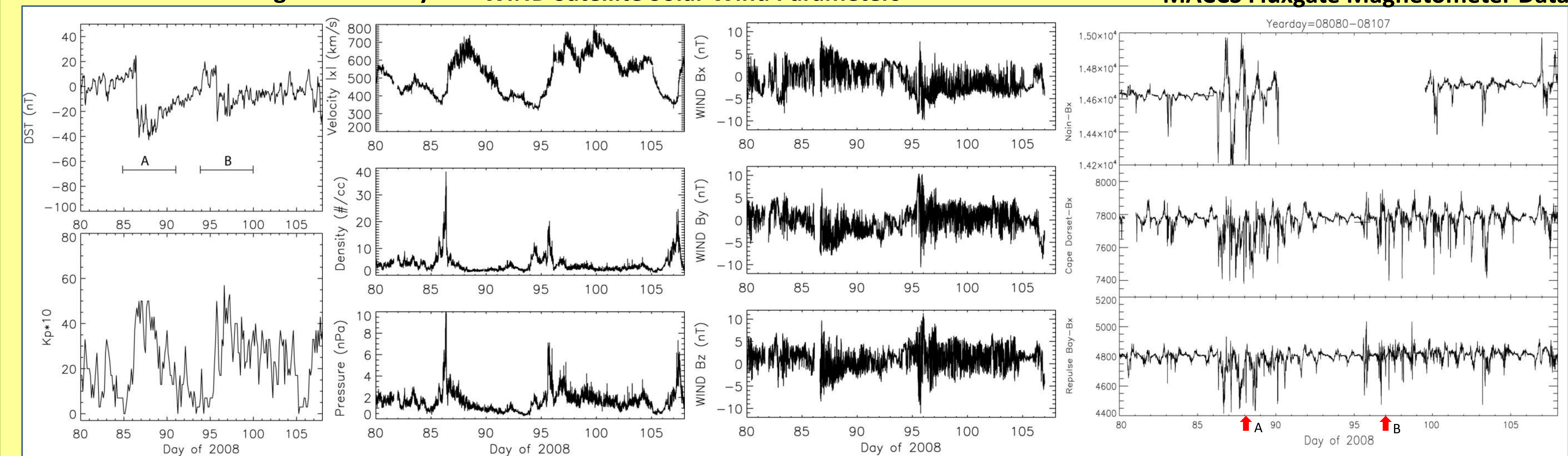
Or by contacting:

