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FIRST SCIENTIFIC RESULTS FROM ESA'S SWARM SATELLITE CONSTELLATION MISSION

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ABSTRACT:

The three-satellite satellite constellation mission *Swarm* was launched by ESA on 22 November 2013. *Swarm* consists of three identical spacecraft, two of which are flying almost side-by-side in polar orbits at lower altitude (about 470 km), while the third satellite is in a slightly higher (about 520 km altitude) orbit. Each of the three satellites carry instruments for measuring Earth's magnetic field direction and intensity with high-precision. Time and position are provided by on-board GPS. The payload also includes instruments to measure plasma and electric field parameters as well as gravitational acceleration. Combining data from the two lower flying satellites provides information on the East-West gradient of the Earth's magnetic field; a quantity that is sensitive to small-scale spatial variations of the field.
We present the first scientific results of the *Swarm* mission after almost 18 months in space, in particular regarding small-scale lithospheric field structure and the temporal evolution of contributions from Earth's core (the so-called secular variation).

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