New Data Products at the IRIS DMC

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Summary

Since 2009 IRIS Data Management Center (DMC) data products have served the seismology community in a variety of ways with data derived products and tools to facilitate research. We are expanding our products beyond those derived from traditional seismic data and highlight three new products.

The Noise Toolkit product, available soon, is based on hourly power spectra calculated for broadband (BH) channels at hundreds of global stations. The Noise Toolkit includes polarization attributes of noise, which can help gain insight into the propagation mode of ambient noise. It also measures microseism energy in variable length time windows, making it ripe for data mining and other applications such as 'weather maps' of seismic noise.
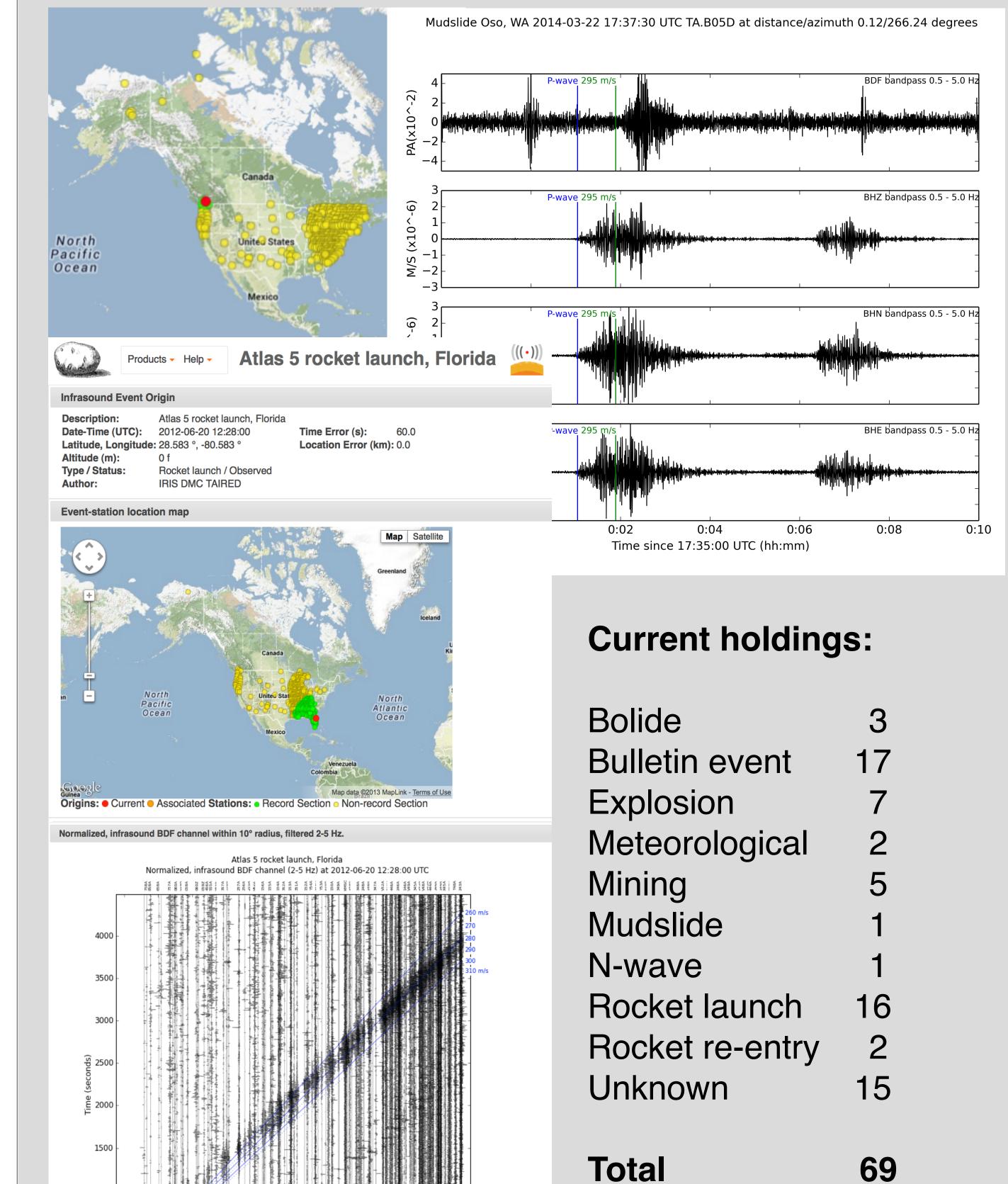
The TA Infrasound Reference Event Database (TAIRED) is a user-supported evolving infrasound event database that serves as a reference event depository where researchers can contribute new events, provide alternate solutions for existing natural and man made seismoacoustic sources and find sample infrasound events for their research.

Finally, we are working with the AxiSEM project on a large, multi-terabyte database of 2D axisymmetric SEM Green's functions. We will couple this database with a processing system allowing customizable, on-demand synthetic seismograms. Synthetics will be available for any source-receiver geometry and include attenuation, anisotropy and any source type (e.g. GCMT, point-source, user-uploaded source-time function). These synthetic seismograms will be available via a web service; we will also provide simple and intuitive command line clients to make access easy.

