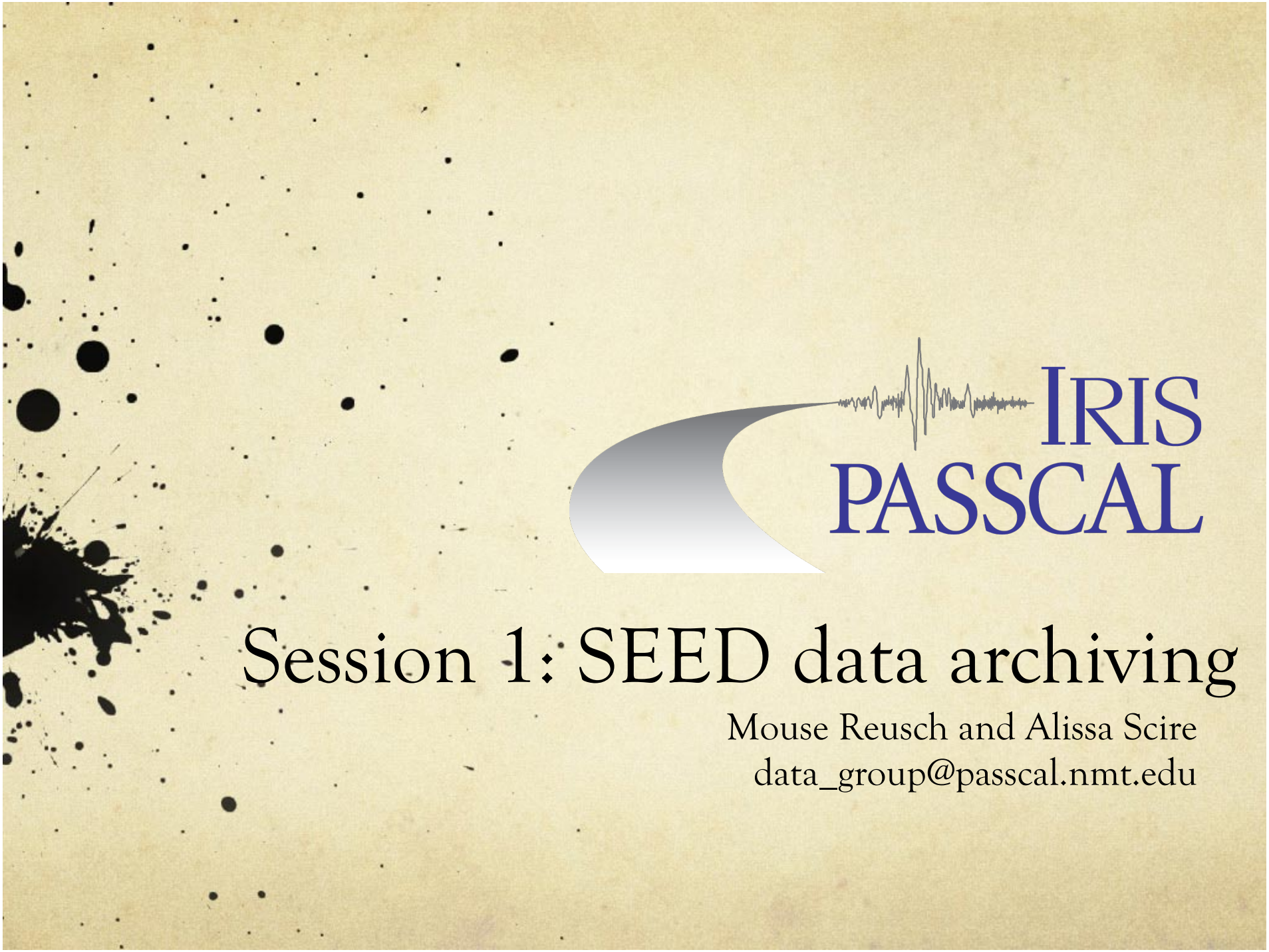


Session 1: SEED data archiving

Mouse Reusch and Alissa Scire
data_group@passcal.nmt.edu

Session 1 outline

- 8:15am Background
  - SEED basics
  - Requirements
  - The importance of metadata
  - Instrumentation differences and data
- 9:00am Archiving steps
  - Batch files and databases
  - RT130 and Q330 archiving steps
  - From PASSCAL to the DMC
- 10:00ish Break
- 10:30am Hands-on data archiving
- 12:00pm Break for lunch

Why should you archive?

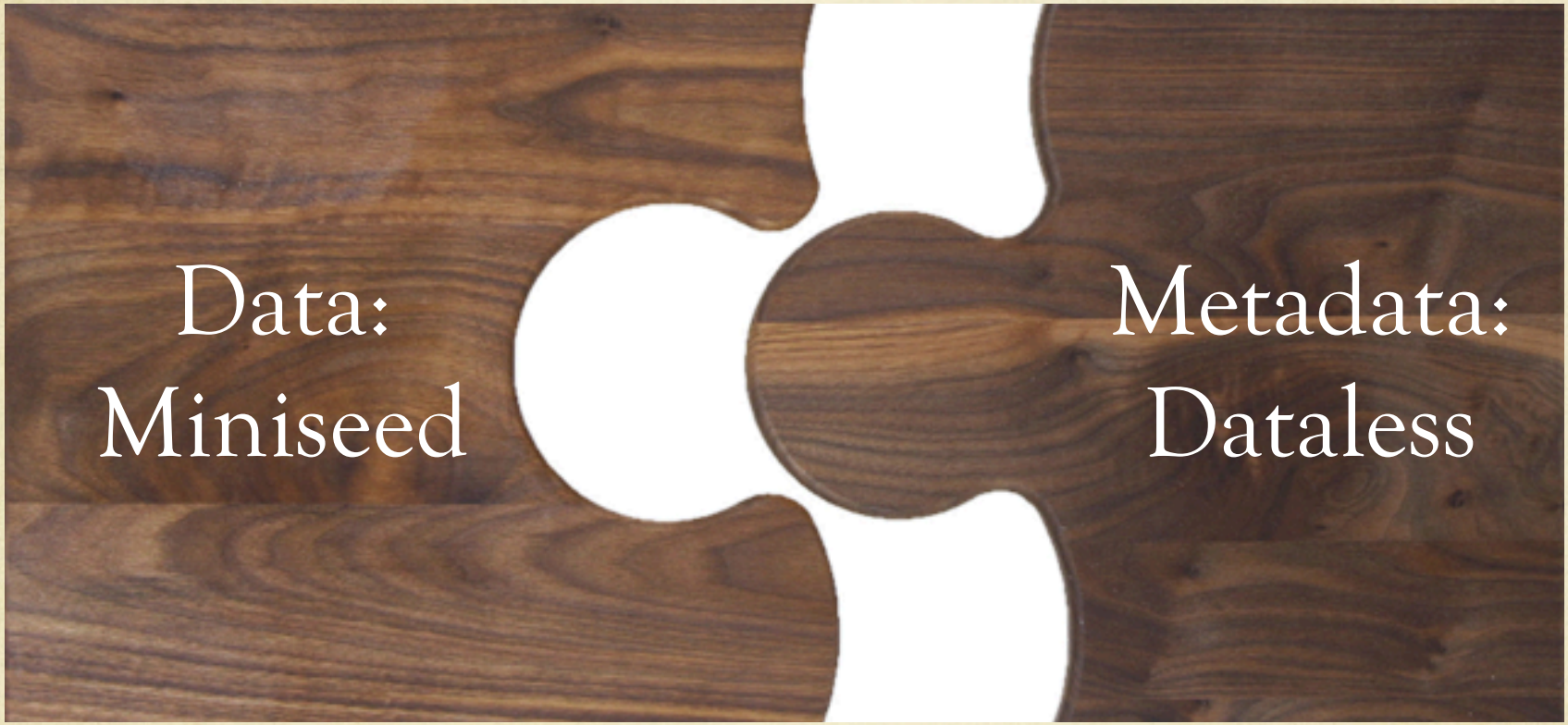
- Archiving data at the DMC can allow for the easy transfer of your data into various formats (e.g. SEED, SAC, etc), making analysis easier
- Serving data to other users is no longer your responsibility; co-PIs and students can access data directly from the DMC
- Lots of cool stuff in MUSTANG at the DMC
  http://service.iris.edu/mustang/
- The equipment in the PASSCAL facility represents a significant community resource
- So, IRIS policy states that all data collected by PASSCAL instruments must be submitted to the IRIS Data Management Center per the Data Delivery Policy:

www.passcal.nmt.edu/content/general-information/policy/data-delivery-policy

Introduction to SEED

- The Standard for the Exchange of Earthquake Data (SEED) is an international standard format for the exchange of digital seismological data
- SEED was designed for use by the earthquake research community, primarily so there was a uniform standard for exchange between institutions of unprocessed Earth motion data
- Adopted by the Federation of Digital Seismographic Networks (FDSN) in 1987
- See also: www.passcal.nmt.edu/content/all-about-seed-format

SEED format: Full SEED volume



Miniseed: Data only SEED

Fixed section of data header

- NETWORK CODE <net>, example: XN, PI
- STATION NAME <sta>, example: STA1, EP01
- CHANNEL NAME-refer to Appendix A in SEED manual
- LOCATION CODE
  - Usually left blank
- Start/end time
- Total number of samples
- Sample rate
- Data header quality indicator: example: D, R, Q, M

Data: Time series

-Wiggles!

-Can be viewed independently

Dataless SEED

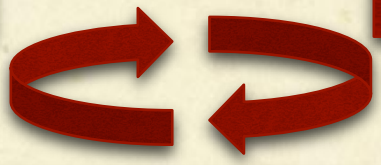
It contains the metadata for your experiment such as instrument types, responses, and station coordinates.

A dataless contains NO waveform data.

Full SEED volume

Dataless

Miniseed



- Network code
- Station name
- Location code
- Channel name
- Start/end time
- Sample rate
- Number of samples

Needs for successful archiving

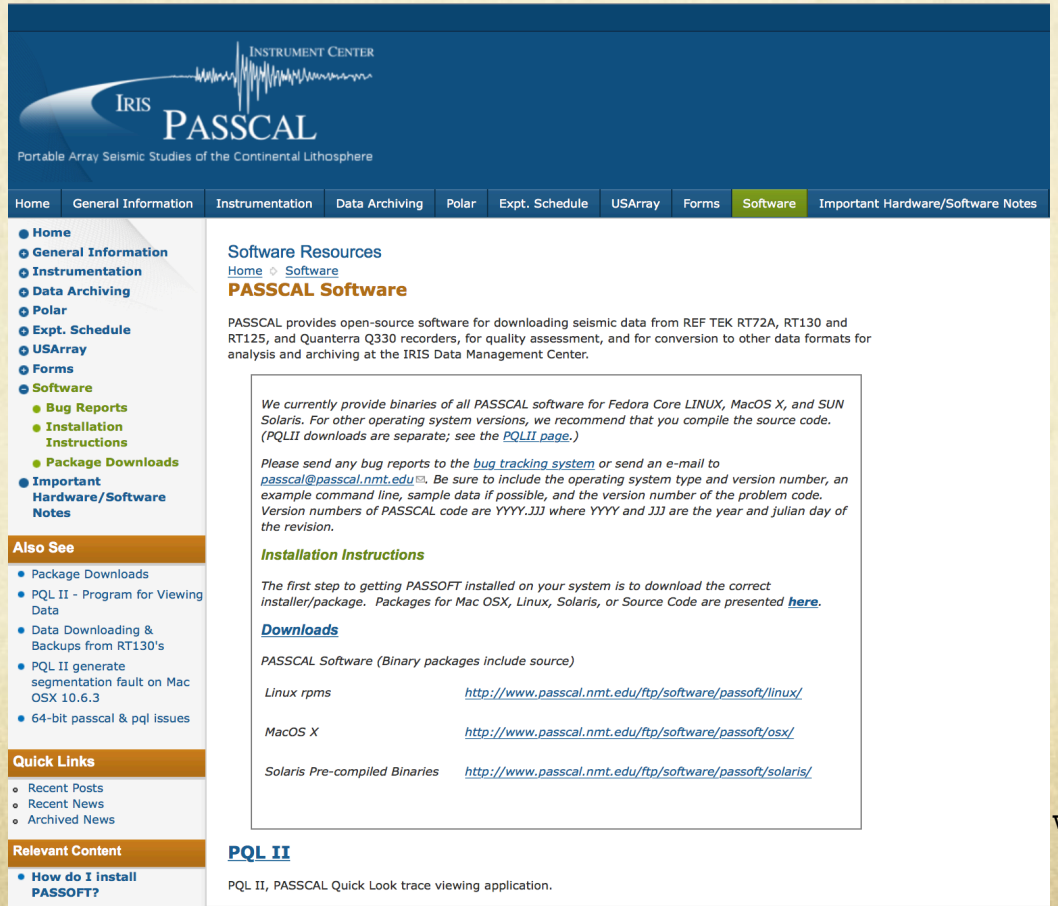
- Hardware and OS requirements
- Software
- Raw data
- Metadata

Hardware & OS requirements

- Hardware: 64-bit computer with internal or external digital space for about 3X the space of the raw data
- OS: Mac OSX 10.8-10.10 or Linux RHEL/CentOS Linux 6.2-6.6 and 7.x
- None of the software works in Windows, but you could use either Linux emulators or a dual-boot machine

Software: PQL II and PASSOFT

- PASSOFT and PQLII are available here: www.passcal.nmt.edu/content/software-resources (get the latest!)



More PQL II/PASSOFT

- PASSOFT is a collection of PASSCAL-written and/or distributed tools
- Used for:
  - Converting data formats: rt2ms
  - Checking station health: logpeek, qpeek
  - Sending data: data2passcal
  - Verifying data coverage: coverplot
- PQL II is a program for viewing time-series data written by Richard Boaz and supported by PASSCAL staff

Antelope

PASSCAL supports Antelope (latest version is 5.5)

Boulder Real Time Technologies (BRTT): www.brtt.com

"Antelope is an integrated collection of programs for data collection and seismic data analysis"

How to get Antelope

- BRTT (Antelope) provides licenses for US academic institutions: www.brtt.com/education_and_academic_research.html
- Have a PASSCAL project but are not a member of a US academic institution? Please contact data_group@passcal.nmt.edu

How PASSCAL uses Antelope

1. Metadata preparation: dbbuild, dbbuild_batch
2. Convert data: miniseed2days, log2miniseed
3. Database quality assurance: dbfixchanids, dbverify, dbversdwf
4. Create a dataless: mk_dataless_seed
5. Verify that the dataless is valid: seed2db

How we don't use Antelope

1. Event location, building of catalogs
2. Conversion to other formats

- Please seek out the Antelope Users Group http://www.antelopeusersgroup.org or other Antelope users for assistance with these tasks. (It's not that we don't want to help you, we just don't know how!)

