

The FDSN Action Group on Marine Seismology Data and Metadata Standards

S33C-3312

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The OBS standards Action Group was initiated following the 2023 FDSN Working Group V: Portable Instrumentation meeting. We are working to make marine seismology data more available and useable, by establishing standards and by collating existing and needed software. We will propose these standards at the IASPEI meeting in September 2025.

This poster summarizes the major topics that need standards and/or software. Details of our proposals are in two files on our Github page (QR code above):

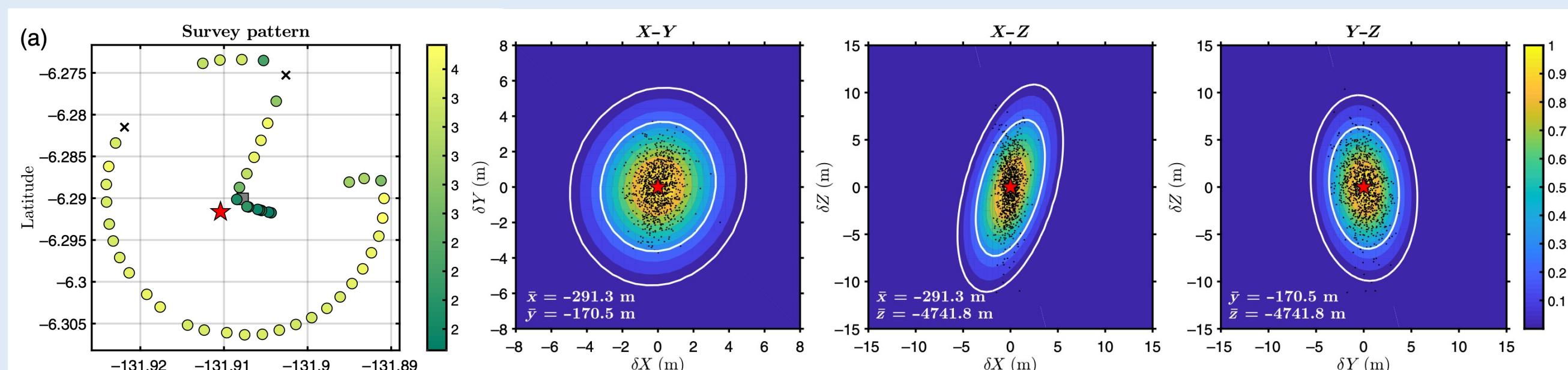
- standards.md: Proposed metadata and data standards.
- software.md: Existing and needed software.

For each topic, we summarize the issues, then list the needed elements in bold.

LOCALIZATION

OBSs are generally deployed in free fall and can drift several hundred meters from their deployment location:

Localization methods, software recommendations, metadata standards.