TAIRED - TA Infrasound Reference Event DB

http://www.iris.edu/dms/products/infrasound-taired/

- a user-supported evolving database
- serves as an infrasound reference event depository

Current holdings:

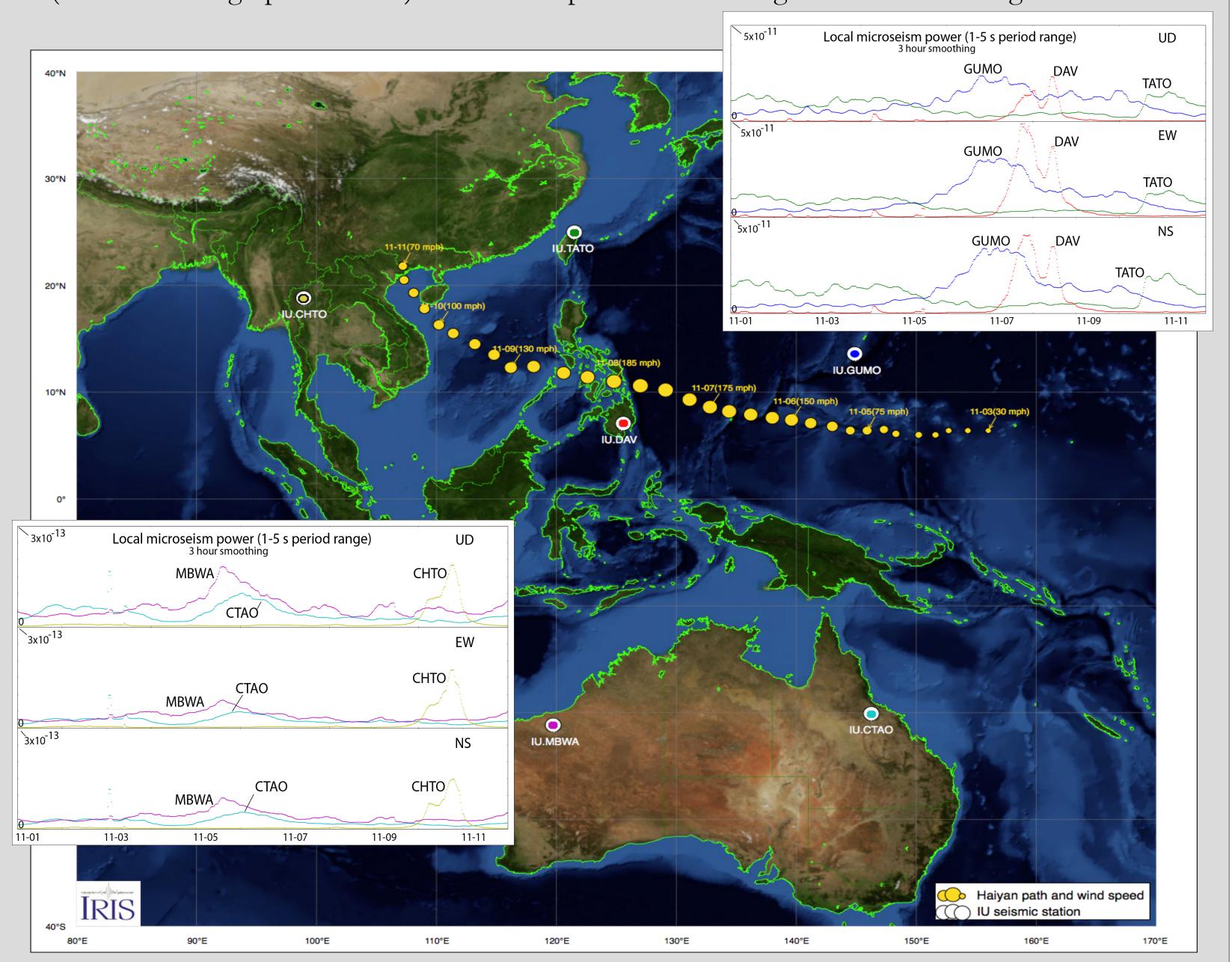|	
Bolide	3
Bulletin event	17
Explosion	7
Meteorological	2
Mining	5
Mudslide	1
N-wave	1
Rocket launch	16
Rocket re-entry	2
Unknown	15
Total	**69**

Noise Toolkit Products (coming soon)

