



MAGNETOMETRY ON BOARD DRONES

One of the main lines of research in the Area of Space Magnetism is the study of the planetary crust of rocky bodies. For a detailed characterization of planetary crusts is necessary to carry out magnetic studies at different heights, this question has not been solved with the required precision using the techniques currently available. Consequently, the main goal is to provide technological solutions in the area of magnetic measurements, such as advanced magnetometry, capable of generating high-resolution vector magnetic data.

Due to this need the MAGMA project arose, whose technological challenge consisted of construction of a measurement system incorporating a vector magnetometer on board an unmanned aerial vehicle.

The prototype consists of a DJI Matrice 600 PRO drone, for which a magnetometric system has been designed, manufactured, and validated, and integrated into a retractable boom, which allows the vectorial measurement of the magnetic field in a multirotor type drone.

The advantages of this measurement system are as follows:

Measurement of vector magnetic signatures of geological structures to improve conclusions about the structure and arrangement of magnetic carriers of rocks in the soil and subsoil.

Preparation of vector maps of large areas.

The airborne system allows us to shorten the distance between the instrumentation and the source in places with high relief or difficult access locations

Regarding the scope of activities, the magnetic signature is a remote, non-invasive and environmentally friendly tool.



The Space Magnetism Area has performed several campaigns of magnetic measurements on foot using the TITAN system in various areas of geological interest, including volcanic areas of Cabo de Gata in Almería, Cerro Gordo in the Province of Ciudad Real, dams of the Sierra de Guadarrama in Madrid, and Lanzarote Island.

