What's New in Antelope

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Baku, Azerbaijan AUG

Overview

- Administrative
  - Recap announcements
    - *Linux* and *Apple*—no more *Solaris*
    - *support@brtt.com*
  - Operational changes at BRTT
    - ISO Download for Customers
    - Tokenized Licenses
- Antelope 5.4 and Peregrine

Administrative

Recap: Solaris, Apple, Linux

- Antelope 5.3 was the last release on Solaris.
  - *Solaris support is over.*
- Uncertainty of Apple hardware future
  - We still fully support Apple
  - Cannot depend on Apple for enterprise-class hardware
  - Antelope 5.4 Needs OSX Mountain Lion (10.8.5) or above
- BRTT fully supports Linux as a platform for enterprise-class systems
  - BRTT fully supports RHEL and CentOS 6.2 in the Antelope 5.4 release

Operational Changes at BRTT: Support

- Improved support responses via email and web *https://brtt.zendesk.com*
- Always get an automated reply with a ticket number
- Provides BRTT staff with coordinated support response tools
- You can go to the web site to see current and old support requests
- You can access your support requests from any web browser
- Our web site (www.brtt.com) describes this in more detail
- YOU ABSOLUTELY MUST USE

  support@brtt.com
- WE WILL NO LONGER RESPOND TO SUPPORT REQUESTS TO OUR INDIVIDUAL ADDRESSES

Operational Changes

Operational Changes at BRTT: Distribution

- New download site for paying customers
  - http://www.brtt.com/customer_download.html
  - Much more convenient than CD distribution
  - Downloads are logged by customer
  - Makes sure everyone has latest ISO
  - Eases notification upon problems
  - Allows us to make large updates when necessary

Operational Changes at BRTT: Further Licensing Improvements

- Customer ID assigned by BRTT
- Tokenized licenses
  - Human-readable
  - Enhanced *check_license* program
    - *check_license –v*
    - Looks for the first license line applicable to the machine
    - Also runs the new *licsnapshot* program
  - Single-line licenses. *Make sure it's on a single line.*
  - If you modify the license line, it will break
  - Still goes in *$ANTELOPE/data/pf/license.pf*

key=*********
product=Antelope version=5.4 custid=USA/BRTT/Evaluation
lictype=node serial=**3F82ZQ*****
a=netops count=0 expires=2016 Jun 01

Operational Changes at BRTT: Software Audit

- ***For Antelope 5.4***:
  - New naming convention
    - Deprecated: **_dep*
    - Preliminary: **_pre*
    - Experimental: **_exp*
- ***For Antelope 5.5***: Conducted audit of entire code base
  - *Will implement the audit results for Antelope 5.5, next year*
  - Removing little-used programs and libraries
    - No more *libproj*
    - No more *VOGL* graphics
    - No more *dynamic_controls*
    - Moved *autodrm, dbdoc, init_training etc.* to *contrib*
    - Will remove *dbinfer, heartbeat2db, leak_detector etc.*
  - Hard to maintain unused programs – "attractive nuisance"
  - Focusing our efforts on most-used and critical components
  - Feedback welcome of course

Antelope 5.4

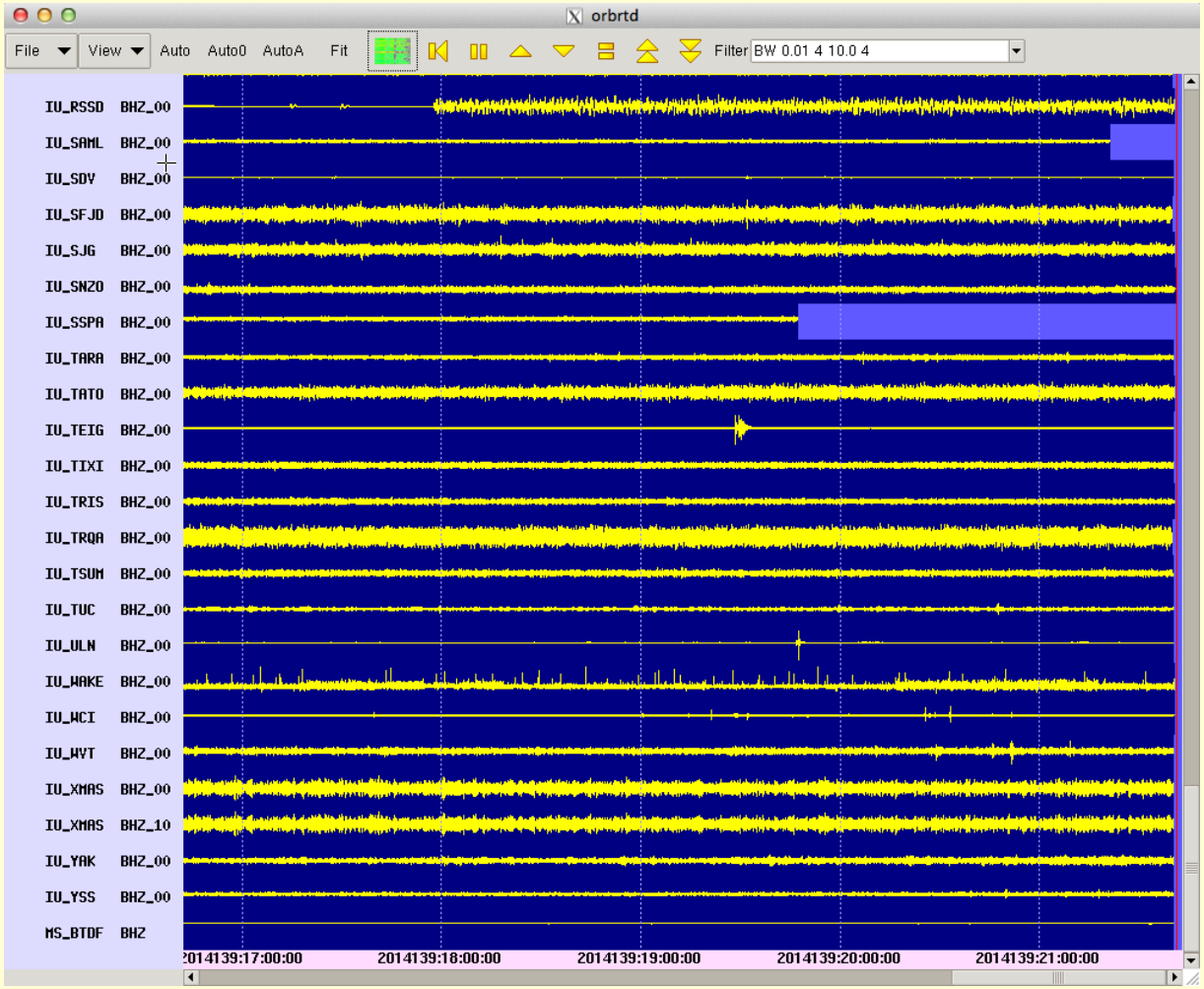
Antelope 5.4

- *orbrtd*
- Python enhancements
- Antelope Toolbox for *MATLAB*
- *USGS2orb*
- Moment Tensors
- *dbevents_pre*
- Peregrine

orbrtd

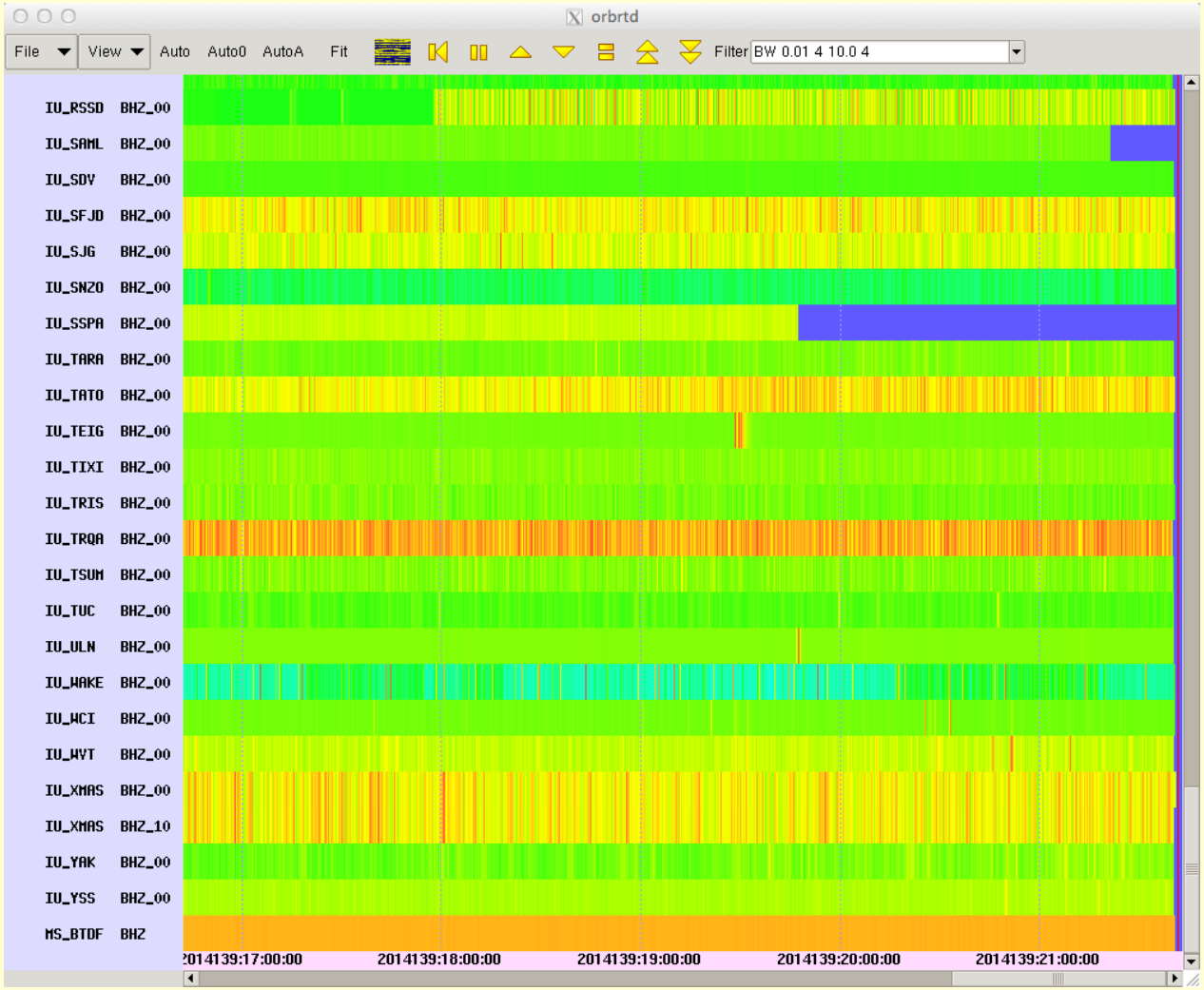
- **orbrtd** is a complete rewrite of **orbmonrtd**
- Rewrite of old TCL/Tk script as a Python script
- Adaptation of *buplot bptrace* Tk canvas item extension available in python
- Provides enhanced trace amplitude plotting options (color, log scales, etc.)
- Provides capability to plot color-contoured spectragram style time-scrolling spectra plots
- Introduces a number of new features, including dynamic automatic channel configurations
- First stage in converting **dbpick** display graphics

