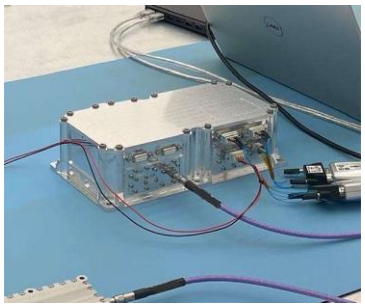
Where No Satnav Has Gone Before

The test version of a unique satellite navigation receiver has been delivered for integration testing on the Lunar Pathfinder spacecraft. The NaviMoon satnav receiver is designed to perform the farthest ever positioning fix from Earth, employing signals that will be millions of times fainter than those used by our smartphones or cars.

"This engineering model of our NaviMoon receiver is the very first piece of hardware to be produced in the context of ESA's Moonlight initiative, to develop dedicated telecommunications and navigation services for the Moon," explains Javier Ventura-Traveset, Head of ESA's Navigation Science Office and managing all ESA lunar navigation activities.

"It will be flown aboard the Lunar Pathfinder mission into orbit around the Moon, from where it will perform the furthest satellite navigation positioning fix ever made, at more than 400 000 km away to an accuracy of less than 100 m. This represents an extraordinary engineering challenge, because at such a distance the faint Galileo and GPS signals it makes use of will be barely distinguishable from background noise. This demonstration will imply a true change of paradigm for lunar orbiting navigation."

Read more in *article*…
https://www.moondaily.com/reports/Where_no_satnav_has_gone_before_999.html
2022-04-22



Loss Of Galileo Puts UK PNT At Risk, Expert Claims

An expert has warned the government of the United Kingdom that the lack of an alternative to Galileo threatens to put critical infrastructure at risk, according to a report in Daily Express.

Andy Proctor, formerly with the satellite and positioning, navigation and timing (PNT) cabinet office, submitted evidence of his concerns to the UK's ministers.

“Our critical infrastructure is at risk from the loss of PNT, space-based or otherwise,” he wrote. “We are currently critically dependent upon GPS; the loss of which will have a major impact in capability and economically.”

Proctor is director of Rethink PNT, a consultancy firm.

He pointed out that the government disinvested in the eLoran terrestrial system that could have provided a backup, although this is slowly reversing.

Read more in *GPS World* article. https://www.gpsworld.com/loss-of-galileo-puts-uk-pnt-at-risk-expert-claims/?utm_source=Navigate%21+Weekly+GNSS+News&utm_medium=Newsletter&utm_campaign=NCMCD220413002&oly_enc_id=1784A2382467C6V

2022-04-15

Successor to Original Michibiki Satellite Passes Functional Tests

Mitsubishi Electric Corp. has completed initial verification of the functions and performance of equipment aboard the orbiting QZS-1R satellite.

QZS-1R was launched Oct. 26, 2021, from Tanegashima Island in Kagoshima Prefecture and is now in quasi-zenith orbit as the successor to the original Quasi-Zenith Satellite (QZS-1), nicknamed Michibiki.

With Quasi-Zenith Satellite System services also having completed testing of related ground systems, the Cabinet Office will begin launching various positioning services via the QZS-1R today.

Mitsubishi Electric built and delivered QZS-R1 to the Cabinet Office of Japan. In addition to supporting these services, Mitsubishi Electric will continue developing satellite systems for forthcoming satellites QZS-5 to QZS-7, which will support advanced, sustainable, high-precision positioning in Japan.

Read more in *GPS World* article. https://www.gpsworld.com/successor-to-original-michibiki-satellite-passes-functional-tests/?utm_source=Navigate%21+Weekly+GNSS+News&utm_medium=Newsletter&utm_campaign=NCMCD220406003&oly_enc_id=1784A2382467C6V

2022-04-04

Russia Interfering With GPS In Ukraine, Pentagon Says

General David Thompson at the Pentagon told NBC News that Russia is interfering with GPS signals in Ukraine.

Russia has also reportedly jammed GPS along its borders with Finland, which has affected civilian aircraft.