Jennifer Posch – posch@augsb.org

Indices of Global Geomagnetic Activity

WIND Satellite Solar Wind Parameters

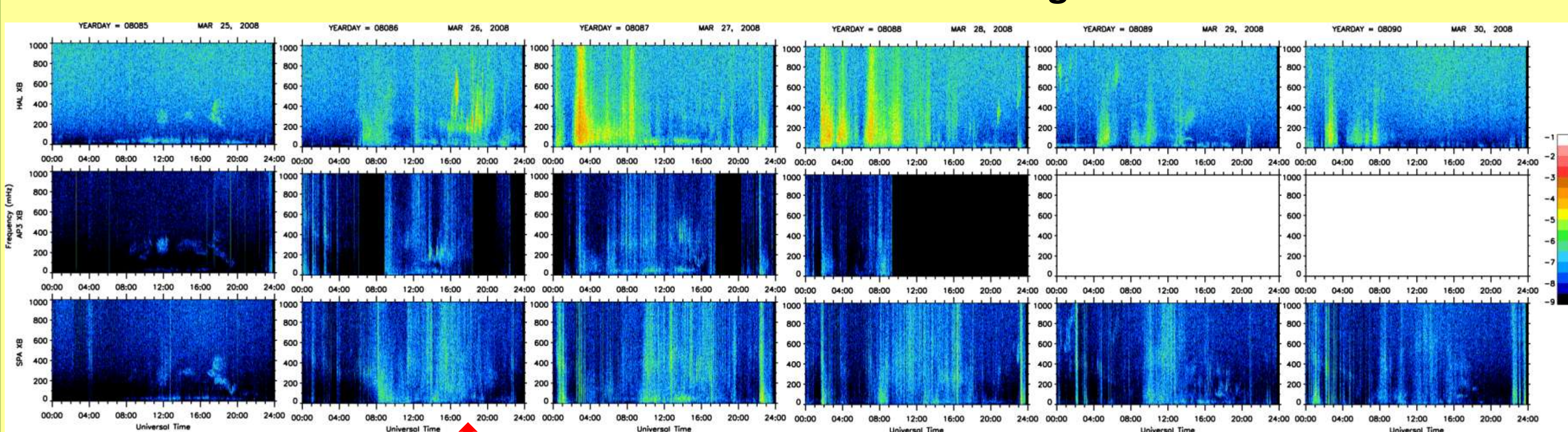
MACCS Fluxgate Magnetometer Data



Despite the very high solar wind velocity during this interval, only weak geomagnetic storms occurred. This may be due to the relatively weak negative IMF Bz conditions during storm onset and the rather low solar wind densities.

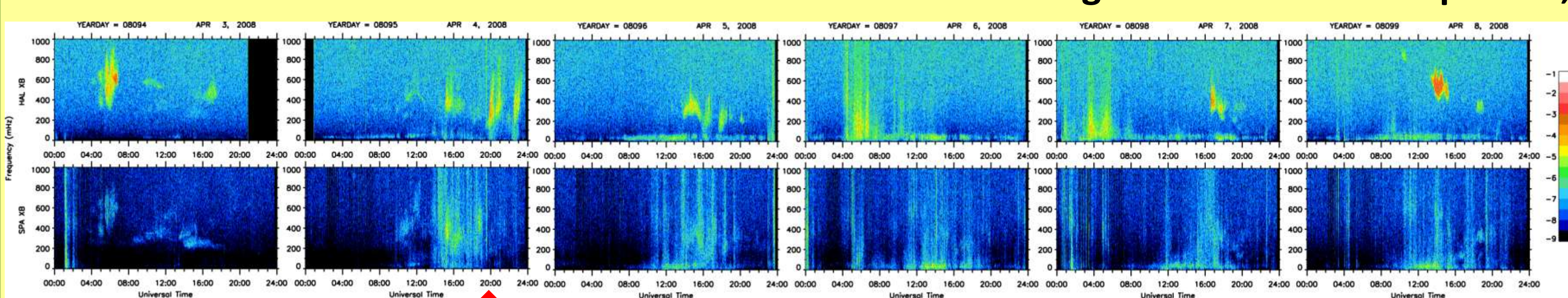
MACCS – Many substorm signatures are evident, especially during and after the onset of the storm intervals.

A - Antarctic Search Coil Magnetometer Data - March 23-30, 2008 (DOY= 85-90)



Minimum Dst of -41 at 18 UT

B - Antarctic Search Coil Magnetometer Data – April 3-8, 2008 (DOY= 94-99)



Minimum Dst of -28 at 20 UT

- Spectrograms (0-1 Hz) of Antarctic search coil data are shown for Halley, AGO P3, and South Pole for the days surrounding the first minor storm of the Whole Heliosphere Interval.
- This storm reached a minimum Dst of -41 nT on March 26, 2008 (day=86) near 18 UT.
- Search coil magnetometer signals are dominated by broadband ULF noise, which is typically observed with storm onset.
- Monochromatic Pc1 waves (0.2-5.0 Hz, electromagnetic ion cyclotron waves) are most often observed below 1.0 Hz. However, some weak Pc1 activity did occur above 1.0 Hz on day 90.

- Spectrograms (0-1 Hz) of Antarctic search coil data are shown for Halley and South Pole for the days surrounding the second minor storm of the Whole Heliosphere Interval.
- This storm reached a minimum Dst of -28 nT on April 4, 2008 (day=95) near 20 UT.
- Monochromatic Pc1 activity is more common during interval B, but was more clearly observed at the lower latitude Halley station.