orbrtd: scrolling time-series



BRTT

orbrtd: color contours



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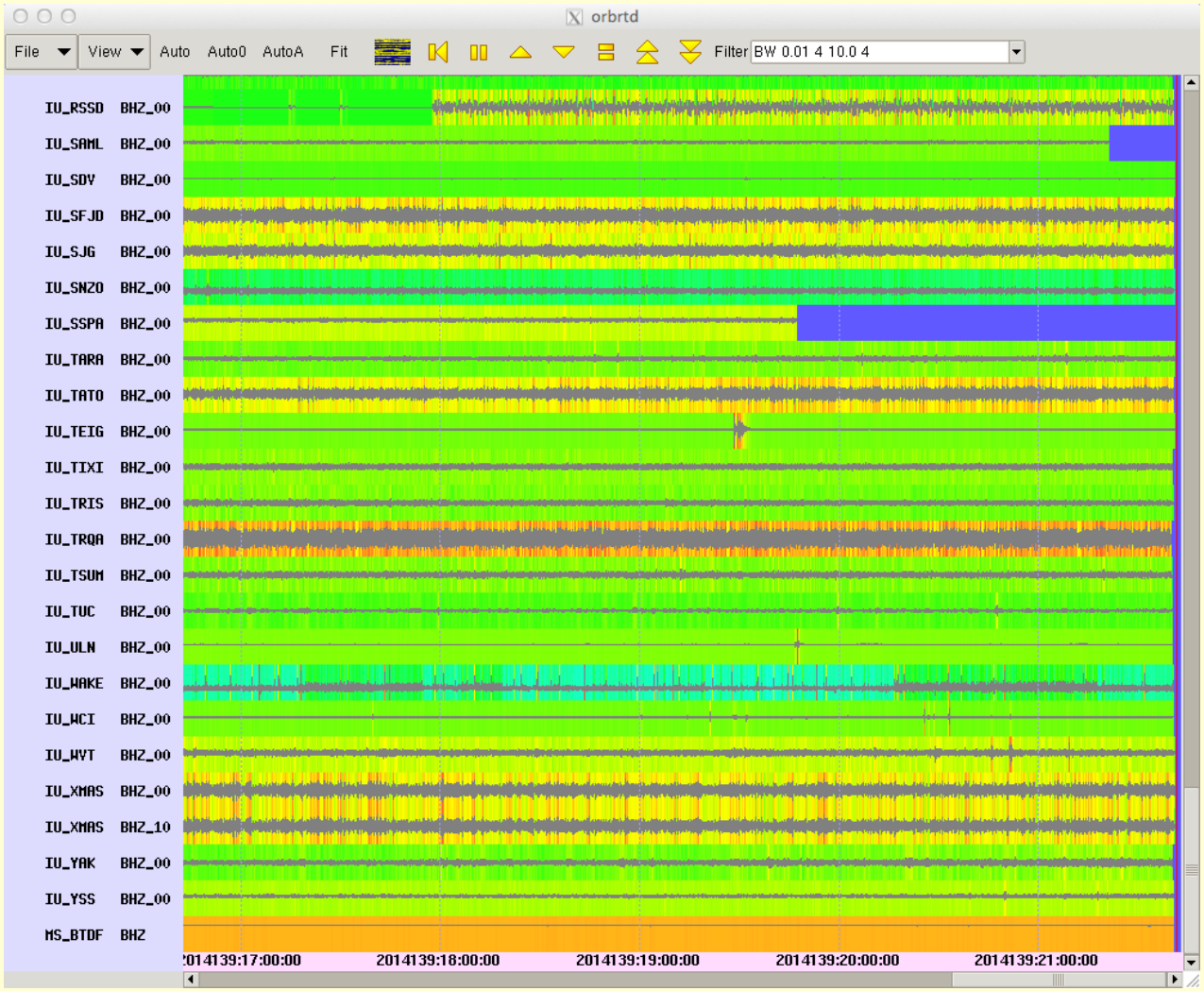
orbrtd: combined plot



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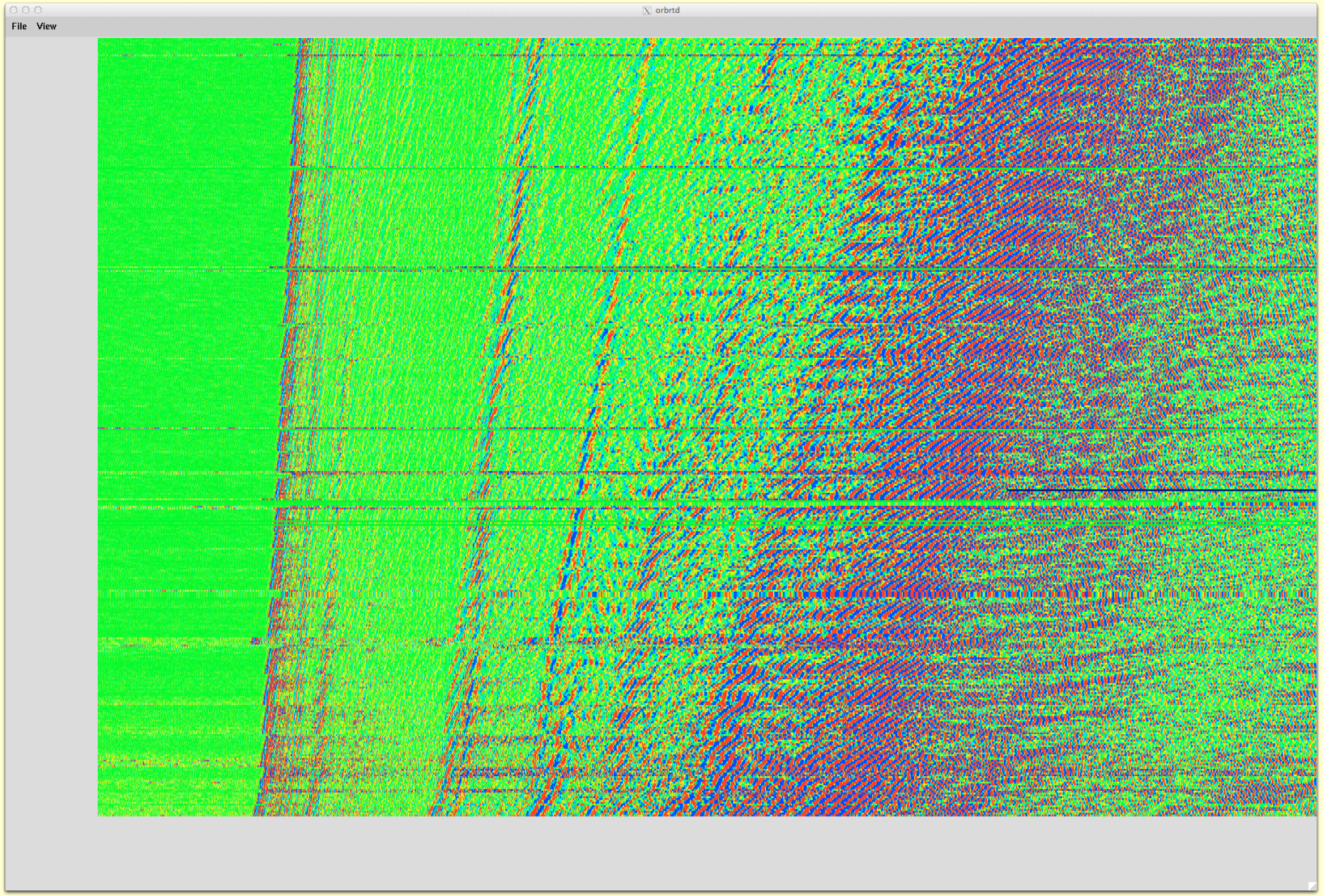
orbrtd: colorscale, USArray



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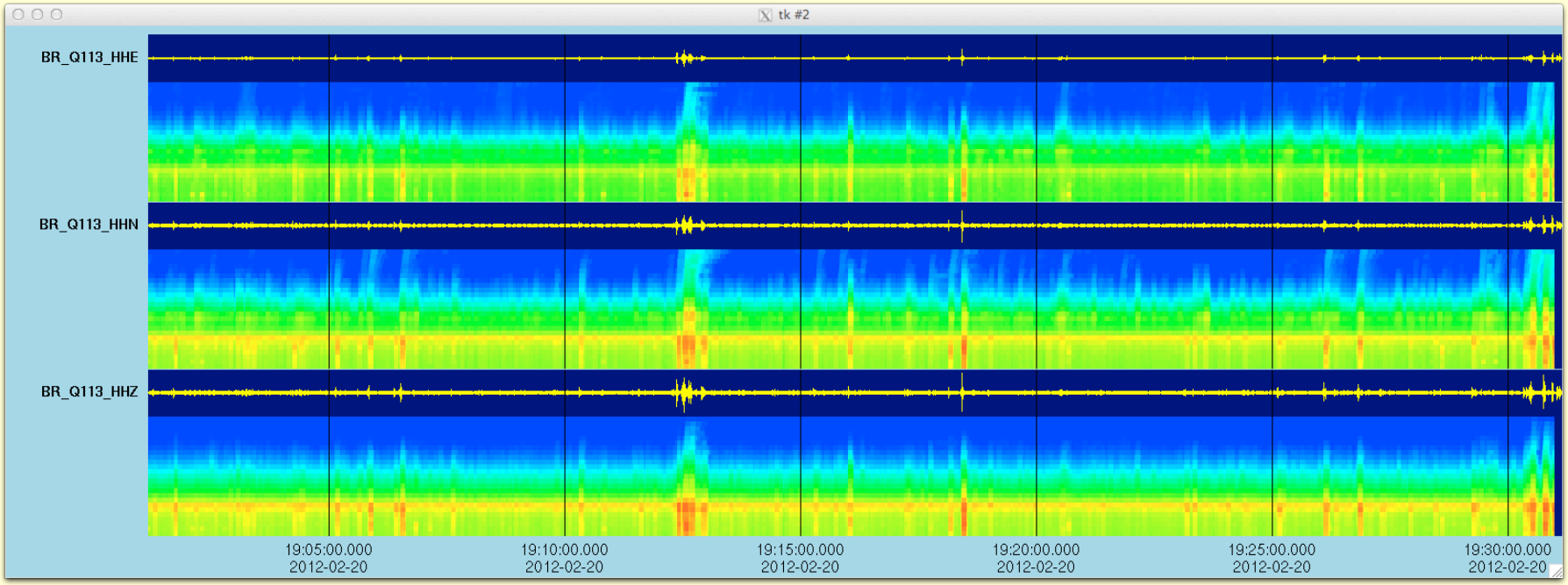
orbrtd spectragrams

