

# ObsPy

## A Python Framework for Seismology

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Tom Eulenfeld, Calum J Chamberlain, Thomas Lecocq  
& The ObsPy Development Team

LMU Munich, ETH Zurich, CDC Spokane, FSU Jena, VU Wellington, ROB Brussels, ...

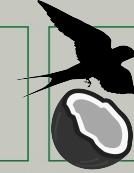
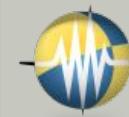
# Why Python for Seismology?

- general purpose language
- quick to learn, intuitive syntax
- huge scientific community
- cross-platform
- free and open source
- ...

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.. there's gotta be a more compelling reason



# Why Python for Seismology?

Strong bonds since early Middle Ages!

**Sir Bedevere:**

*“...and that, my liege, is how we know the Earth to be banana-shaped.”*

**King Arthur:**

*“This new learning amazes me, Sir Bedevere. Explain again how sheep's bladders may be employed to prevent earthquakes.”*

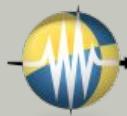


Monty Python and the Holy Grail

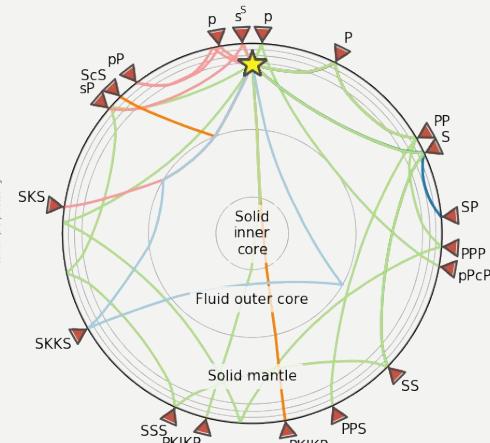
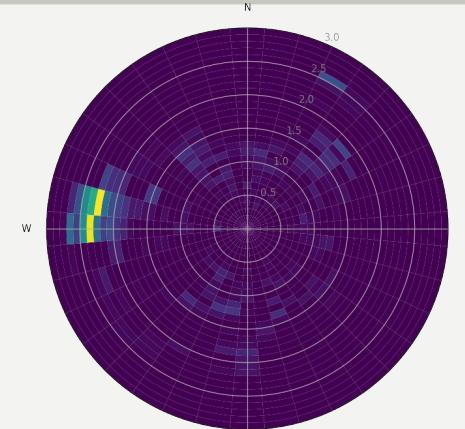
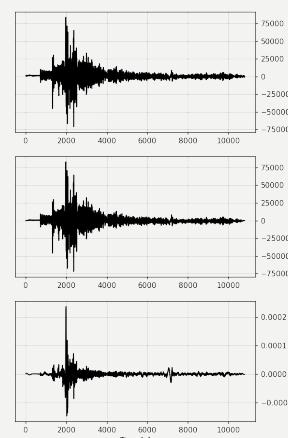
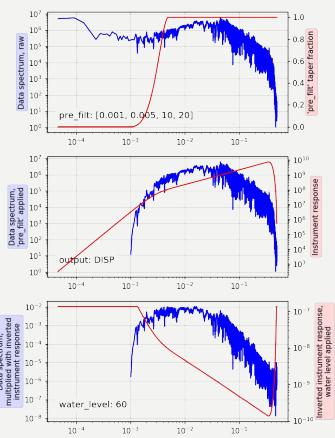
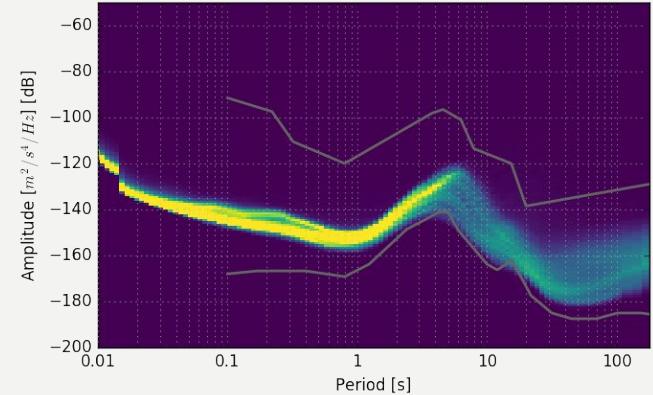
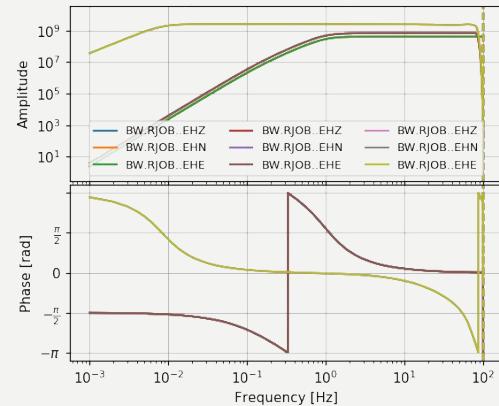
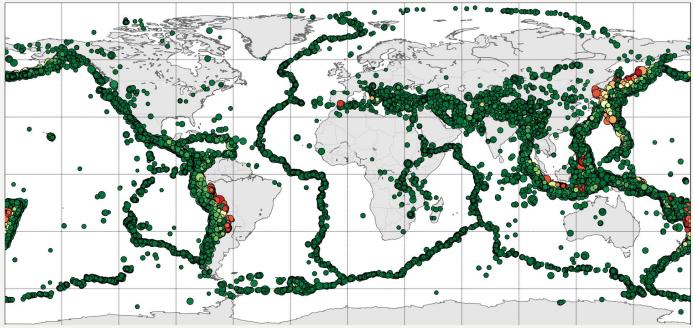
# Functionality

