



From Sucksdorff to the present measurements

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One of the first Pc1 observations were made by E. Sucksdorff in 1932-1935 by La Cour quick-run paper charts. Continuous pulsation magnetometer recordings in Finland exist since 1963 when V. Hessler installed iron cored search coils to Sodankylä and Nurmijärvi observatories. C. Sucksdorff's visit to V. Hessler at the University of Alaska Geophysical Institute in 1964 led to deploying a north-south chain of pulsation magnetometers in Finland. In 1973 it included 5 observation sites (Kevo, Sodankylä, Oulu, Luontisjärvi and Nurmijärvi). The search coils sensors were made in Japan. During more than 30 years of operation the chain was upgraded several times and at present the network implies the third generation of pulsation magnetometers since its start. In 1999 the chain was extended to a low latitude station in the island of Crete and in 2004 to a station at the magnetic equator in Ethiopia. The newest extension in 2005 stretches out to the polar cap with a pulsation magnetometer in Barentsburg/Spitzbergen. This was achieved as a joint project with the University of Leicester/England.

The present chain on the territory of Finland constitutes of 6 observation points (Kilpisjärvi, Ivalo, Sodankylä, Rovaniemi, Oulu, Nurmijärvi) with new instruments built at Sodankylä Geophysical Observatory (electronics) and Department of Physics (sensors), both University of Oulu, in 2003-2003. Today the stations from L=3.3 to 15.6 are identical whereas the low latitude station still operate with instruments used before 2002. The new 3 component pulsation magnetometers record with 16 bit resolution, at 40 Hz sampling rate, in a frequency band from mHz to 10 Hz.

SGO developed recently a new 24bit ULF-ELF-VLF receiver system, called UEV2300, which can also be used as an air core pulsation magnetometer. The di-

mensions of the loop are 3m x 3m with 2 coils, 128 turns each, with an effective area of 2300 m². The frequency band starts at 1 Hz and reaches 20 kHz. First recordings were made during the Finnish EISCAT campaign in October 2005. The most remarkable result in the ULF band was a continuous spectrum of the Schumann resonances up to the 10th harmonics. Spectral resonance structures of the ionospheric Alfvén resonators could not be recognized because of wind effects. The main goal of the measurement was in the ELF-VLF band. This loop antenna will be installed for continuous recordings in future.