What needs to be archived?

- EVERYTHING! meaning...
- All waveform data
- All SOH data
- Accurate metadata in the form of a dataless

Instrumentation and your data

Where it all begins...

Pre-experiment

IDEA – Science objective

- Recording parameters

LOGISTICS – Planning, resources, availability

- How will metadata be collected
- Who will be responsible for archiving

Experiment

FIELD WORK – Installation & service

- Organize and collect field notes (i.e., metadata)
- Field notes are generated with:
  - What stations were where and when
  - Orientation and equipment specifics
- Raw data are retrieved on compact flash disk, USB drive, B14 baler
- Keep multiple backups!

All of the field notes provide the metadata and the raw data will be converted into archive-ready data

Metadata: Required information

Network

- FDSN network code assigned

Station

- Number of stations, location, SEED station name

Instrumentation

- Type of sensor and datalogger, serial numbers, sensor orientation, gain

Time

- Start time, end time, exact times when configurations change

Data streams recorded

- Number of data streams
- Sample rates recorded

INSTALL SHEET (STAND ALONE) STATION Name:_____

Local Date/Time:_____ GMT Date/Time:_____

Field Team: _____

Location of site: _____

Equipment

Sensor S/N: _____ Sensor Type: _____

DAS Type: _____ DAS S/N: _____

Clock S/N: _____

Flash Disk 1 S/N: _____ Size: _____

Flash Disk 2 S/N: _____ Size: _____

INSTALL SENSOR

Level Sensor ____ sensor feet 'locked'_____ (if you have questions, ask)

Declination: _____ Orientation: _____ (East Rod STS2; Brass Pin North CMG)

Solar Power System Set-UP

NOTE: The following tests should be performed with the solar panels in full sun, and with fully charged batteries.

1. Test output of the batteries (12.5 – 13 VDC **WARNING**: **DO NOT** test current). Voltage: _____
2. Connect the batteries to the power box
3. Test the voltage out of the power box to the DAS from pin A+ to C- (Same as battery voltage.)
   NOTE: Make sure the polarity is correct. Voltage: _____
4. Test solar panel output (~18 Volts DC,). Voltage: _____
5. Connect solar panels to power box
6. Test the voltage at the battery terminals (Greater than battery voltage above). Voltage: ____

INSTALL DAS

Connect GPS, and Sensor to DAS and then connect Power.

SENSOR Unlock

CMG-3T: Use the host box to unlock the sensor. Press and hold both the Unlock and Enable

Install sheets aren't always perfect...

INSTALL SHEET (STAND ALONE) Station: A00

Local Date/Time: 6-18-2010 11:30 Am GMT Date/Time: 6-18-2010 18:30

Field Team: _____

GPS Location of Site: _____

Equipment

Sensor S/N: T33893 Sensor Type: CMG-3T

DAS S/N: ABIB

Clock S/N: 2801

Flash Disk 1 S/N: 3076 Size: 2 GB

Flash Disk 2 S/N: 2774 Size: 2 GB

INSTALL SENSOR

Level Sensor ____ sensor feet 'locked'_____ (if you have questions, ask)

Declination: 13.5° E Orientation: T.N. (East Rod STS2, Brass Pin CMG)

INSTALL SHEET (STAND ALONE) Station: A14

Local Date/Time: _____ GMT Date/Time: _____

Field Team: Mairi, Nicole, Andrew, Zhiming

GPS Location of Site: _____

Equipment

Sensor S/N: T3N57 Sensor Type: CMG 3T

DAS S/N: 9D77

Clock S/N: 7397

Flash Disk 1 S/N: 2217 Size: ~~CMG-3T~~ 2GB

Flash Disk 2 S/N: 2925 Size: 2GB

INSTALL SENSOR

Level Sensor V sensor feet 'locked' NA (if you have questions, ask)

Declination: 13.5°E Orientation: _____ (East Rod STS2, Brass Pin CMG)

Metadata – really important!

- Without accurate metadata, data are almost useless
- Common errors:
  - Wrong equipment types
  - Wrong location (lat, lon, elev)
  - Wrong start and/or end dates
  - Wrong sensor orientation
  - No serial numbers, or incorrect serial numbers
- All of this info comes from field notes; please take them carefully!

Metadata information: Where is it used?

1. To populate your Antelope database

2. To generate a dataless using Antelope

3. To archive your data

Note that without metadata,
you cannot archive your data!

PASSCAL instrumentation

- RT130:

  Reftek Steim-compressed data. Not mseed!

- Q330:

  Baler records data in multiplexed mseed format

- RT125 (not commonly archived in SEED):

  Uncompressed format (trd2mseed)

Raw data

RT130

- Stored on 2 compact flash cards
- Filenames are *.ZIP when neo is used, 1 ZIP file per CF card

Q330

- Recorded to a data baler (B14 or B44)
- B14 filenames are *.ALL
- B44 keeps a “data” directory* of files

*FYI, in B44 projects with a high sample rate and/or a long time between servicing, the B44 will create a new data directory for every 2000 files, renaming the old directory with the date

More than just file names...

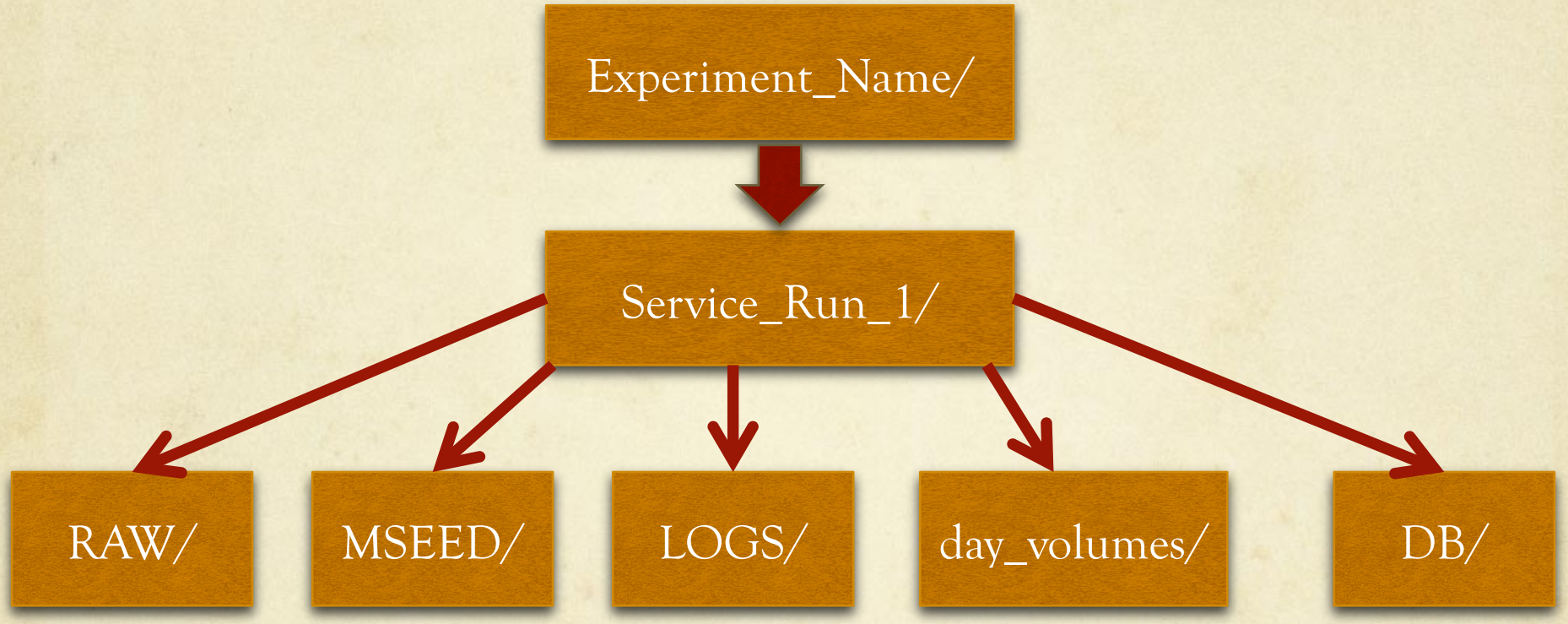
RT130

- Headers are populated by default information that need updating
- Single non-uniform sampled text SOH channel

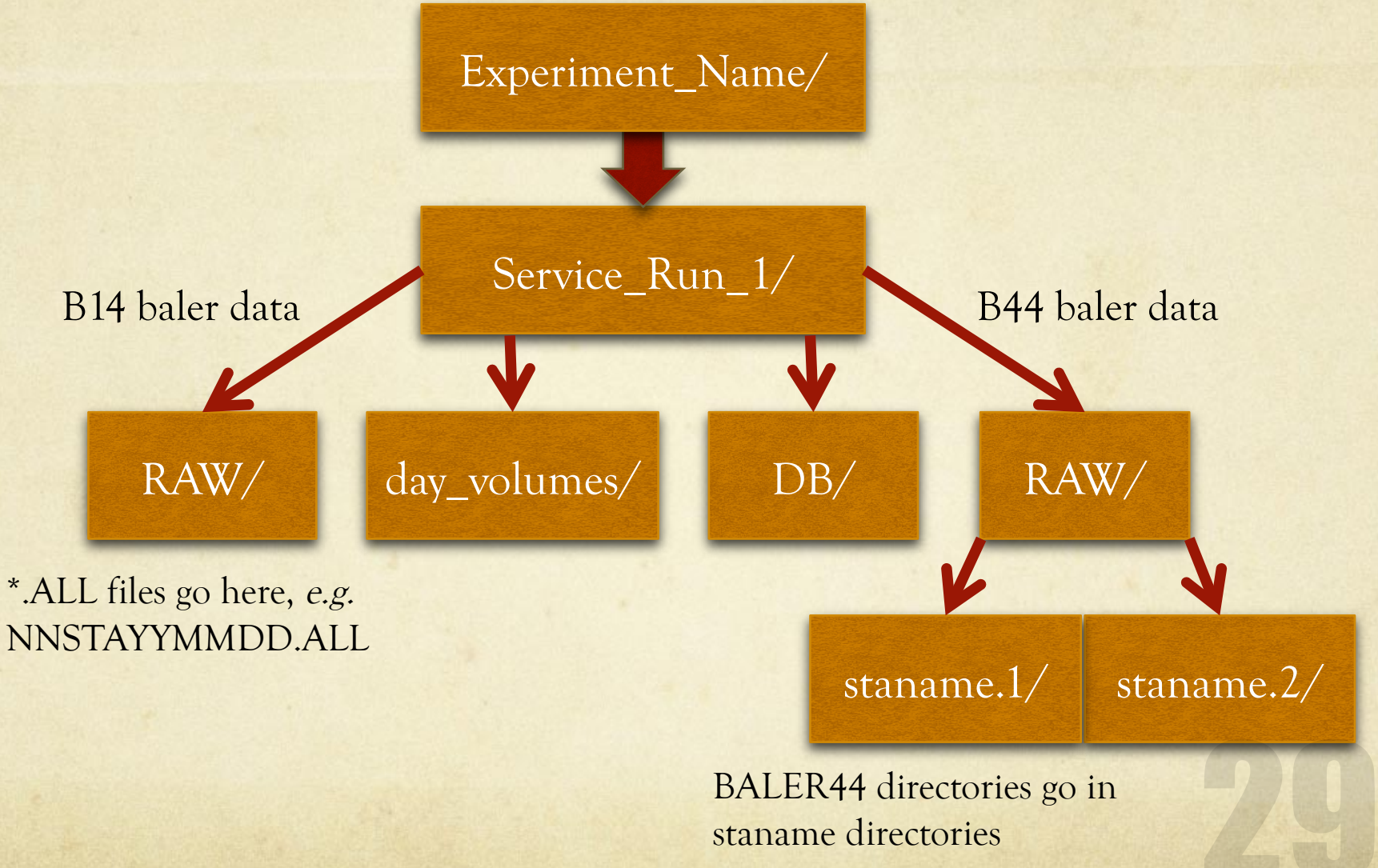
Q330

- Headers can be programmed at station installation
- Multiple time-series SOH channels

Organization is critical (RT130 example)



Organization is critical (Q330 example)



Switch!