Python2+3 library for  $\pm$ everything you need for seismological research

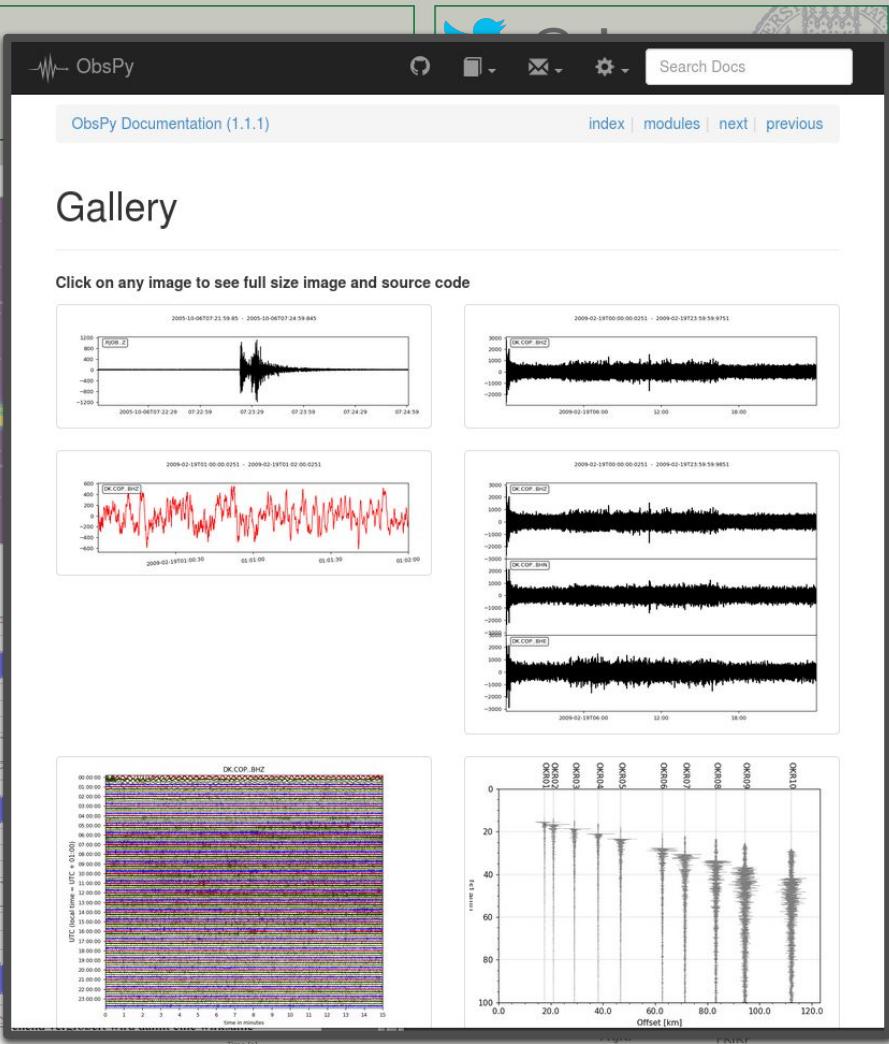
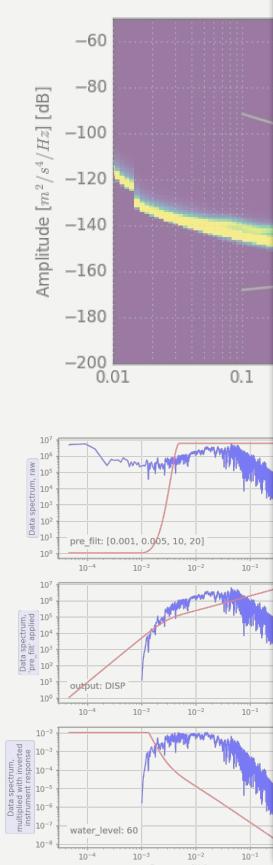
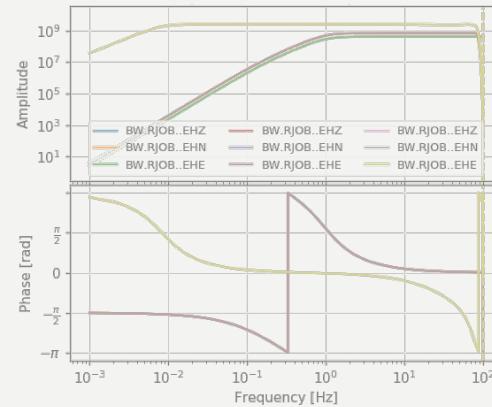
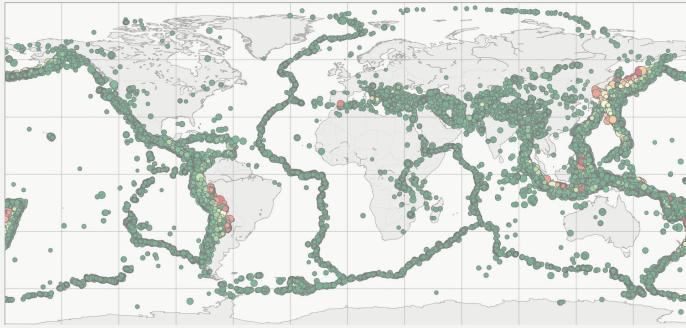
- read (x48) and write (x30) most important file formats
- object oriented core classes
  - waveforms
  - station/instrument metadata
  - event/earthquake metadata
- clients for all important data centers / protocols
- signal processing
- plotting



