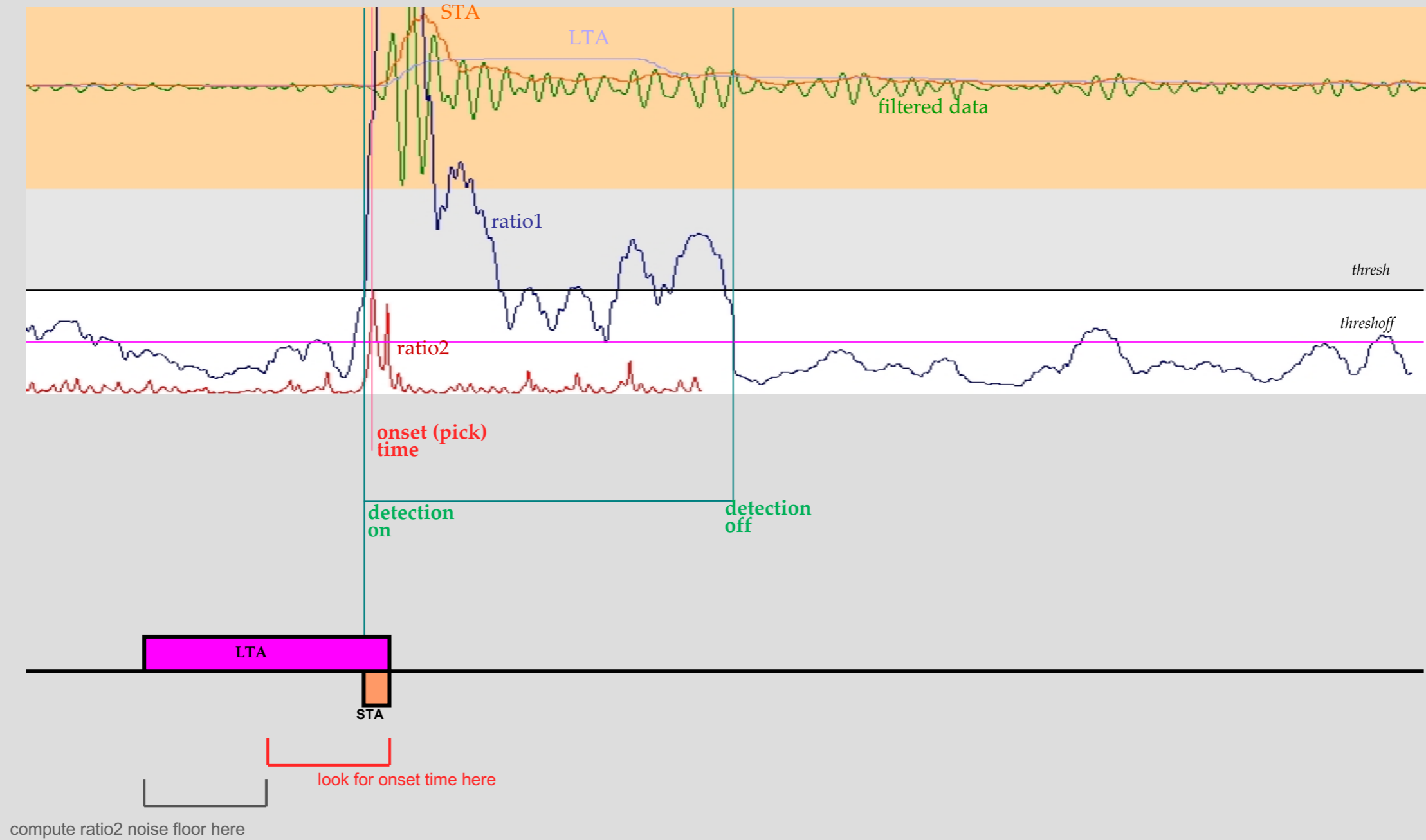


# `inspect_detection` – An Interactive Tool for Previewing and Modifying the Behavior of the Antelope Detector

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# orbdetect – Detection Processing in Antelope

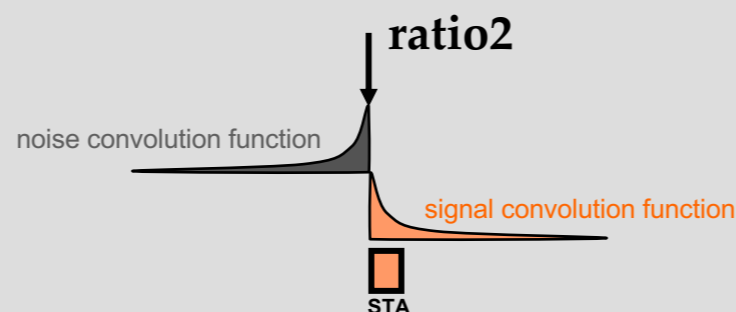


# orbdetect – Notes on Detection Processing

- $ratio1 = STA / LTA$  function processing
- STA and LTA averaging time windows overlap (stable at edges and gaps)
- When  $ratio1(t) > thresh$ , a detection is opened, its start time is set and the value of  $LTA(t)$  is saved in  $LTA\_hold$
- After a detection has started,  $ratio1(t)$  is recomputed as  $STA(t) / LTA\_hold$  and is continuously checked to see if  $ratio1(t) < threshoff$
- When  $ratio1(t) < threshoff$ , the detection is closed and  $ratio1(t)$  is computed again as  $STA(t) / LTA(t)$
- If the detection duration is  $< nodet\_twin$ , then the entire detection, including its associated onset time estimate, is ignored and nothing is output
- The detection off time is subject to the limitations imposed by the  $det\_tmin$  and  $det\_tmax$  parameters

# orbdetect – Onset(pick) Time Estimation

- A new  $\text{ratio2}(t)$  function is computed when there is sufficient data available after a detection has started.
- $\text{ratio2}(t)$  is a true signal-to-noise ratio based upon the ratio of time-abutting signal and noise windows.
- Both signal and noise functions are computed by convolving the square of the filtered data with an exponential time function (one pole low-pass filter).
- The noise function is computed using recursive digital filtering in the forward time direction and the signal function is computed using recursive digital filtering in the reverse time direction.
- The time constants for both filters are nominally the same as  $\text{sta\_twin}$ . This can be overridden with the  $\text{otime\_signal\_tfac}$  and  $\text{otime\_noise\_tfac}$  parameters.
- The noise function is limited by a noise floor value that is computed from the first half of the LTA time window at the detection start time (in order to stabilize the  $\text{ratio2}(t)$  function).
- The onset time is chosen as the time when  $\text{ratio2}(t)$  is at its maximum value within a time window from the detection on time  $- 0.5 * \text{lta\_twin} + \text{sta\_twin}$  to the detection in time  $+ \text{sta\_twin}$ .



# inspect\_detection

- Python script using the new Antelope **pythonbqplot(3Y)** python graphics libraries
- Written to mimic the processing done by **orbdetect(1)** and **dbdetect(1)**
- Can be used to build up parameters for a new detector, one parameter at a time, or to evaluate how an existing set of detector parameters work on various waveform arrivals
- Shows graphical details of the detector's inner functions

## NAME

`inspect_detection` - inspect the behavior of the Antelope arrival detector

## SYNOPSIS

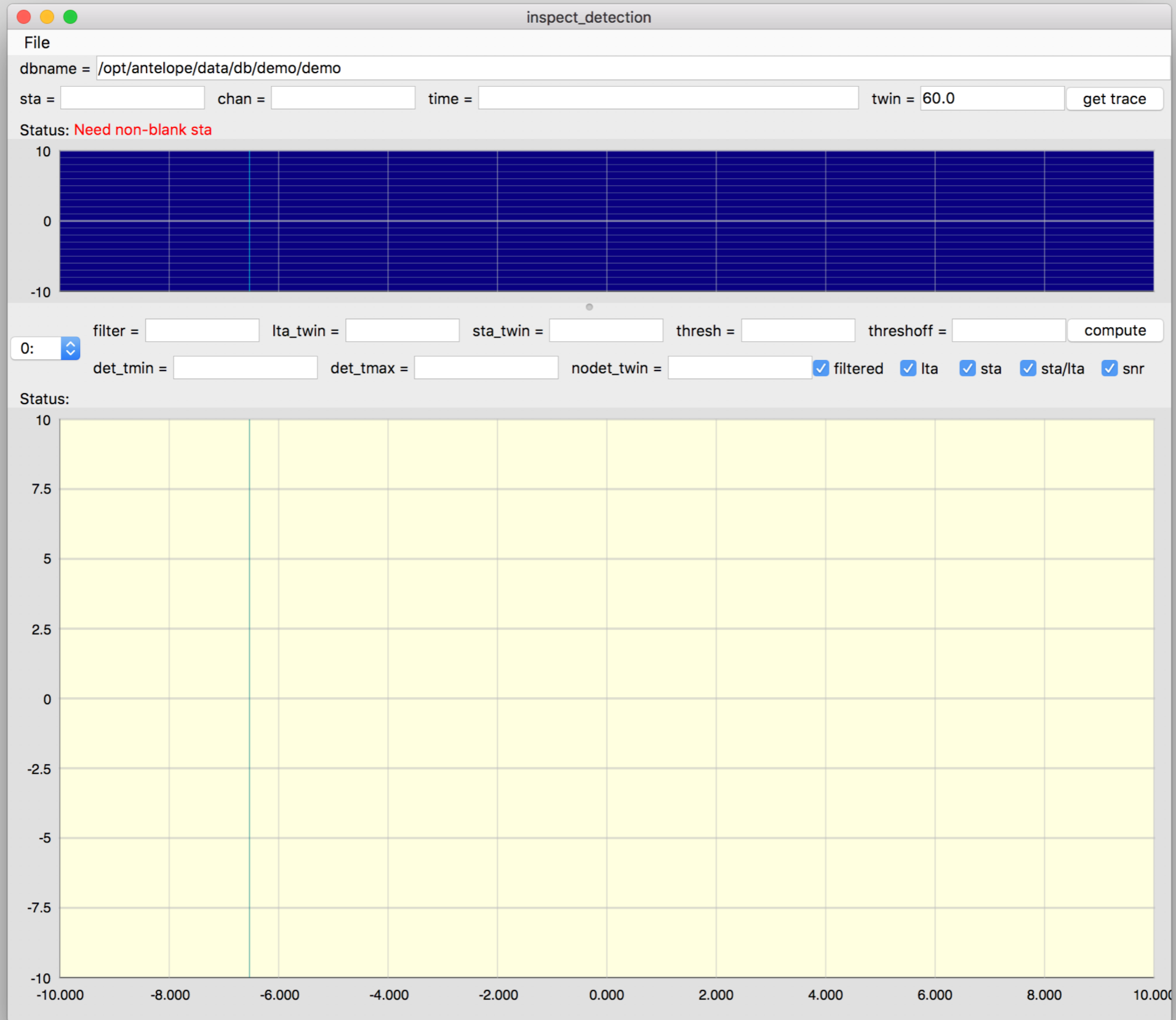
```
inspect_detection [-arid arid] [-sta sta] [-chan chan] [-tstart start_time]
                  [-twin time_window] [-pfdet orbdetect_pffile] [-pf pfname]
                  dbname
```

