Accessing Data at the IRIS DMC

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IRIS Data Management Center

IRIS

IRIS DS Mission Statement

"To provide reliable and efficient access to high quality seismological and related geophysical data, generated by IRIS and its domestic and international partners, and to enable all parties interested in using these data to do so in a straightforward and efficient manner."

Types of Data Access

- Streaming of real-time data
- Asynchronous (batch) requests
  - Continuous time series Event-oriented time series
  - Metadata
- Web service requests
  - Continuous time series
  - Metadata

Giving credit for data

www.fdsn.org/citation/

***GSN** / IRIS Global Seismographic Network (including H2, IC, II, IU, MS)*

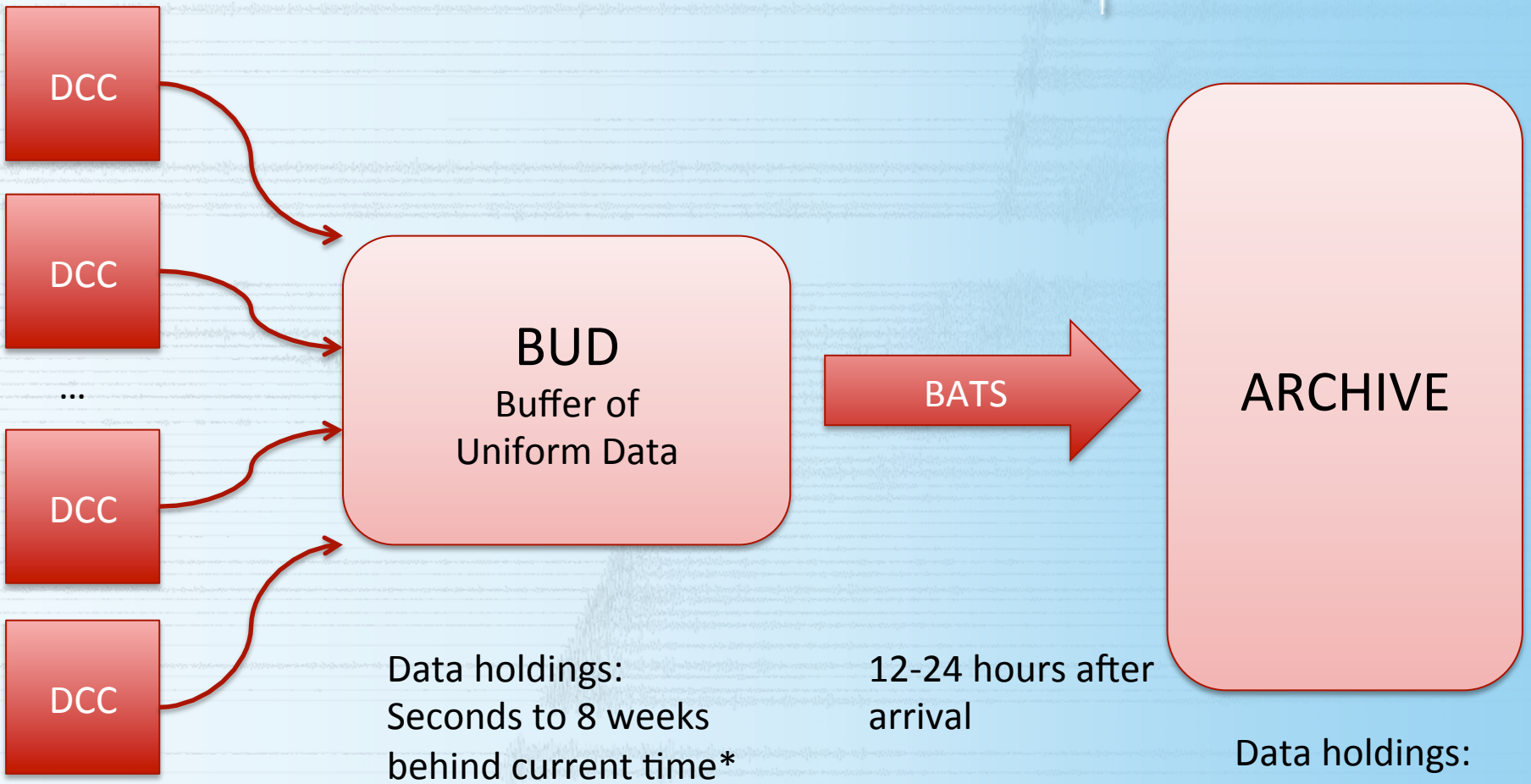
Global Seismographic Network is a cooperative scientific facility operated jointly by the Incorporated Research Institutions for Seismology (IRIS), the United States Geological Survey (USGS), and the National Science Foundation (NSF).
http://www.iris.edu/hq/programs/gsn

***H2** / Hawaii-2 Observatory Seismic System (H2O)*
University of Hawaii

Duennebier, F.K., David W. Harris, James Jolly, James Babinec, David Copson, Kurt Stiffel, The Hawaii-2 Observatory Seismic System, IEEE Jnl. Ocean Engineering, V 27, # 2, pp 212-217, Apr 2002

***HK** / Hong Kong Observatory*

Real-time data flow to the DMC archive



Streaming Real-Time Data from IRIS DMC

- What real-time data are available?

