

Plate Boundary Observatory

Hughes Hits High on the Broadband Scale

Located in an unassuming office park in Boulder, CO, UNAVCO is a non-profit, membership-governed consortium sponsored by the National Science Foundation (NSF) and National Aeronautics and Space Administration (NASA), and supports a myriad of science communities—including those who focus on the deformation of ice, imaging the structure of the atmosphere, and the Earth’s response to ground water, sea level, and other aspects of the hydrosphere. UNAVCO also provides science support through a combination of community coordination, field engineering, technology innovation, and instrument testing.

One UNAVCO project, Plate Boundary Observatory, provides unprecedented imaging of the Earth’s plate boundary deformation. In addition to the UNAVCO facility in Boulder, Plate Boundary Observatory maintains regional offices in San Clemente, CA and Anchorage, AK and has deployed hundreds of global positioning systems (GPS) and seismic monitoring stations in the western U.S. to collect seismic data. To transfer and archive these large amounts of data from remote stations, Plate Boundary Observatory relies on the HughesNet® satellite broadband service. Unlike terrestrial solutions, HughesNet does not rely on cable or phone wires, so it’s available to consumers, businesses, and research organizations anywhere in the continental U.S., regardless of how remote the location—which allows the Plate Boundary Observatory team to transfer data back to UNAVCO quickly, easily, and securely.



Rough Terrain for Data Collection

In the early 1980s, soon after the first experimental GPS satellite was launched, UNAVCO was created to solve the challenge of applying GPS to geosciences for measurement and imaging purposes. UNAVCO, in turn, formed Plate Boundary Observatory in the late 1980s using GPS to study the three-dimensional strain field resulting from deformation across the active boundary zone between the Pacific and North American plates. It now comprises arrays of GPS receivers and Strainmeters that are positioned across the western U.S. and used to measure underground strain over time periods ranging from 15 seconds to decades and longer.

Originally, Plate Boundary Observatory engineers were required to haul the GPS equipment out to a research site, survey and gather data manually, transport the data back to UNAVCO, and repeat everything the following year to measure movement over time.

“As GPS costs declined over the next few years, it became more economical for us to install the equipment permanently,” said Warren Gallaher, Senior Network Engineer. “We also were able to get dial-up connectivity at a few of the less remote sites that helped with communication and data transfer.”



HughesNet Business Internet service offers flexible access plans to suit any size business, with download speeds of up to 5 Mbps, the fastest available in North America, and including bandwidth-on-demand options. Implement secure, private networks—for as few or as many locations as your business needs. All from Hughes, the industry leader in satellite broadband—redefining the network with enterprise-grade private networking solutions that are easy to implement and can grow with a small business of any size.

Plate Boundary Observatory Makes a Move for Satellite Broadband

With such spotty connectivity, however, dial-up didn't prove to be a permanent solution for data transmission. "We really needed a stable, reliable service that could help us archive everything we collected," said Gallaher.

After researching options for high-speed connectivity and trying out a very expensive satellite solution from a Canadian service provider, Gallaher and the Plate Boundary Observatory team signed up for HughesNet satellite broadband in 2002.

"We spend a lot of time at research stations like our location in Yellowstone where satellite connectivity is really our only option for communicating and archiving data at UNAVCO," said Gallaher. "The Hughes satellite modem and small antenna are just perfect for what we need."

Gallaher also likes the stability of their HughesNet service. With remote locations across California, Oregon, and Washington, along with five in Yellowstone, reliability and ease of use are extremely important for the Plate Boundary Observatory team of engineers.

"Our job is to get new, important data back to geologists at our member organizations and universities. They aren't very interested in how the equipment works or how we transfer it, they just want the data," said Gallaher. "For the sake of our program, it's crucial that we are able to do that without any headaches and HughesNet allows us to—it truly satisfies a niche that we couldn't find with other providers."

About Hughes

Hughes Network Systems, LLC (HUGHES) is the global leader in providing broadband satellite networks and services for large enterprises, governments, small businesses, and consumers. HughesNet encompasses all broadband solutions and managed services from Hughes, bridging the best of satellite and terrestrial technologies. Its broadband satellite products are based on global standards approved by the TIA, ETSI, and ITU standards organizations, including IPoS/DVB-S2, RSM-A, and GMR-1. To date, Hughes has shipped more than 2.2 million systems to customers in over 100 countries. Headquartered outside Washington, D.C., in Germantown, Maryland, USA, Hughes maintains sales and support offices worldwide. Hughes is a wholly owned subsidiary of Hughes Communications, Inc. (NASDAQ: HUGH).



HughesNet Provides a "Broadbandquake" for Plate Boundary Observatory

Today, Plate Boundary Observatory has installed over 1,000 GPS stations and about 80 strain seismic stations, all of which can get online and transmit data back to Boulder. The data collected is also freely available online as soon as it can be downloaded and moved to the archives. UNAVCO is also using HughesNet to support and maintain reference stations for NASA's Jet Propulsion Laboratory in California and is considering deploying it for a different project in Africa.

"Similar organizations and small businesses with various locations should realize that HughesNet, above all else, is a stable, easy-to-maintain solution," said Gallaher. "We're committed to cutting-edge geodynamics research and HughesNet allows us to bring back important data really easily."

HughesNet offers a full suite of services designed to help organizations like UNAVCO and Plate Boundary Observatory adapt to their environment. Starting at only \$59.99/month, with download speeds ranging from up to 1 Mbps up to 5 Mbps, the fastest satellite Internet access available in the U.S., the seven HughesNet Business Internet plans also can be customized to include private networks and backup solutions.

For additional information about HughesNet small business services,
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