



First experience of high-frequency magnetometric probe on light Unmanned Aerial Vehicles in geology.

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In 2014 IPGG SB RAS created the first example of aero geophysical device with magnetometric channel for light UAV. Sensitivity of the magnetometric sensor is 70 pTl, the sensitivity of the whole complex is about 1 nTl. Frequency of the created magnetometric channel is 1500 Hz. All experimental work using of high-frequency magnetometric probe (HFMP) based on light UAV were conducted parallel to standard ground magnetometric measurements using proton or quantum magnetometers.

Studies on the archaeological mound in Vengerovsky District of Novosibirsk Region has shown that using UAVs it is possible confidently find the artifacts having anomalous field ~ 5 nTl more. All anomalies found using HFMP on UAV were confirmed by standard quantum magnetometry.

In Khakassia (East Siberia) numerous objects were investigated in detail during geological and geophysical landfills of Novosibirsk State University, Tomsk Polytechnical University and Siberian Federal University.

Due to the high frequency of receiving signal and processing of measurements the data on the magnetic field obtained by UAV HFMP generally coincide with the ground measurements obtained using proton or quantum magnetometry. Comparison of the matching profiles at different sites showed that the magnetic field data obtained by UAV HFMP reveal significantly more complex structure more higher amplitude anomalies. It is possible to create more detail geological model of the structure of studied objects.

Practical application of UAV HFMP showed it significantly better performance and efficiency compared to conventional methods of magnetometric explorations.