Supplementary data for "Companion guide to the Marsquake Catalog from InSight, Sols 0-478: data content and non-seismic events"

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Description

This repository includes sample data sets (both seismic and auxiliary channels - such as pressure) as a supplement to "Companion guide to the Marsquake Catalog from InSight, Sols 0-478: data content and non-seismic events". Our purpose is to provide fast access to a set of sample data for further experimenting, and simple scripts for readers who may not be familiar with Python or tools such as FDSN web services (`http://www.fdsn.org/webservices/`).

Note that the InSight data (InSight Mars SEIS Data Service, 2019) is publicly available from the IPGP Datacenter, IRIS-DMC, and NASA PDS (National Aeronautics and Space Administration Planetary Data System) (`https://pds.nasa.gov/`).

How to download more InSight data

Using the FDSN dataselect/station web services via IRIS or IPGP is the most proper way to access the InSight data. For instance, the url below downloads 20 sps VBB data (02.BH?) for one day between 2019-10-01 and 2019-10-02:

`http://service.iris.edu/fdsnws/dataselect/1/query?net=XB&sta=ELYSE&loc=02&cha=BH?&starttime=2019-10-01T00:00:00&endtime=2019-10-02T00:00:00&format=miniseed&nodata=404`

This url can be used directly via browsers, or tools such as *wget*. A more programmatic way using ObsPy (Krischer et al., 2015) is given as an example in `data_download.py` script.

Repository content

1. `README.pdf`: This file,
2. `*.py` files: Python scripts for basic data processing and plotting some of the non-seismic events presented in the main text. For custom made sol-long spectrogram images, we only provide the data.
3. `core` subfolder: Further source codes for utilities like LMST-UTC conversions.

4. `data/waveform` subfolder: The sample mini-seed files for the waveforms. For custom made sol-long spectrogram images, data is listed under individual sub-folders per image (e.g. `data/waveform/Fig4`).
5. `data/dataless` subfolder: An example station/channel metadata in dataless seed format.

All mini-seed files under `data` directory are daily volumes, covering the martian sol in interest. Each plotting module is able select the appropriate time frame to replicate the example given in the main paper.

Running the example scripts

Download this repository and extract to a suitable location. Navigate to the same location on your terminal; then type `python<modulename>.py` to execute a particular script: `python wind.py`

All codes have been tested for Python 2.7, and should be compatible with Python 3.

References

InSight Mars SEIS Data Service, 2019. SEIS raw data, Insight Mission. IPGP, JPL, CNES, ETHZ, ICL, MPS, ISAE-Supaero, LPG, MFSC. doi:{10.18715/SEIS.INSIGHT.XB_2016}.

Krischer, L., Megies, T., Barsch, R., Beyreuther, M., Lecocq, T., Caudron, C., Wassermann, J., 2015. ObsPy: a bridge for seismology into the scientific Python ecosystem. Comput. Sci. Discov. 8, 014003.