Basic data archiving flow

- Metadata generated
- Raw data collected
- Raw data converted into mseed with specific file naming format
- Metadata converted into dataless
- Dataless and converted data sent to PASSCAL
- Quality controlled dataless and data sent to IRIS DMC
- Data are available to users as either restricted or open access

Metadata to batch file

- What is the batch file?
  - A text file with specific keywords and details used to build an Antelope database
  - A history of your experiment from start to finish
  - Used to generate the parameter file for converting rt130 data into mseed with pre-populated headers
- All of this info comes from your field notes!

```
#comments can be anything and they start with a pound sign
#comment: This is a batch file example.

# your network info
net XY Chile RAMP

# your station info
sta U04B -37.986700 -72.569800 0.202 Callipulli, Chile
time 03/18/2010 00:00:00
datalogger  rt130  9249
sensor cmg40t 0 T4906
axis Z 0 0 - 1 1
axis N 0 90 - 2 1
axis E 90 90 - 3 1
samplerate 100sps
channel Z HHZ
channel N HHN
channel E HHE
samplerate 1sps
channel Z LHZ
channel N LHN
channel E LHE
add

close U04B 12/31/2010 23:59:59
```

```
#comment: This is a batch file example.

# your network info
net XY Chile RAMP

# your station info
sta U04B -37.986700 -72.569800 0.202 Callipulli, Chile
time 03/18/2010 00:00:00
datalogger  rt130  9249
sensor cmg40t 0 T4906
axis Z 0 0 - 1 1
axis N 0 90 - 2 1
axis E 90 90 - 3 1
samplerate 100sps
channel Z HHZ
channel N HHN
channel E HHE
samplerate 1sps
channel Z LHZ
channel N LHN
channel E LHE
add

close U04B 12/31/2010 23:59:59
```

net network code network name

sta stacode lat long elevation(km) station name (city, state, landmark, country)

```
#comment: This is a batch file example.

# your network info
net XY Chile RAMP

# your station info
sta U04B -37.986700 -72.569800 0.202 Callipulli, Chile
time 03/18/2010 00:00:00
datalogger  rt130  9249
sensor cmg40t 0 T4906
axis Z 0 0 - 1 1
axis N 0 90 - 2 1
axis E 90 90 - 3 1
samplerate 100sps
channel Z HHZ
channel N HHN
channel E HHE
samplerate 1sps
channel Z LHZ
channel N LHN
channel E LHE
add

close U04B 12/31/2010 23:59:59
```

time config start time ← time when you power on the station

*The only requirement is that the date and time are before your first waveform and SOH data samples

```
#comment: This is a batch file example.

# your network info
net XY Chile RAMP

# your station info
sta U04B -37.986700 -72.569800 0.202 Callipulli, Chile
time 03/18/2010 00:00:00
datalogger  rt130  9249
sensor cmg40t 0 T4906
axis Z 0 0 - 1 1
axis N 0 90 - 2 1
axis E 90 90 - 3 1
samplerate 100sps
channel Z HHZ
channel N HHN
channel E HHE
samplerate 1sps
channel Z LHZ
channel N LHN
channel E LHE
add

close U04B 12/31/2010 23:59:59
```

datalogger code serial number ←
code is from Antelope .pf file

```
#comment: This is a batch file example.

# your network info
net XY Chile RAMP

# your station info
sta U04B -37.986700 -72.569800 0.202 Callipulli, Chile
time 03/18/2010 00:00:00
datalogger  rt130  9249
sensor cmg40t 0 T4906
axis Z 0 0 - 1 1
axis N 0 90 - 2 1
axis E 90 90 - 3 1
samplerate 100sps
channel Z HHZ
channel N HHN
channel E HHE
samplerate 1sps
channel Z LHZ
channel N LHN
channel E LHE
add

close U04B 12/31/2010 23:59:59
```

time config start time ← time when you power on the station

datalogger code serial number ← code is from Antelope *.pf file

Datalogger Antelope parameter files can be found within:

Antelope 5.4 & earlier

$ANTELOPE/data/instruments/dataloggers

Antelope 5.5

$ANTELOPE/data/contrib/instruments/dataloggers

```
#comment: This is a batch file example.

# your network info
net XY Chile RAMP

# your station info
sta U04B -37.986700 -72.569800 0.202 Callipulli, Chile
time 03/18/2010 00:00:00
datalogger  rt130  9249
sensor cmg40t 0 T4906
axis Z 0 0 - 1 1
axis N 0 90 - 2 1
axis E 90 90 - 3 1
samplerate 100sps
channel Z HHZ
channel N HHN
channel E HHE
samplerate 1sps
channel Z LHZ
channel N LHN
channel E LHE
add

close U04B 12/31/2010 23:59:59
```

sensor code edepth serial number ←
edepth is the depth below surface

```
#comment: This is a batch file example.

# your network info
net XY Chile RAMP

# your station info
sta U04B -37.986700 -72.569800 0.202 Callipulli, Chile
time 03/18/2010 00:00:00
datalogger  rt130  9249
sensor cmg40t 0 T4906
axis Z 0 0 - 1 1
axis N 0 90 - 2 1
axis E 90 90 - 3 1
samplerate 100sps
channel Z HHZ
channel N HHN
channel E HHE
samplerate 1sps
channel Z LHZ
channel N LHN
channel E LHE
add

close U04B 12/31/2010 23:59:59
```

sensor code edepth serial number ←
edepth is the depth below surface

Sensor Antelope parameter files can be found within:
Antelope 5.4 & earlier
$ANTELOPE/data/instruments/sensors
Antelope 5.5
$ANTELOPE/data/contrib/instruments/sensors

```
#comment: This is a batch file example.

# your network info
net XY Chile RAMP

# your station info
sta U04B -37.986700 -72.569800 0.202 Callipulli, Chile
time 03/18/2010 00:00:00
datalogger  rt130  9249
sensor cmg40t 0 T4906
axis Z 0 0 - 1 1
axis N 0 90 - 2 1
axis E 90 90 - 3 1
samplerate 100sps
channel Z HHZ
channel N HHN
channel E HHE
samplerate 1sps
channel Z LHZ
channel N LHN
channel E LHE
add

close U04B 12/31/2010 23:59:59
```

```
axis  label hang vang [sens[lead[pgain]]]
axis  label hang vang [sens[lead[pgain]]]
axis  label hang vang [sens[lead[pgain]]]
```

```
#comment: This is a batch file example.

# your network info
net XY Chile RAMP

# your station info
sta U04B -37.986700 -72.569800 0.202 Callipulli, Chile
time 03/18/2010 00:00:00
datalogger  rt130  9249
sensor cmg40t 0 T4906
axis Z 0 0 - 1 1
axis N 0 90 - 2 1
axis E 90 90 - 3 1
samplerate 100sps
channel Z HHZ
channel N HHN
channel E HHE
samplerate 1sps
channel Z LHZ
channel N LHN
channel E LHE
add

close U04B 12/31/2010 23:59:59
```

samplerate code ← appropriate sample rate for your sta

channel axis-label chan
channel axis-label chan
channel axis-label chan

See 'Appendix A' of the SEED manual for channel naming conventions: www.passcal.nmt.edu/content/data-archiving/documentation/passive-source

Instrument	Sample Rates (Hz)							
	>= 1000 to < 5000	>= 250 to < 1000	>= 80 to < 250	>= 10 to < 80	> 1 to < 10	1	0.1	0.01
STS-2	FH?	CH?	HH?	BH?	MH?	LH?	VH?	UH?
CMG-3T	FH?	CH?	HH?	BH?	MH?	LH?	VH?	UH?
CMG-3ESP	FH?	CH?	HH?	BH?	MH?	LH?	VH?	UH?
TR-240	FH?	CH?	HH?	BH?	MH?	LH?	VH?	UH?
TR-120	FH?	CH?	HH?	BH?	MH?	LH?	VH?	UH?
TR-40	FH?	CH?	HH?	BH?	MH?	LH?	VH?	UH?
CMG-40T 30s	FH?	CH?	HH?	BH?	MH?	LH?	VH?	UH?
CMG-40T 1s	GH?	DH?	EH?	SH?	MH?	LH?	VH?	UH?
S-13	GH?	DH?	EH?	SH?	MH?	LH?	VH?	UH?
HS-10	GH?	DH?	EH?	SH?	MH?	LH?	VH?	UH?
L-4C*	GH?	DL?	EL?	SL?	ML?	LL?	VL?	UL?
L-22*	GH?	DL?	EL?	SL?	ML?	LL?	VL?	UL?
L-28	GL?	DL?	EL?	SL?	ML?	LL?	VL?	UL?
L-28LB (4.5 Hz geophone)*	GH?	DL?	EL?	SL?	ML?	LL?	VL?	UL?
L-40A (40 Hz geophone)*	GH?	DL?	EP?	SP?	MP?	LP?	VP?	UP?
FBA ES-T	FN?	CN?	HN?	BN?	MN?	LN?	VH?	UN?

Table 1. Recommended SEED channel names for many of the sensors available from PASSCAL

* The use of “H”, denoting high gain, assumes that the dataloggers are programmed using a gain of 32, which is the recommended gain setting for a typical PASSCAL experiment. In the event the gain is set to 1 at the datalogger, then the second character of the channel name should be set to “L”.

```
#comment: This is a batch file example.

# your network info
net XY Chile RAMP

# your station info
sta U04B -37.986700 -72.569800 0.202 Callipulli, Chile
time 03/18/2010 00:00:00
datalogger  rt130  9249
sensor cmg40t 0 T4906
axis Z 0 0 - 1 1
axis N 0 90 - 2 1
axis E 90 90 - 3 1
samplerate 100sps
channel Z HHZ
channel N HHN
channel E HHE
samplerate 1sps
channel Z LHZ
channel N LHN
channel E LHE
add

close U04B 12/31/2010 23:59:59
```

add ← adds the current configuration to the database

close sta time (very important, closes the station at this time)

```
#comment: This is a batch file example.

# your network info
net XY Chile RAMP

# your station info
sta U04B -37.986700 -72.569800 0.202 Callipulli, Chile
time 03/18/2010 00:00:00
datalogger  rt130_mp  9249
sensor cmg40t 0 T4906
axis Z 0 0 - 1 1
axis N 0 90 - 2 1
axis E 90 90 - 3 1
samplerate 100sps
channel Z HHZ
channel N HHN
channel E HHE
samplerate 1sps
channel Z LHZ
channel N LHN
channel E LHE
add

close U04B 12/31/2010 23:59:59
```

Notice that there are no mass position listed in the batch file.

Mass positions are considered SOH channels, so, like the LOG files they described in the Antelope parameter file. RT130s didn't always record mass positions so the default rt130.pf file in the Antelope builds does not include them.

PASSCAL created two new files, **rt130_mp.pf** and **rt130_nmp.pf** to accommodate the mass positions and avoid confusion with which one to use if your sensor has masses that can be recorded.

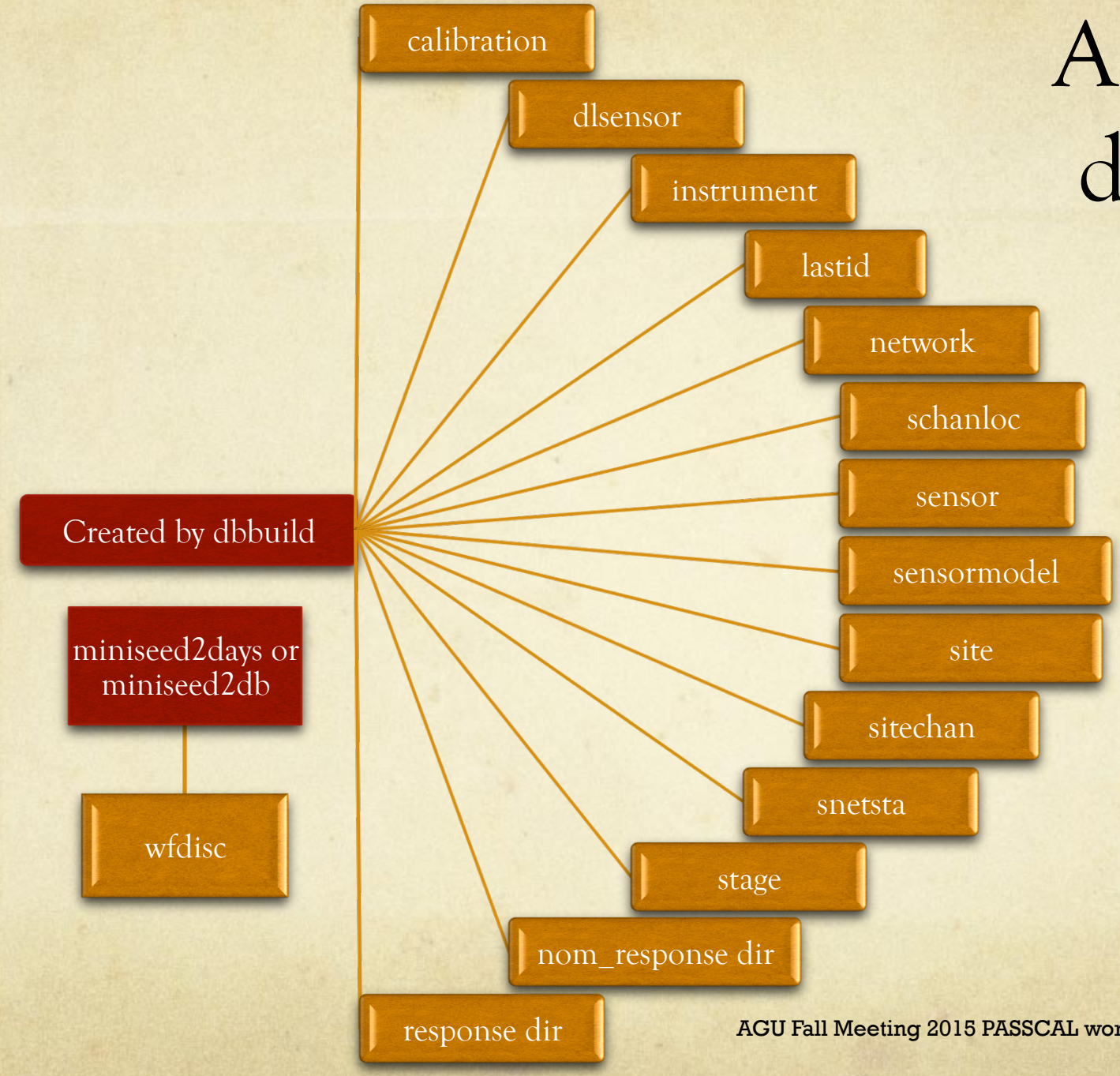
- For more information about the batch file look to the man pages for:
  - dbbuild_batch, dbbuild, and dbbuild_examples
- Additionally, our appendix 'Building a Batch File for dbbuild' has useful examples and can be found at:

www.passcal.nmt.edu/content/data-archiving/documentation/passive-source

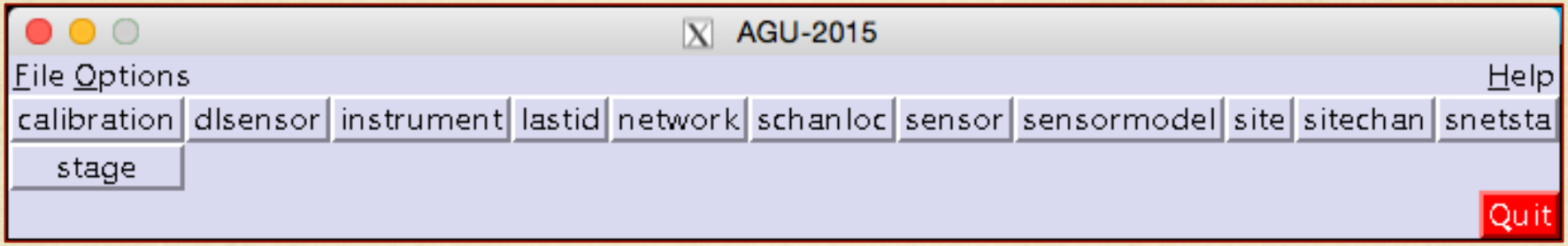
Batch file to database

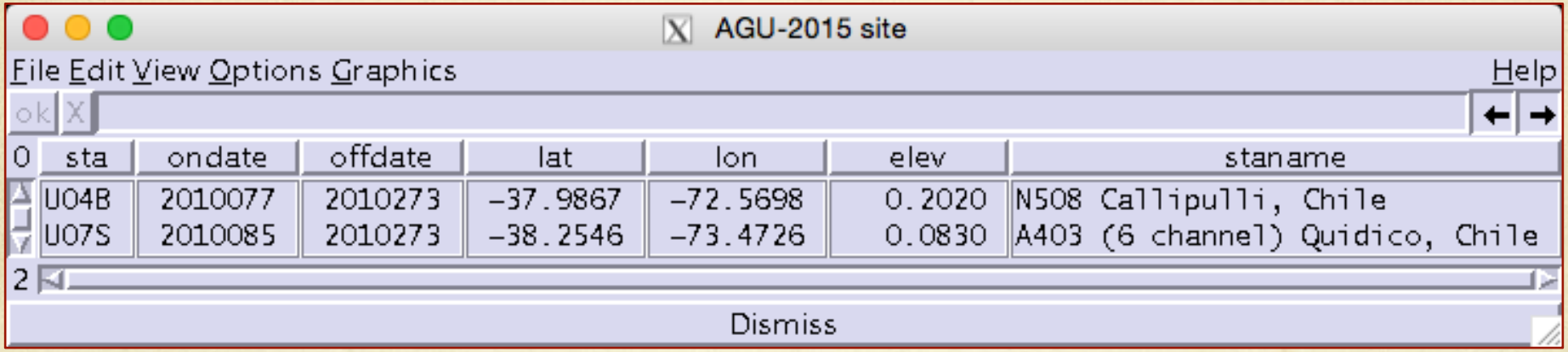
- Build metadata tables using dbbuild
  - dbbuild –b dbname batch_file >& dbbuild.out
- Check the output of dbbuild for errors!
- Check your database with dbe
  - dbe dbname
- Look over a few tables such as sitechan, site, and network to check the entries

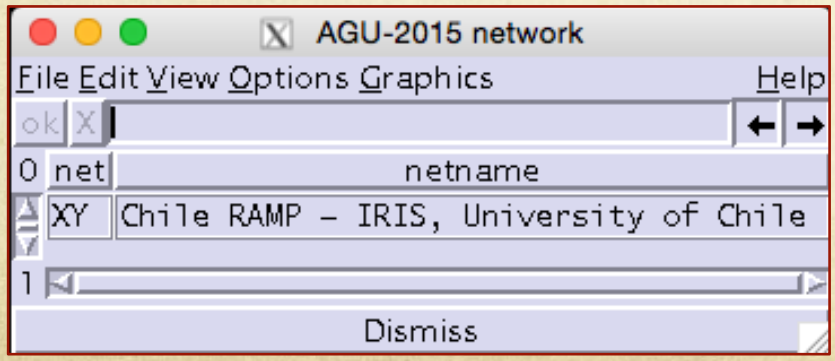
Antelope database tables



Some useful database tables to examine...







Some useful database tables to examine...

AGU-2015 sitechan

File Edit View Options Graphics Help

ok X

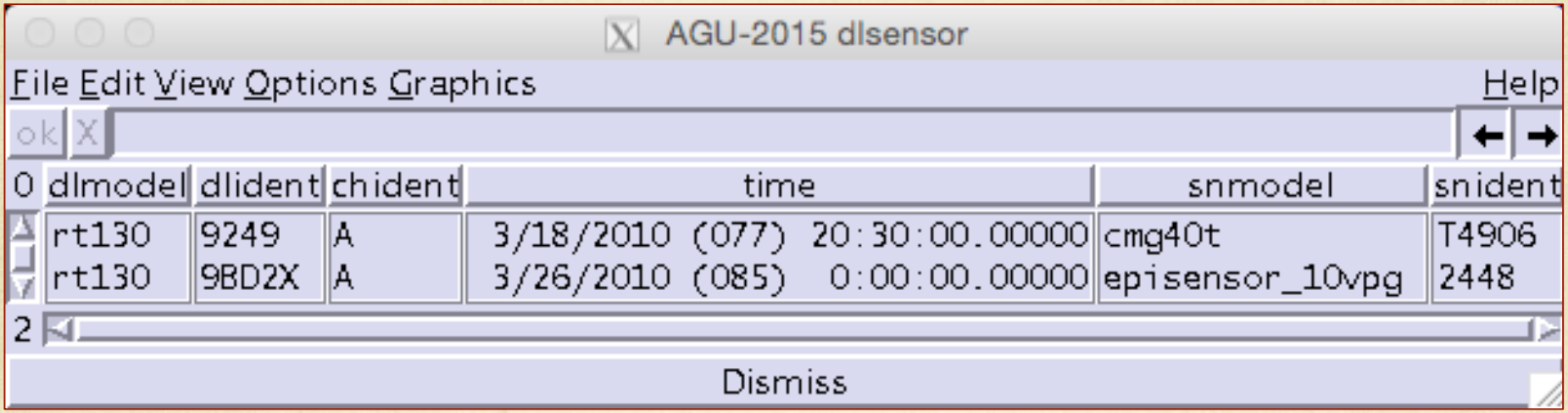
0

sta	chan	ondate	offdate	ctype	edepth	hang	vang	descrip
U04B	HHZ	2010077	2010273		0.0000	0.0	0.0	T4906 9249
U04B	HHN	2010077	2010273		0.0000	0.0	90.0	T4906 9249
U04B	HHE	2010077	2010273		0.0000	90.0	90.0	T4906 9249
U04B	LHZ	2010077	2010273		0.0000	0.0	0.0	T4906 9249
U04B	LHN	2010077	2010273		0.0000	0.0	90.0	T4906 9249
U04B	LHE	2010077	2010273		0.0000	90.0	90.0	T4906 9249
U04B	LOG	2010077	2010273	o				9249
U04B	VM1	2010077	2010273					9249
U04B	VM2	2010077	2010273					9249
U04B	VM3	2010077	2010273					9249
U07S	LNZ	2010085	2010273		0.0000	0.0	0.0	2448 9BD2X
U07S	LNN	2010085	2010273		0.0000	0.0	90.0	2448 9BD2X
U07S	LNE	2010085	2010273		0.0000	90.0	90.0	2448 9BD2X
U07S	LOG	2010085	2010273	o				9BD2X

14

Dismiss

Some useful database tables to examine...



Common database errors

- Start time too late or end time too soon
- Negatives (-) in latitude or longitude
- Elevation in meters instead of kilometers
- Serial numbers listed at more than one station at the same time

RT130 data – in brief

- Batch file
- batch2par – creates a parameter file for rt2ms
- rt2ms – converts data to mseed with correctly populated header values (station/network/channel names)
- Evaluate log files using logpeek, waveforms in PQL
- log2miniseed – convert log files into day volumes
- miniseed2days – cut waveforms into station-channel-day volumes

- Batch file – we did this already!
- batch2par – creates a parameter file for rt2ms
- rt2ms – converts data to mseed with correctly populated header values (station/network/channel names)
- Evaluate log files using logpeek, waveforms in PQL
- log2miniseed – convert log files into day volumes
- miniseed2days – cut waveforms into station-channel-day volumes

batch2par

- We need a parameter file in a future step where the miniseed headers get populated
- batch2par creates this par file from your batch file
- The parameter file is the Rosetta Stone for the header conversions

batch2par batch_file > par_file

```
net XY Chile RAMP

sta U04B -37.986700 -72.569800 0.202 Callipulli, Chile
time 03/18/2010 00:00:00
datalogger  rt130  9249
sensor cmg40t 0 T4906
axis Z 0 0 - 1 1
axis N 0 90 - 2 1
axis E 90 90 - 3 1
samplerate 100sps
channel Z HHZ
channel N HHN
channel E HHE
samplerate 1sps
channel Z LHZ
channel N LHN
channel E LHE
add

close U04B 12/31/2010 23:59:59
```

```
#das; refchan; refstrm; netcode; station; channel; samplerate; gain
9249;   1;     rs100spsrs;    XY;     U04B;   HHZ;    100;          x1
9249;   3;     rs100spsrs;    XY;     U04B;   HHE;    100;          x1
9249;   2;     rs100spsrs;    XY;     U04B;   HHN;    100;          x1
9249;   1;     rs1spsrs;      XY;     U04B;   LHZ;    1;            x1
9249;   3;     rs1spsrs;      XY;     U04B;   LHE;    1;            x1
9249;   2;     rs1spsrs;      XY;     U04B;   LHN;    1;            x1
```

batch2par batch_file > par_file

```
net XY Chile RAMP

sta U04B -37.986700 -72.569800 0.202 Callipulli, Chile
time 03/18/2010 00:00:00
datalogger  rt130  9249
sensor cmg40t 0 T4906
axis Z 0 0 - 1 1
axis N 0 90 - 2 1
axis E 90 90 - 3 1
samplerate 100sps
channel Z HHZ
channel N HHN
channel E HHE
samplerate 1sps
channel Z LHZ
channel N LHN
channel E LHE
add

close U04B 12/31/2010 23:59:59
```

```
#das; refchan; refstrm; netcode; station; channel; samplerate; gain
9249;   1;     rs100spsrs;    XY;     U04B;   HHZ;    100;          x1
9249;   3;     rs100spsrs;    XY;     U04B;   HHE;    100;          x1
9249;   2;     rs100spsrs;    XY;     U04B;   HHN;    100;          x1
9249;   1;     rs1spsrs;      XY;     U04B;   LHZ;    1;            x1
9249;   3;     rs1spsrs;      XY;     U04B;   LHE;    1;            x1
9249;   2;     rs1spsrs;      XY;     U04B;   LHN;    1;            x1
```

batch2par batch_file > par_file

```
net XY Chile RAMP

sta U04B -37.986700 -72.569800 0.202 Callipulli, Chile
time 03/18/2010 00:00:00
datalogger  rt130  9249
sensor cmg40t 0 T4906
axis Z 0 0 - 1 1
axis N 0 90 - 2 1
axis E 90 90 - 3 1
samplerate 100sps
channel Z HHZ
channel N HHN
channel E HHE
samplerate 1sps
channel Z LHZ
channel N LHN
channel E LHE
add

close U04B 12/31/2010 23:59:59
```

```
#das; refchan; refstrm; netcode; station; channel; samplerate; gain
9249;   1;     rs100spsrs;   XY;    U04B;   HHZ;    100;          x1
9249;   3;     rs100spsrs;   XY;    U04B;   HHE;    100;          x1
9249;   2;     rs100spsrs;   XY;    U04B;   HHN;    100;          x1
9249;   1;     rs1spsrs;     XY;    U04B;   LHZ;    1;            x1
9249;   3;     rs1spsrs;     XY;    U04B;   LHE;    1;            x1
9249;   2;     rs1spsrs;     XY;    U04B;   LHN;    1;            x1
```

batch2par batch_file > par_file

```
net XY Chile RAMP

sta U04B -37.986700 -72.569800 0.202 Callipulli, Chile
time 03/18/2010 00:00:00
datalogger  rt130  9249
sensor cmg40t 0 T4906
axis Z 0 0 - 1 1
axis N 0 90 - 2 1
axis E 90 90 - 3 1
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channel N HHN
channel E HHE
samplerate 1sps
channel Z LHZ
channel N LHN
channel E LHE
add

close U04B 12/31/2010 23:59:59
```

```
#das; refchan; refstrm; netcode; station; channel; samplerate; gain
9249;   1;    rs100spsrs;   XY;    U04B;   HHZ;    100;          x1
9249;   3;    rs100spsrs;   XY;    U04B;   HHE;    100;          x1
9249;   2;    rs100spsrs;   XY;    U04B;   HHN;    100;          x1
9249;   1;    rs1spsrs;     XY;    U04B;   LHZ;    1;            x1
9249;   3;    rs1spsrs;     XY;    U04B;   LHE;    1;            x1
9249;   2;    rs1spsrs;     XY;    U04B;   LHN;    1;            x1
```

batch2par batch_file > par_file

```
net XY Chile RAMP

sta U04B -37.986700 -72.569800 0.202 Callipulli, Chile
time 03/18/2010 00:00:00
datalogger  rt130  9249
sensor cmg40t 0 T4906
axis Z 0 0 - 1 1
axis N 0 90 - 2 1
axis E 90 90 - 3 1
samplerate 100sps
channel Z HHZ
channel N HHN
channel E HHE
samplerate 1sps
channel Z LHZ
channel N LHN
channel E LHE
add

close U04B 12/31/2010 23:59:59
```

```
#das; refchan; refstrm;    netcode; station; channel; samplerate; gain
9249;   1;     rs100spsrs;   XY;    U04B;   HHZ;    100;        x1
9249;   3;     rs100spsrs;   XY;    U04B;   HHE;    100;        x1
9249;   2;     rs100spsrs;   XY;    U04B;   HHN;    100;        x1
9249;   1;     rs1spsrs;     XY;    U04B;   LHZ;    1;          x1
9249;   3;     rs1spsrs;     XY;    U04B;   LHE;    1;          x1
9249;   2;     rs1spsrs;     XY;    U04B;   LHN;    1;          x1
```

batch2par batch_file > par_file

```
net XY Chile RAMP

sta U04B -37.986700 -72.569800 0.202 Callipulli, Chile
time 03/18/2010 00:00:00
datalogger  rt130  9249
sensor cmg40t 0 T4906
axis Z 0 0 - 1 1
axis N 0 90 - 2 1
axis E 90 90 - 3 1
samplerate 100sps
channel Z HHZ
channel N HHN
channel E HHE
samplerate 1sps
channel Z LHZ
channel N LHN
channel E LHE
add

close U04B 12/31/2010 23:59:59
```

```
#das; refchan; refstrm; netcode; station; channel; samplerate; gain
9249;   1;     rs100spsrs;    XY;    U04B;   HHZ;    100;          x1
9249;   3;     rs100spsrs;    XY;    U04B;   HHE;    100;          x1
9249;   2;     rs100spsrs;    XY;    U04B;   HHN;    100;          x1
9249;   1;     rs1spsrs;      XY;    U04B;   LHZ;    1;            x1
9249;   3;     rs1spsrs;      XY;    U04B;   LHE;    1;            x1
9249;   2;     rs1spsrs;      XY;    U04B;   LHN;    1;            x1
```

batch2par batch_file > par_file

```
net XY Chile RAMP

sta U04B -37.986700 -72.569800 0.202 Callipulli, Chile
time 03/18/2010 00:00:00
datalogger  rt130  9249
sensor cmg40t 0 T4906
axis Z 0 0 - 1 1
axis N 0 90 - 2 1
axis E 90 90 - 3 1
samplerate 100sps
channel Z HHZ
channel N HHN
channel E HHE
samplerate 1sps
channel Z LHZ
channel N LHN
channel E LHE
add

close U04B 12/31/2010 23:59:59
```