  To view all currently available real-time stations:

  – http://www.iris.edu/mda/_REALTIME (list)

  – http://www.iris.edu/gmap/_REALTIME (map)

  Currently 2917 stations (On May 21, 2015) and >32,000 chans

- How can I stream this data?
  – **SeedLink** server, publically accessible

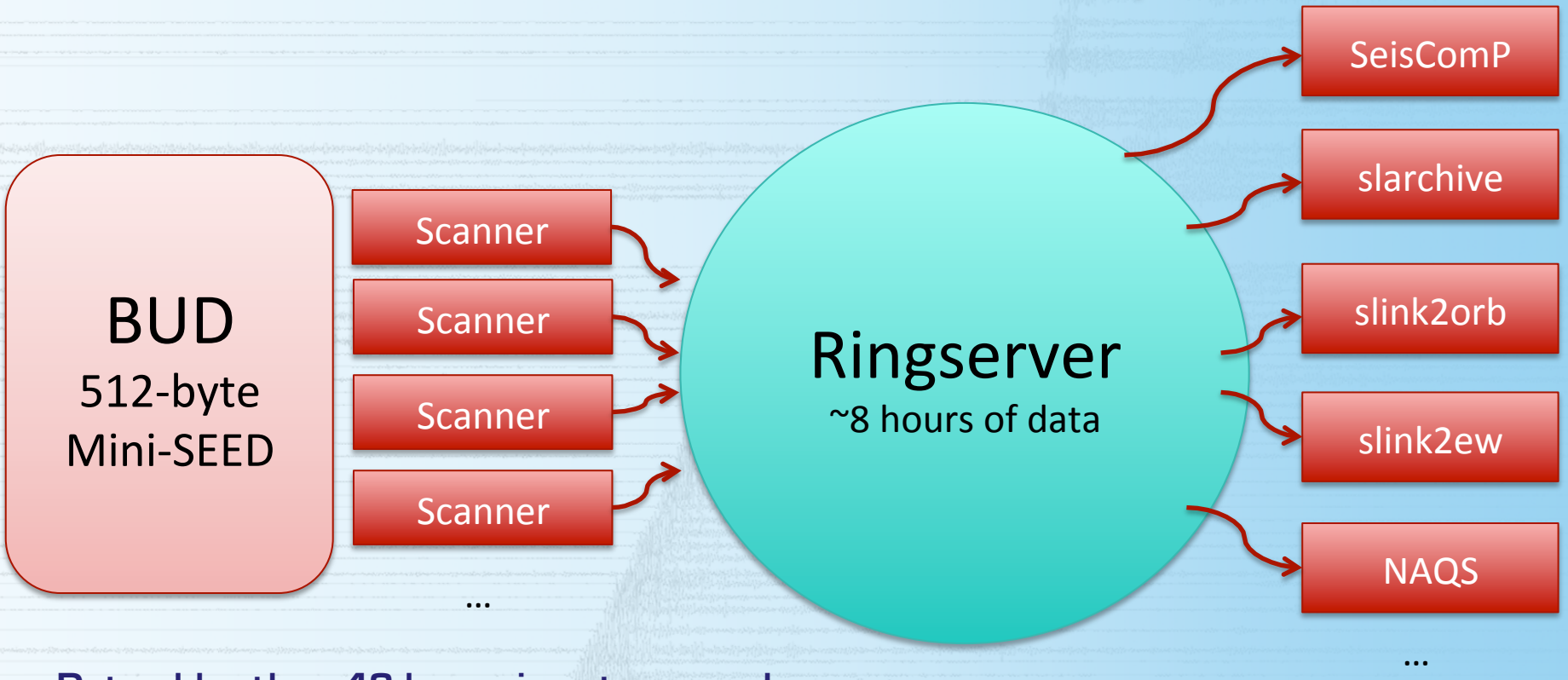
    Host: rtserve.iris.washington.edu

    Port: 18000

  – All open data in the BUD is available via **SeedLink** with minimal added latency.

    Median latency: 40 Hz => 12 seconds, 1 Hz => 160 seconds

SeedLink export data flow



Data older than 48 hours is not scanned.

Users are welcome to any data available via the server as long as client actions do not inhibit our capability to deliver data to other users.

IRIS Supported SeedLink clients:

http://ds.iris.edu/ds/nodes/dmc/services/seedlink/

Available Software

The following software is available from the DMC at http://www.iris.edu/pub/programs/SeedLink/. For details about each individual software package, please visit the software pages, or click the package name link below:

- **libslink** – A SeedLink client library written in C.
- **slink2orb** – SeedLink to Antelope ORB client (licensed Antelope libraries are required).
- **slink2ew** – SeedLink to Earthworm client. Windows binaries available. The most recent release of slink2ew is in the Earthworm source code repository.
- **slarchive** – A SeedLink client that writes all received data to the local disk in user defined directory and file structures.
- **slinktool** – Command line SeedLink client useful for data stream inspection and server testing.
- **ewexport_plugin** – An Earthworm export process plugin (data source) for a seedlink server.
- **orbplugin** – An Antelope ORB plugin (data source) for a seedlink server (licensed Antelope libraries are required).