*[with **Bighorn** structural monitoring package]*



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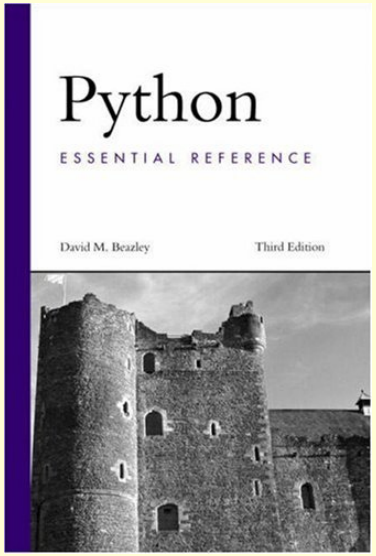
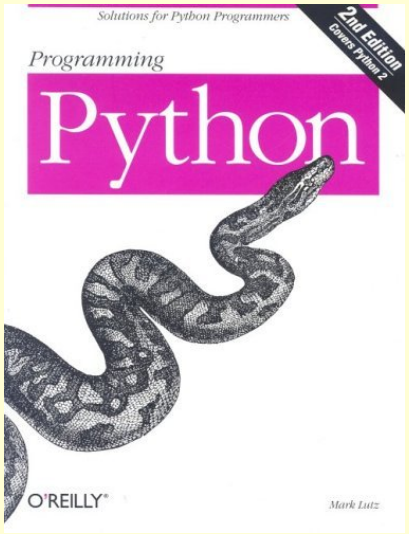
Python

- Python: Object-oriented scripting language
  - http://www.python.org
  - Dynamic
  - Powerful
  - Extensible
  - Fast





Python

- *Datascope* interface rewritten
  - Interface mostly backwards-compatible
  - Only one idiom – object based
  - Can still use in procedural code
- *Coords* interface rewritten
- Many changes to *buplot* BRTT plotting library
- New *ipa* program for interactive Antelope Python shell (*ipython* profile)

("ipython Antelope")

Python *ipa*

```
[marble:~][dev] kent% ipa
Python 2.7.6 (default, Mar  5 2014, 15:42:38)
IPython 1.1.0 -- An enhanced Interactive Python.
…
IPython profile: antelope

In [1]: from antelope import datascope

In [2]: db = datascope.dbopen( '/opt/antelope/data/db/demo/demo' )

In [3]: db = db.lookup( table = 'origin' )

In [4]: db.query( datascope.dbRECORD_COUNT )
Out[4]: 1351

In [5]:
```

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Antelope Toolbox for MATLAB

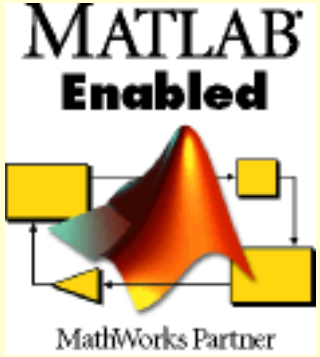
- Antelope Toolbox for MATLAB (ATM)
  - *Compiled into Antelope 5.4*
  - Still need your own copy of MATLAB
  - Use *getid* to find supported versions

```
% getid matlab
R2013b R2014a
```

  - Turnkey:

```
>> run( '/opt/antelope/5.4/setup.m' )
```

  - Starting man-page *antelope_matlab(1)*
- Part of the MATLAB Connections Program

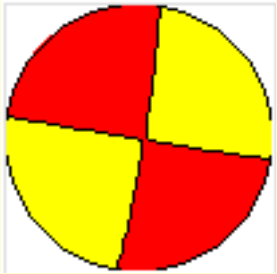


USGS2orb

- Reads Event Catalog from USGS/NEIC web-site
- Puts events in *orbserver*
- Magnitude cutoffs
  - Option to ignore all events below threshold mag
  - Option to archive all events above threshold regardless of association with locally detected events
- *Optionally imports USGS Moment Tensors*

Moment Tensor support

- New Program *USGS2orb* imports moment tensors
- New '*mt*' database table stores them
- New *buplot* capability plots beach-balls

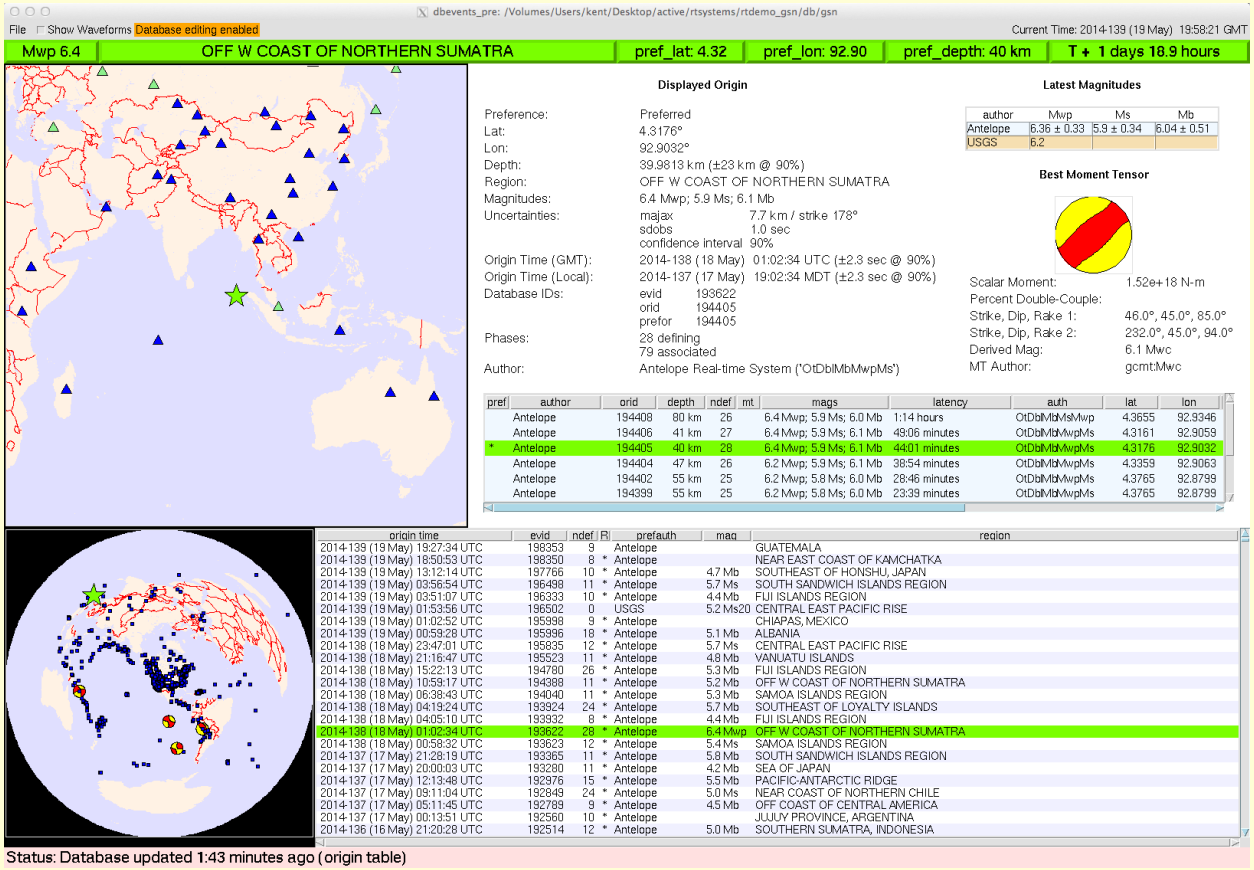


- Integrated into *dbevents_pre* event display

dbevents_pre

- New Event Display program
- Includes Moment Tensor Support
- Top banner for heads-up situational awareness
- Magnitudes comparison table
- Configurable
- Basis for new *dbloc2*