# Functionality



# Functionality





Fu

# Test Reports

 Overview of the latest 50 test reports

50 records per page

 show all  errors only

Report	Errors / Failures	ObsPy Version	CI	PR	Tests	Mods	Node	Python Version	System	Finished
✓ #107266	-	1.1.1.post0+1092.g51b1d0f17e	Tra	#2511	1927	48	travis-ci	3.7.3	Darwin (64bit)	21 hours ago
✓ #107264	-	1.1.1.post0+1092.g51b1d0f17e	Tra	#2511	1929	48	travis-ci	2.7.15	Darwin (64bit)	a day ago
✓ #107263	-	1.1.1.post0+1092.g51b1d0f17e	Tra	#2511	1928	48	travis-ci	3.6.7	Darwin (64bit)	a day ago
✓ #107261	-	1.1.1.post0+1092.g51b1d0f17e	Tra	#2511	1927	48	travis-ci	3.8.0	Linux (64bit)	a day ago
✓ #107260	-	1.1.1.post0+1092.g51b1d0f17e	Tra	#2511	1927	48	travis-ci	3.7.3	Linux (64bit)	a day ago
✓ #107258	-	1.1.1.post0+1092.g51b1d0f17e.obs...	Tra	#2511	1929	48	travis-ci	2.7.15	Linux (64bit)	a day ago
✓ #107257	-	1.1.1.post0+1092.g51b1d0f17e	Tra	#2511	1929	48	travis-ci	3.5.5	Linux (64bit)	a day ago
✓ #107256	-	1.1.1.post0+1092.g51b1d0f17e	Tra	#2511	1929	48	travis-ci	3.4.5	Linux (64bit)	a day ago
✓ #107255	-	1.1.1.post0+1092.g51b1d0f17e.obs...	Tra	#2511	1927	48	travis-ci	2.7.15	Linux (64bit)	a day ago
✓ #107254	-	1.1.1.post0+1092.g51b1d0f17e	Tra	#2511	1928	48	travis-ci	3.6.7	Linux (64bit)	a day ago
✗ #107251	22	1.1.1.post0+1046.g620afc148b.obs...	Tra	-	2149	57	travis-ci	2.7.15	Darwin (64bit)	a day ago
✗ #107247	24	1.1.1.post0+1046.g620afc148b.obs...	Tra	-	2149	57	travis-ci	2.7.15	Linux (64bit)	a day ago
✗ #107246	25	1.1.1.post0+1046.g620afc148b.obs...	Tra	-	2147	57	travis-ci	2.7.15	Linux (64bit)	a day ago
✓ #107242	-	1.1.1.post0+1050.gdc895d4691	Tra	#2478	1905	48	travis-ci	3.8.0	Darwin (64bit)	a day ago
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✓ #107238	-	1.1.1.post0+1050.gdc895d4691	Tra	#2478	1907	48	travis-ci	2.7.15	Darwin (64bit)	a day ago
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**System****all**Darwin  
FreeBSD  
Linux  
Windows**Architecture****all**32bit  
64bit**Python****all**3.8.0  
3.7.5  
3.7.4  
3.7.3  
3.7.2  
3.7.1  
3.7.0  
3.6.9  
3.6.8  
3.6.7  
3.6.6  
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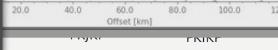
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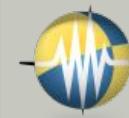