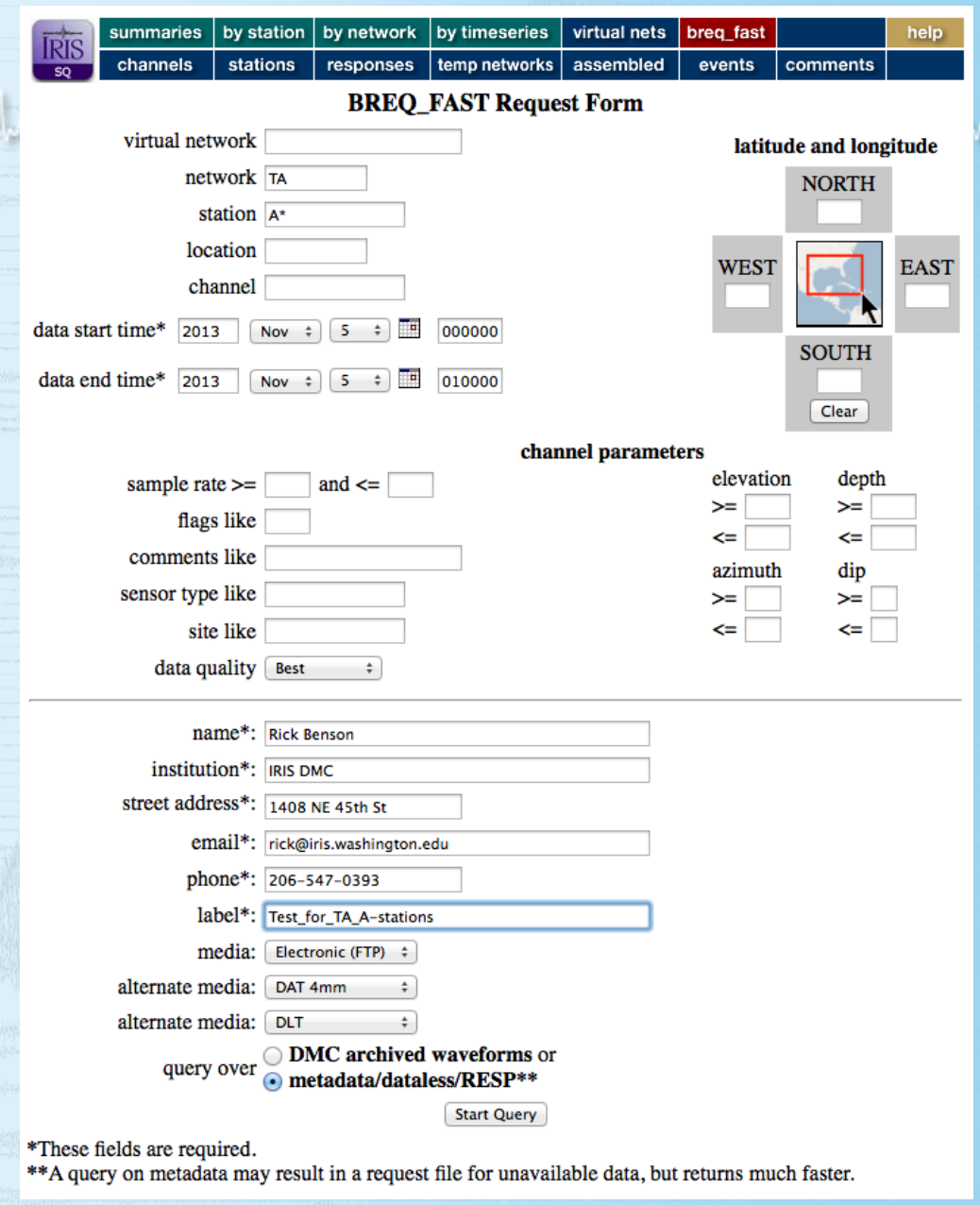
Asynchronous Requests: BREQ_FAST

- Accesses data in both the real-time buffer and permanent archive
- You can send the request when you're away from your computer or on a slow internet connection
- You can pick up your requested data using ftp or http at your convenience
- Returns metadata (dataless SEED), miniSEED, full SEED and more