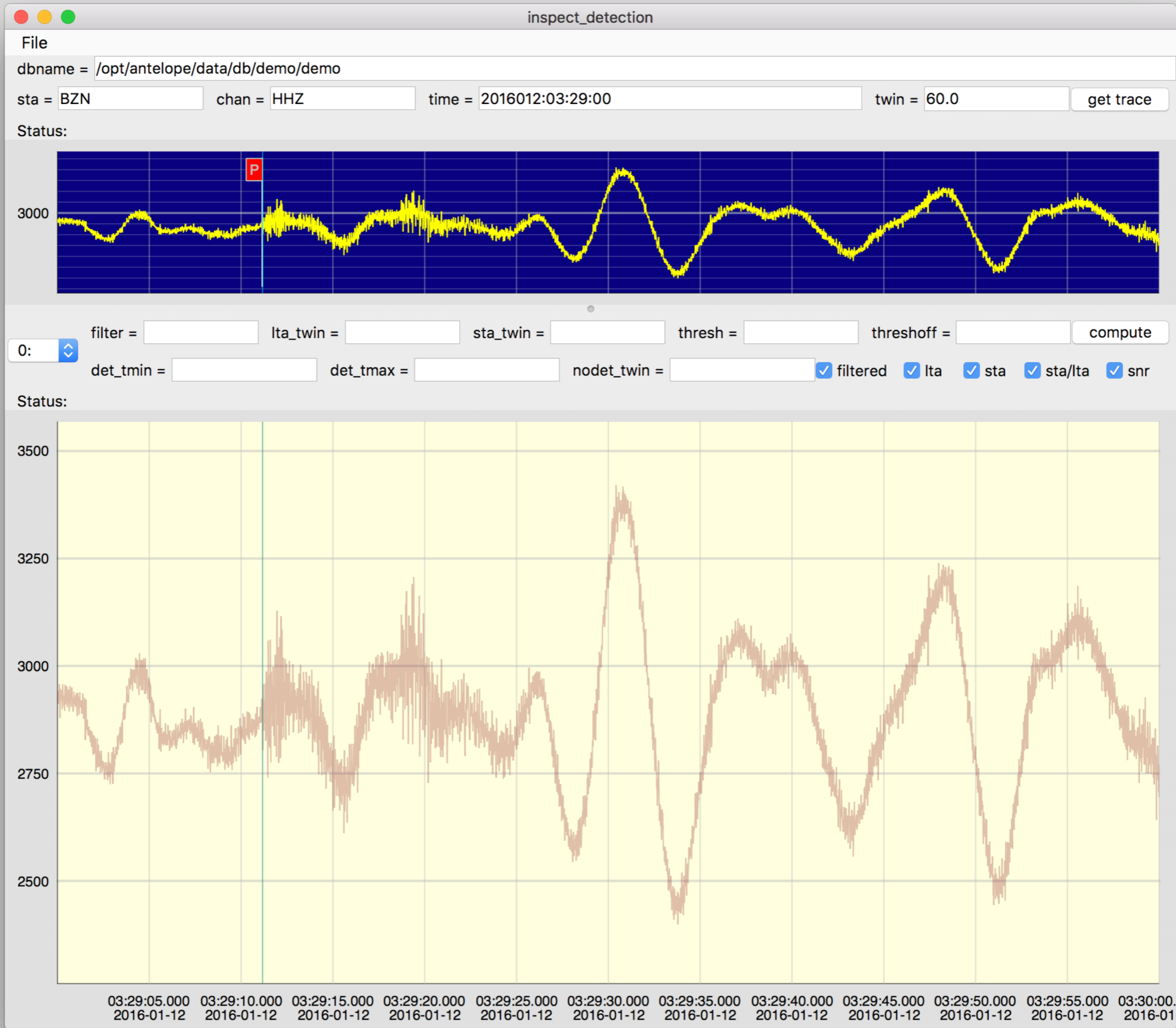
## DESCRIPTION

**inspect\_detection** displays a GUI that will show the various functions used to determine an Antelope arrival detection, as computed by **orbdetect(1)** or **dbdetect(1)**. Detection parameters can be changed and the results displayed interactively.

- The only required argument is the database name.
- Note this is a batch process vs real-time processing.

```
bastille% inspect_detection /opt/antelope/data/db/demo/demo
```







# New Polyline Configure Parameter

## **trace** Dbptr

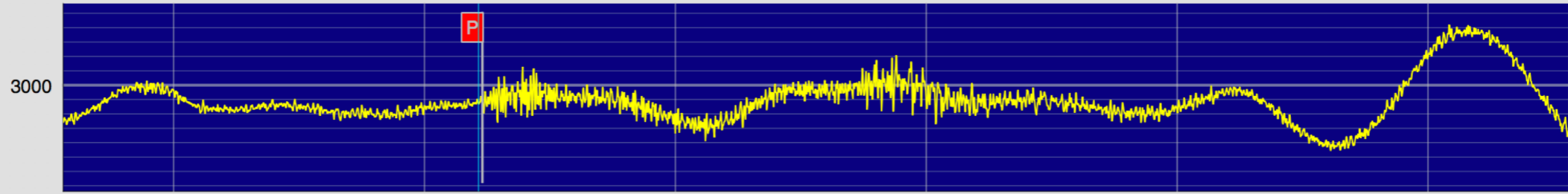
This specifies a row from a Datascope Trace database as the source of the data to be plotted. The Dbptr should be a Datascope object from a **Trace4.0** or **Trace4.1** schema database. The Dbptr can point to a table already set to trace with the record set to the record to be displayed, or it can point to a group view of a sorted trace table with the record set to the group to be displayed. When specifying a group view all of the traces corresponding to the group will be displayed.

File

dbname = /opt/antelope/data/db/demo/demo

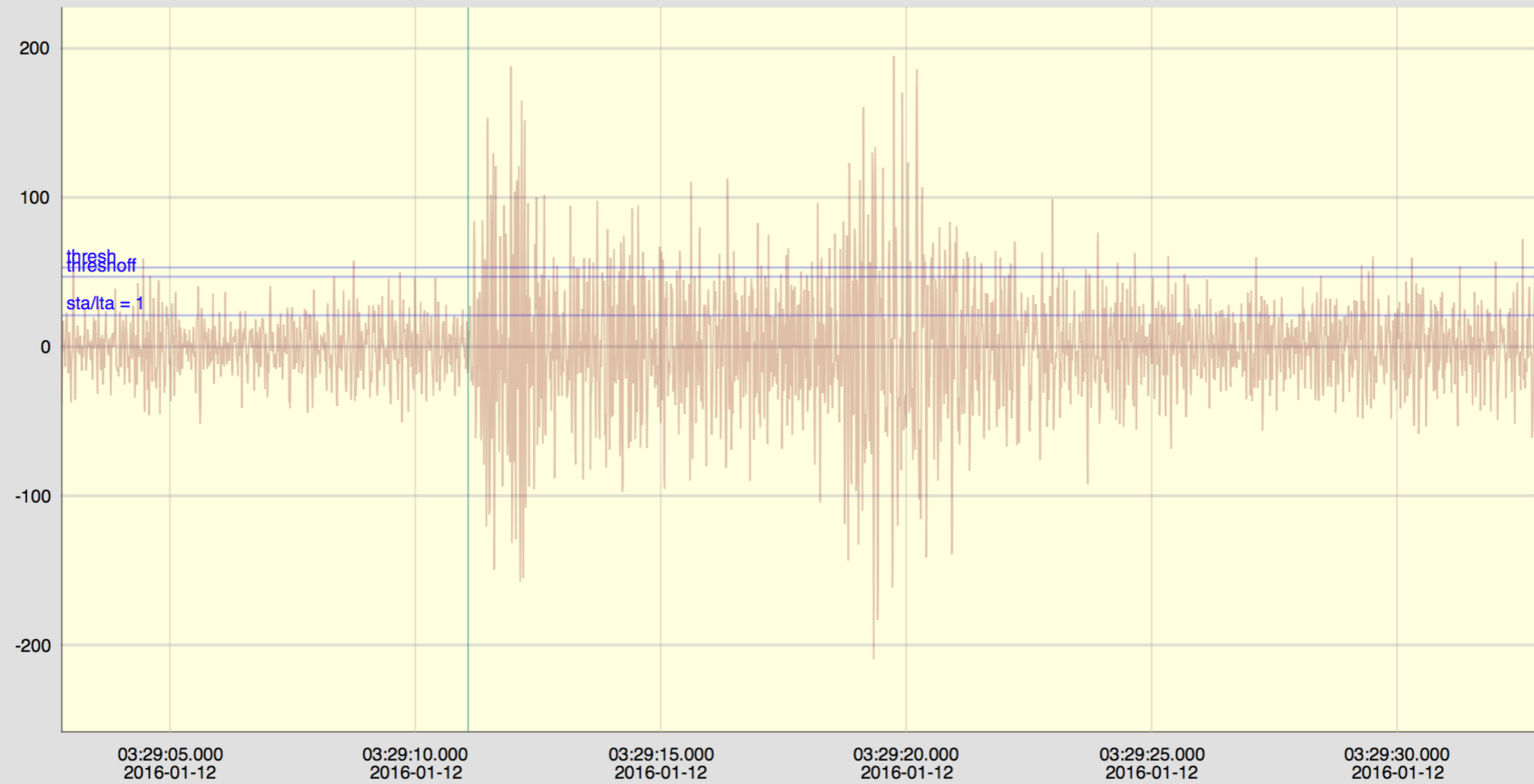
sta = BZN chan = HHZ time = 2016012:03:29:02.800 twin = 30.000 get trace

