First recording of scintillation on Galileo signals in Antarctica made by Septentrio's PolaRx5

Leuven, Belgium – 3 July 2017 – At the end of last year, the DemoGRAPE consortium observed for the first time ever, ionospheric scintillations on Galileo signals in Antarctica, using Septentrio's PolaRx5S GNSS reference receiver.

DemoGRAPE investigates improvement of high-precision satellite positioning with a view to developing scientific and technological applications in Antarctica. At higher latitudes, GNSS signal degradation due to ionospheric activity is more pronounced. The more precise phase-based positioning modes are particularly vulnerable to ionosphere disturbance such as scintillations. Elevated ionospheric activity can cause a loss of precise-positioning mode or, in more extreme cases, a total loss of signal lock.

Monitoring the movement and evolution of ice shelves and glaciers as well as geodetic prospecting require highly precise positioning. Besides this scientific interest, accurate positioning is important from a safety standpoint. When visibility is limited and travel is restricted, designated routes between remote locations have to be strictly followed to avoid dangers such as falling into a crevasse during a snowstorm.

DEMOGrape is an international project lead by Istituto Nazionale di Geofisica e Vulcanologia (INGV), Rome, Italy in partnership with the Politecnico di Torino, the South African National Space Agency (SANSA) and the National Institute for Space Research, São Paulo, Brazil (INPE).

Septentrio's PolaRx5S is the benchmark for GNSS space weather applications. It provides data for scintillation analysis (I&Q correlations, phase, code and carrier-to-noise) at up to 100 Hz for all GNSS L-band frequencies. SBF, RINEX and BINEX data logging is possible on both a built-in 16 GB memory and on an externally connected device. Up to 24 independent data archives can be defined. Logged data can be accessed via the web UI server or automatically pushed to a FTP server.

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"We are really very happy of the fruitful collaboration with Septentrio colleagues that supported our measurements in the extreme environment of Antarctica. The first Galileo scintillations observed in the DemoGRAPE sites are attracting the attention of Space Weather communities, also beyond the European borders, as testified by the article published on the American Geophysical Union Space Weather Journal" (Alfonsi, L., P. J. Cilliers, V. Romano, I. Hunstad, E. Correia, N. Linty, Fabio Dovis et al. "First Observations of GNSS Ionospheric Scintillations From DemoGRAPE Project." Space Weather 14, no. 10 (2016): 704-709).

"We are really proud to have enabled our colleagues and friends from INGV and the DEMOGrape consortium to make this first of a kind scintillation measurement on the Galileo signals" stated Dr Bruno Bougard, Director of R&D at Septentrio. He continued: "Galileo added value on high precision application resides in its ability to increase the position availability and reliability compared to traditional GPS+GLONASS systems. Demonstrating its resilience to scintillation is key for operations at high latitudes."

About Septentrio:
Septentrio designs, manufactures and sells high-precision multi-frequency multi-constellation GPS/GNSS equipment, which is used in demanding applications in a variety of industries such as marine, construction, agriculture, survey and mapping, geographic information systems (GIS), and unmanned aerial vehicles (UAVs) as well as other industries. Septentrio receivers deliver consistently accurate GNSS positions scalable to centimetre-level, and perform solidly even under heavy scintillation or jamming. Septentrio receivers are available as OEM boards, housed receivers and smart antennas.

Septentrio offers in-depth application and integration support to make its customers win in their markets. Septentrio is headquartered in Leuven, Belgium, and has offices in Torrance, California, and Hong Kong, and partners around the world. To learn more about Septentrio and its products, visit: www.septentrio.com.

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