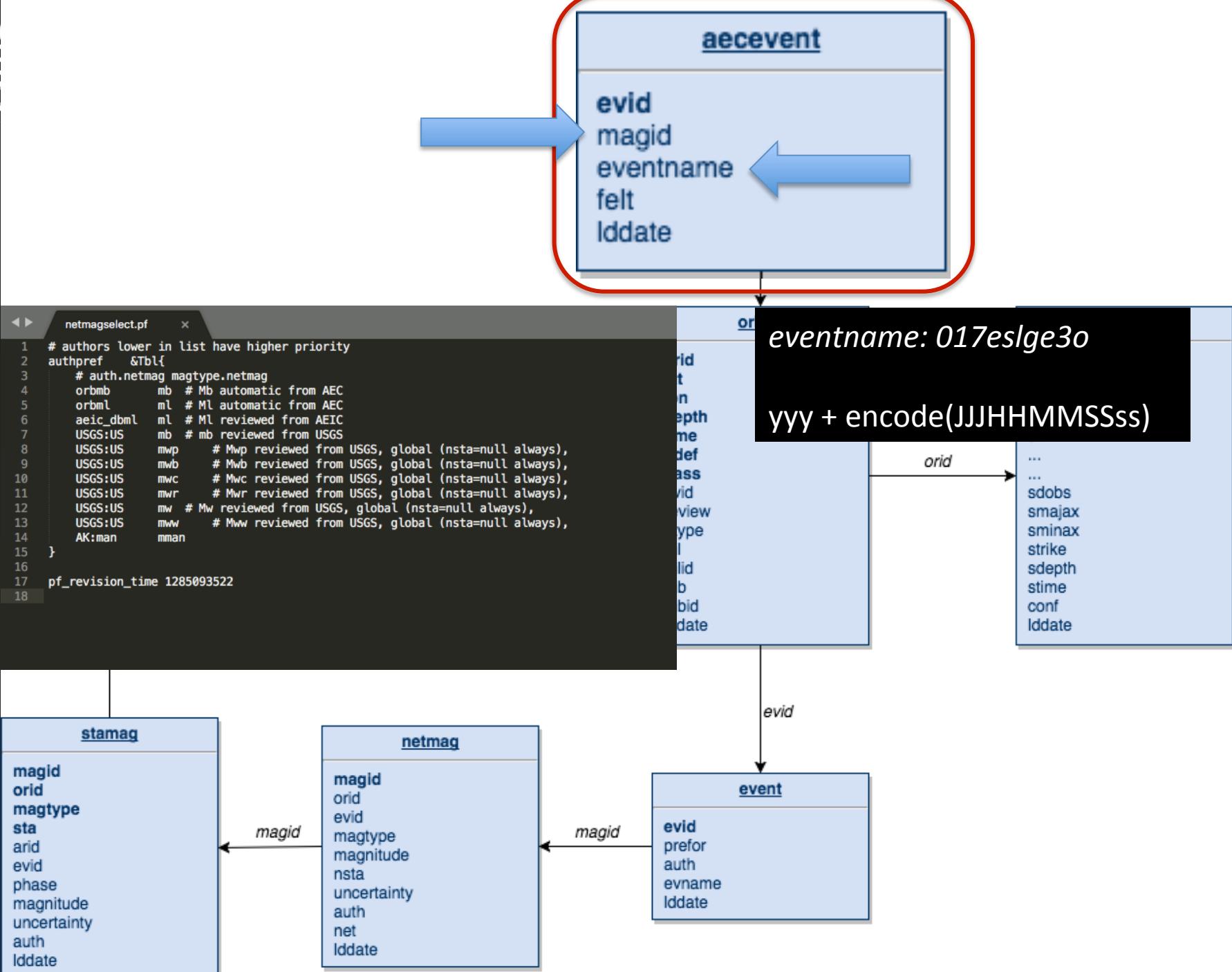


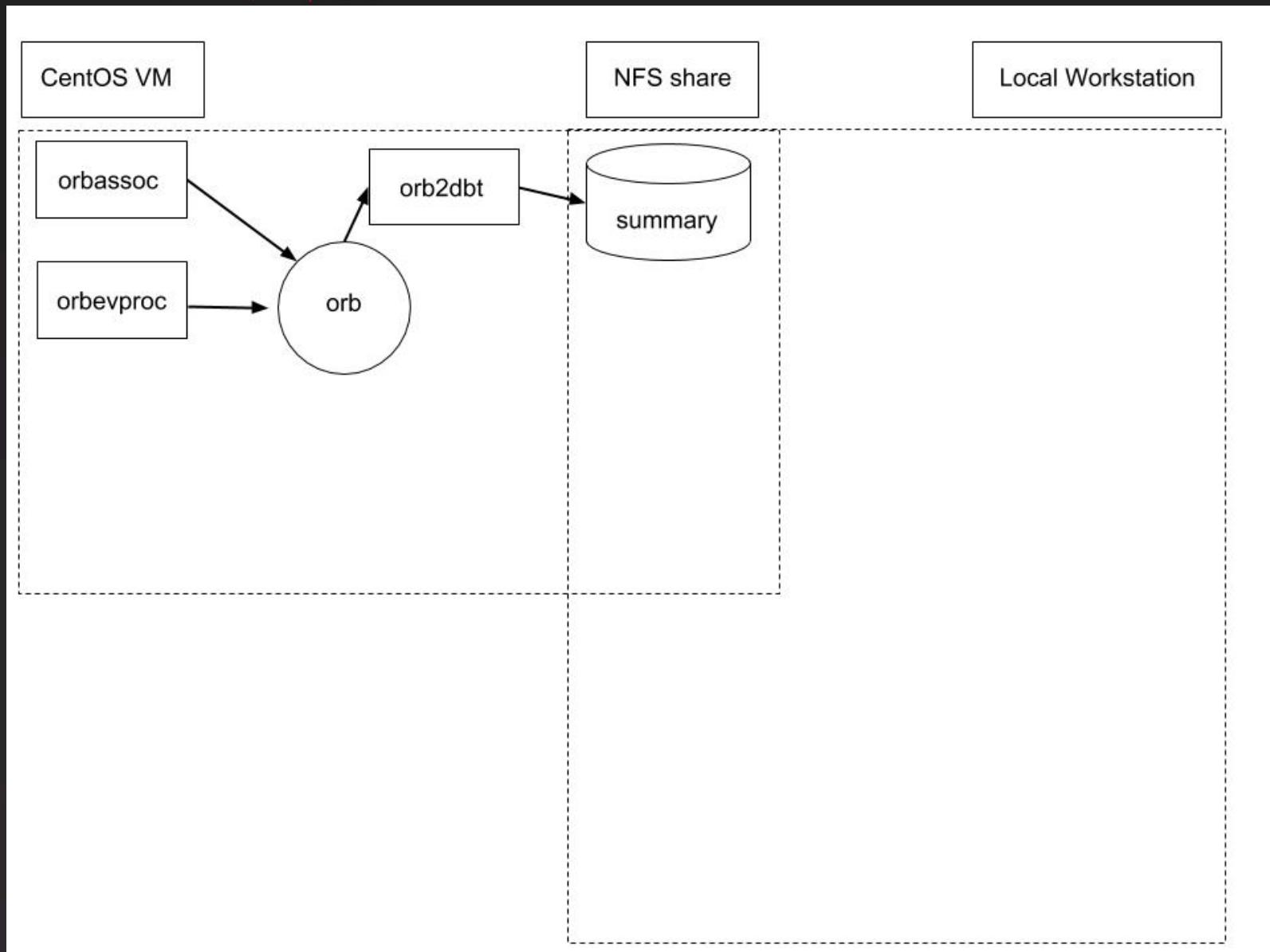
Real-time & Earthquake Response Workflow at AEC

