

DATABASE TECHNIQUES FOR SCIENTIFIC INVESTIGATIONS

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We present combined data sets from magnetic ground-based and satellite related measurements with the aim for event oriented scientific analysis and discuss this in terms of dependability with several attributes, among them availability and reliability. Ground-based measurements are from the (i) South European Geomagnetic Array (SEGMA), satellite magnetic field measurements from (ii) Cluster fluxgate magnetometer (FGM), (iii) Double Star FGM and (iv) Venus-Express Magnetometer (Vex-Mag). The steady progress in database and visualisation techniques enables a fast and reliable investigation if the data originates from real-time sources, even in the case of a huge amount of available different magnetic field measurements. However, calibration, data gaps and disturbances in the field vectors are of major concern and have to be considered, especially in a first run of the combined data product. Former data sets, in our case balloon and rocket measurements – after tedious transformation to electronic media – benefit from a defined structure and re-evaluation is possible with modern software tools, which are written under software systems engineering guidelines. Metadata from various instruments with different formats are combined in unique structures. Defined user interfaces enable queries and scientific investigations under conventional operating systems are possible, both in terms of quick look and high-quality data.

Database, fluxgate magnetometer, software systems engineering

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