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Innovative Technique on Earthquake Data Recording Based on an ARM IP Linux Base System

A sophisticated earthquake data recorder, based on ARM technology, has been developed and improved based on the last standards in the world of seismic data recording assigned for earthquake studies. Abilities of exact timing, low power consuming, long time field operating without maintenance, remote access and remote setting of parameters, customizable data sampling and various modes for recording with different formats of output data are just some the most important features of the developed instrument. It relies on a combination of commodity hardware and free, open-source software to deliver provable data recording quality. For accurate timing, routine GPS data is combined with the very low-jitter synchronization pulses modulated on the same signal and fed directly into a 24-bit analog-to-digital conversion unit. Samples thus acquired and time stamped are then collected and stored as self-describing, self-contained miniSEED streams, one per data channel. These seismography-specific functions are then presented, thanks to the versatility of the Linux kernel and accompanying userland tools, via a user-friendly web-based interface that can be accessed over any IP network on any web-capable device like general smart phones. Remote configuration, with proper access controls, is also provided through the interface.

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