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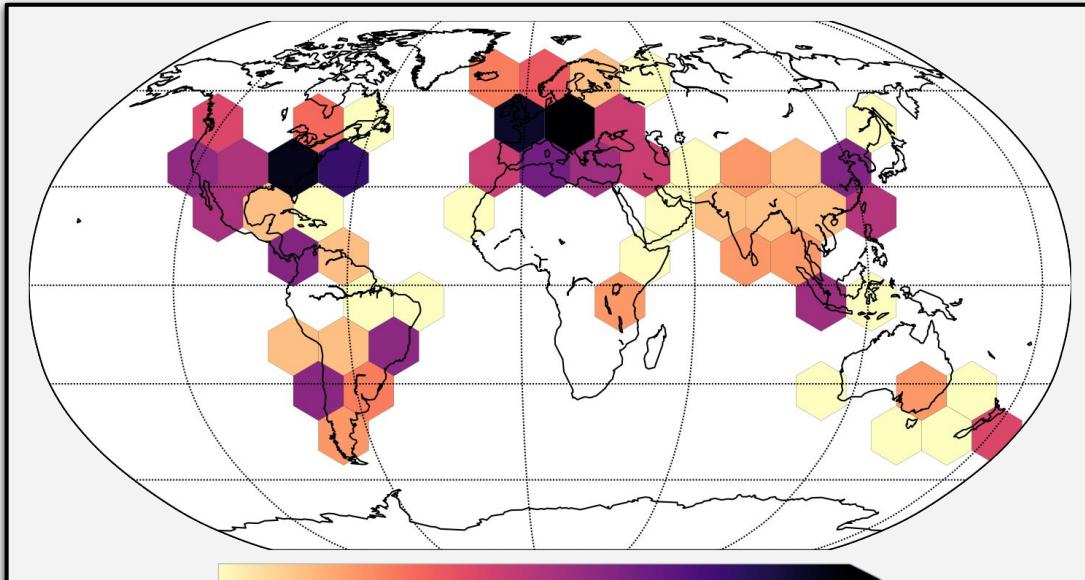


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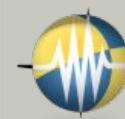