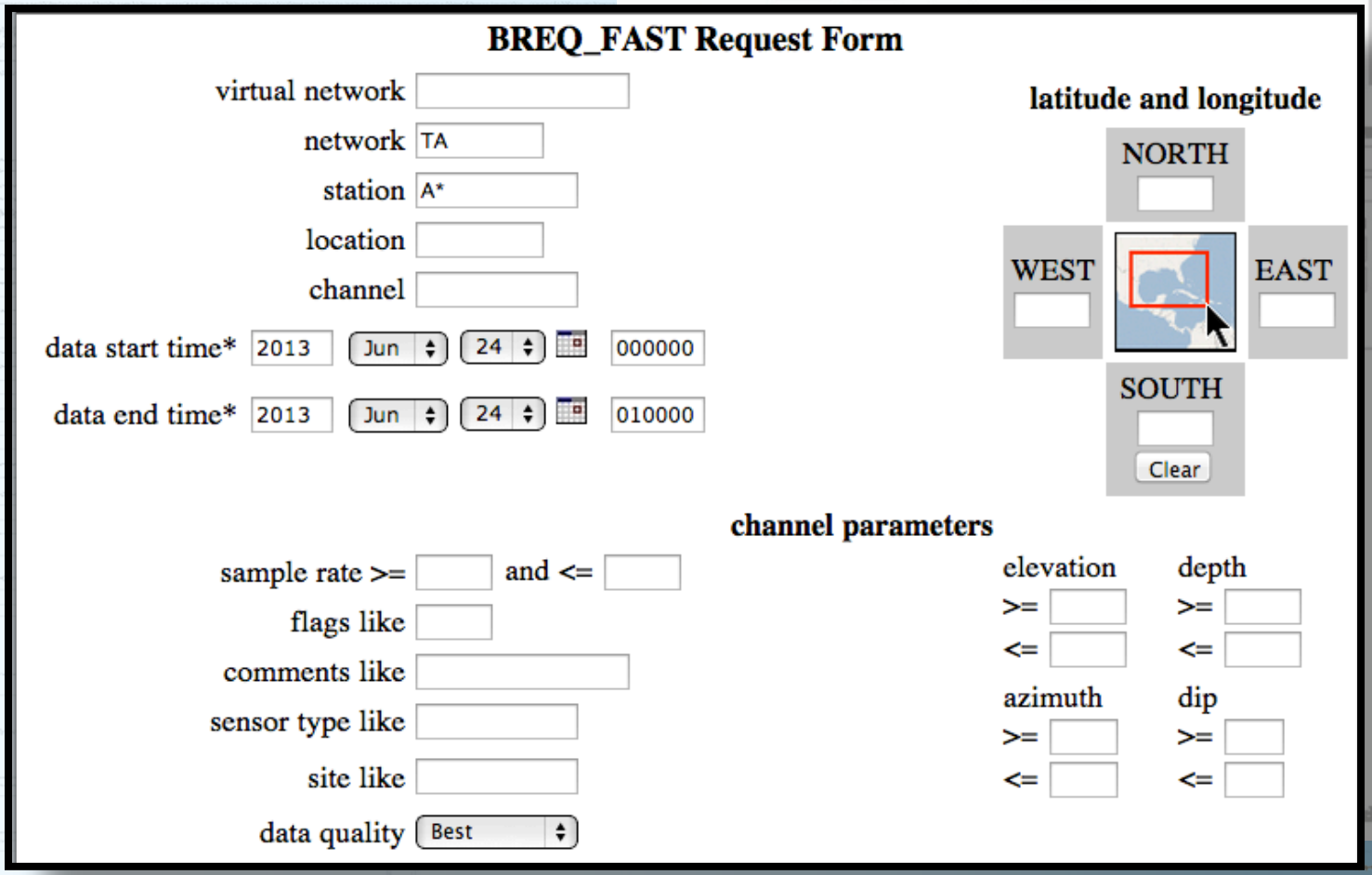
BREQ_FAST via SeismiQuery

Start here:

http://ds.iris.edu/sq



BREQ_FAST via SeismiQuery



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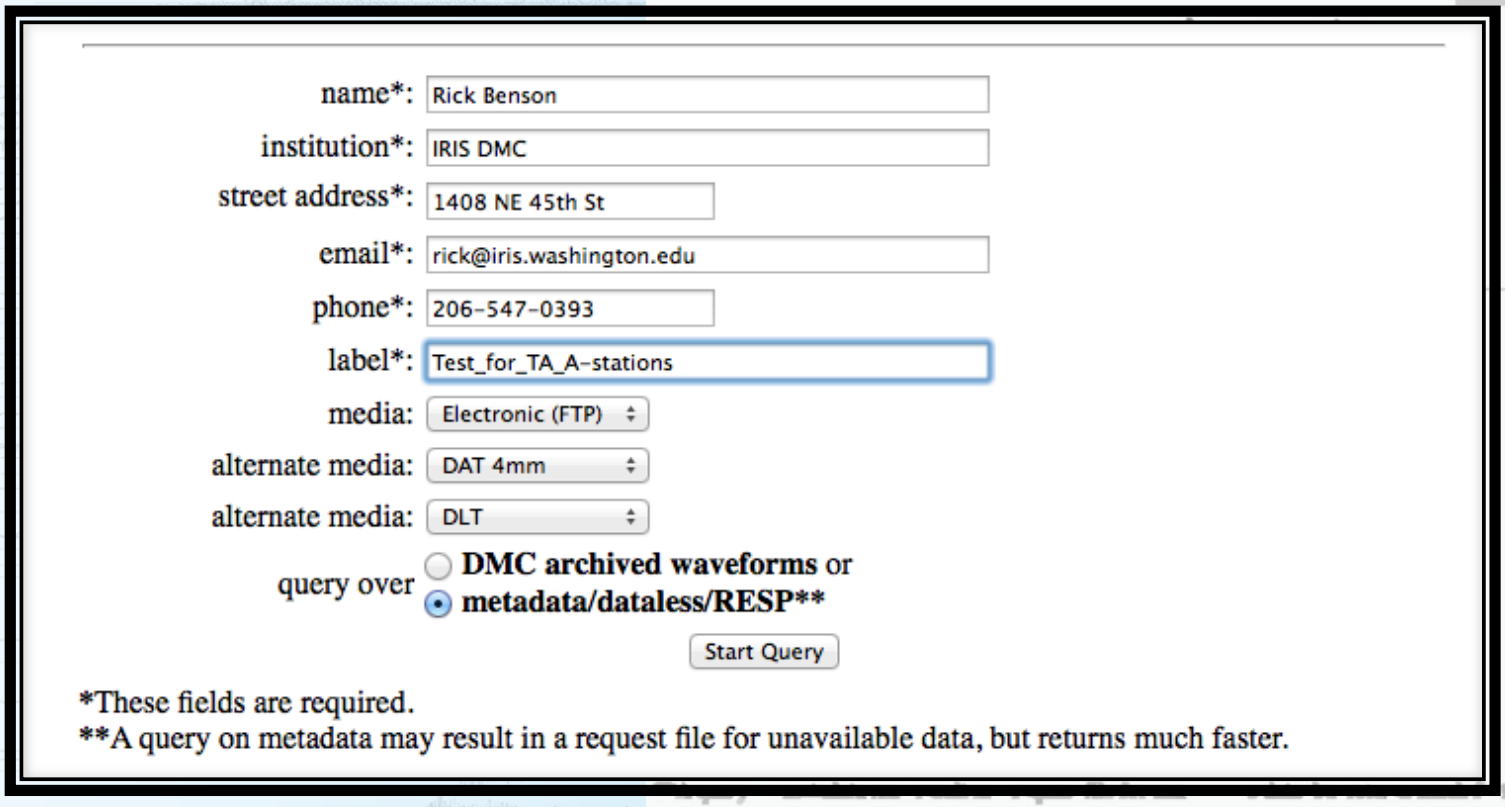
BREQ_FAST via SeismiQuery