Status:



0:      compute  
    filtered  lta  sta  sta/lta  snr

Status:



File

dbname = /opt/antelope/data/db/demo/demo

sta = BZN

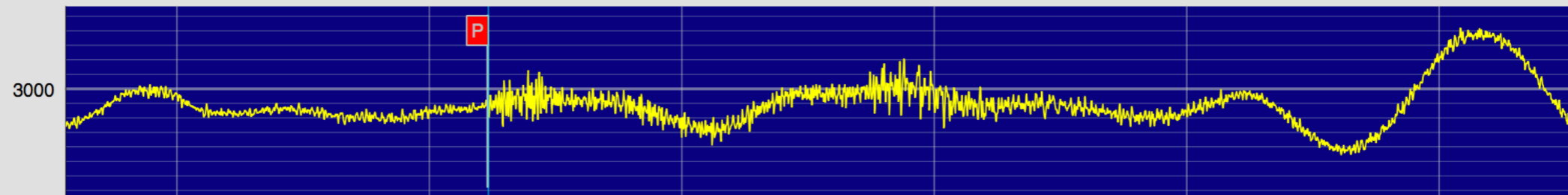
chan = HHZ

time = 2016012:03:29:02.800

twin = 30.000

get trace

Status:



0: ▾

filter = BW 5.0 4 0 0

lta\_twin = 10

sta\_twin = 1

thresh = 4

threshoff = 3

compute

det\_tmin =

det\_tmax =

nodet\_twin =

filtered

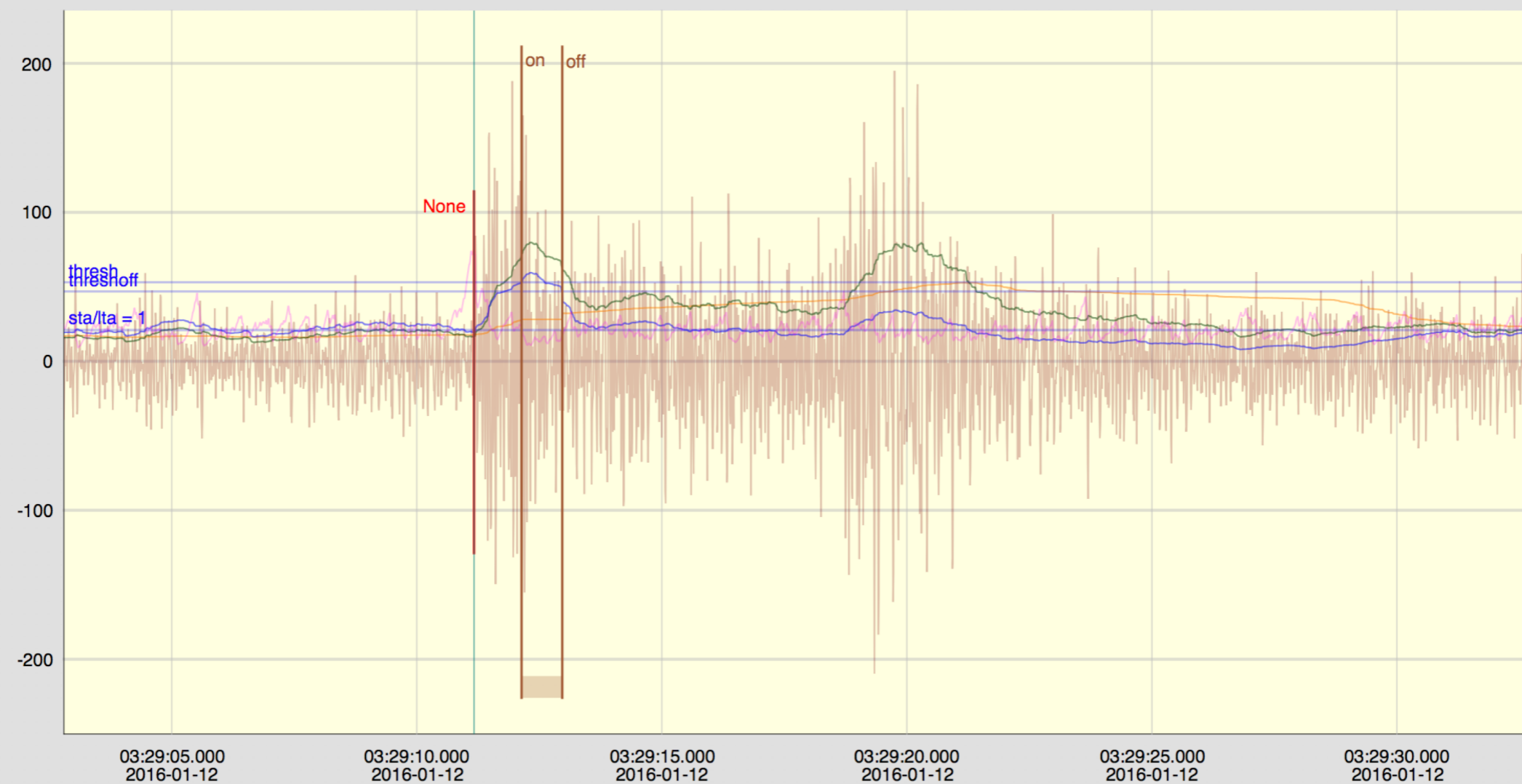
