

EGU2020-18637

<https://doi.org/10.5194/egusphere-egu2020-18637>

EGU General Assembly 2020

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



Certimus, a seismic station optimized for rapid deployment in rugged terrain

Marie Balon, Sofia Filippi, Sally Mohr, Phil Hill, and Neil Watkiss

Güralp Systems Ltd, United Kingdom of Great Britain and Northern Ireland (mbalon@guralp.com)

Operators of broadband seismic stations, particularly in hostile locations, are restricted in experiment design and deployment time-frames by the significant constraints of historical instrumentation. Manufacturers need to move away from the strict requirements on tilt tolerance and associated performance compromises, fixed frequency responses, unfriendly interfaces, slow data downloads and power-hungry systems in favour of simple, flexible and smart instruments that allow the operator to focus on the science at hand.

This transition is already happening with the evolution of seismic monitoring towards compact technologies: rapid-response deployments have, in recent years, become more and more feasible. However, installing low-noise, broadband instruments in remote areas has remained a challenge: low-noise force-balance broadband seismometers are typically heavy and delicate. They require significant infrastructure and logistics.

By developing the standalone, compact Certimus - with the same level of performance as traditional force-balance broadband seismometers - Güralp now offers researchers the opportunity to further push the boundaries of seismic monitoring and deploy stations in more and more challenging environments.

Unique sensor components allow Certimus to function up to 90 degrees tilt, removing the need for time-consuming centring, and allowing the station to be placed in small, hand-dug shallow holes. In 1s mode, the sensor will settle quickly and reliable data can be available in a matter of hours. The frequency range is fully configurable in the long-period corner to allow this level of flexibility: 120s, 10s and 1s to 100Hz.

Certimus offers easy ways to check installation integrity - State-of-Health and live waveforms - before leaving the site: both with the surface and the burial variants, either via Bluetooth, LCD screen or Web Interface.

Since power consumption is a major limitation, Certimus comes with an ultra-low power mode (under 300mW) and a rugged battery module to gain up to six weeks of data before retrieval - or before a permanent power supply is arranged.

All files are recorded in industry standard miniSEED format making data download and management simplistic and universal. The metadata auxiliary channels record a vast range of

state of health parameters to ensure optimal qualification of the seismic data with the environmental conditions of the seismic station.

All these advanced features are gathered in a compact, lightweight case that can be carried with all its accessories in a backpack to the most inaccessible areas. Quality seismic data is made available swiftly from anywhere, anytime.