name*: Rick Benson

institution*: IRIS DMC

street address*: 1408 NE 45th St

email*: rick@iris.washington.edu

phone*: 206-547-0393

label*: Test_for_TA_A-stations

media: Electronic (FTP)

alternate media: DAT 4mm

alternate media: DLT

query over
- ○ **DMC archived waveforms** or
- ◉ **metadata/dataless/RESP****

Start Query

*These fields are required.

**A query on metadata may result in a request file for unavailable data, but returns much faster.

BREQ_FAST via SeismiQuery

Results in a new popup window:

Notice

If this query takes more than 5 minutes, you may wish to hit the STOP button on this browser window, further restrict your query, and resubmit the query.

Found metadata for 3 stations and 137 channels.

Make Map of Stations

Submit request below to receive

- ☐ full SEED
- ☑ dataless SEED
- ☐ mini SEED
- ☐ sync file
- ☐ RESP file
- ☐ email request to myself

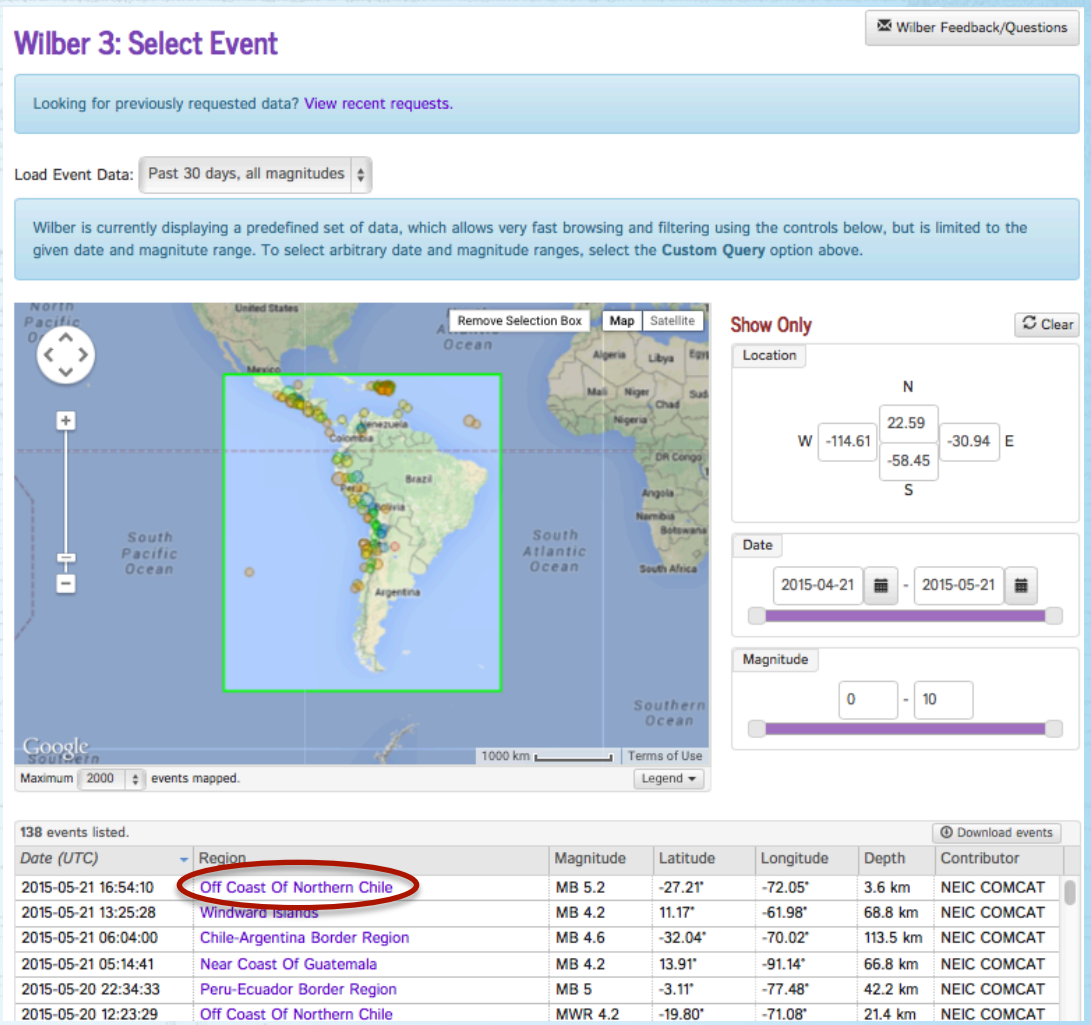
```
.NAME Rick Benson
.INST IRIS DMC
.ADDRESS 1408 NE 45th St
.EMAIL rick@iris.washington.edu
.PHONE 206-547-0393
.FAX YOUR_FAX
.MEDIA: FTP
.ALTERNATE MEDIA: DAT
.ALTERNATE MEDIA: DLT3
.LABEL Test_for_TA_A-stations
.FROM SQ
.QUALITY B
.END
A04D TA 2013 11 05 00 00 00.0000 2013 11 05 01 00 00.9999 1 ACE (View in MDA)
A04D TA 2013 11 05 00 00 00.0000 2013 11 05 01 00 00.9999 1 BDF EP (View in MDA)
A04D TA 2013 11 05 00 00 00.0000 2013 11 05 01 00 00.9999 1 BDO EP (View in MDA)
A04D TA 2013 11 05 00 00 00.0000 2013 11 05 01 00 00.9999 1 BHE (View in MDA)
A04D TA 2013 11 05 00 00 00.0000 2013 11 05 01 00 00.9999 1 BHN (View in MDA)
A04D TA 2013 11 05 00 00 00.0000 2013 11 05 01 00 00.9999 1 BHZ (View in MDA)
A04D TA 2013 11 05 00 00 00.0000 2013 11 05 01 00 00.9999 1 HNE (View in MDA)
A04D TA 2013 11 05 00 00 00.0000 2013 11 05 01 00 00.9999 1 HNN (View in MDA)
A04D TA 2013 11 05 00 00 00.0000 2013 11 05 01 00 00.9999 1 HNZ (View in MDA)
A04D TA 2013 11 05 00 00 00.0000 2013 11 05 01 00 00.9999 1 LCE (View in MDA)
A04D TA 2013 11 05 00 00 00.0000 2013 11 05 01 00 00.9999 1 LCE EP (View in MDA)
A04D TA 2013 11 05 00 00 00.0000 2013 11 05 01 00 00.9999 1 LCO EP (View in MDA)
A04D TA 2013 11 05 00 00 00.0000 2013 11 05 01 00 00.9999 1 LCQ (View in MDA)