lta

sta

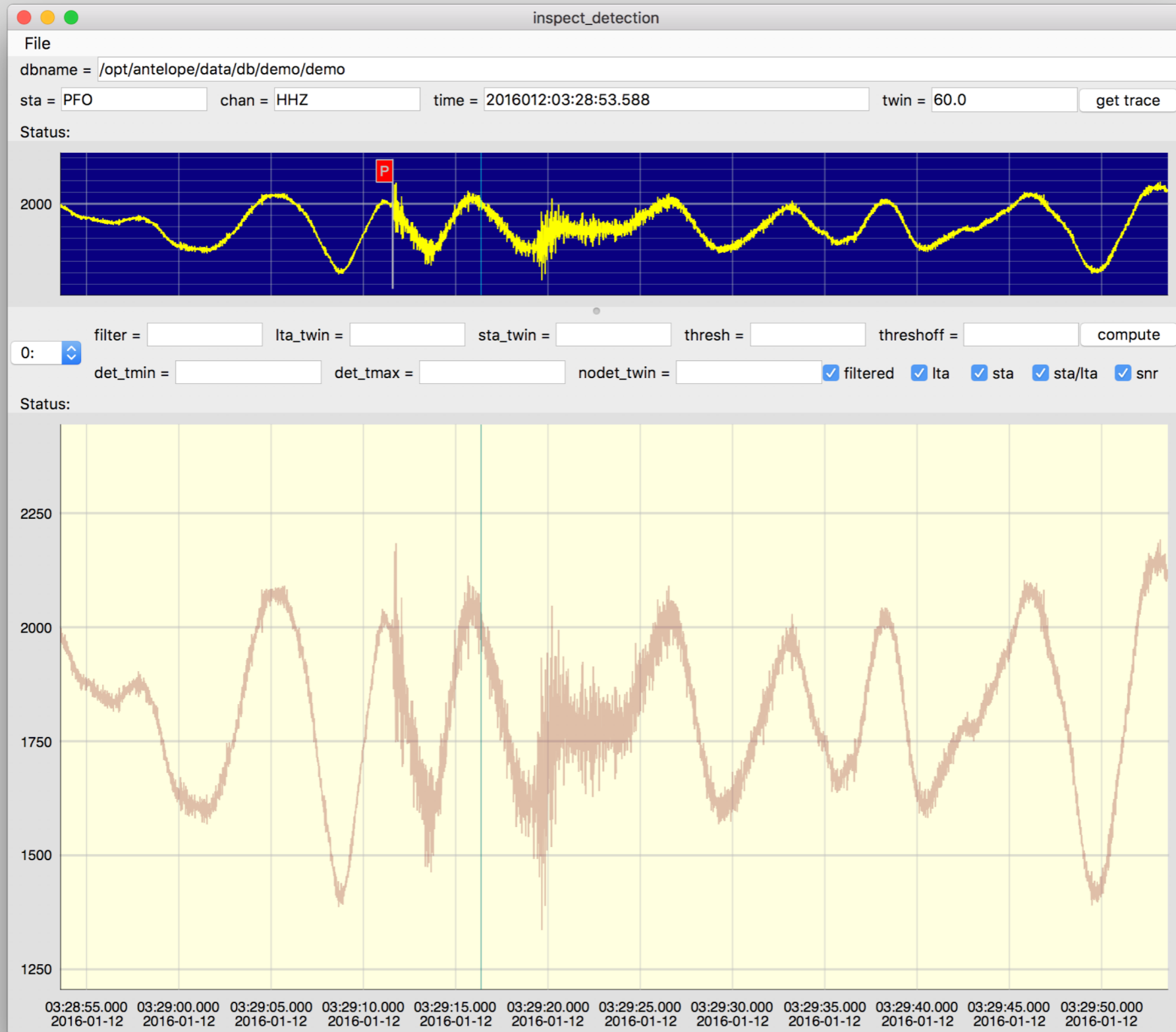
sta/lta

snr

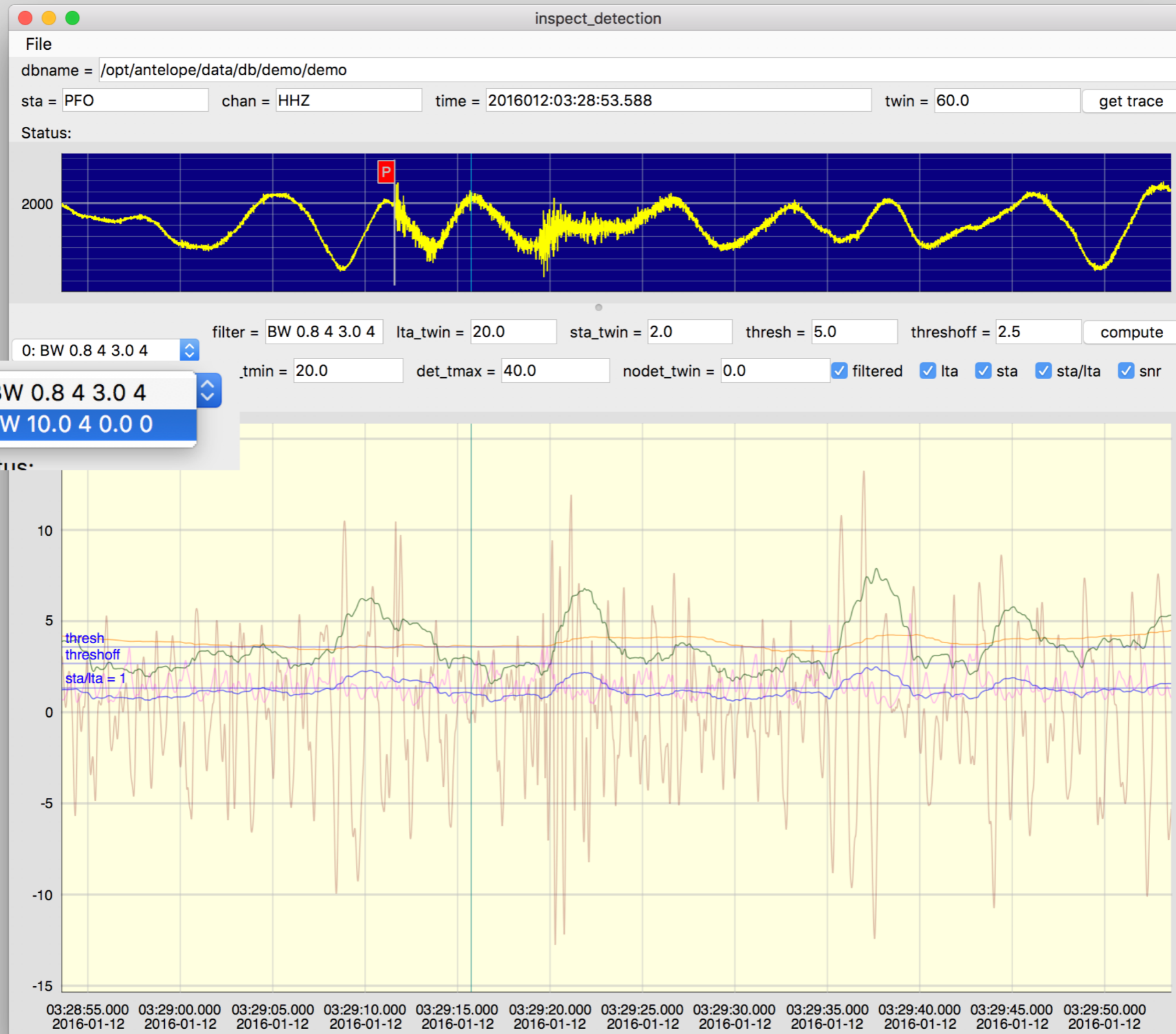
Status:

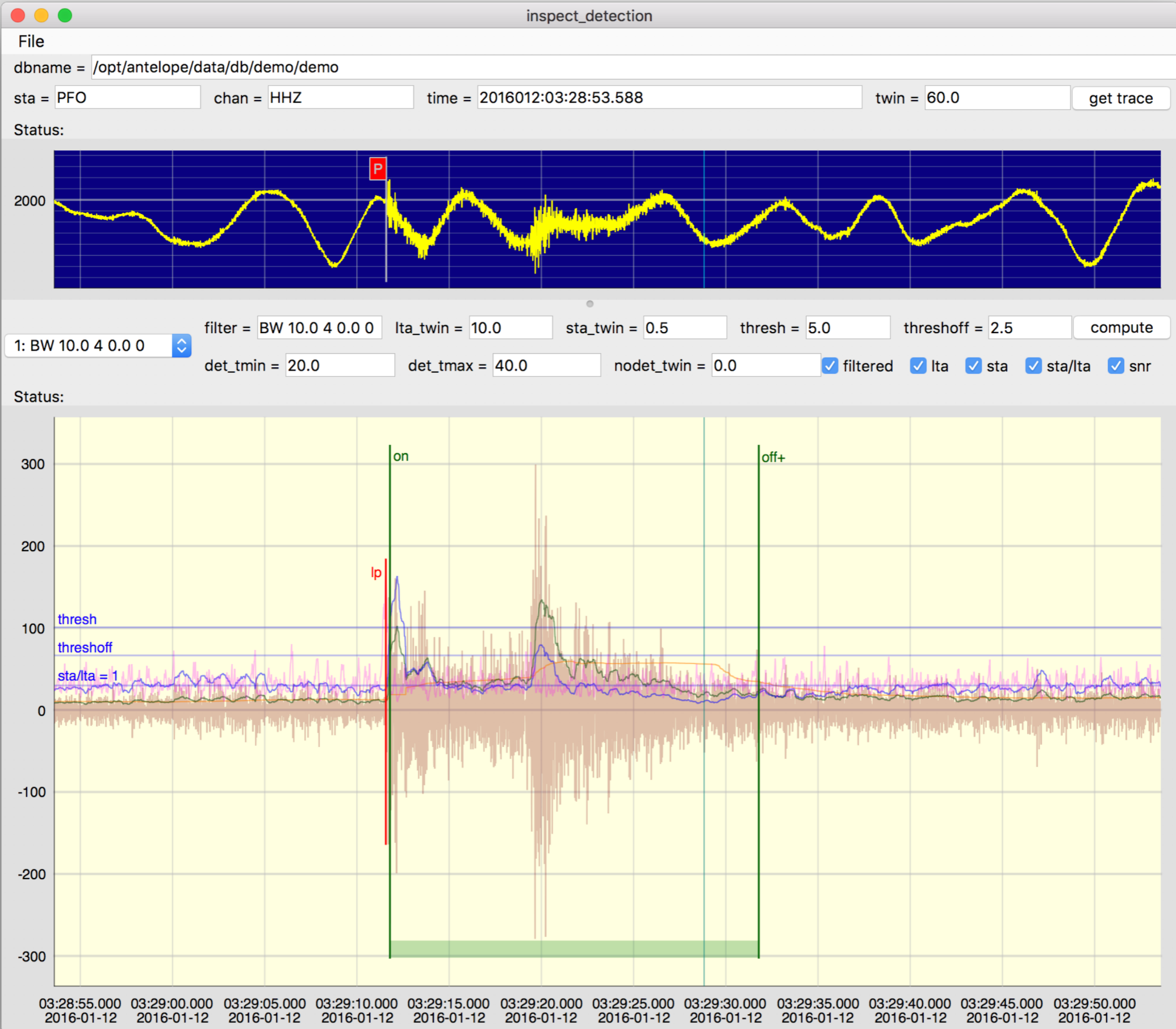


```
bastille% inspect_detection -arid 10 /opt/antelope/data/db/demo/demo
```

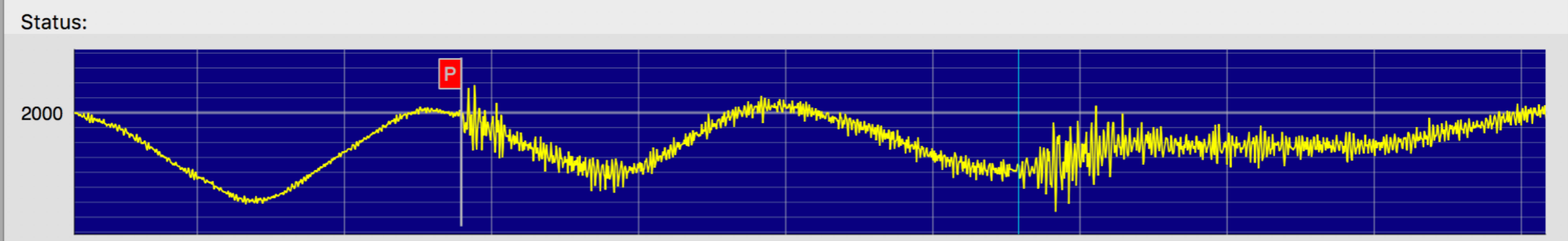


```
bastille% inspect_detection -arid 10 \  
-pfdet ~/rtsystems/rtdemo_anza/pf/orbdetect_P opt/antelope/data/db/demo/demo
```

