



The Trial Software version for DEMETER power spectrum files visualization and mapping

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In the frame of Kazakhstan's Scientific Space System creation for earthquakes precursors research, the hardware and software of DEMETER satellite was investigated. The data processing Software of DEMETER is based on package SWAN under IDL Virtual machine and realizes many features, but we can't find an important tool for the spectrograms analysis - space-time visualization of power spectrum files from electromagnetic devices as ICE and IMSC. For elimination of this problem we have developed Software which is offered to use.

The DeSS (DEMETER Spectrogram Software) – it is Software for visualization, analysis and a mapping of power spectrum data from electromagnetic devices ICE and IMSC. The Software primary goal is to give the researcher friendly tool for the analysis of electromagnetic data from DEMETER Satellite for earthquake precursors and other ionosphere events researches.

The Input data for DeSS Software is a power spectrum files:

- Power spectrum of 1 component of the electric field in the VLF range (APID 1132);
- Power spectrum of 1 component of the electric field in the HF range (APID 1134);
- Power spectrum of 1 component of the magnetic field in the VLF range (APID 1137).

The main features and operations of the software is possible:

- various time and frequency filtration;
- visualization of time dependence of signal intensity on fixed frequency;
- spectral density visualization for fixed frequency range;
- spectrogram autosize and smooth spectrogram;
- the information in each point of the spectrogram: time, frequency and intensity;
- the spectrum information in the separate window, consisting of 4 blocks;
- data mapping with 6 range scale.

On the map we can browse next information:

- satellite orbit;
- conjugate point at the satellite altitude;
- north conjugate point at the altitude 110 km;
- south conjugate point at the altitude 110 km.

This is only trial software version to help the researchers and we always ready collaborate with scientists for software improvement.

References:

1. D.Lagoutte, J.Y. Brochot, D. de Carvalho, L.Madrias and M. Parrot. DEMETER Microsatellite. Scientific Mission Center. Data product description. DMT-SP-9-CM-6054-LPC.
2. D.Lagoutte, J.Y. Brochot, P.Latremoliere. SWAN – Software for Waveform Analysis. LPCE/NI/003.E – Part 1 (User's guide), Part 2 (Analysis tools), Part 3 (User's project interface).