A04D TA 2013 11 05 00 00 00.0000 2013 11 05 01 00 00.9999 1 LDF EP (View in MDA)
A04D TA 2013 11 05 00 00 00.0000 2013 11 05 01 00 00.9999 1 LDM EP (View in MDA)
A04D TA 2013 11 05 00 00 00.0000 2013 11 05 01 00 00.9999 1 LDO EP (View in MDA)
A04D TA 2013 11 05 00 00 00.0000 2013 11 05 01 00 00.9999 1 LEP EP (View in MDA)
A04D TA 2013 11 05 00 00 00.0000 2013 11 05 01 00 00.9999 1 LHE (View in MDA)
A04D TA 2013 11 05 00 00 00.0000 2013 11 05 01 00 00.9999 1 LHN (View in MDA)
A04D TA 2013 11 05 00 00 00.0000 2013 11 05 01 00 00.9999 1 LHZ (View in MDA)
A04D TA 2013 11 05 00 00 00.0000 2013 11 05 01 00 00.9999 1 LIM EP (View in MDA)
A04D TA 2013 11 05 00 00 00.0000 2013 11 05 01 00 00.9999 1 LKM EP (View in MDA)
A04D TA 2013 11 05 00 00 00.0000 2013 11 05 01 00 00.9999 1 LNE (View in MDA)
A04D TA 2013 11 05 00 00 00.0000 2013 11 05 01 00 00.9999 1 LNN (View in MDA)
A04D TA 2013 11 05 00 00 00.0000 2013 11 05 01 00 00.9999 1 LNZ (View in MDA)
A04D TA 2013 11 05 00 00 00.0000 2013 11 05 01 00 00.9999 1 LOG (View in MDA)
```

Asynchronous Requests: Wilber3

- Accesses event-windowed data
- You can specify
  - Networks and channel types
  - Station distance and azimuth range
- Allows you to preview waveforms before requesting them
- You can pick up your requested data using ftp or http at your convenience
- Returns, miniSEED, full SEED, SAC or ASCII

Wilber3: Finding Events

http://ds.iris.edu/wilber3/



Wilber3: Finding Stations

Wilber Feedback/Questions

Wilber 3: Select Stations

2015-05-21 MB5.2 Off Coast Of Northern Chile

Latitude	Longitude	Date	Depth	Magnitude	Description	Related Pages
27.2068° S	72.0479° W	2015-05-21 16:54:10 UTC	3.6 km	MB5.2	Off Coast Of Northern Chile	IRIS Event Page

The map below shows stations operational during this event, filtered by the criteria in the form to the right.

Show up to 5000 stations. Legend

Request Only Clear

Networks: _LACSN

Channels: BH?

Set default networks/channels

Distance Range: 0 - 25

Azimuth Range: -180 - 180 Invert

Actions

Show Record Section | Request Data

Use the checkboxes below to add/remove individual stations from your request.