dbevents_pre: Event Display



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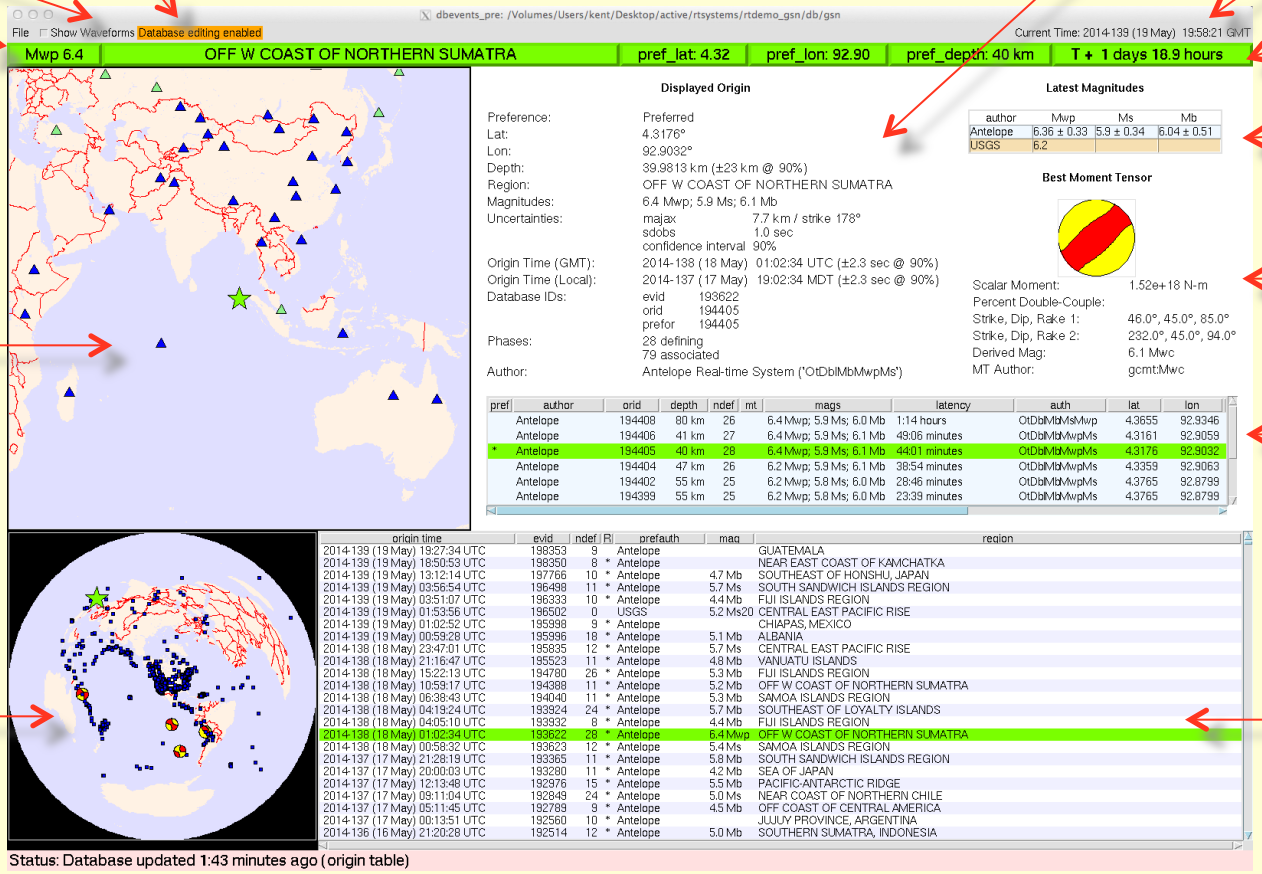
dbevents_pre:
Event Display



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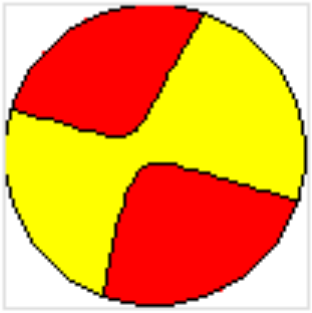
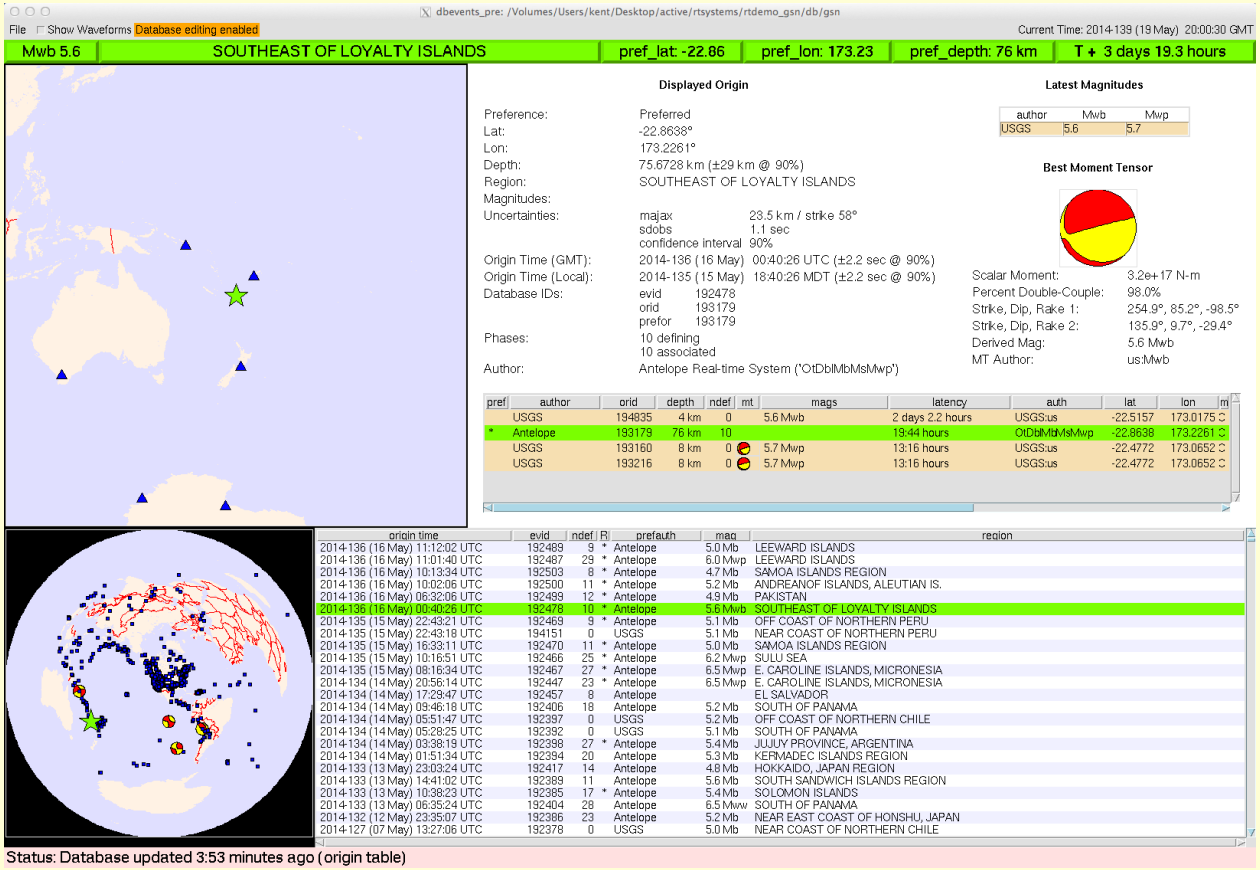
dbevents_pre: Moment Tensor Support

Best Moment Tensor



Scalar Moment:	1.73e+18 N-m
Percent Double-Couple:	89.0%
Strike, Dip, Rake 1:	108.8°, 89.2°, -13.3°
Strike, Dip, Rake 2:	199.0°, 76.7°, -179.2°
Derived Mag:	6.1 Mwb
MT Author:	us:Mwb

dbevents_pre: Choice of 'best' MT



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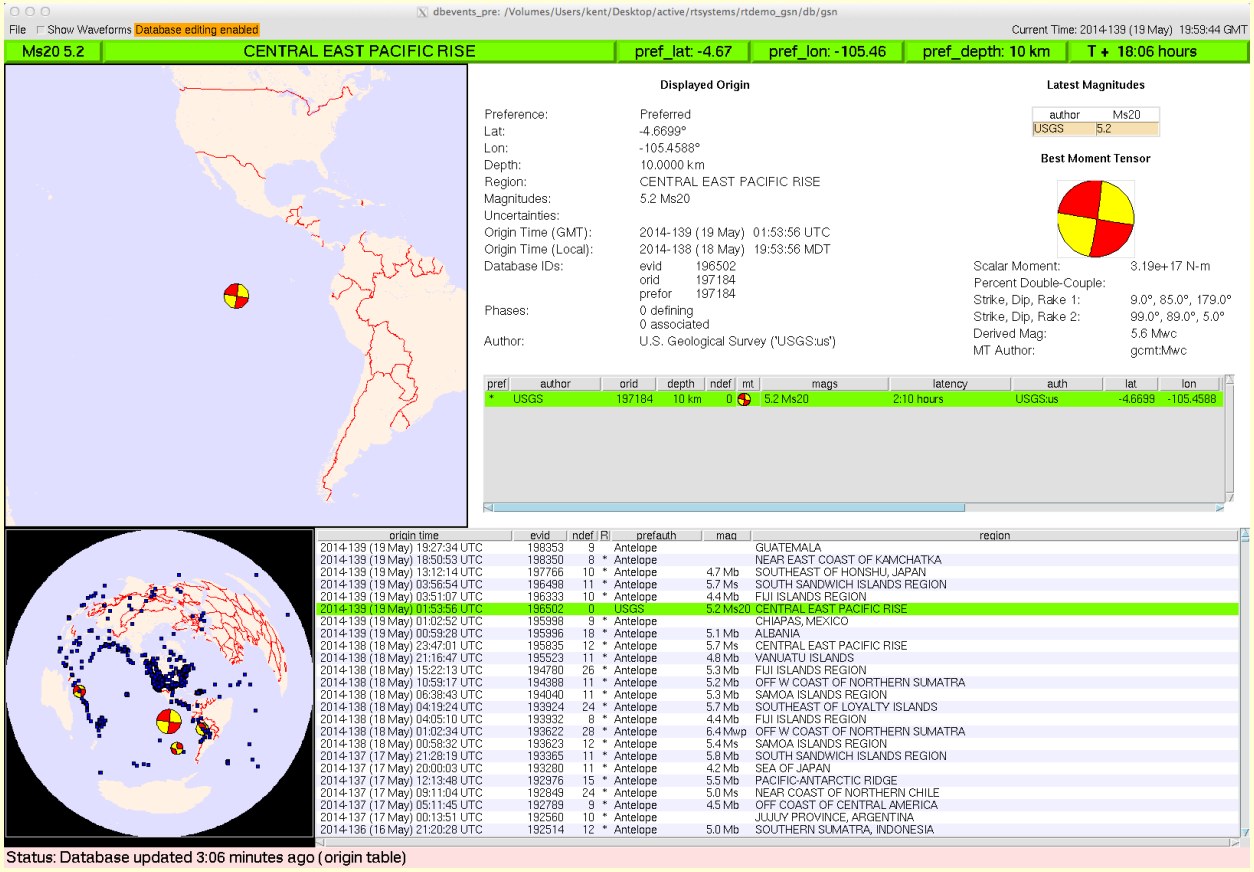
dbevents_pre:
Map display of prefor MT, 'best' MT



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dbevents_pre: Magnitudes Summary Table