U.S. commanders say Russia has not yet attacked U.S. GPS satellites in orbit, but the U.S. Space Force continues to monitor the constellation.

Read more in *GPS World* article. https://www.gpsworld.com/russia-interfering-with-gps-in-ukraine-pentagon-says/?utm_source=Defense+PNT&utm_medium=Newsletter&utm_campaign=NCMCD220407003&oly_enc_id=1784A2382467C6V

2022-04-13

Russia Jamming Aircraft Satnav, French Official Warns

The Russian military has disrupted flight systems in three regions since the invasion of Ukraine, highlighting the need for robust alternatives, according to a French safety regulator and as reported by Bloomberg.

Airline pilots have reported jamming of satellite navigation systems around the Black Sea, eastern Finland and the Kaliningrad enclave, said Benoit Roturier, head of satellite navigation at France's civil aviation authority DGAC.

The jamming signals appear to originate from Russian trucks intent on protecting troops and installations against GPS-guided missiles. While the signals are not aimed at civil aviation, however, they force the pilots to deal with distracting alerts.

"Airplanes hit by jamming can continue to fly using inertial navigation systems — that is standard and works with GPS," Roturier said. "This could be less accurate, but can be used when GPS goes down." Yet regulators are realising the potential for massive airspace disruptions, especially as the European Union pushes for increasing reliance on satellite navigation.

Read more in *GPS World* article. https://www.gpsworld.com/russia-jamming-aircraft-satnav-french-official-warns/?utm_source=Navigate%21+Weekly+GNSS+News&utm_medium=Newsletter&utm_campaign=NCMCD220330002&oly_enc_id=1784A2382467C6V

2022-04-01

Europe Initiates Ambitious SBAS Expansions: Dual-Frequency Multi-Constellation Signals Coming to EGNOS

Maritime transportation re-mains the backbone of worldwide economic activity, representing 80% of global merchant traffic. Europe is one of the world's leading

maritime hubs, with 329 key seaports and control of about 30% of the world's merchant fleet.

Shipping around the extensive European coastline relies on differential GNSS (DGNSS) signals for navigation and safety. These signals depend on a network of fixed, ground-based reference stations to broadcast the difference between the positions indicated by GNSS and known fixed positions. Today, almost all commercial GPS receivers, even hand-held units, allow DGNSS data inputs, and DGNSS is commonly used in maritime settings. However, the cost of maintaining this aging infrastructure is high, and the long-standing debate over what to do with this service is unresolved.

Jean-Marc Piéplu, European Geostationary Navigation Overlay Service (EGNOS) Exploitation Program Manager at the EU Agency for the Space Program (EUSPA), told *Inside GNSS,* "We are developing a new EGNOS service dedicated to Maritime users, which will complement and serve as an alternative to the local DGNSS network currently deployed along the European coasts."

Read more in *Inside GNSS* article. https://insidegnss.com/europe-initiates-ambitious-sbas-expansions-dual-frequency-multi-constellation-signals-coming-to-egnos/
2022-03-30

GNSS Signals Help Map Sea-surface Topography

Monitoring the constantly changing shape of the sea surface is important for scientific and societal applications such as ocean current forecasting, climate research, ship routing, cable laying and debris tracking.

A project supported by the Discovery element of ESA's Basic Activities recently investigated a technique to precisely measure sea-surface topography. The project was based on an idea submitted by the Institute for Space Studies of Catalonia (IEEC) through the Open Space Innovation Platform (OSIP) — ESA's place for your space ideas.

The technique involves GNSS reflectometry — signals that have been reflected off of the sea surface at very low angles. At these "grazing" angles, waves and surface roughness have little impact on the reflection process; the sea surface acts as a very smooth mirror.

Read more in *GPS World* article. https://www.gpsworld.com/gnss-signals-help-map-sea-surface-topography/?utm_source=Navigate%21+Weekly+GNSS+News&utm_medium=Newsletter&utm_campaign=NCMCD220323003&oly_enc_id=1784A2382467C6V

2022-03-22