Noise Toolkit products will be based on hourly power spectra calculated for broadband (BH) channels at hundreds of stations. The Noise Toolkit will provide 2 types of data products:
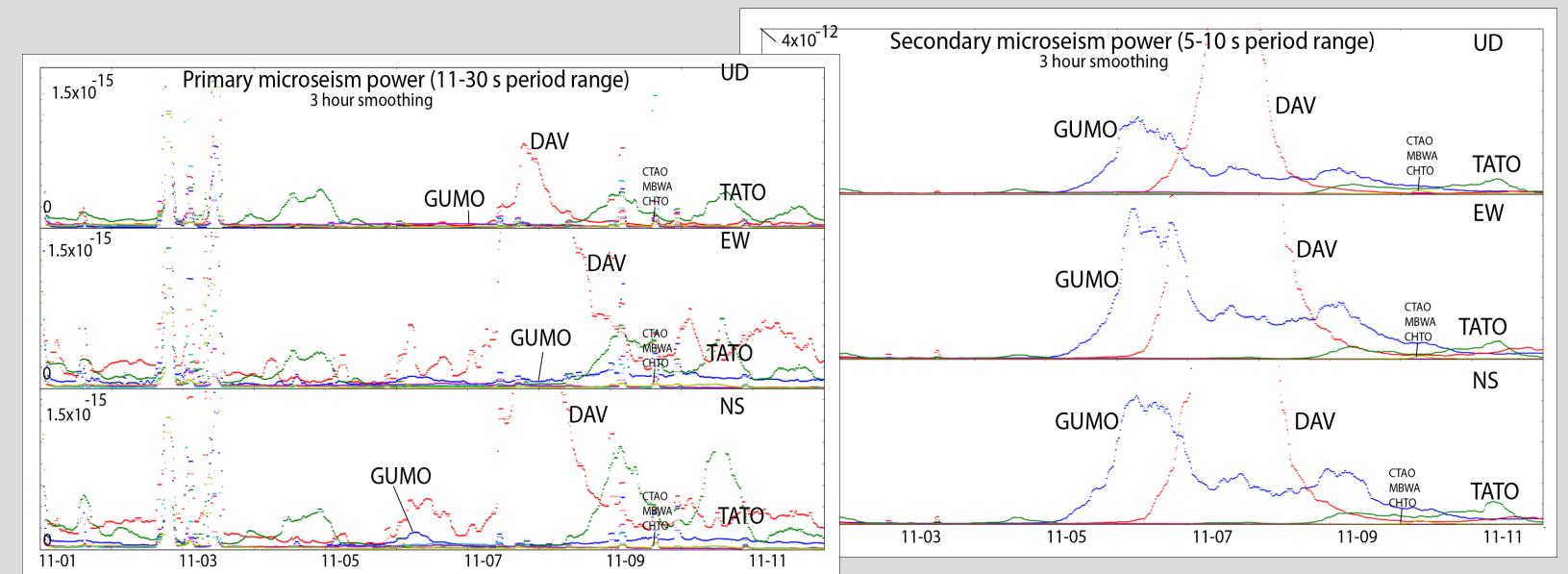
- *Frequency dependent polarization analysis*
  Systematic automated polarization analysis of seismic noise recorded by three-component seismometers

- *Microseism Energy*
  - a near real-time microseism energy-based data product
  - calculate median microseism energy at different period bands for a range of PSD median time windows

Looking at Super Typhoon Haiyan (November 2013)

An example of the Noise toolkit data product's ability to map the microseism energy during a major storm. The example is based on the November 1 - 11, 2013 microseisms at 4 IU network (Global Seismograph Network) stations at 3 period bands using a 3 hour smoothing window.

Primary microseism (11s - 30s) power variations (left) and the secondary microseism (5-10s) power variations (right) at the above 6 stations with DAV dominating the plots.

In Development (subject to change)

6TB Green's Function database at IRIS

- Resolution: 2-8 to 100 sec
- 0.05 deg distance spacing
- 100 source depths
- 60 minutes duration
- Reference 1D models: AK135, PREM, PREM-cont, PREM-ocean (with 0, 1, 3, 5 km water layers)

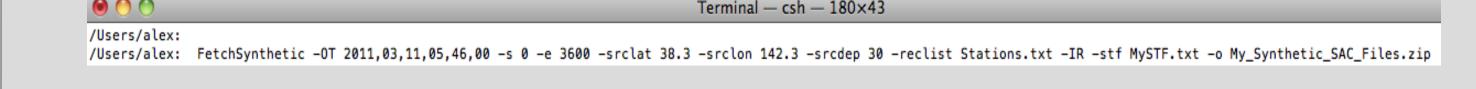### Customizations delivered to the user

- Any source location, any receiver location, 100 source depths
- Origin time, start and end times
- Components: Z, N, E, radial, transverse
- Radiation pattern from moment tensor or GCMT ID (optional)
- Convolved with source-time function (optional)
- Convolved with instrument response (optional)

Output

- Fully processed, header loaded SAC file synthetic seismograms

Access via webservices

- Well suited for integration into existing processing systems.
- Write your own script to retrieve synthetics.
- Simple, one command line accessing using a script from the DMC.

Request for data product collaborative development proposals
Due: June 15, 2014

IRIS Data Services invites proposals for collaborative data product development. This is an excellent opportunity for researchers to put forward unique and useful data product idas and collaborate with the DMC in the development of the product. Unlike previous years and due to budget constraints, funding will not be awarded for product development. Instead, you will be working with the DMC staff and with access to resources at the DMC to make your product idea a reality and have it hosted by the DMC. This opportunity is open to all.

Ask for further details!