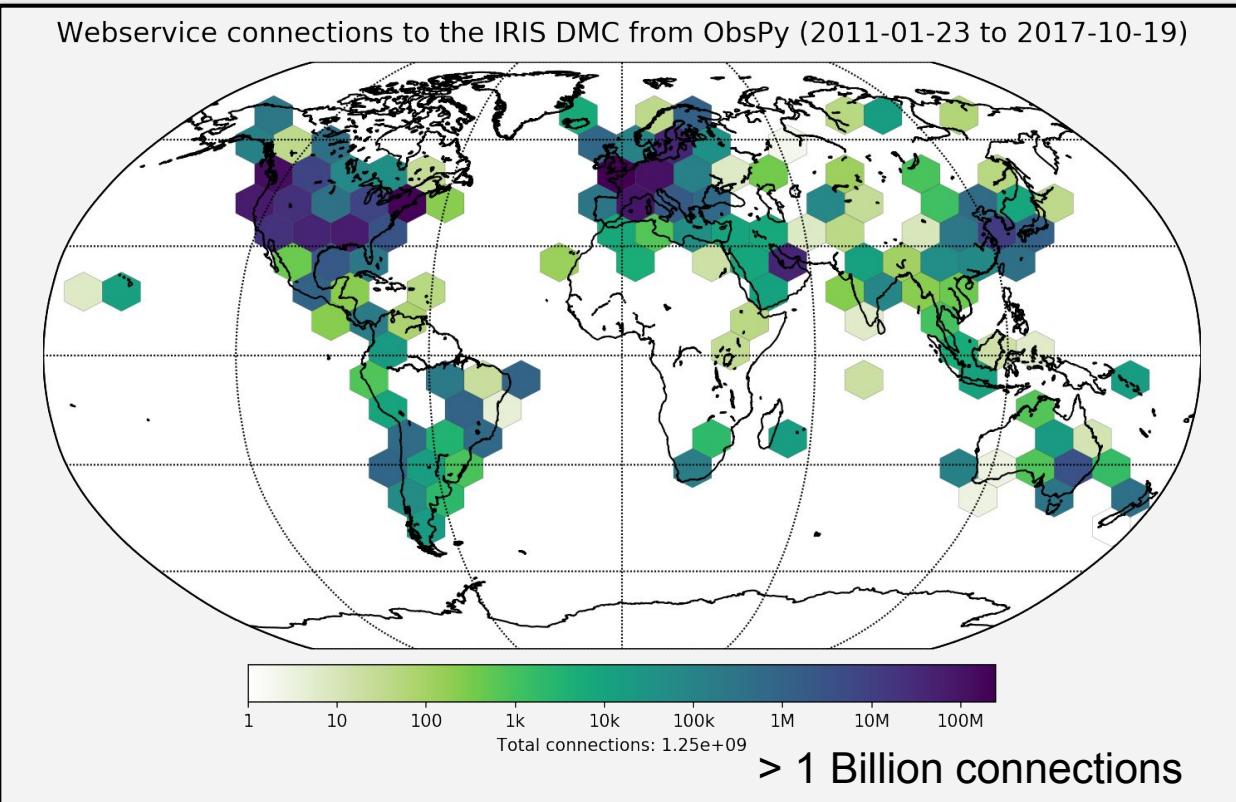
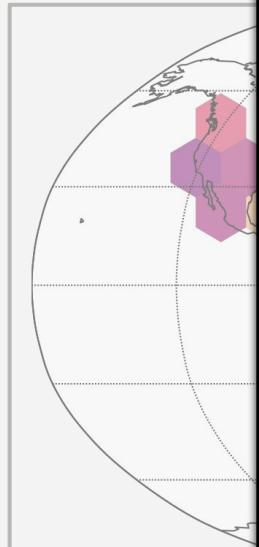
# Impact

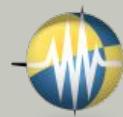


ObsPy 1.1.0-1 Debian/Ubuntu package downloads: 795 unique IPs  
This represents only a small subset of all Obspy downloads.