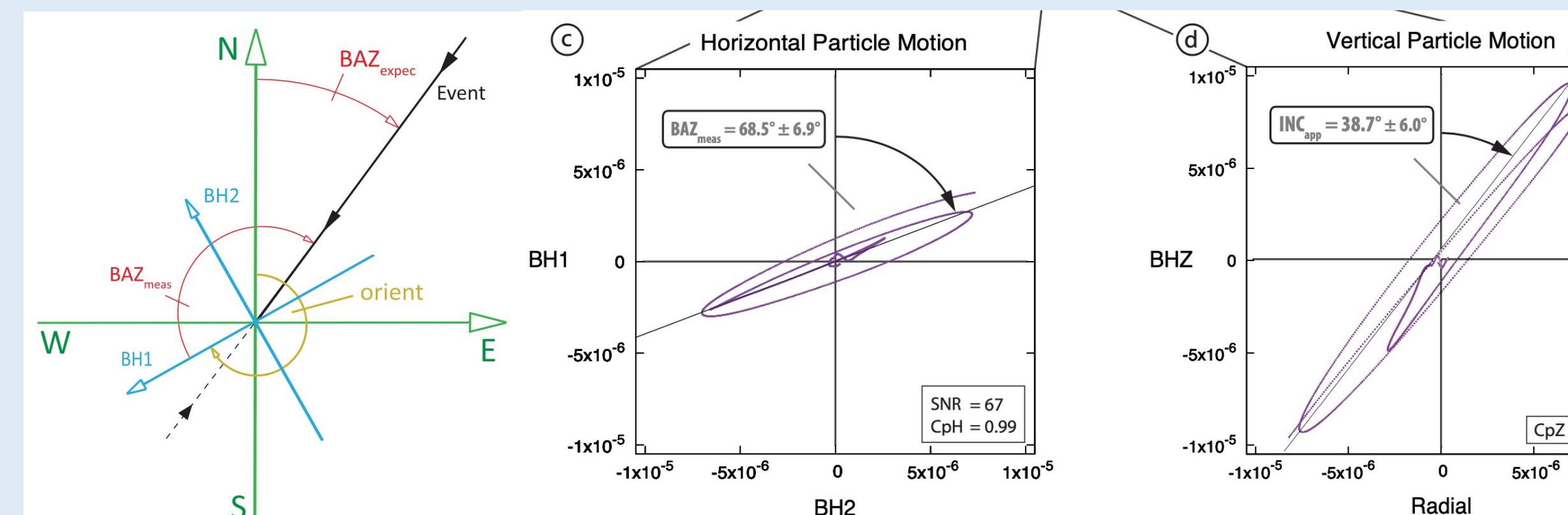


Locating OBSs using an acoustic survey (from [Russell et al., 2019](#)).

ORIENTATION

OBSs land in an unknown orientation and magnetic compasses are biased by OBS electronics:

Orientation methods, metadata standards, software recommendations.



Orientation calculation using the P-Pol Method (from [Scholz et al., 2017](#)).

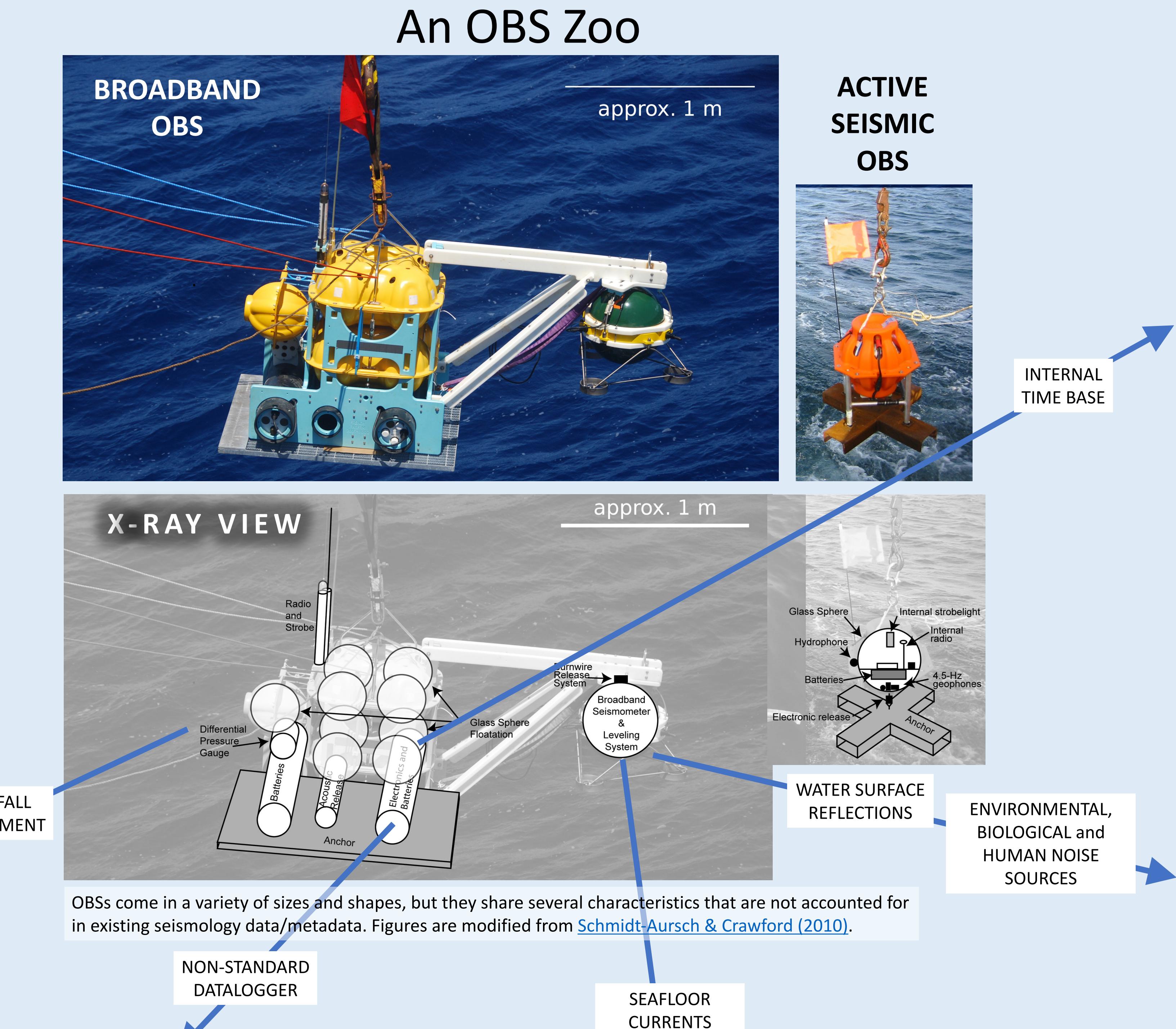
Most OBSs use non-standard data loggers that do not output miniSEED or StationXML files: Metadata standards, software recommendations.