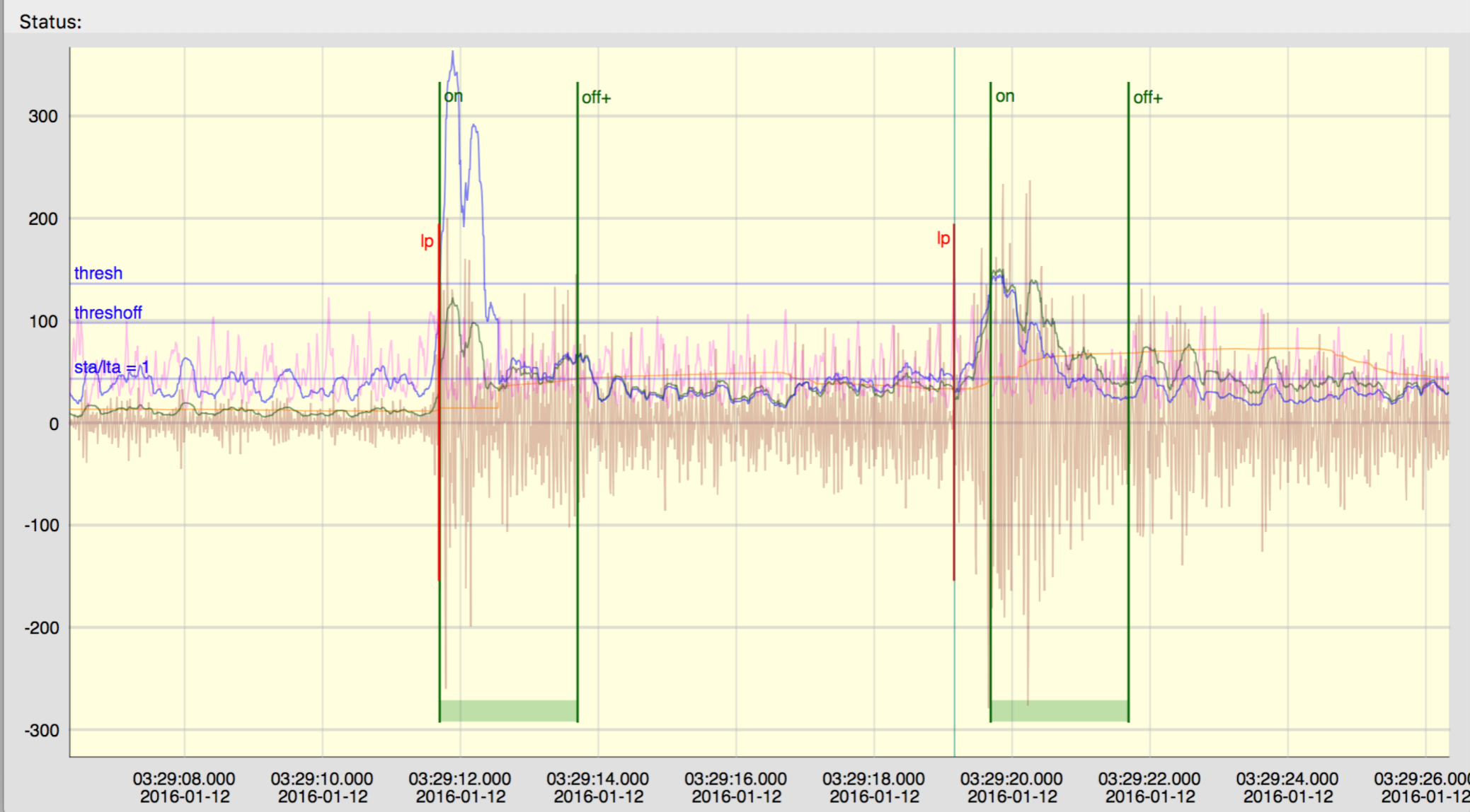




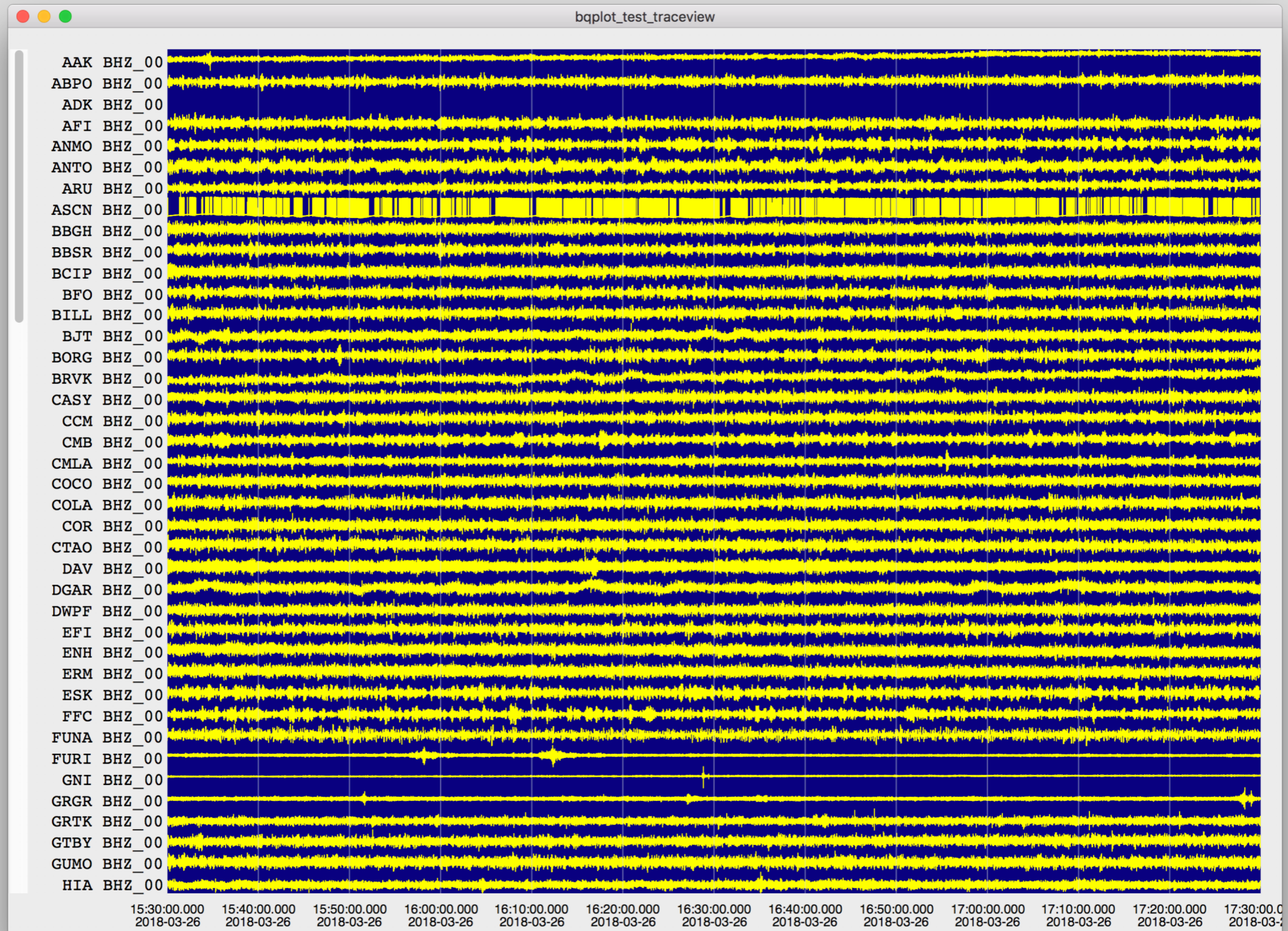
File  
dbname = /opt/antelope/data/db/demo/demo  
sta = PFO chan = HHZ time = 2016012:03:29:06.330 twin = 20.000 get trace



1: BW 10.0 4 0.0 0 filter = BW 10.0 4 0.0 0 lta\_twin = 5 sta\_twin = 0.2 thresh = 4.0 threshoff = 2.5 compute  
det\_tmin = 2 det\_tmax = 40.0 nodet\_twin = 0.0  filtered  lta  sta  sta/lta  snr



# Changing Subjects – Progress on new dbpick

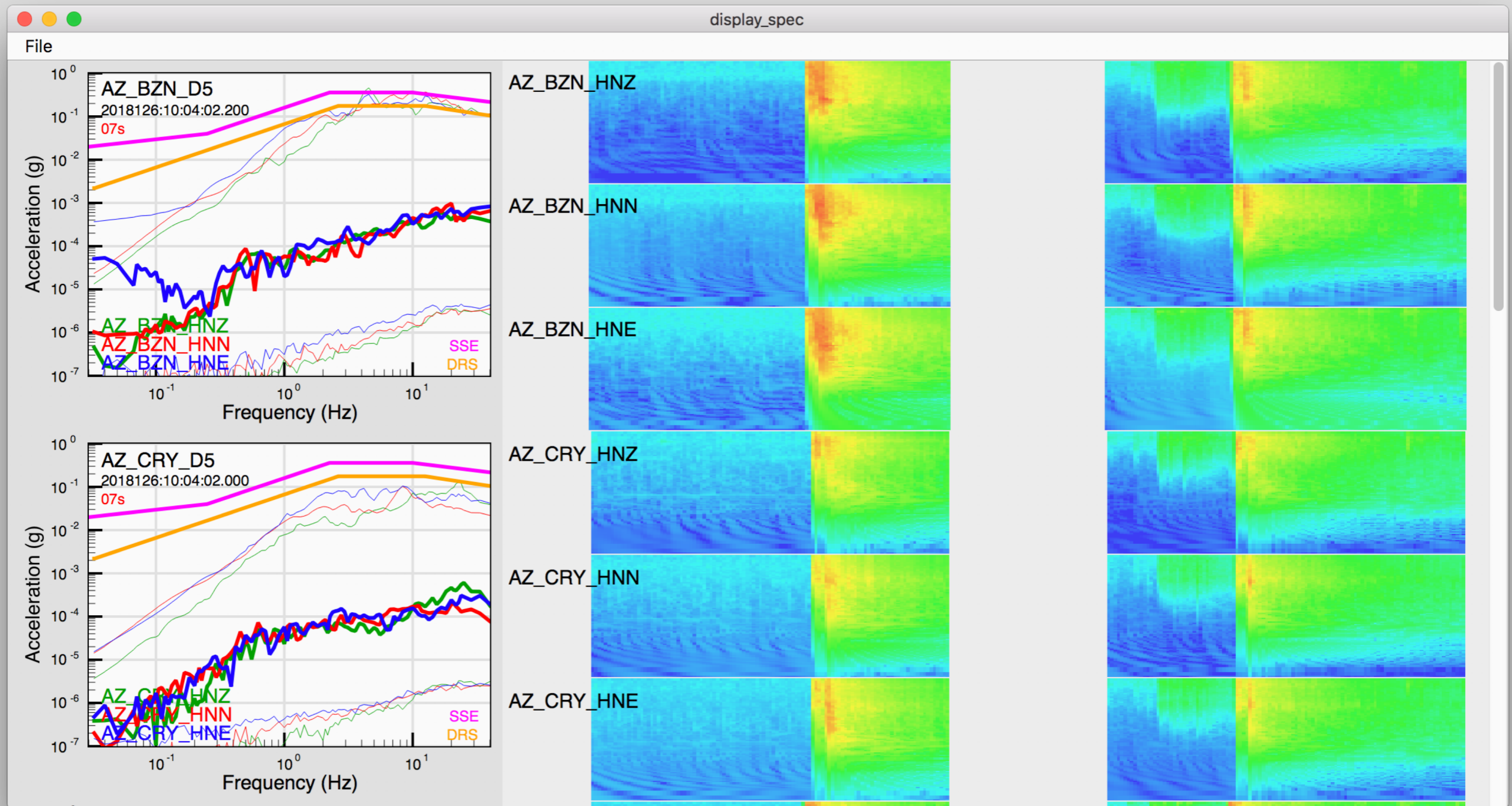




# Progress on new **dbpick**

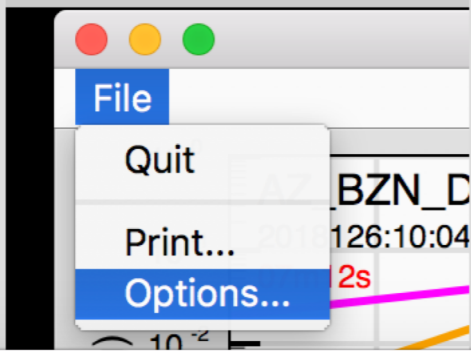
- Based upon a new `c++` class, **BQTraceview**, using Qt graphics for efficient display of waveforms and ability to display and edit arrival picks.
- Current prototype implementation that demonstrates waveform display and interaction that is approximately as efficient as the legacy **dbpick**
- Plan is to implement all of the other **dbpick** capabilities within **BQTraceview**
- Python extension will be developed and used to backport **BQTraceview** implemented trace displays in apps like **inspect\_detection**
- **BQTraceview** will be developed to also display data from ORB packets as well as Datascope trace schema data. Data displays will be able to automatically scroll in time as well as automatically update due to database changes. Replacement for **orbbrtd** and **orbmonrtd\_dep**.

