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THE EARTH MAGNETIC FIELD COMPLEXITY STRAIGHTENED OUT BY SWARM MISSION

The geomagnetic field is by far the best-documented magnetic field of all Earth-like planets. The use of many different approaches has led to extensive progress in our understanding of the Earth's magnetic field characteristics and properties. A real progress in the knowledge of the Earth's magnetic field than was previously possible has been realized by a few very successful space missions.

Here, an overview is given on the current status of observing, interpreting and understanding the behavior of the magnetic field produced within the Earth's core. Satellite magnetic data are brought in, and the way they can be used to derive the temporal evolution of the core field is discussed. Interpretation of this behavior from the very short timescales (monthly to annual) to those covered by the full available space observations (sub-decadal to decadal) is exposed.

Finally, a status-of-the-art of the Swarm mission and some of its recent results are presented. These recent developments have also implicitly increased the use of geomagnetic data into some specific activities. Attention is given on very recent globally geomagnetic field variations, with some particular space-weather effects.

Some conclusions on the three Swarm spacecraft are drawing with some possible suggestions of continuation of observational side, for insuring a long-term monitoring of the Earth's magnetic field from space.