#das;	refchan;	refstrm;	netcode;	station;	channel;	samplerate;	gain
9249;	1;	rs100spsrs;	XY;	U04B	HHZ;	100;	x1
9249;	3;	rs100spsrs;	XY;	U04B	HHE;	100;	x1
9249;	2;	rs100spsrs;	XY;	U04B	HHN;	100;	x1
9249;	1;	rs1spsrs;	XY;	U04B	LHZ;	1;	x1
9249;	3;	rs1spsrs;	XY;	U04B	LHE;	1;	x1
9249;	2;	rs1spsrs;	XY;	U04B	LHN;	1;	x1

batch2par batch_file > par_file

```
net XY Chile RAMP

sta U04B -37.986700 -72.569800 0.202 Callipulli, Chile
time 03/18/2010 00:00:00
datalogger  rt130  9249
sensor cmg40t 0 T4906
axis Z 0 0 - 1 1
axis N 0 90 - 2 1
axis E 90 90 - 3 1
samplerate 100sps
channel Z HHZ
channel N HHN
channel E HHE
samplerate 1sps
channel Z LHZ
channel N LHN
channel E LHE
add

close U04B 12/31/2010 23:59:59
```

#das;	refchan;	refstrm;	netcode;	station;	channel;	samplerate;	gain
9249;	1;	rs100spsrs;	XY;	U04B;	HHZ;	100;	x1
9249;	3;	rs100spsrs;	XY;	U04B;	HHE;	100;	x1
9249;	2;	rs100spsrs;	XY;	U04B;	HHN;	100;	x1
9249;	1;	rs1spsrs;	XY;	U04B;	LHZ;	1;	x1
9249;	3;	rs1spsrs;	XY;	U04B;	LHE;	1;	x1
9249;	2;	rs1spsrs;	XY;	U04B;	LHN;	1;	x1

batch2par batch_file > par_file

```
net XY Chile RAMP

sta U04B -37.986700 -72.569800 0.202 Callipulli, Chile
time 03/18/2010 00:00:00
datalogger  rt130  9249
sensor cmg40t 0 T4906
axis Z 0 0 - 1 1
axis N 0 90 - 2 1
axis E 90 90 - 3 1
samplerate 100sps
channel Z HHZ
channel N HHN
channel E HHE
samplerate 1sps
channel Z LHZ
channel N LHN
channel E LHE
add

close U04B 12/31/2010 23:59:59
```

```
#das; refchan; refstrm; netcode; station; channel; samplerate; gain
9249;   1;     rs100spsrs;    XY;     U04B;   HHZ;    100;          x1
9249;   3;     rs100spsrs;    XY;     U04B;   HHE;    100;          x1
9249;   2;     rs100spsrs;    XY;     U04B;   HHN;    100;          x1
9249;   1;     rs1spsrs;      XY;     U04B;   LHZ;    1;            x1
9249;   3;     rs1spsrs;      XY;     U04B;   LHE;    1;            x1
9249;   2;     rs1spsrs;      XY;     U04B;   LHN;    1;            x1
```

Edit the par_file

```
#das; refchan; refstrm; netcode; station; channel; samplerate; gain
9249;   1;     rs100spsrs;     XY;     U04B;   HHZ;    100;     x1
9249;   3;     rs100spsrs;     XY;     U04B;   HHE;    100;     x1
9249;   2;     rs100spsrs;     XY;     U04B;   HHN;    100;     x1
9249;   1;     rs1spsrs;       XY;     U04B;   LHZ;    1;       x1
9249;   3;     rs1spsrs;       XY;     U04B;   LHE;    1;       x1
9249;   2;     rs1spsrs;       XY;     U04B;   LHN;    1;       x1
```

```
#das; refchan; refstrm; netcode; station; channel; samplerate; gain
9249;   1;     1;      XY;     U04B;   HHZ;    100;     1
9249;   3;     1;      XY;     U04B;   HHE;    100;     1
9249;   2;     1;      XY;     U04B;   HHN;    100;     1
9249;   1;     2;      XY;     U04B;   LHZ;    1;       1
9249;   3;     2;      XY;     U04B;   LHE;    1;       1
9249;   2;     2;      XY;     U04B;   LHN;    1;       1
9249;   1;     9;      XY;     U04B;   VM1;    0.1;     1
9249;   3;     9;      XY;     U04B;   VM3;    0.1;     1
9249;   2;     9;      XY;     U04B;   VM2;    0.1;     1
```

Run rt2ms

- Check out 'rt2ms –h' to see other options
- Run:

  rt2ms –D dir-of-zips –Y –L –o MSEED –p par_file >& rt2ms.out
- The output is .log (and .err) files as well as waveform data in subdirectories beneath the MSEED directory

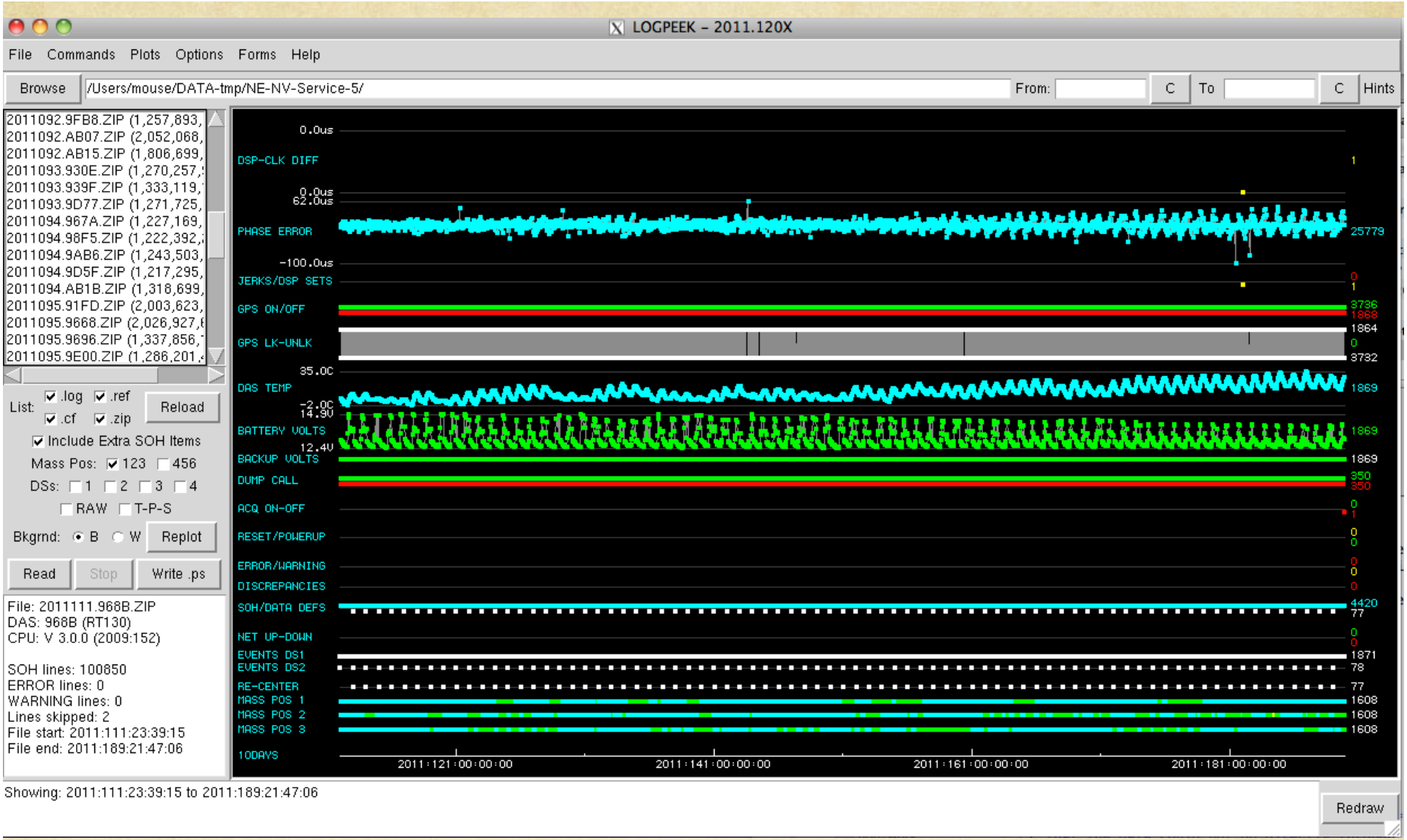
QC your files and data

- Move all .log and .err files into the LOGS directory
- Use logpeek to look for timing problems, power issues, mass position problems
- Use PQL II to evaluate the waveforms

Logpeek

- Use logpeek to look at station health
- Suggestions would be:
  - Look for consistent locking and unlocking of the gps
  - Verify that the solar panels are charging the battery (if applicable)
  - Check the mass positions for excessive drift or pegging
- See 'Logpeek: Reviewing RT130 State of Health Information' on this page:

www.passcal.nmt.edu/content/data-archiving/documentation/passive-source

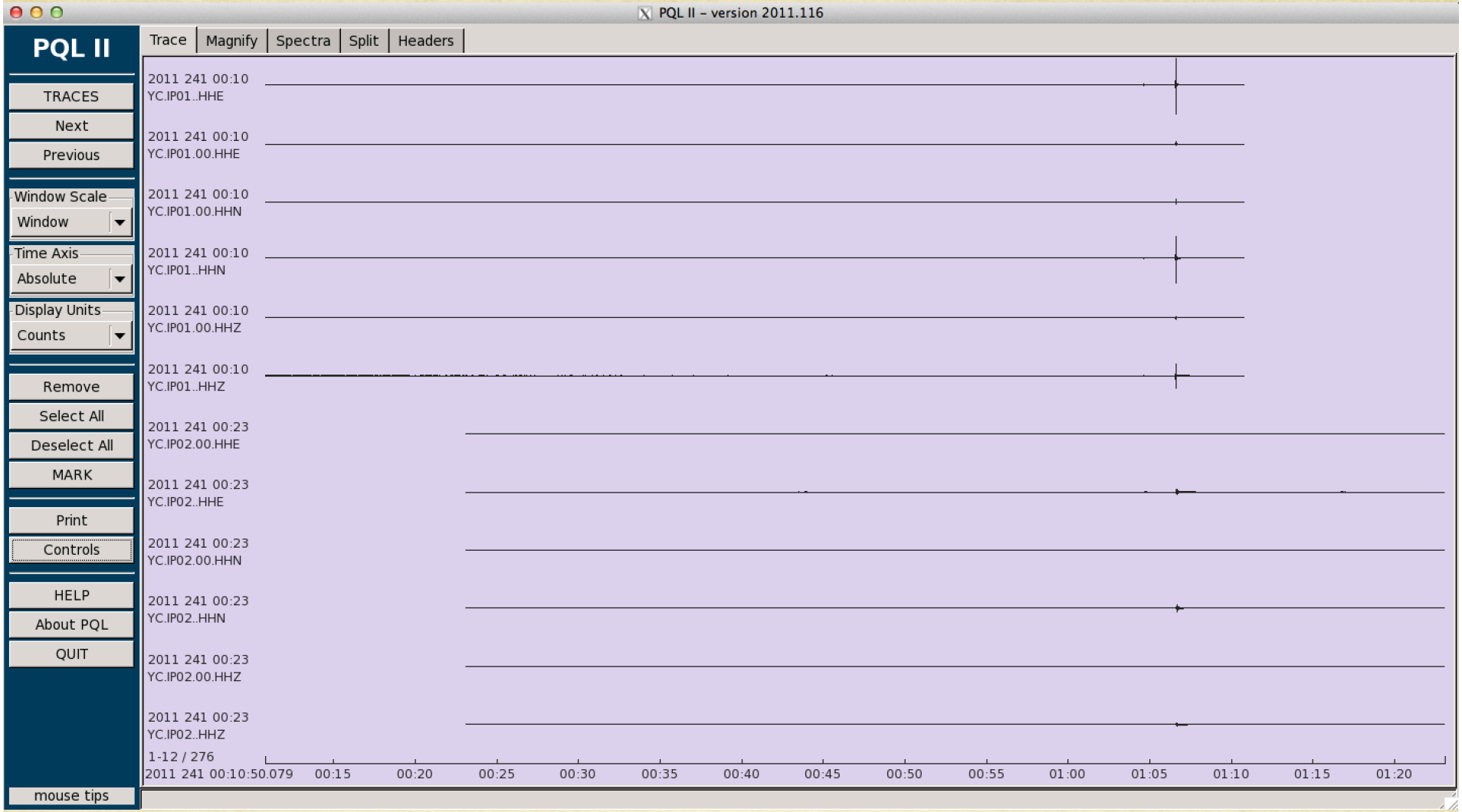

LOGPEEK – 2011.120X
File Commands Plots Options Forms Help
Browse
/Users/mouse/DATA-tmp/NE-NV-Service-5/
From:
To
Hints
2011092.9FB8.ZIP (1,257,893,
2011092.AB07.ZIP (2,052,068,
2011092.AB15.ZIP (1,806,699,
2011093.930E.ZIP (1,270,257,
2011093.939F.ZIP (1,333,119,
2011093.9D77.ZIP (1,271,725,
2011094.967A.ZIP (1,227,169,
2011094.98F5.ZIP (1,222,392,
2011094.9AB6.ZIP (1,243,503,
2011094.9D5F.ZIP (1,217,295,
2011094.AB1B.ZIP (1,318,699,
2011095.91FD.ZIP (2,003,623,
2011095.9668.ZIP (2,026,927,
2011095.9696.ZIP (1,337,856,
2011095.9E00.ZIP (1,286,201,
List: .log .ref .cf .zip
Reload
Include Extra SOH Items
Mass Pos: 123 456
DSs: 1 2 3 4
RAW T-P-S
Bkgrnd: B W
Replot
Read
Stop
Write .ps
File: 2011111.968B.ZIP
DAS: 968B (RT130)
CPU: V 3.0.0 (2009:152)
SOH lines: 100850
ERROR lines: 0
WARNING lines: 0
Lines skipped: 2
File start: 2011:111:23:39:15
File end: 2011:189:21:47:06
0.0us
DSP-CLK DIFF
0.0us
62.0us
PHASE ERROR
-100.0us
JERKS/DSP SETS
GPS ON/OFF
GPS LK-UNLK
35.0C
DAS TEMP
-2.0C
14.9V
BATTERY VOLTS
12.4V
BACKUP VOLTS
DUMP CALL
ACQ ON-OFF
RESET/POWERUP
ERROR/WARNING
DISCREPANCIES
SOH/DATA DEFS
NET UP-DOWN
EVENTS DS1
EVENTS DS2
RE-CENTER
MASS POS 1
MASS POS 2
MASS POS 3
10DAYS
2011:121:00:00:00
2011:141:00:00:00
2011:161:00:00:00
2011:181:00:00:00
Showing: 2011:111:23:39:15 to 2011:189:21:47:06
Redraw