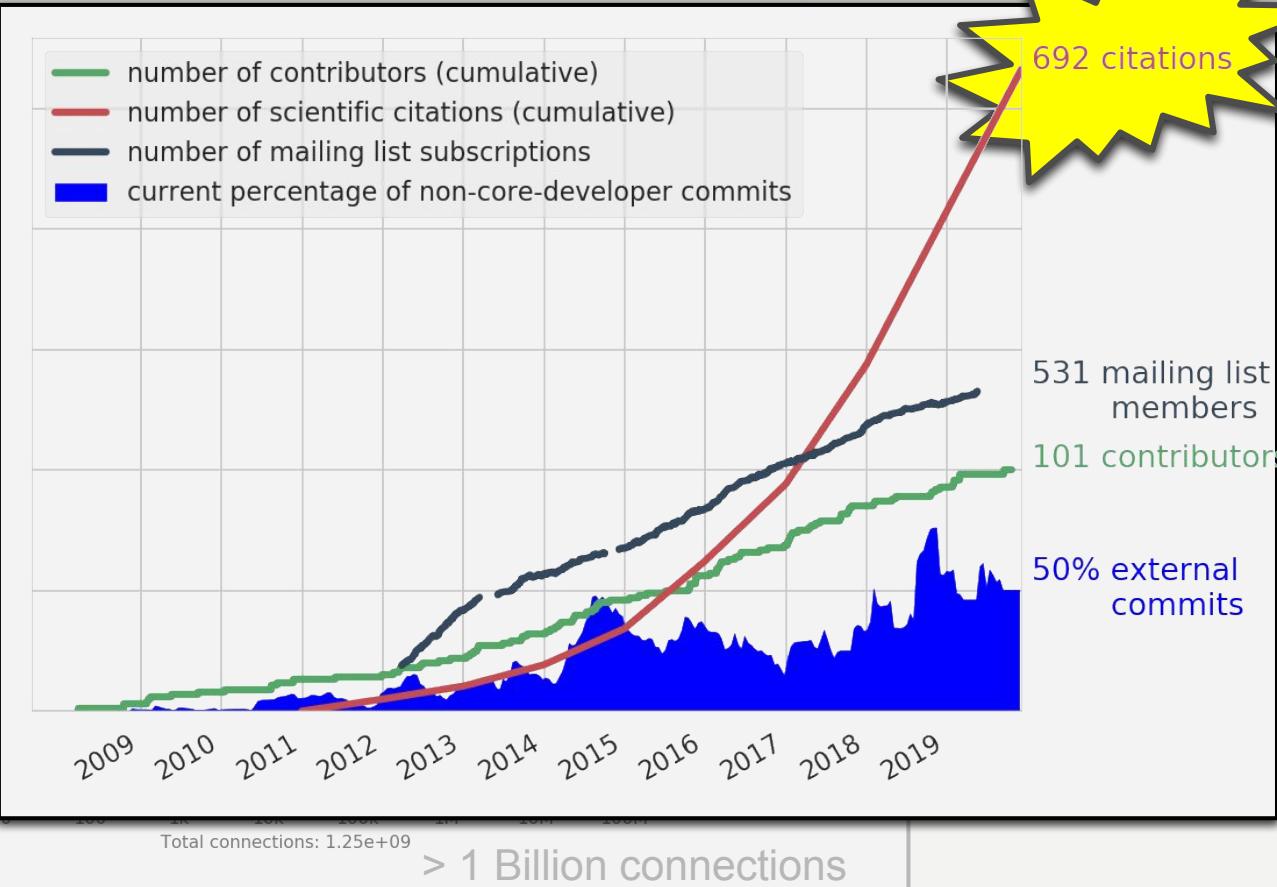
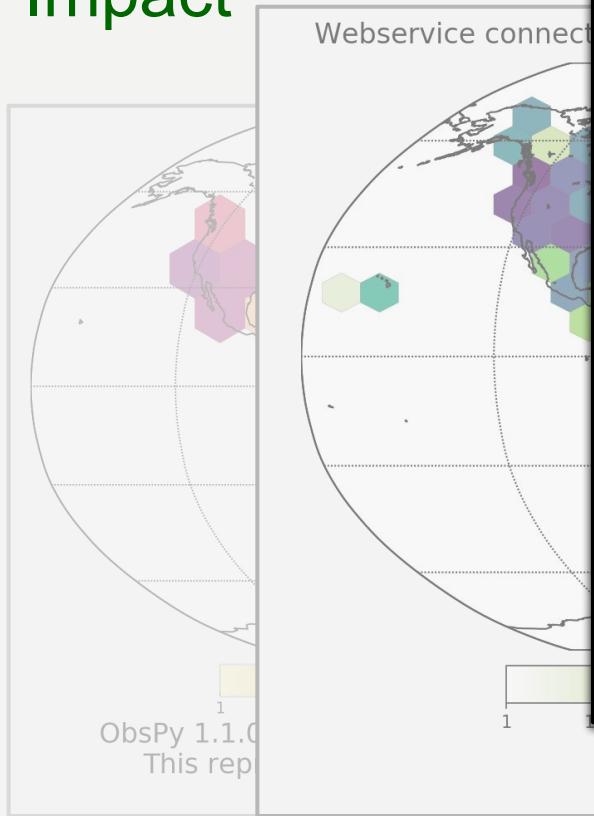


