

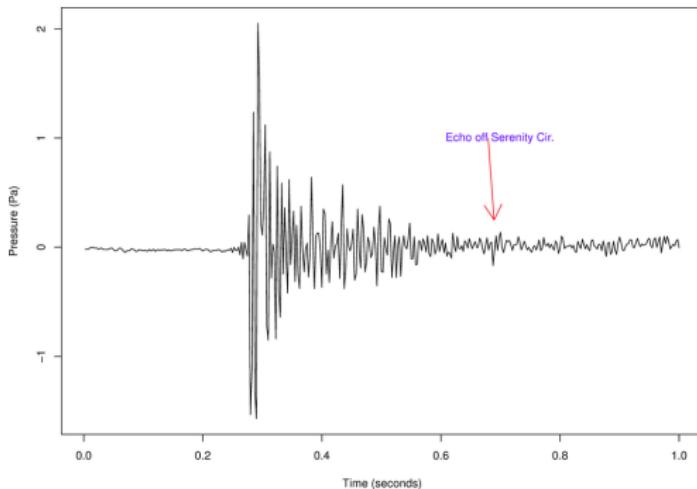
Precise Absolute Time for Geophysical Applications

SAND2016-7965PE

Daniel Bowman

Sandia National Laboratories

August 25, 2016

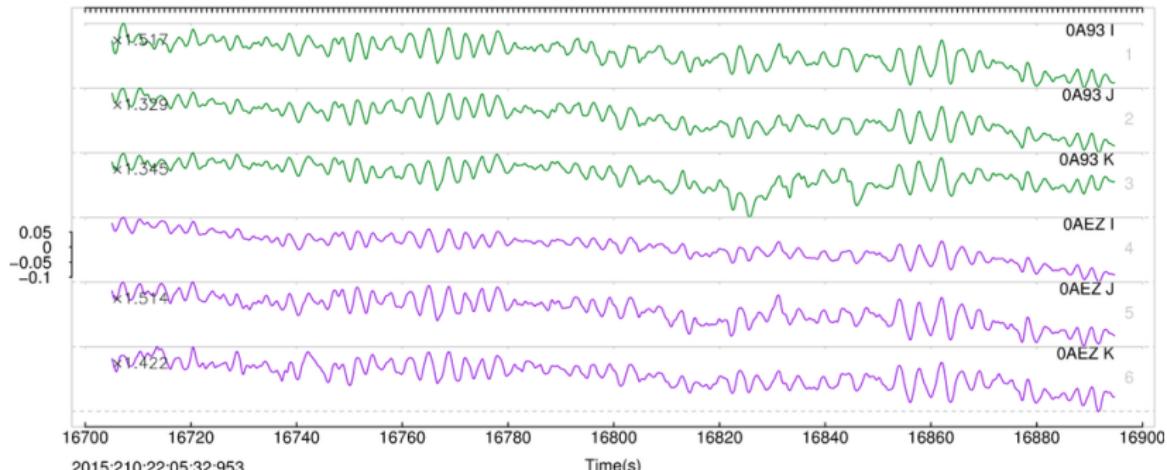


Timing is Everything

Each element of a geophysics network **must agree** on the time.
A one second error translates to:

- ▶ A sound wave traveling 34 m
- ▶ A seismic wave traveling 3 km
- ▶ An electromagnetic wave traveling 300,000 km

2015:211:02:43:58:021



GPS Time Sync Module

Current geophysical timing modules are **expensive, heavy, and proprietary**. You will change this.

- ▶ Up to 100 time stamps/second
- ▶ Millisecond resolution
- ▶ Cost less than \$100

The successful completion of this task will permit **sensor deployments en masse** on places such as active volcanoes.