Logpeek

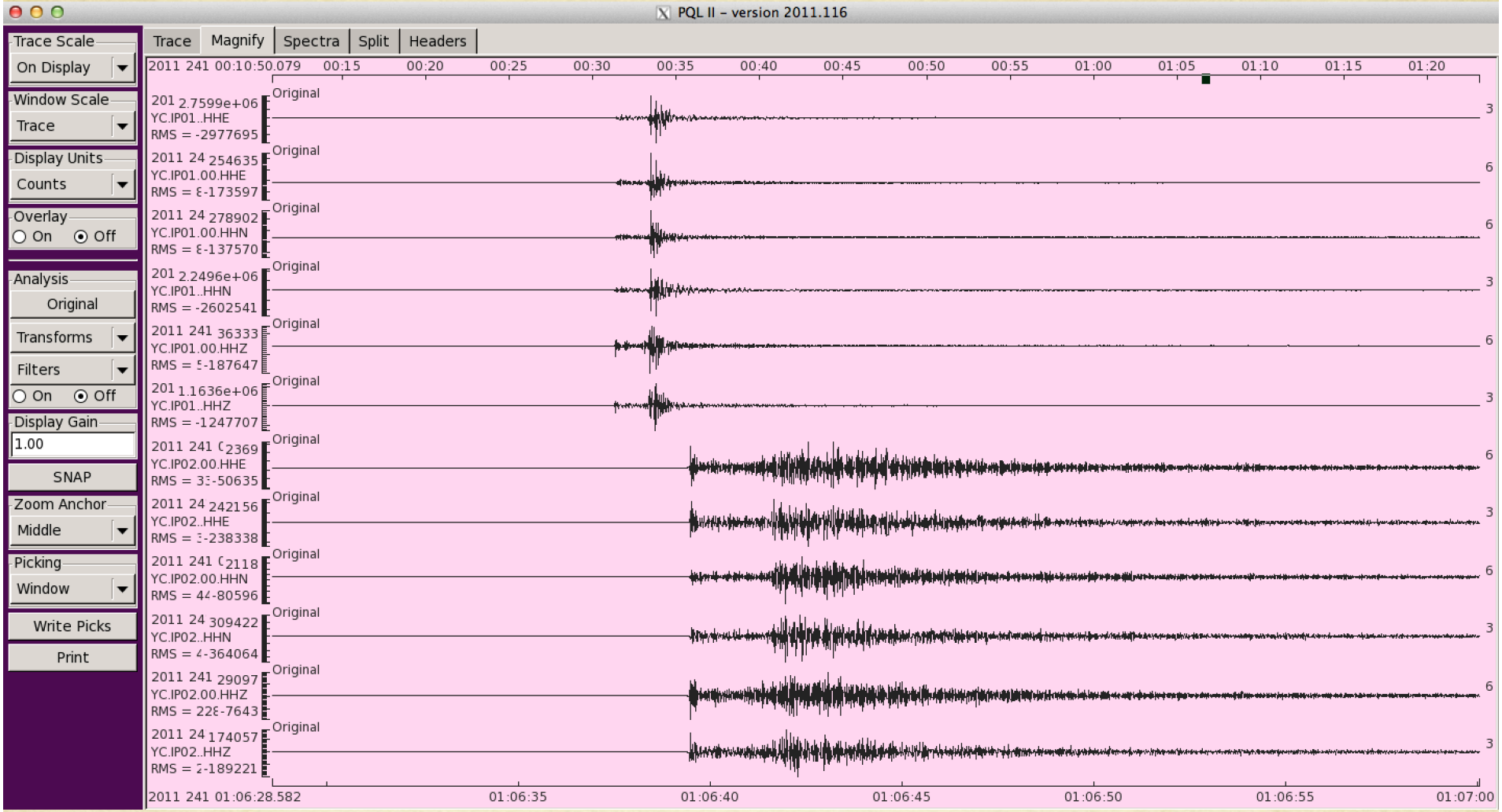
PQL II

- Use PQL II to review waveform data
- Suggestions would be:
  - Combine all 1sps data together and look at long-term waveform health
  - Identify specific earthquakes from online catalogs and look for them in your data
  - Scan through waveforms on a day-by-day basis
- See PQL help documents on this page:

www.passcal.nmt.edu/content/data-archiving/documentation/passive-source


PQL II – version 2011.116
PQL II
Trace
Magnify
Spectra
Split
Headers
TRACES
Next
Previous
Window Scale
Window
Time Axis
Absolute
Display Units
Counts
Remove
Select All
Deselect All
MARK
Print
Controls
HELP
About PQL
QUIT
mouse tips
2011 241 00:10
YC.IP01..HHE
2011 241 00:10
YC.IP01.00.HHE
2011 241 00:10
YC.IP01.00.HHN
2011 241 00:10
YC.IP01..HHN
2011 241 00:10
YC.IP01.00.HHZ
2011 241 00:10
YC.IP01..HHZ
2011 241 00:23
YC.IP02.00.HHE
2011 241 00:23
YC.IP02..HHE
2011 241 00:23
YC.IP02.00.HHN
2011 241 00:23
YC.IP02..HHN
2011 241 00:23
YC.IP02.00.HHZ
2011 241 00:23
YC.IP02..HHZ
1-12 / 276
2011 241 00:10:50.079
00:15
00:20
00:25
00:30
00:35
00:40
00:45
00:50
00:55
01:00
01:05
01:10
01:15
01:20

PQL II


PQL II – version 2011.116
Trace Scale
On Display
Window Scale
Trace
Display Units
Counts
Overlay
On
Off
Analysis
Original
Transforms
Filters
On
Off
Display Gain
1.00
SNAP
Zoom Anchor
Middle
Picking
Window
Write Picks
Print
Trace
Magnify
Spectra
Split
Headers
2011 241 00:10:50.079
00:15
00:20
00:25
00:30
00:35
00:40
00:45
00:50
00:55
01:00
01:05
01:10
01:15
01:20
Original
YC.IP01..HHE
YC.IP01.00.HHE
YC.IP01.00.HHN
YC.IP01..HHN
YC.IP01.00.HHZ
YC.IP01..HHZ
YC.IP02.00.HHE
YC.IP02..HHE
YC.IP02.00.HHN
YC.IP02..HHN
YC.IP02.00.HHZ
YC.IP02..HHZ
2011 241 01:06:28.582
01:06:35
01:06:40
01:06:45
01:06:50
01:06:55
01:07:00

PQL II

log2miniseed

- Converts log files into day volumes
- Copy the global log2miniseed parameter file into your working directory by typing:
  - cp $ANTELOPE/data/pf/log2miniseed.pf .

log2miniseed (cont.)

- Using any text editor, change the default string in the log2miniseed.pf file
- from this:

  wfname %Y/%j/%{sta}.%{chan}.%Y.%j
- to:

  wfname day_volumes/%{sta}/%{sta}.%{net}.%{loc}.%{chan}.%Y.%j

log2miniseed (finally!)

- Ensure that Antelope is using the pf you just modified by using either:

For tcsh: setenv PFPATH $ANTELOPE/data/pf:.

For bash: export PFPATH=$ANTELOPE/data/pf:.

- Then run log2miniseed:

log2miniseed –a –n XY –s U04B LOGS/2010.128.15.09.9249.log

- where XY, U04B and LOGS/*.log are changed to your network, station, path and file names. Do this for every log file or write a script for it.

miniseed2days

- Convert the waveforms into station-channel-day volumes using miniseed2days
- Use:

miniseed2days –d DB/dbname –u –w "day_volumes/%{sta}/%{sta}.%{net}.%{loc}.%{chan}.%Y.%j" MSEED/ >& miniseed2days.out

- The –w flag defines a required naming format; use this flag or modify the miniseed2days.pf file

Switching gears to Q330 data

Q330 data – in brief

- Batch file
- miniseed2days – split waveforms into station-channel-day volumes out of multiplexed files
- fixhdr if any headers need to be changed and miniseed2days again only if changes were made
- qpeek for state of health (SOH) review
- pql for waveform and some SOH review
- miniseed2db to add waveforms to the database

- Batch file – we did this already!
- miniseed2days – split waveforms into station-channel-day volumes out of multiplexed files
- fixhdr if any headers need to be changed and miniseed2days again only if changes were made
- qpeek for state of health (SOH) review
- pql for waveform and some SOH review
- miniseed2db to add waveforms to the database

miniseed2days

- Convert the waveforms into station-channel-day volumes using miniseed2days
- For B14 balers:

miniseed2days –f –w "day_volumes/%{sta}/%{sta}.%{net}.%{loc}.%{chan}.%Y.%j" RAW/*.ALL >& miniseed2days.out

- For B44 balers:

miniseed2days –f –w "day_volumes/%{sta}/%{sta}.%{net}.%{loc}.%{chan}.%Y.%j" RAW/staname.?/data >& miniseed2days.out

fixhdr (only if...)

- Use fixhdr to fix headers if any are incorrect
- Then, to update the file names, re-run miniseed2days:

miniseed2days –u –w "day_volumes2/%{sta}/%{sta}.%{net}.%{loc}.%{chan}.%Y.%j" day_volumes/ >& miniseed2days2.out

How to use fixhdr to:

- Correct headers
- Change endianness
- Mark timing questionable
- See 'Fixhdr Help' and the training video for RT130-to-SEED processing on our website:

www.passcal.nmt.edu/content/data-archiving/documentation/passive-source

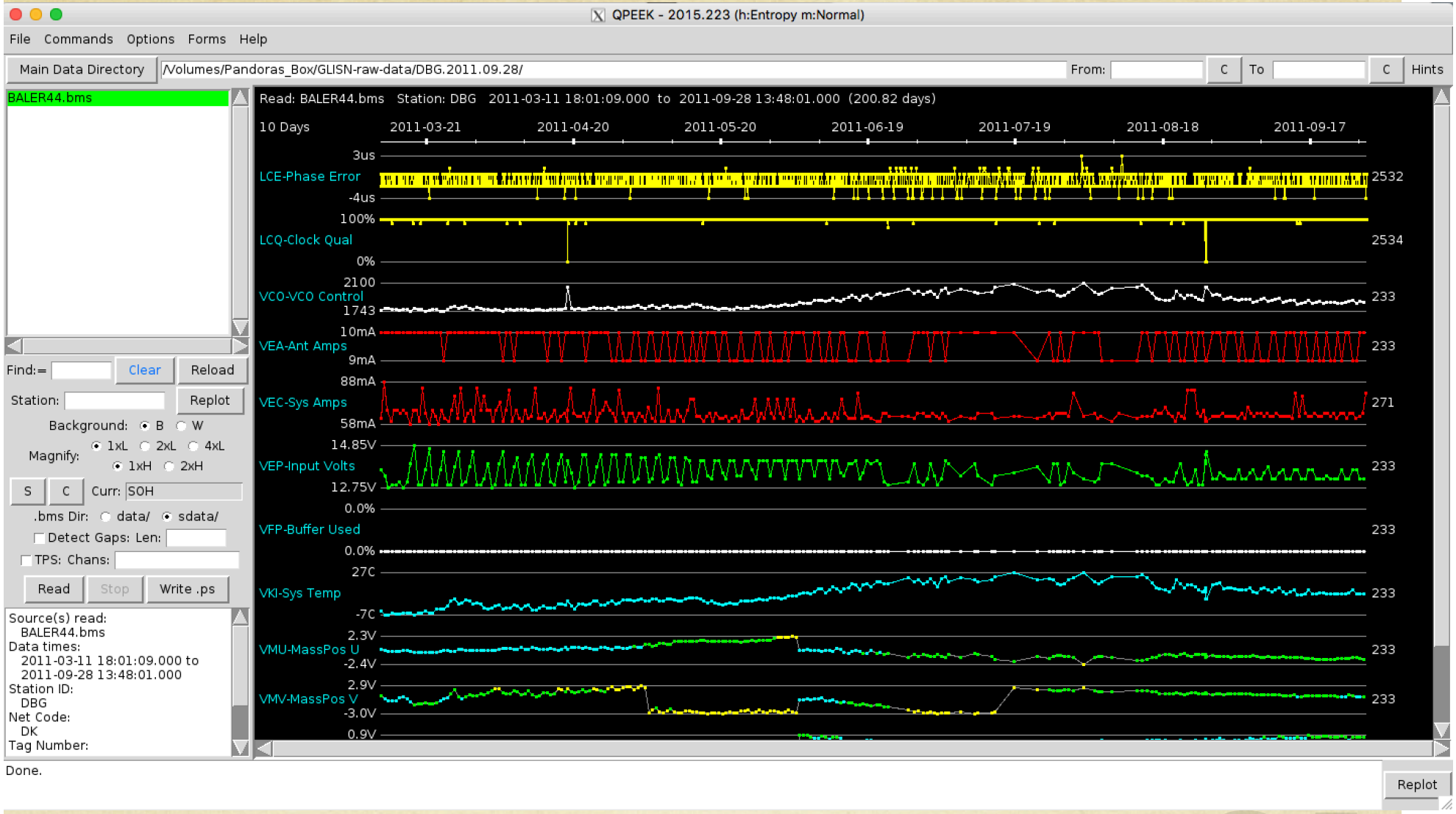
qpeek and pql

- Use qpeek to view SOH channels
- Use PQL to scan the waveforms as well as focus in on SOH channels such as temperature, voltage and clock quality
- See 'Q330 State of Health (SOH) Channels' on this page:

www.passcal.nmt.edu/content/data-archiving/documentation/passive-source

Qpeek

- Similar to logpeek, use qpeek to look at station health
- Suggestions would be:
  - Check for high clock quality and low phase errors
  - Verify that the solar panels are charging the battery (if applicable)
  - Look for excessive drift or pegging in the mass positions
  - Examine decimated waveforms
  - Confirm that the packet buffer is dumping regularly to the baler

