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Advances in active integrated sensor systems

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ADVANCES IN ACTIVE INTEGRATED SENSOR SYSTEMS
Traditional seismic station setups include an analogue seismometer or accelerometer, digitizer and datalogger. Over time, the digitizer and datalogger have been incorporated into a single piece of hardware, with the next stage of evolution being the incorporation of the seismometer and digitizer into a single package. This has been an offering within the community for over 10 years now but, with both systems, the sensor components and digitizer remain quite separate elements, albeit contained in the one package.
Güralp's latest design in digital seismometers takes the digital package to the next level. By fully integrating digital functions into the feedback mechanism, we have created a sensor component that can operate at any angle and with a configurable long period corner, making deployments, quick, easy and efficient.
With this digital advancement, the instruments can host an abundance of ancillary sensors including temperature, humidity, magnetometer, MEMS accelerometer, pressure and many more state-of-health parameters. The data from these sensors are readily available for research outside of the seismic realm. This creates an intelligent system dynamic which Güralp aims to base further developments on.
We explore how the digital seismometer works and the benefits of the design approach in improving the performance of seismic networks.