DATA AND METADATA CONVERSION

Instrument component characteristics such as the leveler's precision affect data quality: Metadata standards.

INSTRUMENT COMPONENT SPECIFICATIONS

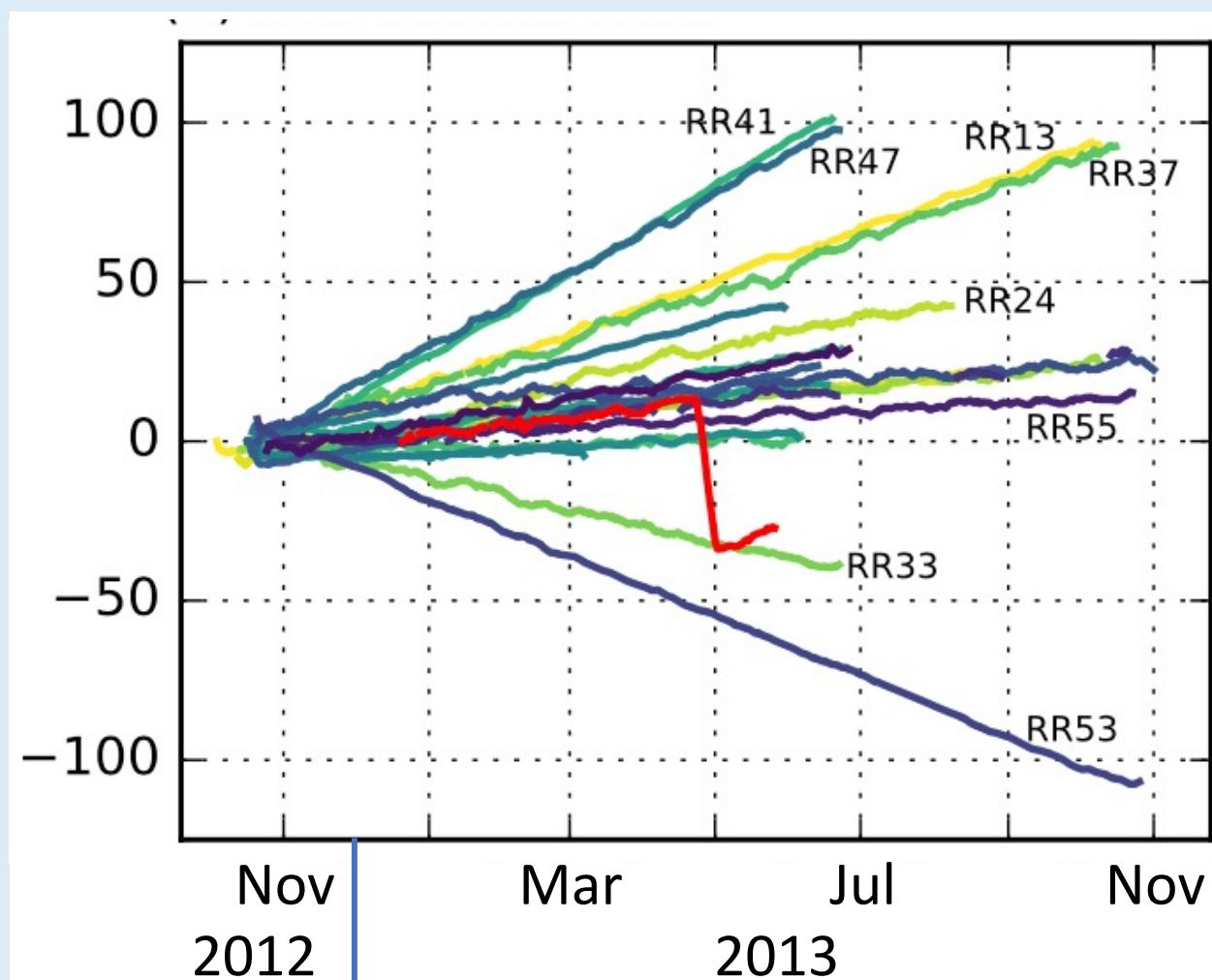
Instrument component characteristics such as the leveler's precision affect data quality: Metadata standards.



