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Magnetic location of ionosphere and lithosphere sources of ULF geomagnetic disturbances

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Three magnetic stations situated at tops of a triangle at the Earth's surface at distances 4-6 km one from the other are a magnetic gradientometer. Two gradientometers situated at distance 100-150 km allow determining (along the Earth's surface) gradient and phase velocity vectors of ULF magnetic disturbances (F=0.001-1 Hz) of ionosphere and lithosphere origination. As a rule, ionosphere sources are situated in auroral zone and lithosphere sources are situated in seismic active zones. The gradient vectors are directed to a local source of the ULF variations and the phase velocity vectors are directed in the opposite direction.

Recent our works had achieved an anomaly behavior of amplitudes, gradients and phase velocity values appearing 1-2 months before strong EQs ($M \geq 5$). These effects were firstly recorded at Japan by the magnetic gradientometer situated at Izu and Boso peninsulas. The strongest seismic shock with magnitude Ì=6.4 had taken place 01.07.2000 under a sea bottom at a distance $\sim$75 km from the remote magnetic stations located at Izu and $\sim$140 km from the magnetic stations located at Boso. Using the phase-gradient method the gradient and phase velocity vectors of ULF magnetic disturbances were constructed and they allowed finding a position of the epicenter of the forthcoming EQ.