

## 6C recordings from Stromboli volcano

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Near field recordings and thus finite source inversions of volcano-induced events often suffer from unaccounted effects of local tilt, saturation of classical instrumentation, unknown shallow velocity structure and doubtful orientation of the instruments. In addition, if the station number is limited the results of moment tensor inversions are very often not well constrained. Recent advances in hardware development made it possible to install several very broadband, high sensitive rotational motion sensor, based on fiber optical gyroscope technology, in very close distance of an activate volcano, i.e., on Stromboli volcano in 2016, 2018 and 2022, respectively. Using this new instrument together with classical instrumentation (i.e., translational seismometer, infrasound and tilt meter) we were able to record more than four weeks of permanent strombolian activity at Stromboli during these two experiments. The resulting six axis measurements reveal clear rotations around all three coordinate axis. We are furthermore able to demonstrate how this six axes measurements can help to improve the location procedure due to the property of a fiber optic gyro to act as a physical wave polarizer. We also demonstrate the application of a single site shallow velocity estimation using volcanic background noise only, which will further improve the reliability of the source mechanism estimate. As a concluding step we will demonstrate how the use of sparse 6C measurement might be able to reduce the ambiguity of moment tensor inversions of volcano related signals.

**Primary author:** BRAUN, Thomas (Istituto Nazionale di Geofisica e Vulcanologia)

**Co-authors:** BERNAUER, Felix (Ludwig Maximilians University Munich); GUATTARI, Frederic (iXblue); IGEL, Heiner (Department of Earth and Environmental Science, Ludwig-Maximilians-University Munich); WASSERMANN, Joachim (Ludwig Maximilians University Munich); KEIL, Sabrina (Department of Earth and Environmental Science, Ludwig-Maximilians-University Munich)

**Presenter:** BRAUN, Thomas (Istituto Nazionale di Geofisica e Vulcanologia)

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