Latest Magnitudes

author	Mwp	Ms	Mb
Antelope	6.36 ± 0.33	5.9 ± 0.34	6.04 ± 0.51
USGS	6.2		

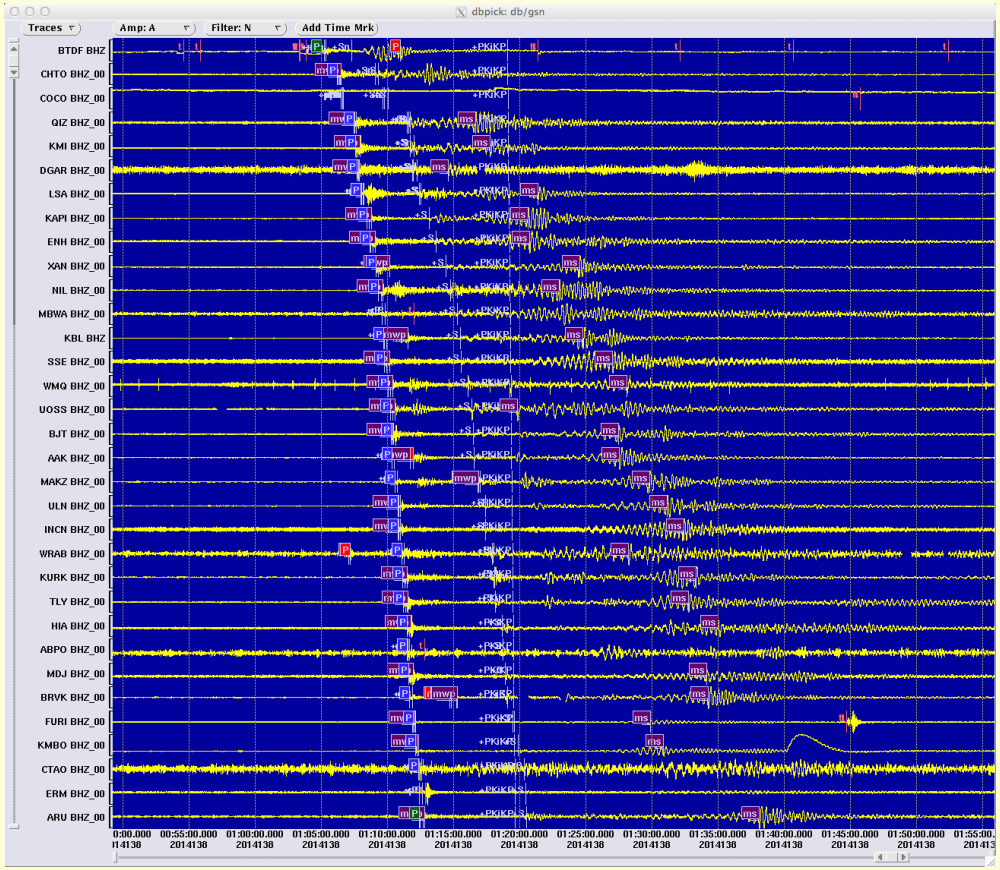
- Magnitude preference order is specifiable

dbevents_pre: Information Panel

Displayed Origin

Preference:	Preferred
Lat:	4.3176°
Lon:	92.9032°
Depth:	39.9813 km (±23 km @ 90%)
Region:	OFF W COAST OF NORTHERN SUMATRA
Magnitudes:	6.4 Mwp; 5.9 Ms; 6.1 Mb
Uncertainties:	majax 7.7 km / strike 178° sdobs 1.0 sec confidence interval 90%
Origin Time (GMT):	2014-138 (18 May) 01:02:34 UTC (±2.3 sec @ 90%)
Origin Time (Local):	2014-137 (17 May) 19:02:34 MDT (±2.3 sec @ 90%)
Database IDs:	evid 193622 orid 194405 prefor 194405
Phases:	28 defining 79 associated
Author:	Antelope Real-time System ('OtDblMbMwpMs')

dbevents_pre: show waveforms option



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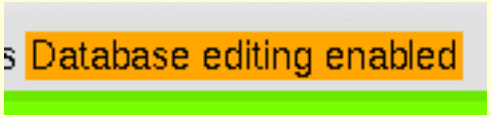
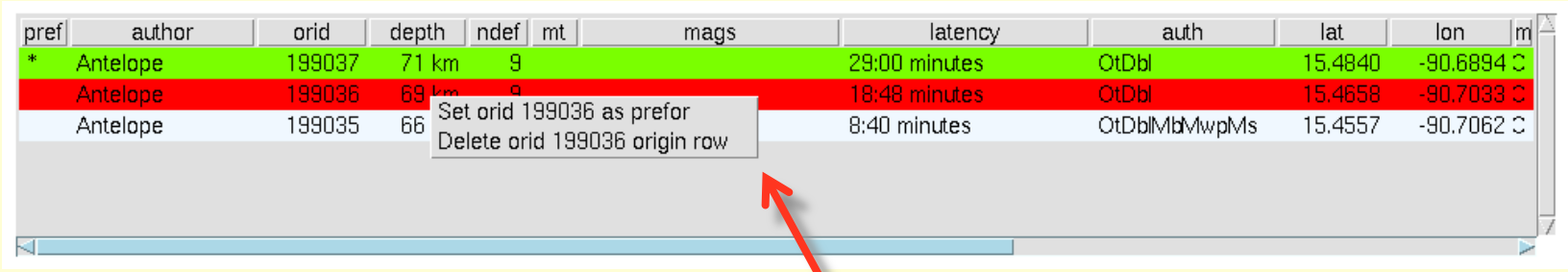
dbevents_pre: rudimentary editing

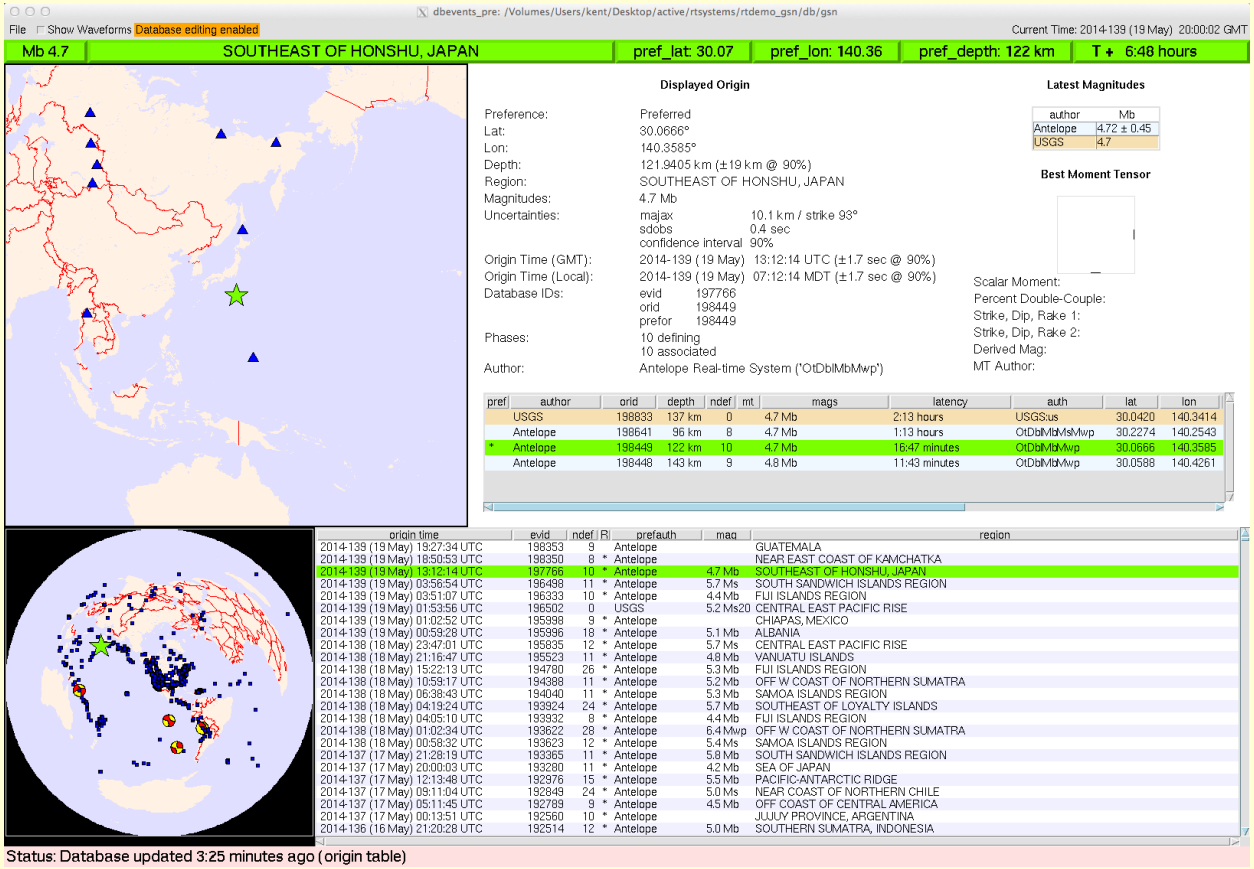


Editing has warning-label and off-switch for kiosk displays



- Set preferred origin
- Delete undesirable origin

dbevents_pre:
Color-coded Authors



BRTT

Bighorn

Strong motion/structure monitoring version of Antelope also including web enhancements

Peregrine

Web enhanced version of Antelope

Peregrine

- Web-based Monitoring
- Web-based Information distribution
- Web-based Interaction
- Antelope Base System + Web Infrastructure
  - New program ***rtwebserver***
  - New program ***rtcache***
  - Host of supporting *Python* libraries

Peregrine Goals

- Robust Web Presence for users and operators
- Capitalize on informative power of real-time system
- Platform for revealing more about RT system to operators
- Clean integration with real-time system
- Familiar configuration patterns for operators
- Low user-maintenance cost and complexity
- Flexible and Extensible
- Self-contained
- Maintainable software base

What We Did

- Wrote our own web server
- Made it run under a real-time system (*rtexec*)
- Made it look and feel like our existing programs
- Made it connect easily to Antelope
- Wrote a caching daemon to generate products for it
- Added example web-site to GSN demo

rtwebserver

- Self-contained web-server:

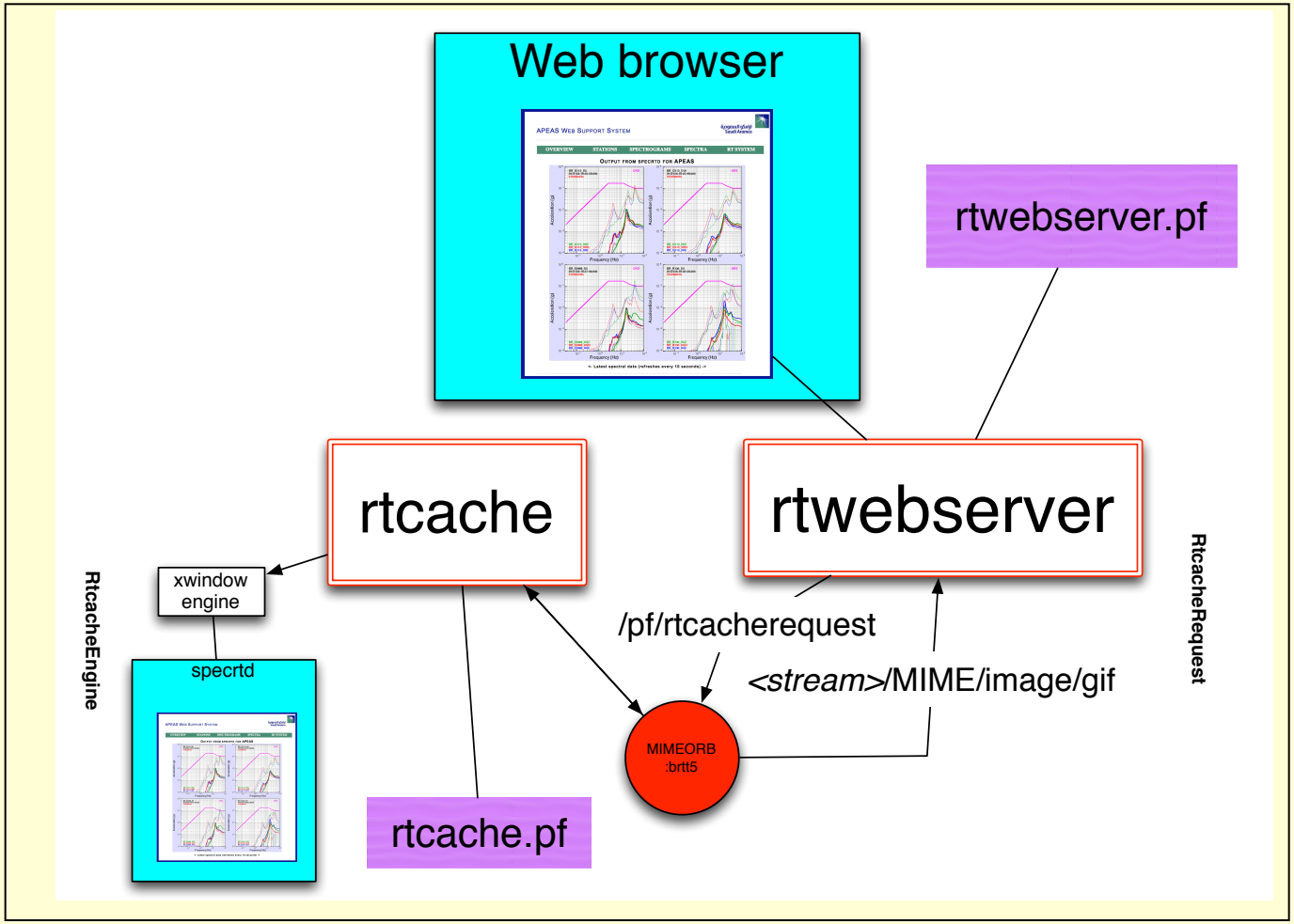
```
% rtwebserver -v -P 8000
```

- Written in *Python* and *Twisted*
  - *http://twistedmatrix.com*
- Runs under *rtexec*
- Parameter-file configures entire site
  - *rtwebserver.pf*
- Logs connections to database

rtcache

- Generalized Caching Daemon
- Pre-builds products for the web server
- For Example:
  - Dynamic X-window screen-shots
  - Strong-motion alarm reports
  - Dbevents or orbrtd output
  - Anything you can code into *Python*
- Exchanges request/response via *orbserver*
- Can show on the web any GUI you can run as X-client

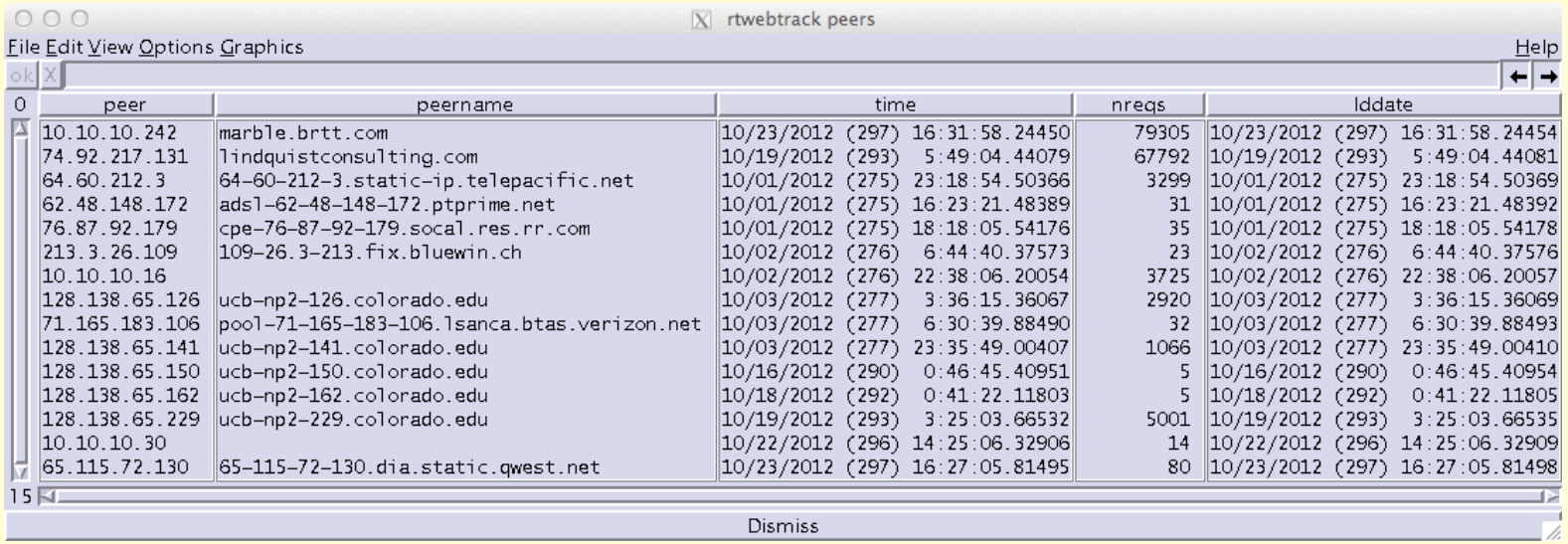
Peregrine Architecture



rtwebserver.pf

```
site &Arr{
   pages &Arr{
      index             rpy:webitems/index.rpy  index
      latest            rpy:webitems/latest.rpy
      rtm               rpy:webitems/rtm.rpy
      orbmonrtd         rpy:webitems/orbmonrtd.rpy
      sources           rpy:webitems/sources.rpy
      clients           rpy:webitems/clients.rpy
      dynamic &Arr{
        ximage          rtcache:ximage
      }
      images &Arr{
        brtt_logo.gif   file:webitems/images/brtt_logo.gif
        dots.gif        file:webitems/images/dots.gif
      }
      css &Arr{
        style.css       pf:stylesheet   text/css
      }
   }
```

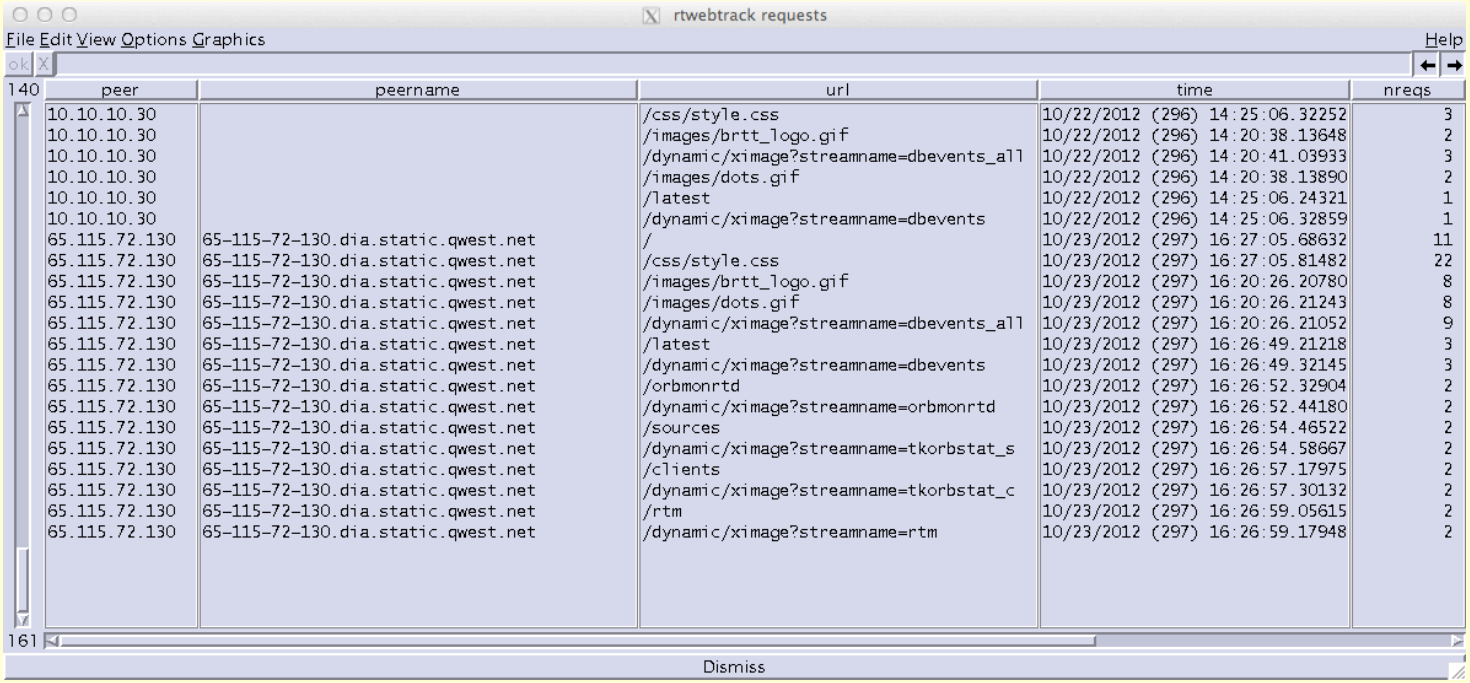
rtwebserver connection logging: who is connecting