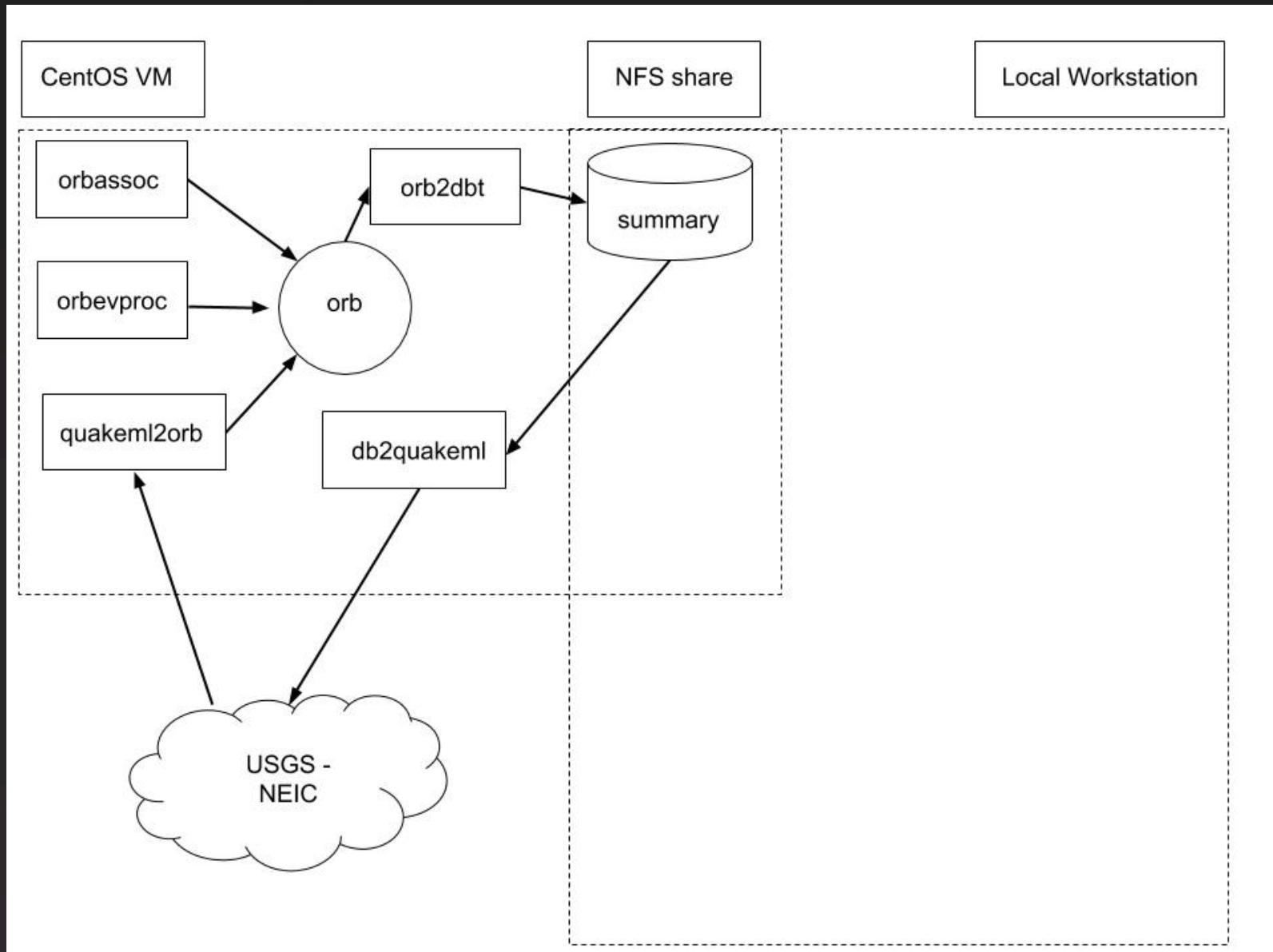


AUG 2018 – Victoria, BC

- magnitudes for moderate – large earthquakes
 - ml computed at AEC
 - mb, mw from NEIC
 - want: AEC solution with NEIC magnitude
- persistent & unique event identifier
- duty review...dbevents – originally forked from v4.3 (circa 2000!), reforked from 4.9 in 2007 after 2000 lines of code drift