Selected **40** out of **40** stations. Select All None One station every

Station	Network	Latitude	Longitude	*Distance*	Azimuth	Elevation	Name
AC04	C1	-28.20°	-71.07°	1.32°	139.39°	249 m	Llanos de Challe
GO03	C	-27.59°	-70.23°	1.66°	103.93°	730 m	Copiapo (Tierra Amarilla), Chile
AC01	C1	-26.15°	-70.60°	1.67°	51.05°	346 m	Pan de Azucar
LCO	IU	-29.01°	-70.70°	2.16°	146.94°	2274 m	Las Campanas Astronomical Observatory, Chile
AC02	C1	-26.84°	-69.13°	2.63°	82.54°	3980 m	Maricunga
GO02	C	-25.16°	-69.59°	3.01°	47.72°	2550 m	Mina Guanaco, Chile

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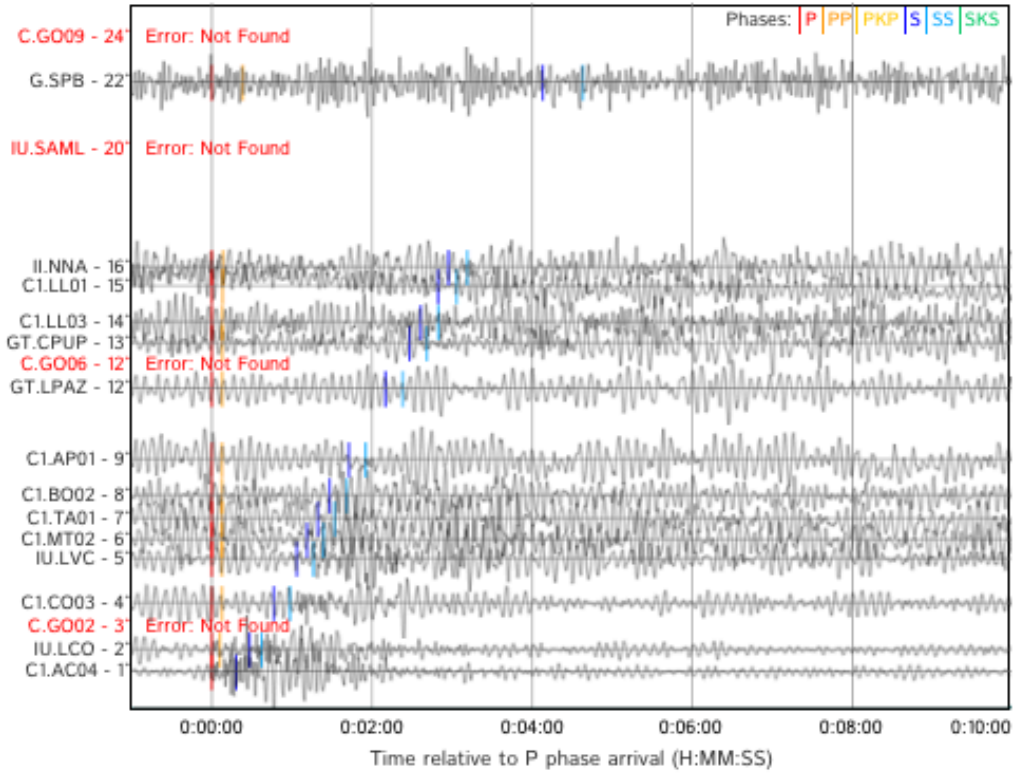
Wilber3: Previewing data

Record Section

Latitude	Longitude	Date	Depth	Magnitude	Description
27.2068° S	72.0479° W	2015-05-21 16:54:10 UTC	3.6 km	MB5.2	Off Coast Of Northern Chile



Time Range

From 1 minutes

before P arrival

until 10 minutes

after P arrival

Display

Channel: BHZ

Vertical size: 400 pixels

Hide records less than 10 pixels apart

Decimate to 1000 samples

Update

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Wilber3: Requesting data

Wilber 3: Track Data Request

Mary Templeton: 2015-05-21 MB5.2 Off Coast Of Northern Chile

You may bookmark this page and visit it later to monitor or download your data.

This page (and any requested data) will expire in a few days.

Event

Date	2015-05-21 16:54:10 UTC	**Description**	Off Coast Of Northern Chile
Latitude	27.2° S	**Magnitude**	MB5.2
Longitude	72.0° W	**Catalog**	NEIC PDE
Depth	4	**Contributor**	NEIC COMCAT

View this event in Wilber

Requested Data

Success Download data

Completed 6 of 6 (100%)

1. Done **Prepare for processing**
2. Done **Build selection file**
3. Done **Fetch timeseries data**
4. Done **Deliver files to pickup area**
5. Done **Log data statistics**
6. Done **Clean up**

View full log

Data	404 channels
Output Format	Miniseed
Submitted	May 21, 2015, 1:51 p.m. (28 minutes ago)
Completed	May 21, 2015, 1:52 p.m. (took 0 minutes)

Web Service Requests: dataselect

http://service.iris.edu/fdsnws/dataselect/1/

- Accesses continuous data
- Data is pushed to your computer by http when request is submitted.
- Best for small- to moderate-sized requests
- Returns miniSEED in a single large file that can be split with any of these freely available programs:
  - https://seiscode.iris.washington.edu/projects/mseed2sac
  - https://seiscode.iris.washington.edu/projects/mseed2ascii
  - https://seiscode.iris.washington.edu/projects/dataselect

Web Service Requests: timeseries

http://service.iris.edu/irisws/timeseries/1/

- Accesses continuous data
- You may specify the following processing options for requested data:

Filtering	Instrument response removal
Mean removal	Differentiation, integration
Scaling	decimation