# New display\_spec Application



# display\_spec

- Replaces the now deprecated **specrtd**
- Displays both time-slice spectra plots plus time-domain spectrogram type plots
- Current implementation only displays output from **orbsmrsp**, strong motion response spectra
- Intent is to have this same application display other types of spectra, such as noise spectra
- Uses new **PfTreeview** python class



display\_spec options

Expand all Collapse all Save as... Options...

Allow value edits  Show non-inline comments  Show comments  Show constraints  Show source

| key                              | value      | comment  |
|----------------------------------|------------|--|
|                                  |            | # This is the parameter file for display_spec                |
| <b>background_color</b>          | #e0e0e0    | # background color outside of plot                           |
| <b>background_plot_color</b>     | #fafafa    | # background plot color                                      |
| ▶ <b>channel_colors &amp;Tbl</b> |            | # color coding for channels                                  |
| ▶ <b>limit_colors &amp;Arr</b>   |            | # color coding for limit spectra                             |
| <b>plot_mode</b>                 | loglog     | # Plotting mode (loglog, loglin, linlog, linlin)             |
| <b>spectra_units</b>             | g          | # Spectra units to plot (g, mg, nm/s**2, m/s**2, cm/s, nm/s) |
| <b>xaxis_type</b>                | frequency  | # X-axis type (frequency, period)                            |
| <b>ybottom</b>                   | 0.0000001  | # spectra value at bottom of plot                            |
| <b>ytop</b>                      | 1.000      | # spectra value at bottom of plot                            |
| <b>xleft</b>                     | 0.03       | # frequency/period value at left side of plot                |
| <b>xright</b>                    | 40.0       | # frequency/period value at right side of plot               |
| <b>width_spec</b>                | 400        | # spectra frame width in pixels                              |
| <b>width_trace</b>               | 800        | # trace frame width in pixels                                |
| <b>height_spec</b>               | 300        | # spectra/trace frame height in pixels                       |
| ▶ <b>staprocs &amp;Tbl</b>       |            | # staproc row column   |
| <b>pf_revision_time</b>          | 1509986095 |  |

Status:

# New Pftreeview

- Based upon a new c++ class, **BQPftreeview**, using Qt graphics for display and editing of Antelope parameter file values.
- Note that the parameter file display preserves order and shows comments
- Nested **&Tbl** and **&Arr** parameters can be expanded
- Values can be edited. Applications can be written to notice value edits and respond appropriately
- Edited parameters can be saved
- Generalized interface for editing and saving parameters for any application

# PfTreeview

display\_spec options

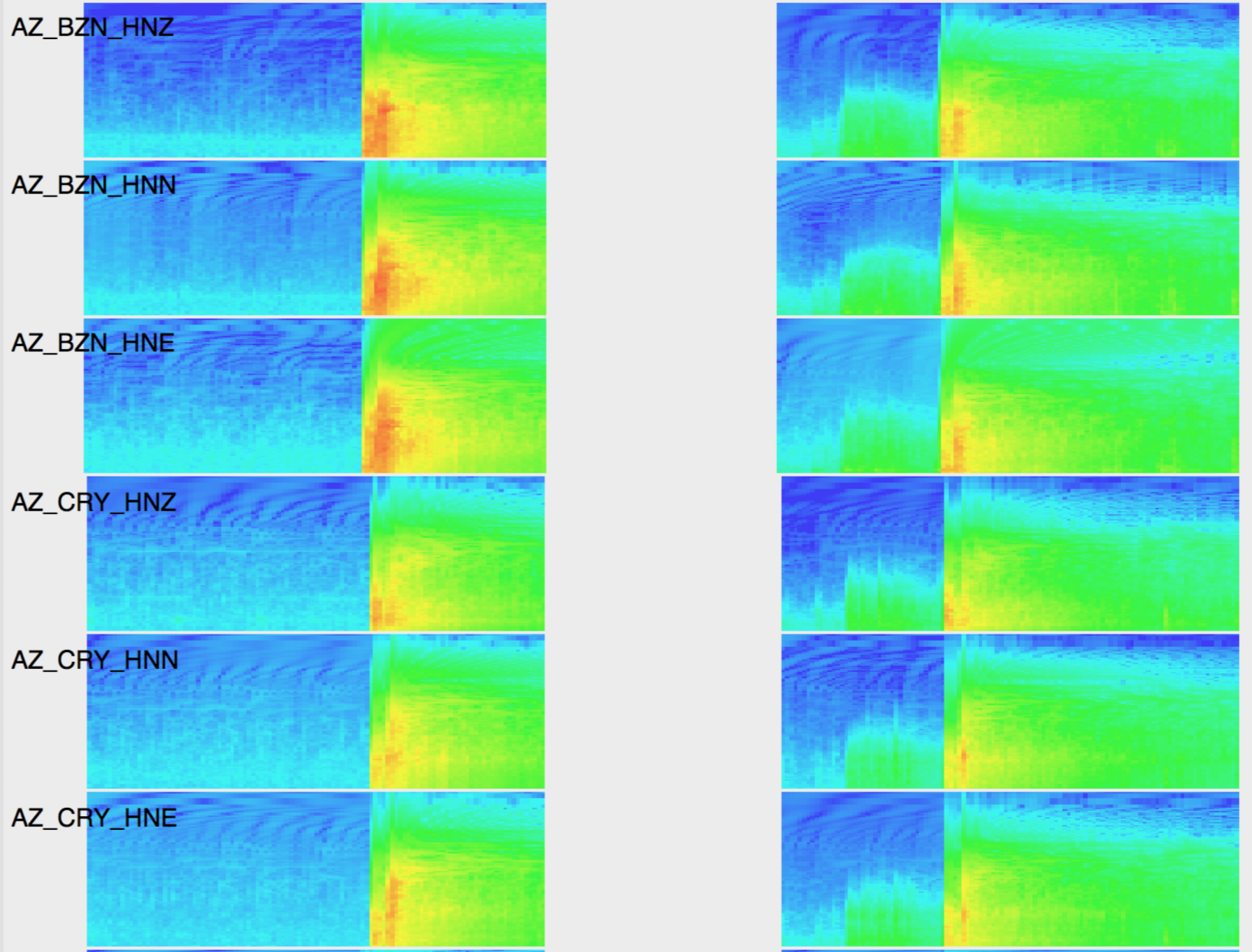
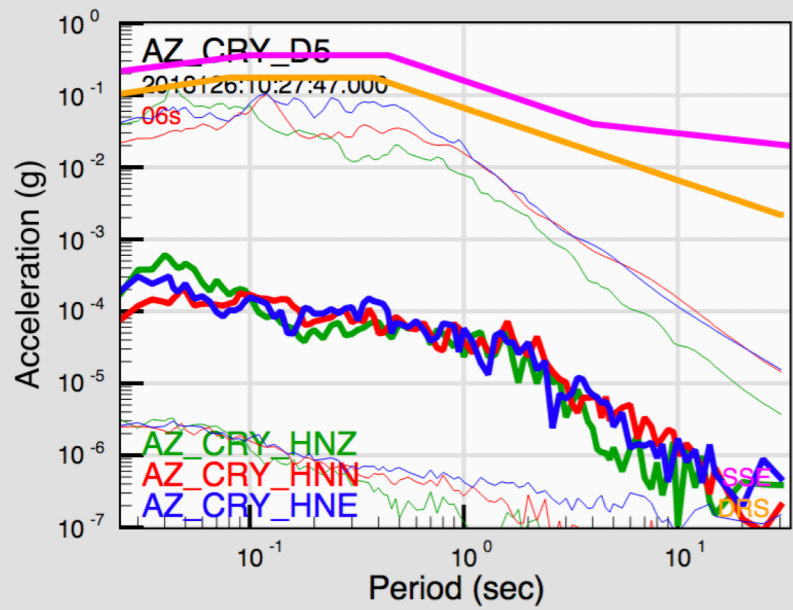
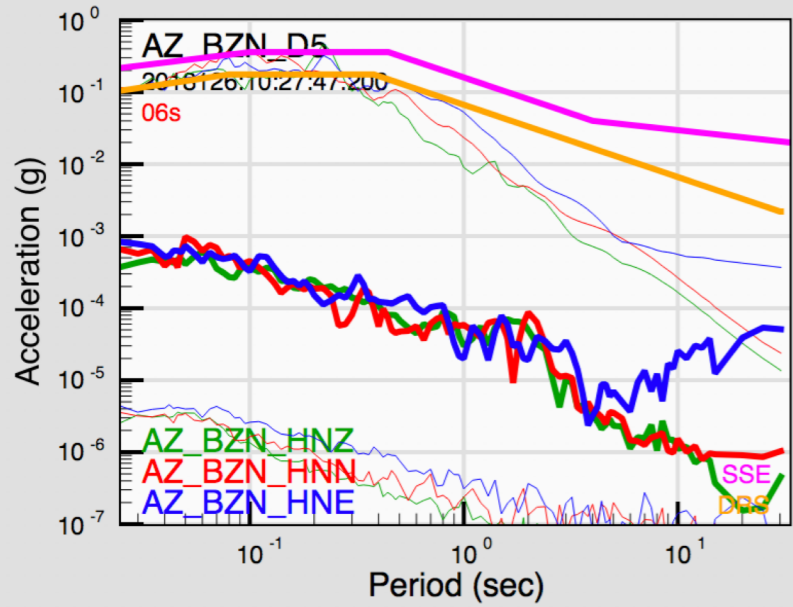
Expand all Collapse all Save as... Options...