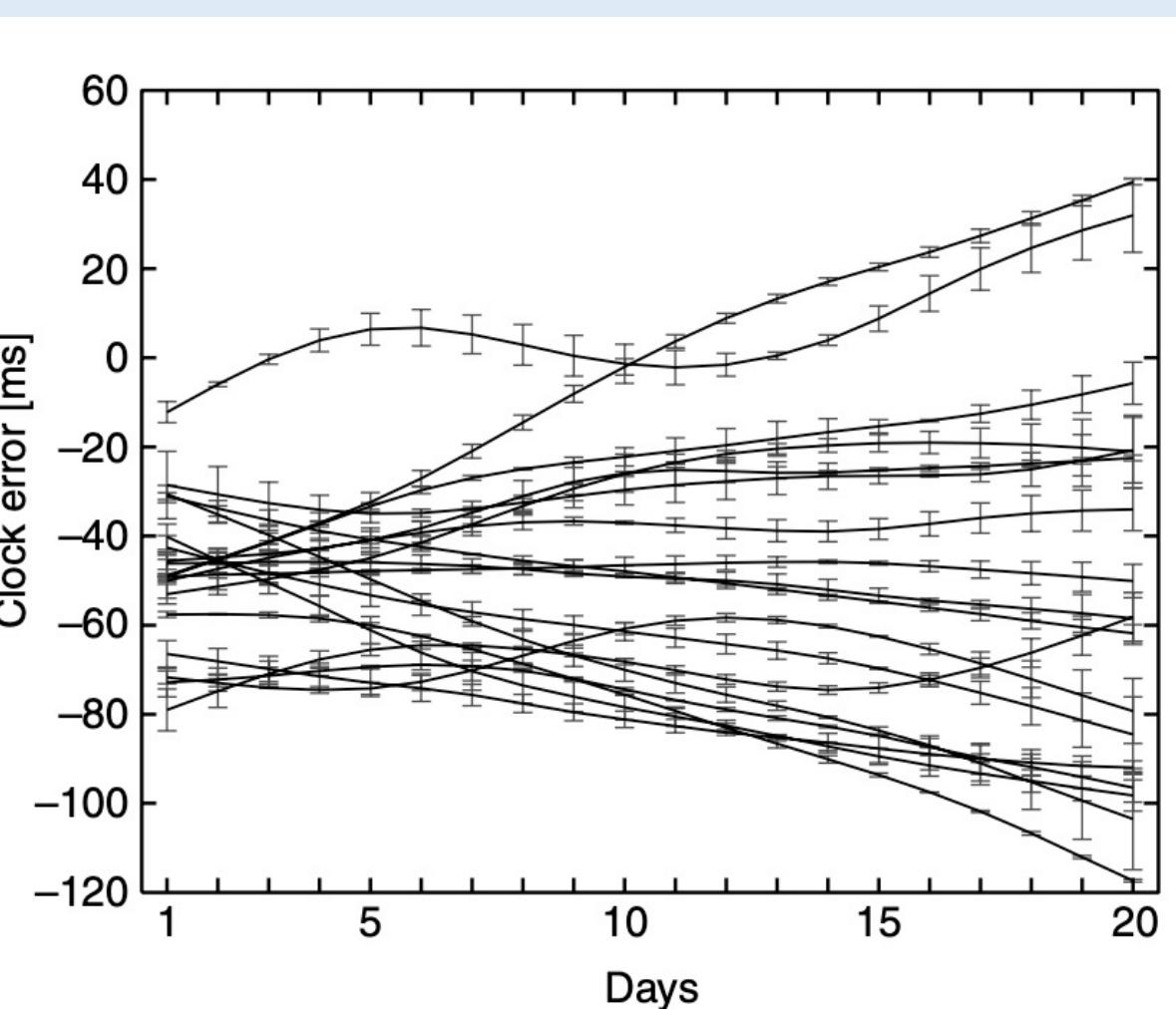
NON-STANDARD DATALOGGER
SEAFLOOR CURRENTS

CLOCK DRIFT AND LEAPSECONDS

OBSS use an internal time base, whose drift must be calculated and corrected. Leap seconds, a one-second adjustment to match UTC to observed solar time, must be inserted into the data: Drift calculation methods, metadata standards, software recommendations.



