

西オングル島における VLF 自然電波観測用小電力ロガーの開発

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## Development of Low-power Logger for Natural VLF Wave Observation at West Ongul Island

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We have developed a new VLF wideband monitoring system for Syowa Station. This system is designed to monitor 200Hz to 100kHz of natural VLF waves at the West Ongul Island, where UAP monitoring site is located about 5km remote from Syowa Station in order to avoid noise of Syowa Station and has been continued to observe since 1976. Power of this station has been supplied only by solar batteries until 2008. A new hybrid power supply system at West Ongul monitoring site has been deployed by JARE49. VLF wideband observation system is also scheduled to be installed during IPY.

The power resource is limited at the isolated observation site in Antarctica. We have deployed a hybrid power generationsystem in west Ongul island. This system has two electric power sources. One is the solar power generator and the other is the wind power generator. Still the power consumption of the observation system has to be minimized to about 20W including the VLF wideband sampling system and the wireless link between west Ongul island and east Ongul island where the Syowa Station is located. We have adopted a FPGA based A/D sampling system up to 100kHz for VLF monitoring at west ongul island and transferred the observation data with wireless LAN link, then recorded at Syowa Station in east ongul island. The FPGA system enables us a low power consumption and reconfigurable observation system. We have successfully obtained sample data by using this system during JARE49 as follows.

Figure 1 shows the VLF wideband spectrum obtained in July 8, 2008. We have observed harmonics signals before local magnetic noon. The original data has been recorded with sampling speed of 200ks/sec and 1024samples of wave form during 5msec observation time. The FFT spectrum is obtained by a PC based data analysis system in Syowa Station. About 10 spectrums at the maximum can be obtained in 1 second depending on the condition of wireless LAN link. Summary data can be transferred to NIPR via the satellite link and is available on the internet.

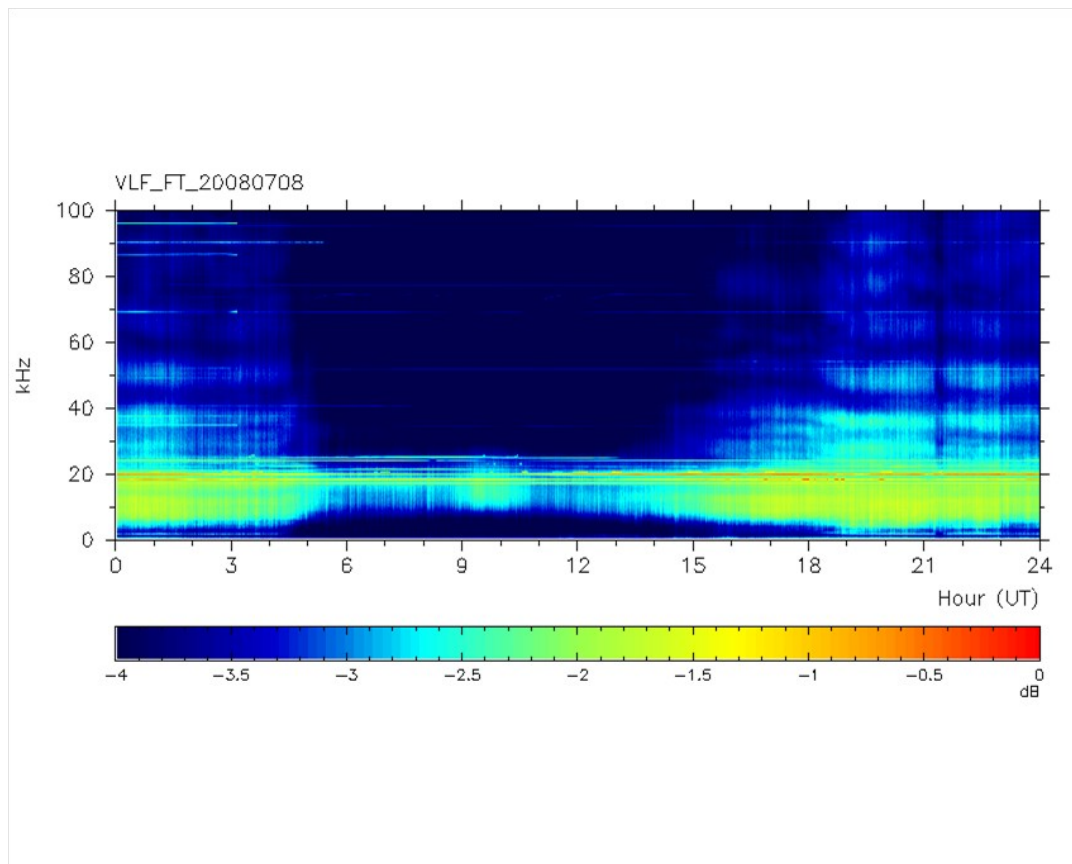


Figure 1. VLF Wideband spectrum obtained at Ongul Island, Syowa Station on July 8, 2008.