Allow value edits  Show non-inline comments  Show comments  Show constraints  Show source

| key                            | value          | comment   |
|--------------------------------|----------------|---|
| ▼ <b>limit_colors &amp;Arr</b> |                | # color coding for limit spectra                            |
| DRS                            | orange         |   |
| OBE                            | #ff6000        |   |
| SSE                            | magenta        |   |
| LSA                            | darkgray       |   |
| plot_mode                      | loglog         | # Plotting mode (loglog, loglin, linlog, linlin)            |
| spectra_units                  | g              | # Spectra units to plot (g, mg, nm/s**2, m/s**2, cm/s, ...) |
| xaxis_type                     | period         | # X-axis type (frequency, period)                           |
| ybottom                        | 0.0000001      | # spectra value at bottom of plot                           |
| ytop                           | 1.000          | # spectra value at bottom of plot                           |
| xleft                          | 0.03           | # frequency/period value at left side of plot               |
| xright                         | 40.0           | # frequency/period value at right side of plot              |
| width_spec                     | 400            | # spectra frame width in pixels                             |
| width_trace                    | 800            | # trace frame width in pixels                               |
| height_spec                    | 300            | # spectra/trace frame height in pixels                      |
| ▼ <b>staproc &amp;Tbl</b>      |                | # staproc row column  |
|                                | AZ_BZN_D5 0 0  |   |
|                                | AZ_CRY_D5 1 0  |   |
|                                | AZ_FRD_D5 2 0  |   |
|                                | AZ_KNW_D5 3 0  |   |
|                                | AZ_LVA2_D5 4 0 |   |
|                                | AZ_PFO_D5 5 0  |   |
| pf_revision_time               | 1509986095     |   |

Status:

File



# PfTreeview

Allow value edits
  Show non-inline comments
  Show comments
  Show constraints
  Show source

| key                              | value          | source   |
|----------------------------------|----------------|--|
|                                  |                | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:0  |
|                                  |                | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:1  |
| <b>background_color</b>          | #e0e0e0        | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:2  |
| <b>background_plot_color</b>     | #fafafa        | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:3  |
|                                  |                | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:4  |
| ▼ <b>channel_colors &amp;Tbl</b> |                | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:5  |
|                                  | ..Z #00a000    | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:6  |
|                                  | ..N red        | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:7  |
|                                  | ..E blue       | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:8  |
|                                  |                | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:10 |
| ▼ <b>limit_colors &amp;Arr</b>   |                | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:11 |
| <b>DRS</b>                       | orange         | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:12 |
| <b>OBE</b>                       | #ff6000        | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:13 |
| <b>SSE</b>                       | magenta        | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:14 |
| <b>LSA</b>                       | darkgray       | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:15 |
|                                  |                | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:17 |
| <b>plot_mode</b>                 | loglog         | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:18 |
| <b>spectra_units</b>             | g              | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:19 |
| <b>axis_type</b>                 | frequency      | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:20 |
|                                  |                | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:21 |
| <b>ybottom</b>                   | 0.0000001      | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:22 |
| <b>ytop</b>                      | 1.000          | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:23 |
| <b>xleft</b>                     | 0.03           | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:24 |
| <b>xright</b>                    | 40.0           | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:25 |
|                                  |                | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:26 |
| <b>width_spec</b>                | 400            | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:27 |
| <b>width_trace</b>               | 800            | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:28 |
| <b>height_spec</b>               | 300            | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:29 |
|                                  |                | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:30 |
| ▼ <b>stapprocs &amp;Tbl</b>      |                | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:31 |
|                                  | AZ_BZN_D5 0 0  | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:32 |
|                                  | AZ_CRY_D5 1 0  | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:33 |
|                                  | AZ_FRD_D5 2 0  | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:34 |
|                                  | AZ_KNW_D5 3 0  | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:35 |
|                                  | AZ_LVA2_D5 4 0 | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:36 |
|                                  | AZ_PFO_D5 5 0  | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:37 |
| <b>pf_revision_time</b>          | 1509986095     | /Users/danny/rtsystems/rtdemo_anza_bighorn/pf/display_spec.pf:39 |

Status:



# PfTreeview

Expand all Collapse all Save as... Options...

Allow value edits  Show non-inline comments  Show comments  Show constraints  Show source

| key                              | value          | constraints                          |
|----------------------------------|----------------|--------------------------------------|
| <b>background_color</b>          | #e0e0e0        | <color>                              |
| <b>background_plot_color</b>     | #fafafa        | <color>                              |
| ▼ <b>channel_colors &amp;Tbl</b> |                | <regex> <color>                      |
|                                  | ..Z #00a000    |                                      |
|                                  | ..N red        |                                      |
|                                  | ..E blue       |                                      |
| ▼ <b>limit_colors &amp;Arr</b>   |                | <color>                              |
| DRS                              | orange         |                                      |
| OBE                              | #ff6000        |                                      |
| SSE                              | magenta        |                                      |
| LSA                              | darkgray       |                                      |
| <b>plot_mode</b>                 | loglog         | <str>(loglog loglin linlog linlin)   |
| <b>spectra_units</b>             | g              | <str>(g mg nm/s**2 m/s**2 cm/s nm/s) |
| <b>xaxis_type</b>                | frequency      | <str>(frequency period)              |
| <b>ybottom</b>                   | 0.0000001      | <float>(>=0.0)                       |
| <b>ytop</b>                      | 1.000          | <float>(>=0.0)                       |
| <b>xleft</b>                     | 0.03           | <float>(>=0.0)                       |
| <b>xright</b>                    | 40.0           | <float>(>=0.0)                       |
| <b>width_spec</b>                | 400            | <int>(>=0)                           |
| <b>width_trace</b>               | 800            | <int>(>=0)                           |
| <b>height_spec</b>               | 300            | <int>(>=3)                           |
| ▼ <b>staprocs &amp;Tbl</b>       |                | <str> <int> <int>                    |
|                                  | AZ_BZN_D5 0 0  |                                      |
|                                  | AZ_CRY_D5 1 0  |                                      |
|                                  | AZ_FRD_D5 2 0  |                                      |
|                                  | AZ_KNW_D5 3 0  |                                      |
|                                  | AZ_LVA2_D5 4 0 |                                      |
|                                  | AZ_PFO_D5 5 0  |                                      |
| <b>pf_revision_time</b>          | 1509986095     |                                      |

Status:

# New pfe Application

| key                        | value      | comment                                   |
|----------------------------|------------|---|
|                            |            | #   |
|                            |            | # This the q3302orb parameter file used   |
|                            |            | # communicate with a set of q330 datalog  |
|                            |            | #   |
|                            |            | # Following are global parameters:        |
| pfstatusreport_interval    | 20         | # This is the time interval in seconds fo |
|                            |            | # status report packets                   |
| pfstatusreport_verbosity   | 0          | # Output status report verbosity          |
|                            |            | # 0 - Complete every pfstatusreport_in    |
|                            |            | # 1 - Plus just connection mode for da    |
|                            |            | # when connection mode changes.           |
|                            |            | # 2 - Plus all parameters for datalogg    |
|                            |            | # when connection mode changes.           |
| local_port_base            | 27500      | # base port no. for local auto_fixed port |
| cmd_orbtag                 | dataorb    | # command line orb tag for command packet |
| log_orbtag                 | dataorb    | # command line orb tag for log packets    |
| status_orbtag              | dataorb    | # command line orb tag for status packets |
| db_orbtag                  | dataorb    | # command line orb tag for db packets     |
| config_orbtag              | dataorb    | # command line orb tag for configuration  |
| shutdown_wait_time         | 20.0       | # amount of time to wait for dataloggers  |
|                            |            | # during a shutdown of q3302orb           |
| ▶ packet_defs &Arr         |            | # ORB data packet definitions             |
|                            |            | # Following are global default datalogge  |
| statusrequest_interval     | 20         | # This is the time interval in seconds fo |
|                            |            | # datalogger status                       |
| statusreport_interval      | 20         | # This is the time interval in seconds fo |
|                            |            | # client status information as wavefor    |
| datarate_interval          | 60.0       | # This is the averaging duration in secon |
|                            |            | # data rate averages                      |
| commeff_interval           | 120.0      | # This is the averaging duration in secon |
|                            |            | # communication efficiency                |
| thruput_interval           | 120.0      | # This is the averaging duration in secon |
|                            |            | # thrupt averages                         |
| local_port_control         | auto_fixed | # local port no. for control sockets      |
|                            |            | # "auto_fixed" = automati                 |
|                            |            | # an integer= use integer as port         |
| local_port_data            | auto_fixed | # local port no. for data sockets         |
| timeout_control            | 20         | # UDP read timeout in secs for control so |
| timeout_data               | 20         | # read timeout in secs for data           |
| timeout_datathread_hang    | 3600       | # Apparent datathread hang timeout to shu |
| timeout_controlthread_hang | 3600       | # Apparent controlthread hang timeout to  |
| maxretries_control         | 3          | # max no. of re-reads before re-connect f |
| maxretries_register        | 5          | # max no. of registration retries before  |