- Returns
  - miniSEED, SAC, ASCII or WAV files to your computer or
  - PNG plots to your browser

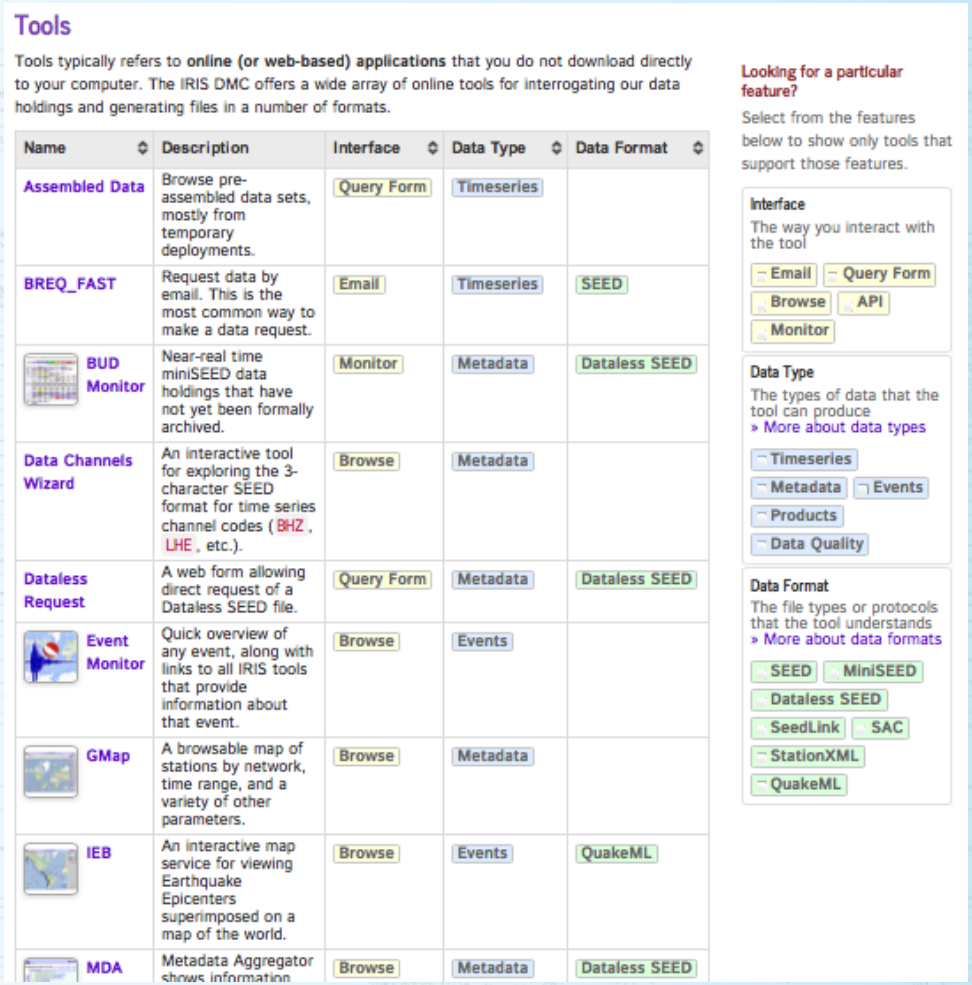
Web Service Requests: station

http://service.iris.edu/fdsnws/station/1/

- Accesses metadata
- You may request metadata for these levels:
  - Network
  - Station
  - Channel
  - Response
- Returns FDSN stationXML or text to your browser

If you like to explore further…

http://ds.iris.edu/ds/nodes/dmc/tools/##



Tools

Tools typically refers to **online (or web-based) applications** that you do not download directly to your computer. The IRIS DMC offers a wide array of online tools for interrogating our data holdings and generating files in a number of formats.

Name	Description	Interface	Data Type	Data Format
Assembled Data	Browse pre-assembled data sets, mostly from temporary deployments.	Query Form	Timeseries	
BREQ_FAST	Request data by email. This is the most common way to make a data request.	Email	Timeseries	SEED
BUD Monitor	Near-real time miniSEED data holdings that have not yet been formally archived.	Monitor	Metadata	Dataless SEED
Data Channels Wizard	An interactive tool for exploring the 3-character SEED format for time series channel codes (BHZ , LHE , etc.).	Browse	Metadata	
Dataless Request	A web form allowing direct request of a Dataless SEED file.	Query Form	Metadata	Dataless SEED
Event Monitor	Quick overview of any event, along with links to all IRIS tools that provide information about that event.	Browse	Events	
GMap	A browsable map of stations by network, time range, and a variety of other parameters.	Browse	Metadata	
IEB	An interactive map service for viewing Earthquake Epicenters superimposed on a map of the world.	Browse	Events	QuakeML
MDA	Metadata Aggregator shows information	Browse	Metadata	Dataless SEED

Looking for a particular feature?

Select from the features below to show only tools that support those features.

Interface

The way you interact with the tool

Email · Query Form · Browse · API · Monitor

Data Type

The types of data that the tool can produce

» More about data types

Timeseries · Metadata · Events · Products · Data Quality

Data Format

The file types or protocols that the tool understands

» More about data formats

SEED · MiniSEED · Dataless SEED · SeedLink · SAC · StationXML · QuakeML

The Data Tool Matrix provides a more complete list of data types and access tools available from IRIS DMC

IRIS NSF

...then Friday's 9:30 am breakout session may be for you!