# Impact

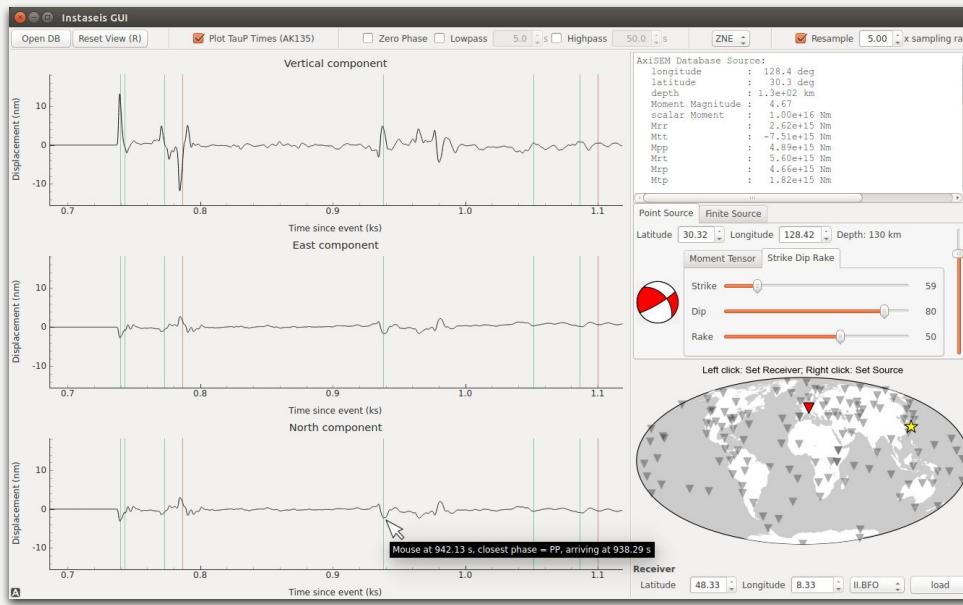




# Impact

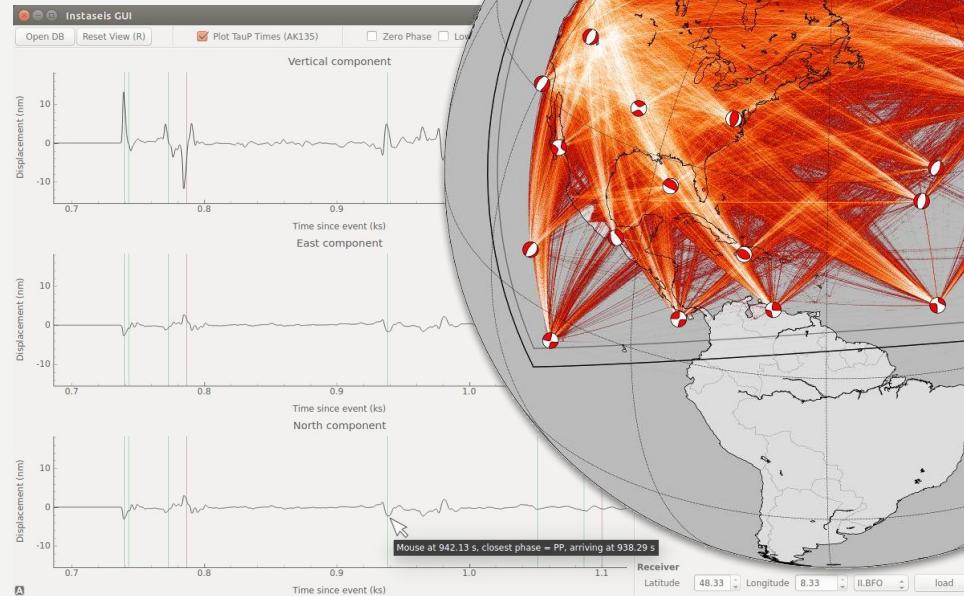


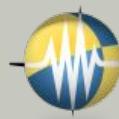
# Impact



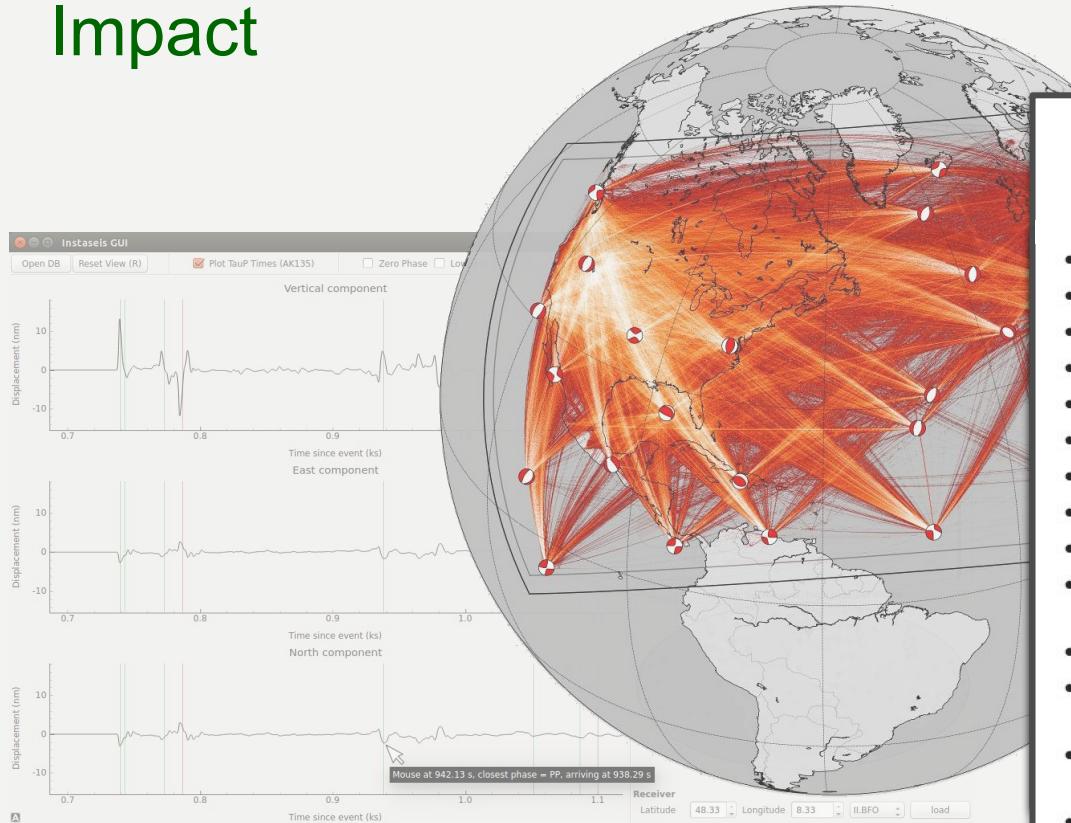


# Impact





# Impact

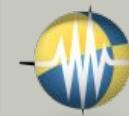


...triple digits of reusing projects?!

## Use Cases / Applications Using ObsPy

Feel free to add your own project to the list.

- [LASIF](#) - Large-Scale Seismic Inversion Framework
- [pyflex](#) - Enhanced port of FLEXWIN
- [hypoDDpy](#) - Run hypoDD in a data driven manner.
- [wfs\\_input\\_generator](#) - Generate input files for many waveform solvers directly from data
- [rf](#) - Calculate receiver functions.
- [Qopen](#) - Separation of intrinsic and scattering Q by envelope inversion.
- [EQcorrscan](#) - Match-filter earthquake detection
- [PhasePApy](#) - a Seismic Phase Picker and Associator program package
- [Jane](#) - Document database for Seismology
- [MouseTrap](#) - A module for detecting a special type of disturbance (so called mouse, pinfling step) in seismic records.
- [Lazylyst](#) - A GUI created for time series review, using a flexible framework for new work