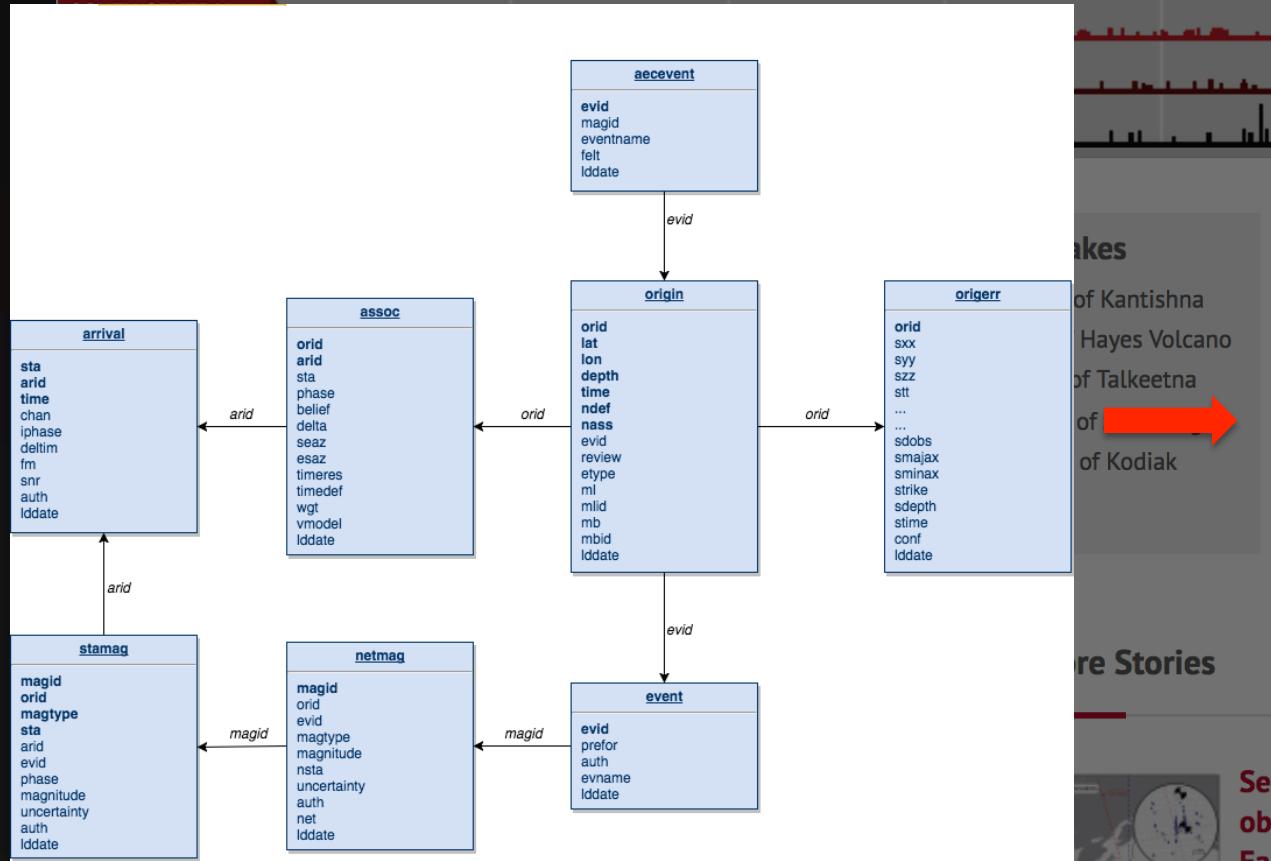






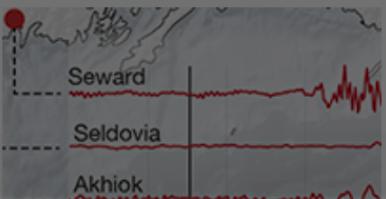
Internal (Datascope)