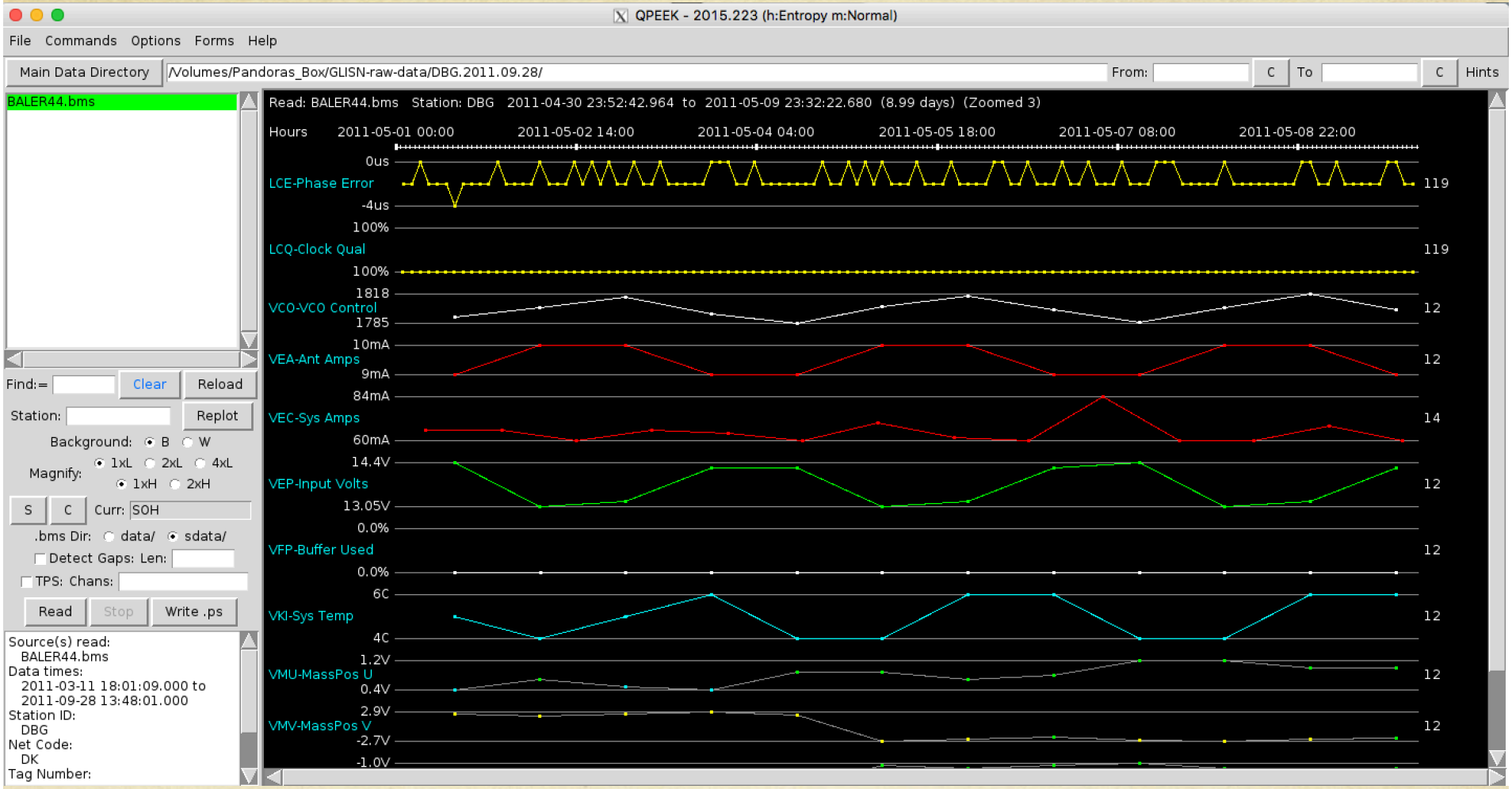

QPEEK - 2015.223 (h:Entropy m:Normal)
File Commands Options Forms Help
Main Data Directory
/Volumes/Pandoras_Box/GLISN-raw-data/DBG.2011.09.28/
From:
To
Hints
BALER44.bms
Read: BALER44.bms Station: DBG 2011-03-11 18:01:09.000 to 2011-09-28 13:48:01.000 (200.82 days)
10 Days
2011-03-21
2011-04-20
2011-05-20
2011-06-19
2011-07-19
2011-08-18
2011-09-17
LCE-Phase Error
LCQ-Clock Qual
VCO-VCO Control
VEA-Ant Amps
VEC-Sys Amps
VEP-Input Volts
VFP-Buffer Used
VKI-Sys Temp
VMU-MassPos U
VMV-MassPos V
Find:=
Clear
Reload
Station:
Replot
Background: B W
Magnify: 1xL 2xL 4xL 1xH 2xH
S
C
Curr: SOH
.bms Dir: data/ sdata/
Detect Gaps: Len:
TPS: Chans:
Read
Stop
Write .ps
Source(s) read:
BALER44.bms
Data times:
2011-03-11 18:01:09.000 to
2011-09-28 13:48:01.000
Station ID:
DBG
Net Code:
DK
Tag Number:
Done.
Replot

qpeek

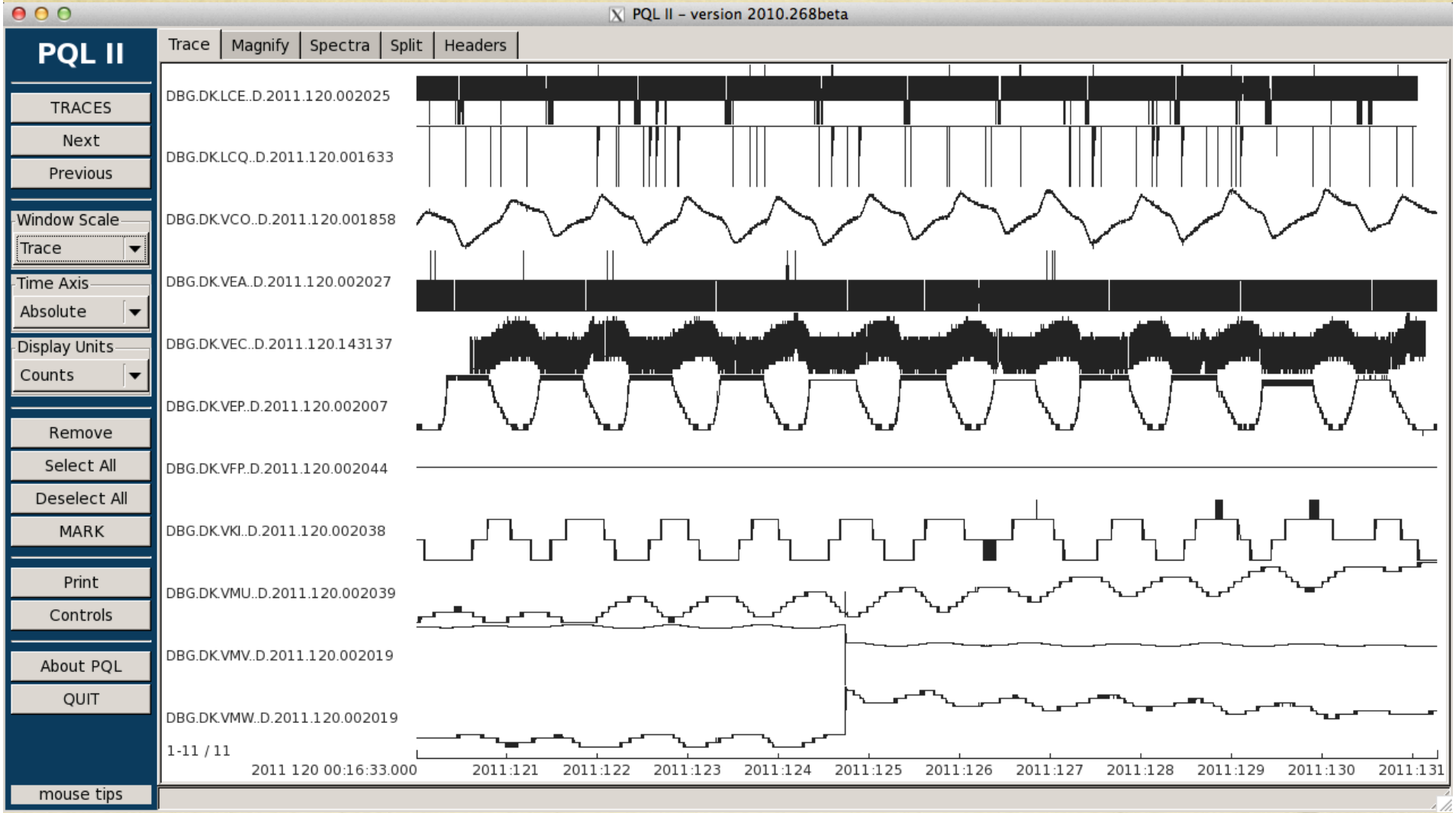
PQL II

- Just like for RT130s, use PQL II to review waveform data
- But! An advantage of Q330s is that the SOH channels can be examined more closely due to their format and higher sample rate (vs RT130)
- See PQL help documents on this page:

www.passcal.nmt.edu/content/data-archiving/documentation/passive-source



10 days of SOH in qpeek



Same 10 days in PQL II

miniseed2db

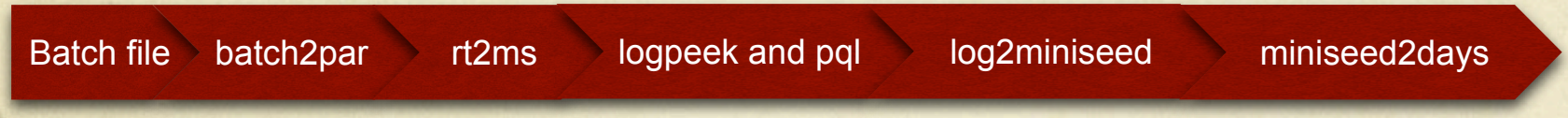
- Use miniseed2db to add the waveforms to your database:

miniseed2db day_volumes2/* DB/dbname >& miniseed2db.out

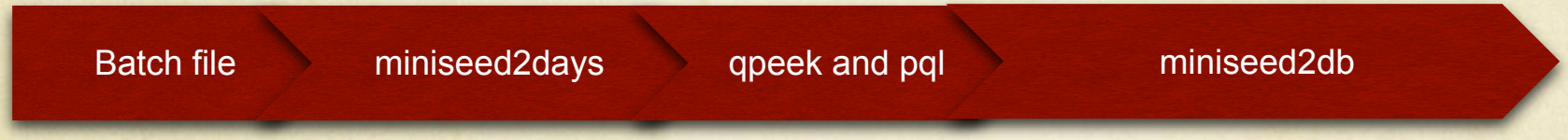
- If you did not need to re-run miniseed2days, use 'day_volumes' instead of 'day_volumes2'

Back together again

- You now have a database with metadata and waveforms, whether you have rt130 or q330 data



And/or



Now to wrap it up!

dbfixchanids

- Syncs the wfdisc table with the sensor table:

dbfixchanids dbname >& dbfixchanids.out

- dbfixchanids will throw an error if a particular wfdisc row does not have a corresponding sensor row

dbverify

- Checks database for consistency:

dbverify -tj dbname >& dbverify.out

- A good result is: 0 failures of joins

dbverify problems

Check	Issues on traces & meta-data	Comments
dbverify perform consistency checks on db	Non-described channels/stations	Comparing cmd output & batch file to identify the reason for this warning
	Multiple configurations for same time frame	Mainly due to bad closing times in the batch file or multiple configurations for the same station in one day without proper closing
	Removed files	Missing files in original path
	Duplicate record	Same record in multiple wfdisc entries

dbversdwf

- Checks the wfdisc miniseed data files for consistency:

dbversdwf –tu dbname >& dbversdwf.out

- A good result is: 0 bad files/0 bad records

dbversdwf problems

Check	Issues	Comments
dbversdwf check SEED data files for consistency	BAD records	These warnings are usually associated with: •Bad endianness •Bad logical record •Steim compression issues •Corrupted blockette

For details on each check please consult man page (man dbversdwf)

Generate your dataless

- Use mk_dataless_seed to create a dataless based on your database

mk_dataless_seed –v –o NN.YY.dbname.YYYYDOYHHMM.dataless dbname

- Where: NN is your network code, YY is the year of your data, and DOYHHMM is the approximate **current** day-of-year-hour-minute

Common first time problem:

- There is a field in the site.pf that requires an 'originating organization'
- The error that comes from mk_dataless_seed reads:

db2sd *fatal*: Please fill in the 'originating organization' in db2sd.pf

- Using admin privileges, edit site.pf to have your institution as the 'originating organization'
- site.pf is found in $ANTELOPE/data/pf/site.pf

Verify your dataless

- Verify the dataless:

seed2db –v NN.YY.dbname.YYYYDOYHHMM.dataless

- A successful result is a listing of all of your stations followed by zero errors in the 11 SEEDERRORS categories

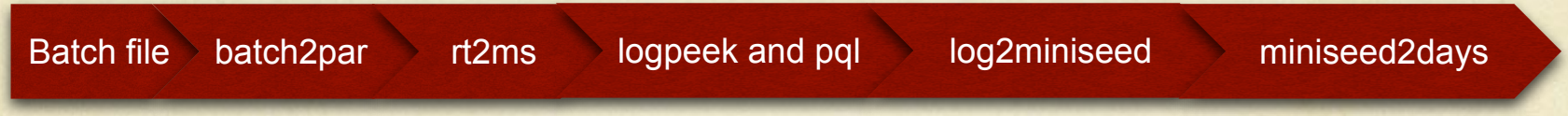
Send your data and dataless to PASSCAL

- Email your dataless to data_group@passcal.nmt.edu so that we can open and/or turn on the database allocation for your experiment
- Use data2passcal.py to send your data to PASSCAL
  - You will want to run it on the day_volumes directory containing your final miniseed files
  - All miniseed files found in the directory will be sent
  - List of sent files is kept in a log file so if the transfer is interrupted, data2passcal will resume where it left off

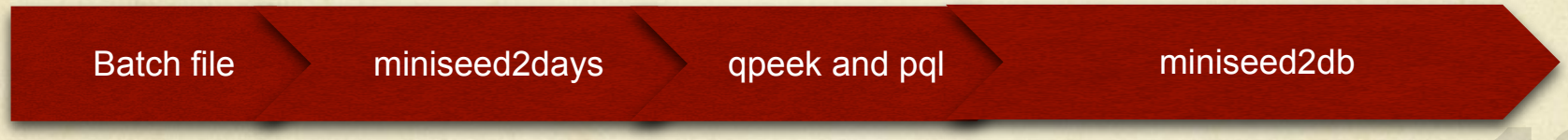
And in summary:

- Data and metadata converted to archive-ready format:

Either RT130 data:



Or Q330 data:



And in summary:

- Database checked, dataless created, data sent:

Fin! (With your part)(for now...)