peer	peername	time	nreqs	lddate
10.10.10.242	marble.brtt.com	10/23/2012 (297) 16:31:58.24450	79305	10/23/2012 (297) 16:31:58.24454
74.92.217.131	lindquistconsulting.com	10/19/2012 (293) 5:49:04.44079	67792	10/19/2012 (293) 5:49:04.44081
64.60.212.3	64-60-212-3.static-ip.telepacific.net	10/01/2012 (275) 23:18:54.50366	3299	10/01/2012 (275) 23:18:54.50369
62.48.148.172	adsl-62-48-148-172.ptprime.net	10/01/2012 (275) 16:23:21.48389	31	10/01/2012 (275) 16:23:21.48392
76.87.92.179	cpe-76-87-92-179.socal.res.rr.com	10/01/2012 (275) 18:18:05.54176	35	10/01/2012 (275) 18:18:05.54178
213.3.26.109	109-26.3-213.fix.bluewin.ch	10/02/2012 (276) 6:44:40.37573	23	10/02/2012 (276) 6:44:40.37576
10.10.10.16		10/02/2012 (276) 22:38:06.20054	3725	10/02/2012 (276) 22:38:06.20057
128.138.65.126	ucb-np2-126.colorado.edu	10/03/2012 (277) 3:36:15.36067	2920	10/03/2012 (277) 3:36:15.36069
71.165.183.106	pool-71-165-183-106.lsanca.btas.verizon.net	10/03/2012 (277) 6:30:39.88490	32	10/03/2012 (277) 6:30:39.88493
128.138.65.141	ucb-np2-141.colorado.edu	10/03/2012 (277) 23:35:49.00407	1066	10/03/2012 (277) 23:35:49.00410
128.138.65.150	ucb-np2-150.colorado.edu	10/16/2012 (290) 0:46:45.40951	5	10/16/2012 (290) 0:46:45.40954
128.138.65.162	ucb-np2-162.colorado.edu	10/18/2012 (292) 0:41:22.11803	5	10/18/2012 (292) 0:41:22.11805
128.138.65.229	ucb-np2-229.colorado.edu	10/19/2012 (293) 3:25:03.66532	5001	10/19/2012 (293) 3:25:03.66535
10.10.10.30		10/22/2012 (296) 14:25:06.32906	14	10/22/2012 (296) 14:25:06.32909
65.115.72.130	65-115-72-130.dia.static.qwest.net	10/23/2012 (297) 16:27:05.81495	80	10/23/2012 (297) 16:27:05.81498

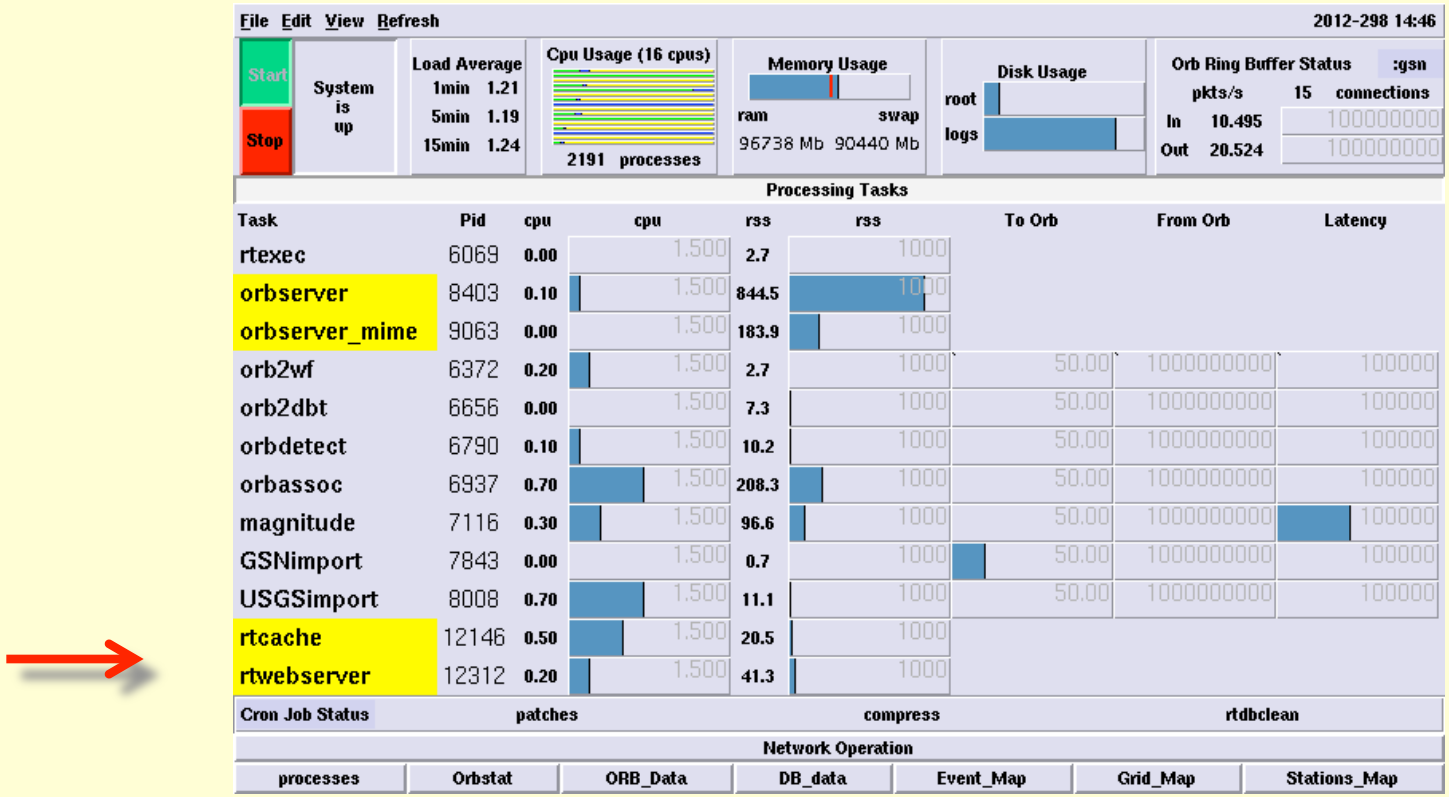
BRTT

rtwebserver connection logging: what are they asking for



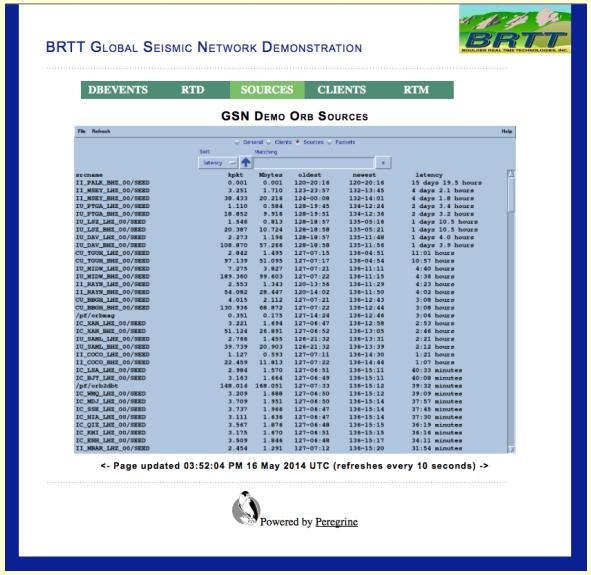
peer	peername	url	time	nreqs
10.10.10.30		/css/style.css	10/22/2012 (296) 14:25:06.32252	3
10.10.10.30		/images/brtt_logo.gif	10/22/2012 (296) 14:20:38.13648	2
10.10.10.30		/dynamic/ximage?streamname=dbevents_all	10/22/2012 (296) 14:20:41.03933	3
10.10.10.30		/images/dots.gif	10/22/2012 (296) 14:20:38.13890	2
10.10.10.30		/latest	10/22/2012 (296) 14:25:06.24321	1
10.10.10.30		/dynamic/ximage?streamname=dbevents	10/22/2012 (296) 14:25:06.32859	1
65.115.72.130	65-115-72-130.dia.static.qwest.net	/	10/23/2012 (297) 16:27:05.68632	11
65.115.72.130	65-115-72-130.dia.static.qwest.net	/css/style.css	10/23/2012 (297) 16:27:05.81482	22
65.115.72.130	65-115-72-130.dia.static.qwest.net	/images/brtt_logo.gif	10/23/2012 (297) 16:20:26.20780	8
65.115.72.130	65-115-72-130.dia.static.qwest.net	/images/dots.gif	10/23/2012 (297) 16:20:26.21243	8
65.115.72.130	65-115-72-130.dia.static.qwest.net	/dynamic/ximage?streamname=dbevents_all	10/23/2012 (297) 16:20:26.21052	9
65.115.72.130	65-115-72-130.dia.static.qwest.net	/latest	10/23/2012 (297) 16:26:49.21218	3
65.115.72.130	65-115-72-130.dia.static.qwest.net	/dynamic/ximage?streamname=dbevents	10/23/2012 (297) 16:26:49.32145	3
65.115.72.130	65-115-72-130.dia.static.qwest.net	/orbmonrtd	10/23/2012 (297) 16:26:52.32904	2
65.115.72.130	65-115-72-130.dia.static.qwest.net	/dynamic/ximage?streamname=orbmonrtd	10/23/2012 (297) 16:26:52.44180	2
65.115.72.130	65-115-72-130.dia.static.qwest.net	/sources	10/23/2012 (297) 16:26:54.46522	2
65.115.72.130	65-115-72-130.dia.static.qwest.net	/dynamic/ximage?streamname=tkorbstat_s	10/23/2012 (297) 16:26:54.58667	2
65.115.72.130	65-115-72-130.dia.static.qwest.net	/clients	10/23/2012 (297) 16:26:57.17975	2
65.115.72.130	65-115-72-130.dia.static.qwest.net	/dynamic/ximage?streamname=tkorbstat_c	10/23/2012 (297) 16:26:57.30132	2
65.115.72.130	65-115-72-130.dia.static.qwest.net	/rtm	10/23/2012 (297) 16:26:59.05615	2
65.115.72.130	65-115-72-130.dia.static.qwest.net	/dynamic/ximage?streamname=rtm	10/23/2012 (297) 16:26:59.17948	2

