GEOMAGNETIC OBSERVATORY PRACTICE, INSTRUMENTATION AND NETWORK

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The recent progresses in ground based magnetic observatory operation encompasses several aspects: instrumentation, acquisition, accuracy estimation, data processing, data transmission, opening of new observatories ...
In the present state of the art, manual absolute measurements remain the most accurate way of controlling the base lines of the magnetometers, whatever their type. Efforts are made for several years towards more automatization (Automatic DI Flux : Rasson and Van Loo; GAUSS: Auster et al.; DIDD: Hegymegi, Körmendi et al.; Vectorial Helium pumped magnetometer: Léger et al.; ...). Nevertheless, these recent proposed solutions are either : still under development, still need the presence of an observer or/and their instrumental reference frame is difficult to determine.
The observatories have still to be operated by a trained observer. This condition may be hard to fulfil in remote areas as in Antarctica or when strong economic pressure may result in a reduction of the observer staffs.
Concerning the new generation of numerical acquisition, the typical reference becomes the Intermagnet network that recommended in 2003 to produce one-second data. The current concerns focus on resolution (< 1 pT), sampling rate and time accuracy (< 10 ms).
Worldwide synchronized one second data acquisition and dissemination will probably be a big challenge for the next future, especially in the context of the forth-coming Swarm satellite mission.

Magnetic observatories, instruments, acquisitions, second data

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