- [REDPy](#) - A tool for automated detection and analysis of repeating earthquakes in continuous data.
- [CodaNorm](#) - A software package for the body-wave attenuation calculation by the coda normalization method
- [ISOLA-ObsPy](#) - A seismic source inversion module. Events are described as point source centroid moment tensors.



## News / Outlook

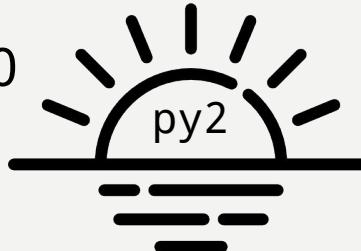
NumFOCUS affiliated project

Upcoming major release (next few weeks)

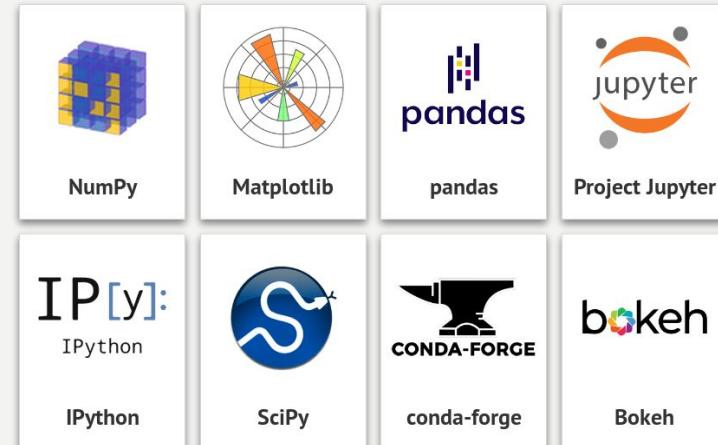
- loads of new functionality
- last release supporting both Python 2+3

Soon after: release 2.0.0

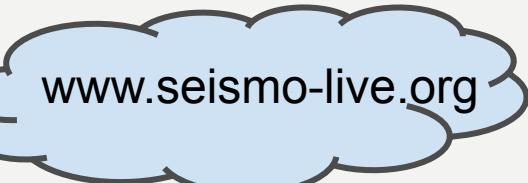
- Same functionality as 1.2.0
- Python 3 only
- huge code base cleanup



<https://numfocus.org/>



We welcome everybody to be part of the project!  
<https://github.com/obspy/obspy>



[www.seismo-live.org](http://www.seismo-live.org)

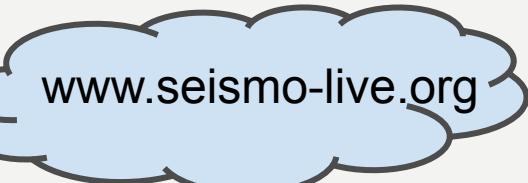
The Jupyter Notebook Library for Seismology

Friday 10:35 ED52A-02



We welcome everybody to be part of the project!  
<https://github.com/obspy/obspy>

Thank you for your attention!



[www.seismo-live.org](http://www.seismo-live.org)

The Jupyter Notebook Library for Seismology

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