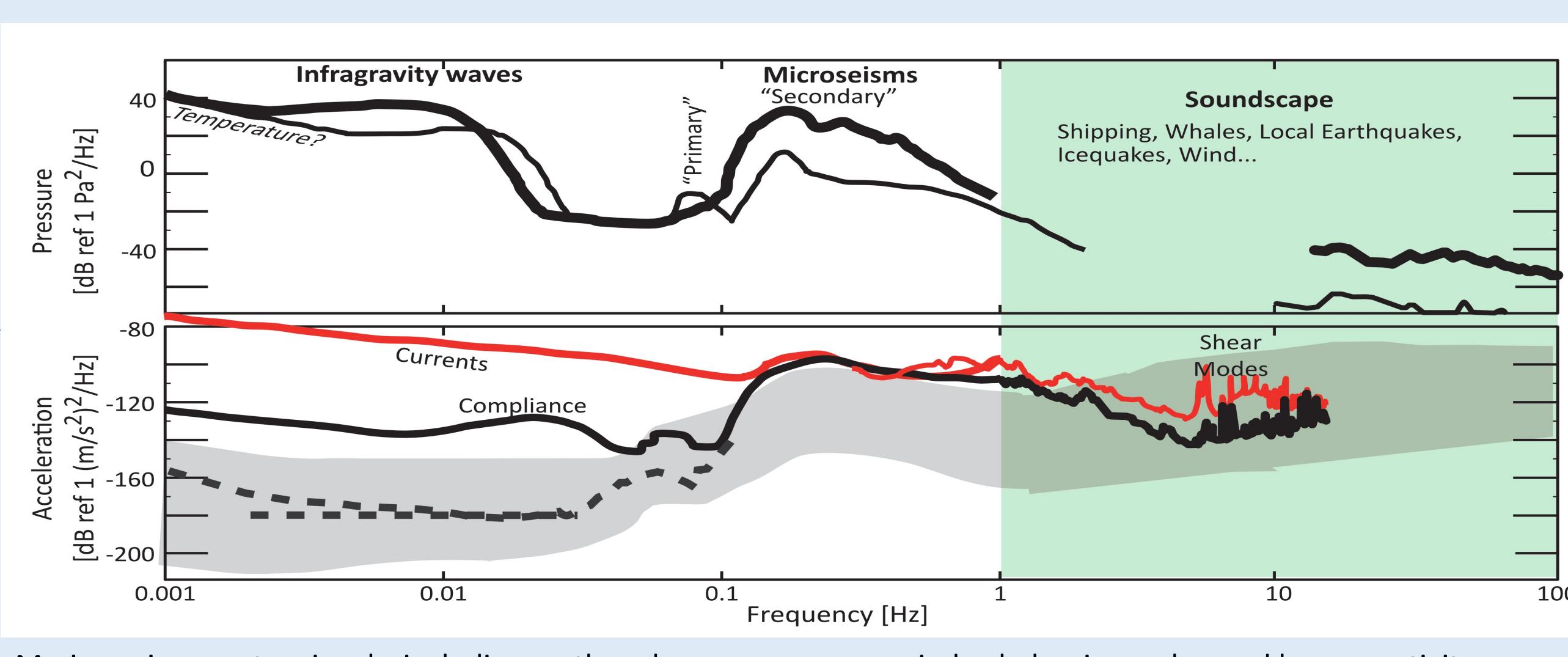
OBS clock drifts from the RHUM-RUM experiment ([Hable et al., 2018](#)).



Non-linear component of clock drift from the SISMOMAR experiment ([Gouédard et al., 2014](#)).

SIGNAL SEPARATION

There are many sources of signal on OBSS, extracting the one that interests you is crucial: Software recommendations.



Marine seismometer signals, including earthquakes, ocean waves, wind, whales, icequakes and human activity.

WHAT CAN YOU DO?

- Learn about / comment on the proposed standards.
- Suggest other standards.

HOW CAN YOU DO IT?

- Talk to the nice presenter!
- Write about it on the Issues page (QR code to the right).