Status:

| File                         | Edit | View    |
|------------------------------|------|---------|
| Done                         |      |         |
| q3302orb%                    |      |         |
| ack_print_bit_flag           |      | yes     |
| acq_matrix@                  |      |         |
| calibration_amplitude        |      | 2       |
| calibration_capacitive       |      | no      |
| calibration_duration         |      | 100     |
| calibration_monitor_channels |      | 0x0     |
| calibration_period           |      | 1       |
| calibration_sensors          |      | AB      |
| calibration_settling_time    |      | 30      |
| calibration_trailer_time     |      | 100     |
| calibration_waveform         |      | step    |
| cmd_orbtag                   |      | dataorb |
| commeff_interval             |      | 120.0   |
| config_orbtag                |      | dataorb |
| control_inactivity_timeout   |      | 300     |
| datalogger_templates%        |      |         |
| dataloggers@                 |      |         |
| datarate_interval            |      | 60.0    |
| db_orbtag                    |      | dataorb |
| debug_ack                    |      | 0       |
| debug_control                |      | 0       |
| debug_data                   |      | 0       |
| debug_startup                |      | no      |
| debug_udp                    |      | 0       |
| ep_disposition%              |      |         |
| ep_map%                      |      |         |
| flush_buffer_age             |      | 0       |
| flush_buffer_thresh          |      | 0       |
| inactivity_timeout           |      | 1800.0  |
| local_port_base              |      | 27500   |

# New display\_pfdisc Application

display\_pfdisc: /Users/danny/rtsystems/rtdemo\_anza\_bighorn/dbpf/anza

| rec    | time                 | srcname             | isstash | pftype              | pf identifier               | pfseq | pf state   |
|--------|----------------------|---------------------|---------|---------------------|-----------------------------|-------|------------|
| 000061 | 2018126:10:03:16.967 | AZ_SND_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_SND_D5/1525600973.000000 | 3     | final      |
| 000039 | 2018126:10:01:10.343 | AZ_SND_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_SND_D5/1525600845.000000 | 5     | final      |
| 000040 | 2018126:10:01:13.417 | AZ_WMC_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_WM                       |       |            |
| 000124 | 2018126:10:27:01.362 | AZ_SND_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_SN                       |       |            |
| 000125 | 2018126:10:27:02.372 | AZ_WMC_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_WM                       |       |            |
| 000100 | 2018126:10:24:45.533 | AZ_PFO_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_PF                       |       |            |
| 000121 | 2018126:10:26:57.380 | AZ_FRD_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_FR                       |       |            |
| 000103 | 2018126:10:24:50.545 | AZ_WMC_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_WM                       |       |            |
| 000102 | 2018126:10:24:47.827 | AZ_BZN_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_BZ                       |       |            |
| 000122 | 2018126:10:27:00.247 | AZ_PFO_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_PF                       |       |            |
| 000123 | 2018126:10:27:01.225 | AZ_TRO_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_TR                       |       |            |
| 000101 | 2018126:10:24:47.510 | AZ_SND_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_SN                       |       |            |
| 000034 | 2018126:10:01:04.429 | AZ_FRD_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_FR                       |       |            |
| 000035 | 2018126:10:01:05.327 | AZ_LVA2_D5/pf/ALARM | n       | alarm/spectra/smrsp | AZ_LVA                      |       |            |
| 000036 | 2018126:10:01:08.425 | AZ_TRO_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_TR                       |       |            |
| 000099 | 2018126:10:24:45.527 | AZ_TRO_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_TR                       |       |            |
| 000098 | 2018126:10:24:42.617 | AZ_LVA2_D5/pf/ALARM | n       | alarm/spectra/smrsp | AZ_LVA                      |       |            |
| 000097 | 2018126:10:24:41.622 | AZ_FRD_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_FR                       |       |            |
| 000037 | 2018126:10:01:08.435 | AZ_PFO_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_PF                       |       |            |
| 000062 | 2018126:10:03:18.030 | AZ_WMC_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_WM                       |       |            |
| 000058 | 2018126:10:03:12.903 | AZ_FRD_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_FR                       |       |            |
| 000059 | 2018126:10:03:16.020 | AZ_PFO_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_PF                       |       |            |
| 000060 | 2018126:10:03:16.961 | AZ_TRO_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_TR                       |       |            |
| 000038 | 2018126:10:01:10.324 | AZ_BZN_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_BZ                       |       |            |
| 000031 | 2018126:10:00:51.356 | AZ_WMC_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_WM                       |       |            |
| 000032 | 2018126:10:00:52.488 | AZ_WMC_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_WM                       |       |            |
| 000041 | 2018126:10:02:51.914 | AZ_FRD_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_FR                       |       |            |
| 000042 | 2018126:10:02:51.923 | AZ_PFO_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_PF                       |       |            |
| 000044 | 2018126:10:02:52.910 | AZ_TRO_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_TR                       |       |            |
| 000045 | 2018126:10:02:52.981 | AZ_PFO_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_PF                       |       |            |
| 000046 | 2018126:10:02:53.911 | AZ_PFO_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_PF                       |       |            |
| 000047 | 2018126:10:02:53.915 | AZ_TRO_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_TR                       |       |            |
| 000048 | 2018126:10:02:54.913 | AZ_TRO_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_TR                       |       |            |
| 000049 | 2018126:10:02:54.952 | AZ_SND_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_SN                       |       |            |
| 000050 | 2018126:10:02:55.045 | AZ_PFO_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_PF                       |       |            |
| 000051 | 2018126:10:02:55.989 | AZ_SND_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_SN                       |       |            |
| 000052 | 2018126:10:02:55.993 | AZ_TRO_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_TR                       |       |            |
| 000056 | 2018126:10:02:56.944 | AZ_WMC_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_WM                       |       |            |
| 000110 | 2018126:10:26:38.351 | AZ_TRO_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_TR                       |       |            |
| 000001 | 2018126:10:00:43.472 | AZ_BZN_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_BZ                       |       |            |
| 000002 | 2018126:10:00:43.483 | AZ_FRD_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_FR                       |       |            |
| 000003 | 2018126:10:00:44.317 | AZ_BZN_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_BZ                       |       |            |
| 000004 | 2018126:10:00:44.324 | AZ_PFO_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_PF                       |       |            |
| 000006 | 2018126:10:00:44.438 | AZ_LVA2_D5/pf/ALARM | n       | alarm/spectra/smrsp | AZ_LVA                      |       |            |
| 000007 | 2018126:10:00:44.444 | AZ_TRO_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_TR                       |       |            |
| 000008 | 2018126:10:00:45.461 | AZ_BZN_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_BZ                       |       |            |
| 000010 | 2018126:10:00:45.476 | AZ_PFO_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_PF                       |       |            |
| 000011 | 2018126:10:00:45.486 | AZ_TRO_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_TR                       |       |            |
| 000012 | 2018126:10:00:46.454 | AZ_SND_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_SND_D5/1525600845.000000 | 0     | inprogress |
| 000013 | 2018126:10:00:46.459 | AZ_PFO_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_PFO_D5/1525600843.000000 | 2     | inprogress |
| 000014 | 2018126:10:00:46.464 | AZ_BZN_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_BZN_D5/1525600842.200000 | 3     | inprogress |
| 000015 | 2018126:10:00:46.477 | AZ_TRO_D5/pf/ALARM  | n       | alarm/spectra/smrsp | AZ_TRO_D5/1525600843.000000 | 2     | inprogress |

Allow value edits
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  Show comments
  Show constraints
  Show source

| key                         | value  |
|-----------------------------|--|
| <b>channels &amp;Tbl</b>    |  |
| AZ_BZN_HNZ                  | g 0.1054925 g 2.723166 cm/s                              |
| AZ_BZN_HNN                  | g 0.1073912 g 3.682089 cm/s                              |
| AZ_BZN_HNE                  | g 0.09686046 g 5.199335 cm/s                             |
| limit_STRUC1_DRS            | g DRS  |
| limit_STRUC1_SSE            | g SSE  |
| endtime                     | 1525600870.200000  |
| <b>exceedances &amp;Arr</b> |  |
| <b>STRUC1_DRS &amp;Arr</b>  |  |
| <b>channels &amp;Tbl</b>    |  |
| AZ_BZN_HNZ                  | 21 4.545 161.198   |
| AZ_BZN_HNN                  | 28 12.500 111.693  |
| AZ_BZN_HNE                  | 27 4.545 85.500  |
| type                        | DRS  |
| <b>STRUC1_SSE &amp;Arr</b>  |  |
| <b>channels &amp;Tbl</b>    |  |
| AZ_BZN_HNZ                  | 2 4.545 27.697   |
| AZ_BZN_HNN                  | 3 12.500 12.282  |
| type                        | SSE  |
| facility                    | ANZA   |
| pfseq                       | 8  |
| pfstate                     | final  |
| pfstringident               | AZ_BZN_D5/1525600842.200000                              |
| pftype                      | alarm/spectra/smrsp                                      |
| <b>spectrum &amp;Tbl</b>    |  |
|                             | 40.000 0.107717 0.1160598 0.1003867 0.105 0.2169815      |
|                             | 33.333 0.1192727 0.1125453 0.1066122 0.1138554 0.2319222 |
|                             | 28.571 0.1575943 0.1180762 0.1380425 0.1219224 0.2453539 |
|                             | 25.000 0.1197315 0.141622 0.1061393 0.12937 0.2576142    |
|                             | 23.810 0.1435921 0.1625325 0.1261053 0.1322023 0.2622438 |
|                             | 22.727 0.1822145 0.1622924 0.1445931 0.1349637 0.2667405 |
|                             | 21.739 0.1611589 0.1853236 0.1344262 0.137654 0.2711056  |
|                             | 20.833 0.1523934 0.1911262 0.1456389 0.140281 0.2753534  |
|                             | 20.000 0.1745345 0.1938499 0.1578582 0.1428461 0.2794876 |
|                             | 18.182 0.1905735 0.2456527 0.1630545 0.1490212 0.2893864 |
|                             | 16.667 0.1969569 0.2141774 0.1945636 0.1548913 0.298729  |
|                             | 15.385 0.1978387 0.2730031 0.2027654 0.1604955 0.30759   |
|                             | 14.286 0.2092693 0.2601846 0.208732 0.1658655 0.3160292  |
|                             | 13.333 0.2050524 0.3469585 0.2831741 0.1710294 0.3240987 |
|                             | 12.500 0.1771678 0.3725793 0.3000256 0.176 0.3318255     |

Status:

# PfTreeview

- Current initial implementation does not properly parse **&Literal** types nor does it properly process parameter file references
- A patch in the current release is intended to fix at least the **&Literal** type parsing
- Other exotic parameter file constructs (**&Undef**, **&ask**, **&exec**, **&file**, etc.) may or may not be implemented in the future depending on user input and difficulty of implementation
- Legacy **pf** routines will remain indefinitely