Geophysical Research Abstracts
Vol. 12, EGU2010-4576, 2010
EGU General Assembly 2010

ObsPy: A Python toolbox for Seismology, a Data Center Perspective

Moritz Beyreuther (1), Robert Barsch (1), Lion Krischer (1), Tobias Megies (1), Yannik Behr (2), and Joachim Wassermann (1)

(1) Department of Earth and Environmental Sciences (geophys. Observatory), Ludwig Maximilians University, Munich, Germany, (2) School of Geography Environment and Earth Sciences, Victoria University, Wellington, New Zealand

ObsPy: A Python toolbox for seismology (http://www.obspy.org) aims at filling the gap between interactive analysis and automatic data acquistion systems. Automatic batch analysis of continuous data streams or feeding a so far unknown formatted data stream into an acquistion system are two possible applications.

Python provides a platform independent, free and open source interpreter language including a large collection of scientific open-source modules thus allowing rapid development of prototype code. ObsPy extends Python by providing the seismologist with basic seismological routines, e.g. MiniSEED, SAC, GSE2 read and write support, various pickers, filters, instrument correction... The data itself is stored in numpy.ndarrays allowing powerful numerical array-programming modules like NumPy (http://numpy.scipy.org) or SciPy (http://scipy.org) to be used. Also SeisComP3 has a Python API which makes use of the previous mentioned modules, thus making it easy to extend SeisComP3 with the help of the ObsPy library.

Especially for data centers the ObsPy ArcLink and XSEED modules are of special interest. The ArcLink module makes it possible to easily automatically access the data via ArcLink or for testing the servers functionality. The XSEED module allows to convert data from dataless SEED to XML-SEED and back. The XML-SEED format is very verbose and easy extensible for internal purposes. For "public" distribution the resulting extended XML-SEED can always be converted back to the standard exchange format dataless SEED (loosing the additionally fields).

An application of ObsPy is running on the Azores. Here, seismic data are continuous recorded with National Instruments digitizers which are writing data in an binary format every 10s. ObsPy is used to feed the data in EarthWorm and SeisComP3 by decoding the binary format every 30s and appending the new data to a MiniSEED file. The MiniSEED file is continuously scanned by the `mseed_scan` module of the seedlink server and allows EarthWorm as well as SeisComP3 to access the data.