rtwebserver / rtcache in real-time system



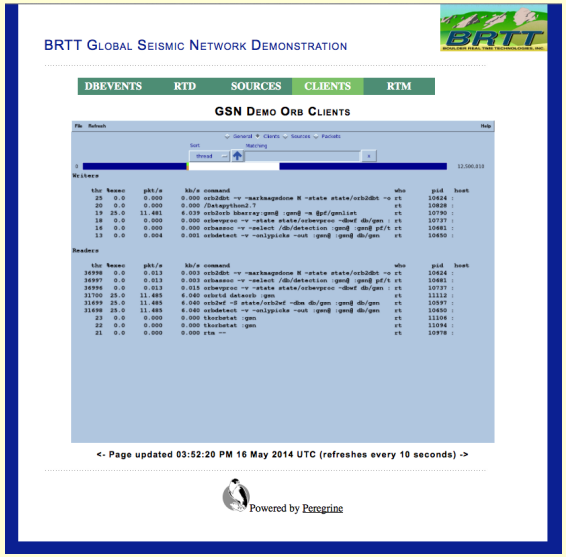
BRTT

Arbitrary X-client Display on Web

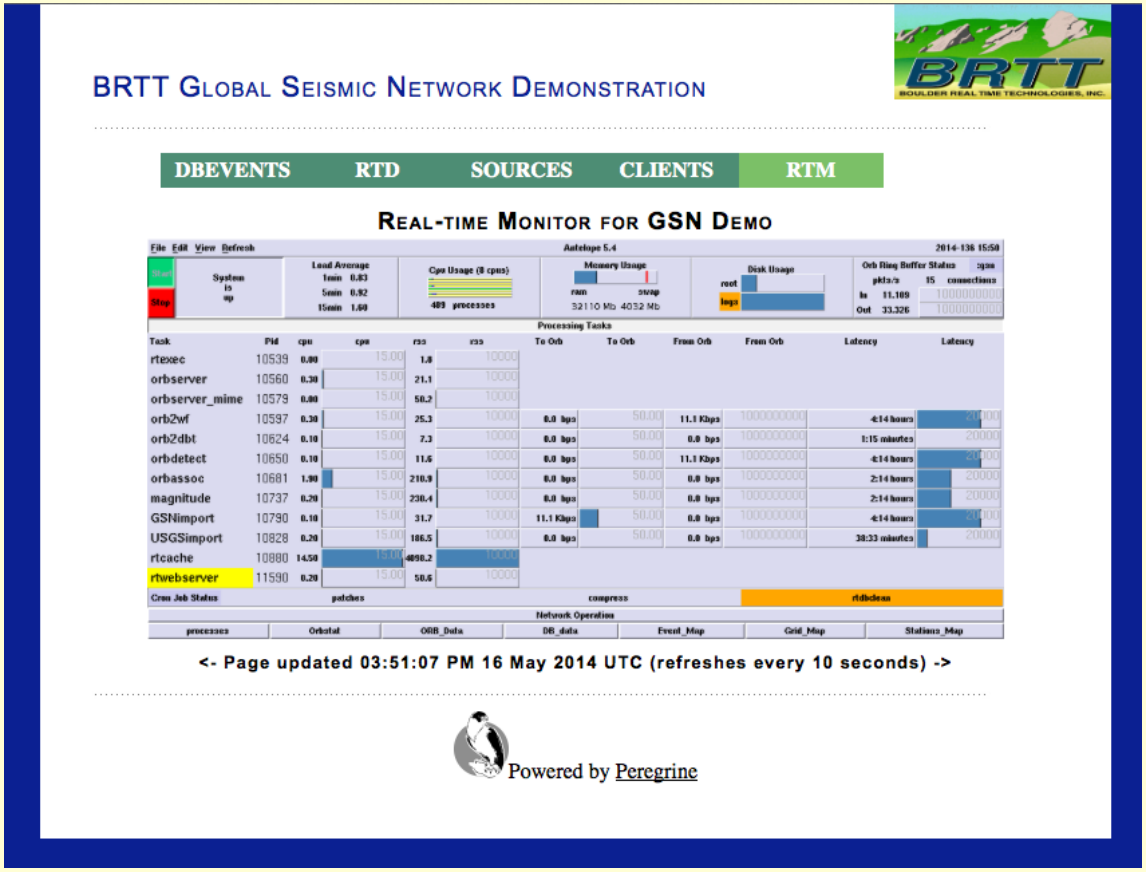


tkorbstat sources display

tkorbstat clients display



RTM System Status on Web



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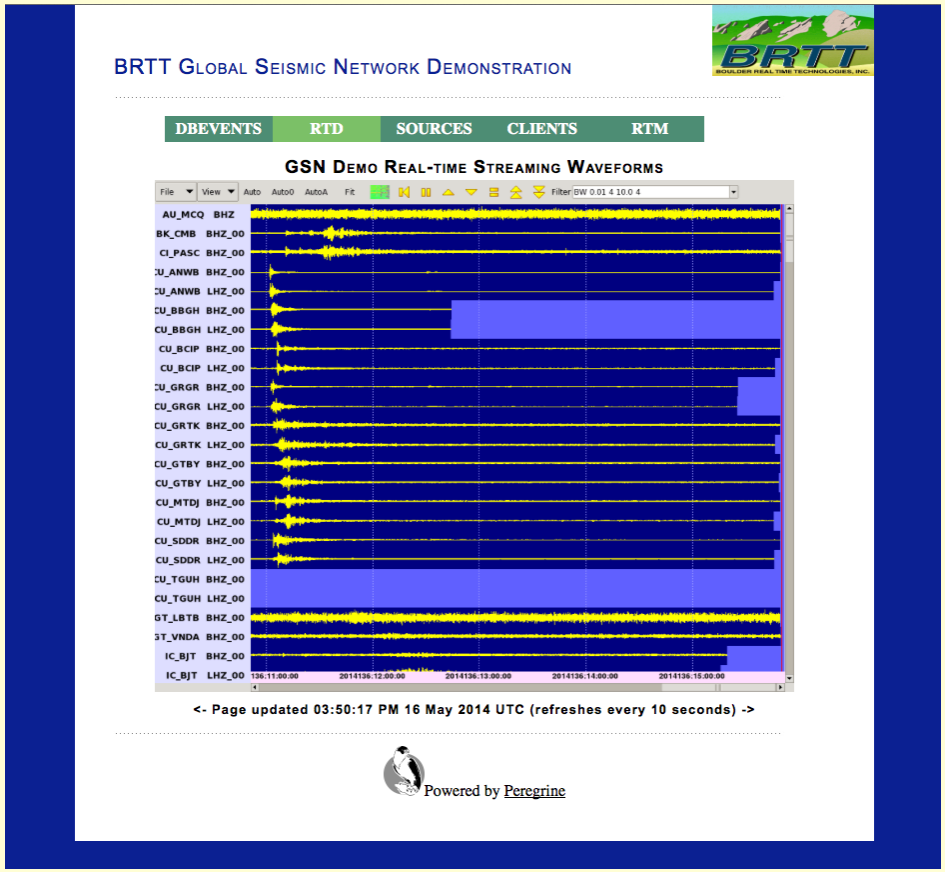
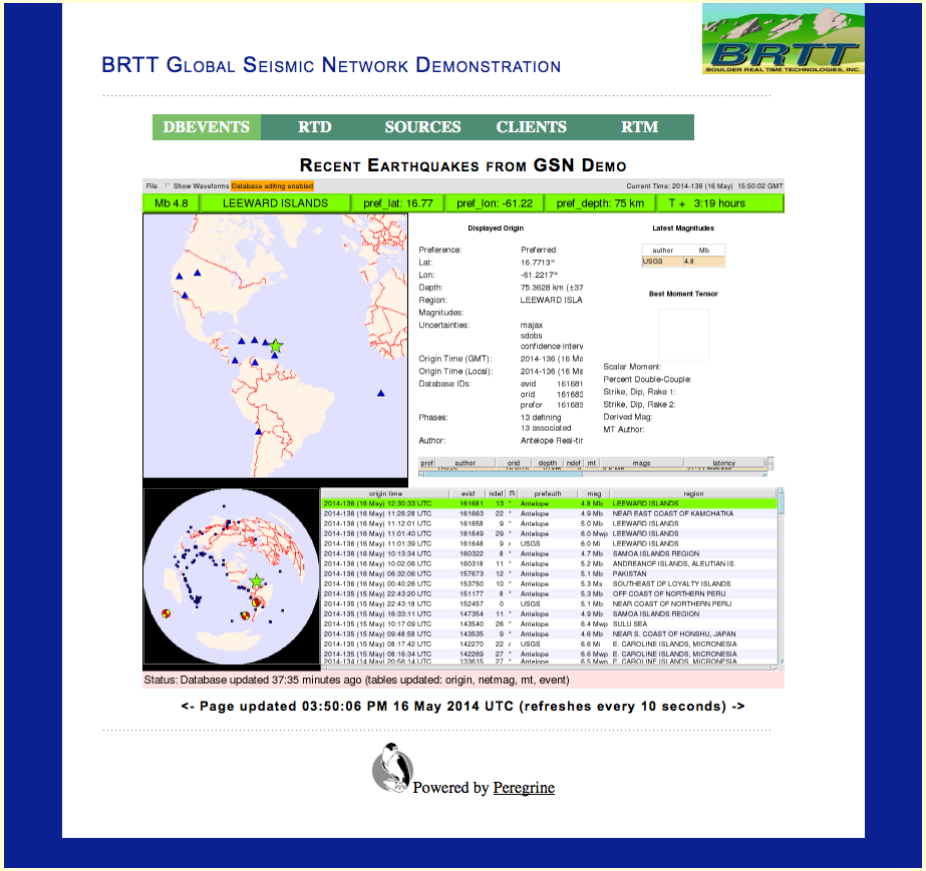
Real-time Waveform Display on Web



Latest Earthquakes on Web



Peregrine Added Cost For Antelope 5.4 Users:

$ 0.00

Thank You

BRTT