What goes on at the PIC

- We run checks on your waveforms and dataless, looking for:
  - Correct naming convention
  - Overlaps
  - All data described in dataless
  - Consistency with dataless
  - Previously archived?
  - Unique station locations

What next?

- If there are no problems with the data or dataless, the data will be transmitted to the DMC for final archiving within a few days
- Shortly after that, the data are available for downloading from the DMC via your favorite request tool
- The Data Group will send you a summary of the data coverage of all of your archived data for confirmation. Please compare this with your field notes to ensure that no data were lost

Data coverage: coverplot

- coverplot generates a plot illustrating the coverage of the data archived and the dataless
- Uses a data sync file and the dataless to create a graphical review of the data archived
- To load both the sync and the dataless:

  coverplot –m <sync> –d <dataless>

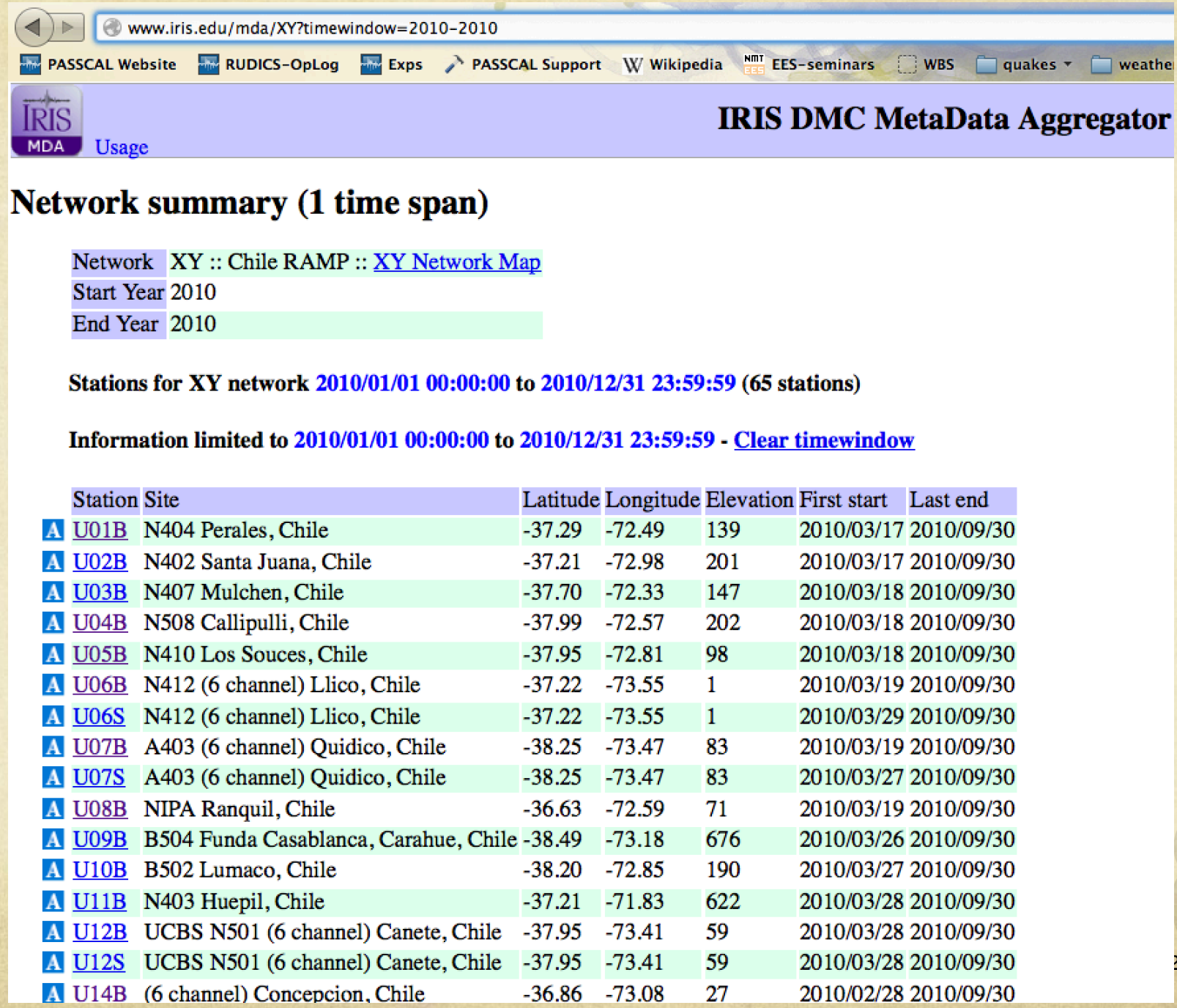
- Light blue: dataless coverage
- Dark blue: data
- Pink: data gap
- Red: data with no dataless (shouldn't see any)

At the DMC...

- Here are some ways to look at the available data for the Chile RAMP network...

- www.iris.edu/mda/XY?timewindow=2010-2010

- (You can try this out on your network!)



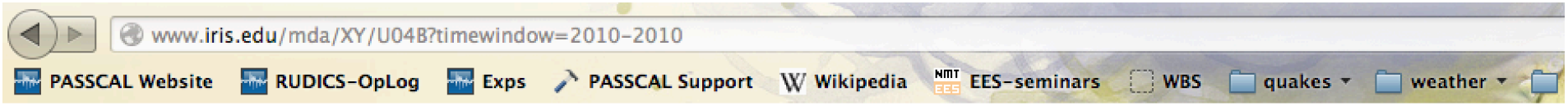
Network summary (1 time span)

Network	XY :: Chile RAMP :: XY Network Map
Start Year	2010
End Year	2010

Stations for XY network 2010/01/01 00:00:00 to 2010/12/31 23:59:59 (65 stations)

Information limited to 2010/01/01 00:00:00 to 2010/12/31 23:59:59 - Clear timewindow

	Station	Site	Latitude	Longitude	Elevation	First start	Last end
A	U01B	N404 Perales, Chile	-37.29	-72.49	139	2010/03/17	2010/09/30
A	U02B	N402 Santa Juana, Chile	-37.21	-72.98	201	2010/03/17	2010/09/30
A	U03B	N407 Mulchen, Chile	-37.70	-72.33	147	2010/03/18	2010/09/30
A	U04B	N508 Callipulli, Chile	-37.99	-72.57	202	2010/03/18	2010/09/30
A	U05B	N410 Los Souces, Chile	-37.95	-72.81	98	2010/03/18	2010/09/30
A	U06B	N412 (6 channel) Llico, Chile	-37.22	-73.55	1	2010/03/19	2010/09/30
A	U06S	N412 (6 channel) Llico, Chile	-37.22	-73.55	1	2010/03/29	2010/09/30
A	U07B	A403 (6 channel) Quidico, Chile	-38.25	-73.47	83	2010/03/19	2010/09/30
A	U07S	A403 (6 channel) Quidico, Chile	-38.25	-73.47	83	2010/03/27	2010/09/30
A	U08B	NIPA Ranquil, Chile	-36.63	-72.59	71	2010/03/19	2010/09/30
A	U09B	B504 Funda Casablanca, Carahue, Chile	-38.49	-73.18	676	2010/03/26	2010/09/30
A	U10B	B502 Lumaco, Chile	-38.20	-72.85	190	2010/03/27	2010/09/30
A	U11B	N403 Huepil, Chile	-37.21	-71.83	622	2010/03/28	2010/09/30
A	U12B	UCBS N501 (6 channel) Canete, Chile	-37.95	-73.41	59	2010/03/28	2010/09/30
A	U12S	UCBS N501 (6 channel) Canete, Chile	-37.95	-73.41	59	2010/03/28	2010/09/30
A	U14B	(6 channel) Concepcion, Chile	-36.86	-73.08	27	2010/02/28	2010/09/30



IRIS MDA Usage

IRIS DMC MetaData Aggregator

Station summary (1 time span)

Information limited to 2010/01/01 00:00:00 to 2010/12/31 23:59:59 - Clear timewindow

Network	XY :: Chile RAMP :: XY Network Map
Station	U04B :: N508 Callipulli, Chile :: Chile RAMP - IRIS, University of Chile :: U04B Station Map :: View RESP
Latitude	-37.99
Longitude	-72.57
Elevation	202
Start	2010/03/18 (077) 00:00:00
End	2010/09/30 (273) 23:59:59
Epoch	2010/03/25 (084) 20:32:00 - 2010/09/30 (273) 23:59:59
Instrument	Reftek 130 Datalogger
Channels (Hz)	Location --: LM1 (1), LM2 (1), LM3 (1), LOG (0)A, VM1 (.1)A, VM2 (.1)A, VM3 (.1)A
Instrument	Guralp CMG3T/Reftek 130 Datalogger
Channels (Hz)	Location --: HHE (100)A, HHN (100)A, HHZ (100)A, LHE (1)A, LHN (1)A, LHZ (1)A
Epoch	2010/03/18 (077) 20:30:00 - 2010/03/25 (084) 20:32:00
Instrument	Reftek 130 Datalogger
Channels (Hz)	Location --: LM1 (1), LM2 (1), LM3 (1), LOG (0)A, VM1 (.1)A, VM2 (.1)A, VM3 (.1)A
Instrument	Guralp CMG40T/Reftek 130 Datalogger
Channels (Hz)	Location --: HHE (100)A, HHN (100)A, HHZ (100)A, LHE (1)A, LHN (1)A, LHZ (1)A
MetaData Load	2011/02/11 (042) 07:40:37

www.iris.edu/mda/XY/U04B?timewindow=2010-2010

PASSCAL Website | RUDICS-OpLog | Exps | PASSCAL Support | Wikipedia | EES-seminars | WBS | quakes | weather

End	2010/09/30 (273) 23:59:59
Epoch	2010/03/25 (084) 20:32:00 - 2010/09/30 (273) 23:59:59
Instrument	Reftek 130 Datalogger
Channels (Hz)	Location --: LM1 (1), LM2 (1), LM3 (1), LOG (0)A, VM1 (.1)A, VM2 (.1)A, VM3 (.1)A
Instrument	Guralp CMG3T/Reftek 130 Datalogger
Channels (Hz)	Location --: HHE (100)A, HHN (100)A, HHZ (100)A, LHE (1)A, LHN (1)A, LHZ (1)A
Epoch	2010/03/18 (077) 20:30:00 - 2010/03/25 (084) 20:32:00
Instrument	Reftek 130 Datalogger
Channels (Hz)	Location --: LM1 (1), LM2 (1), LM3 (1), LOG (0)A, VM1 (.1)A, VM2 (.1)A, VM3 (.1)A
Instrument	Guralp CMG40T/Reftek 130 Datalogger
Channels (Hz)	Location --: HHE (100)A, HHN (100)A, HHZ (100)A, LHE (1)A, LHN (1)A, LHZ (1)A
MetaData Load	2011/02/11 (042) 07:40:37

Virtual network affiliations:

Name	Description	Primary DC	Secondary DC
_PASSCAL	IRIS PASSCAL Experiment Stations	IRIS PASSCAL	IRIS DMC
.UNRESTRICTED	All unrestricted stations, generated via cron	IRIS DMC	IRIS DMC
_IMAD	International Maule Aftershock Data	IRIS DMC	IRIS DMC

No data available in real-time systems for 2010/01/01 00:00:00 - 2010/12/31 23:59:59

Archive data availability - Make a batch request for data (breq_fast) - (data access overview)

	Earliest	Latest
A	2010/03/18 (077) 20:51:30	2010/09/27 (270) 19:37:35

Query archive for data day availability:

2010

SEED data requests from the DMC

- http://ds.iris.edu/data/access/regular.htm
- Ones we have used: BREQ_Fast, JWEED, SOD (listed under Software)
- Web services! http://service.iris.edu

Ok, you have collected, converted, and sent your data to PASSCAL.
We verified and archived it at the DMC.
Anybody can now see that your data have been archived
Authorized users can also request the data.

…

…

…

What now?

Updating your metadata

- Station changes? Errors?
  - New equipment
  - Change of sample rate
  - Moved station
- Edit batch file to reflect changes
  - Ask data_group@passcal.nmt.edu if you have questions!
  - Update database and dataless
  - Send the new version to PASSCAL if your project is still on-going

Good luck!

And never hesitate to ask for assistance

data_group@passcal.nmt.edu