Web (MySQL)



webevents

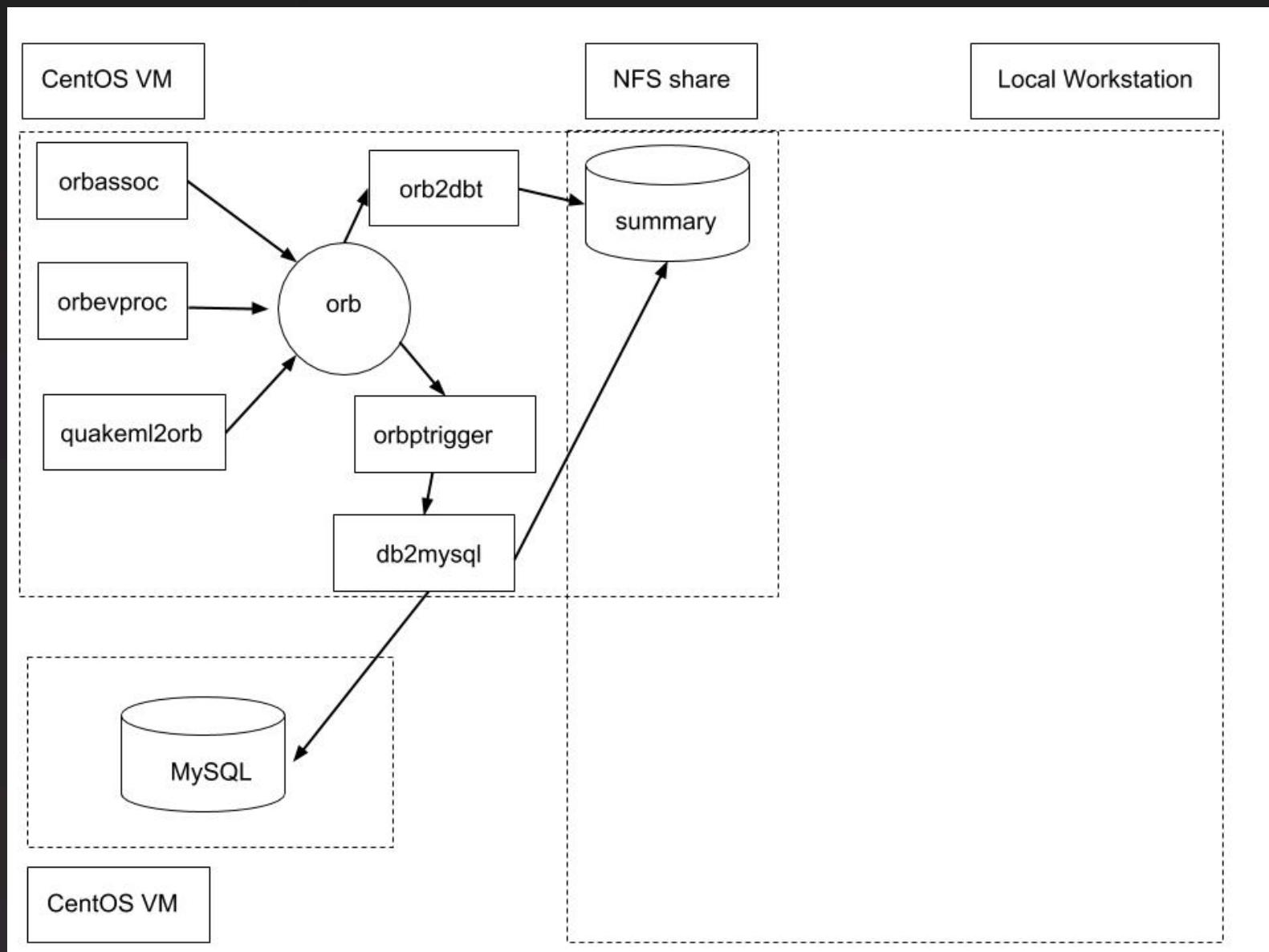
event_name char(30)
time decimal(17,5)
latitude decimal(9,4)
longitude decimal(9,4)
depth decimal(9,4)
jdate int(7)
magnitude decimal(7,2)
magnitude_type char(10)
magnitude_author char(30)
reviewed tinyint(1)
felt tinyint(1)
event_type char(20)
number_phases int(6)
lenddate decimal(17,5)



We spend a lot of time at the Earthquake Center anticipating what will happen during large earthquakes. For earthquakes occurring off the coast,

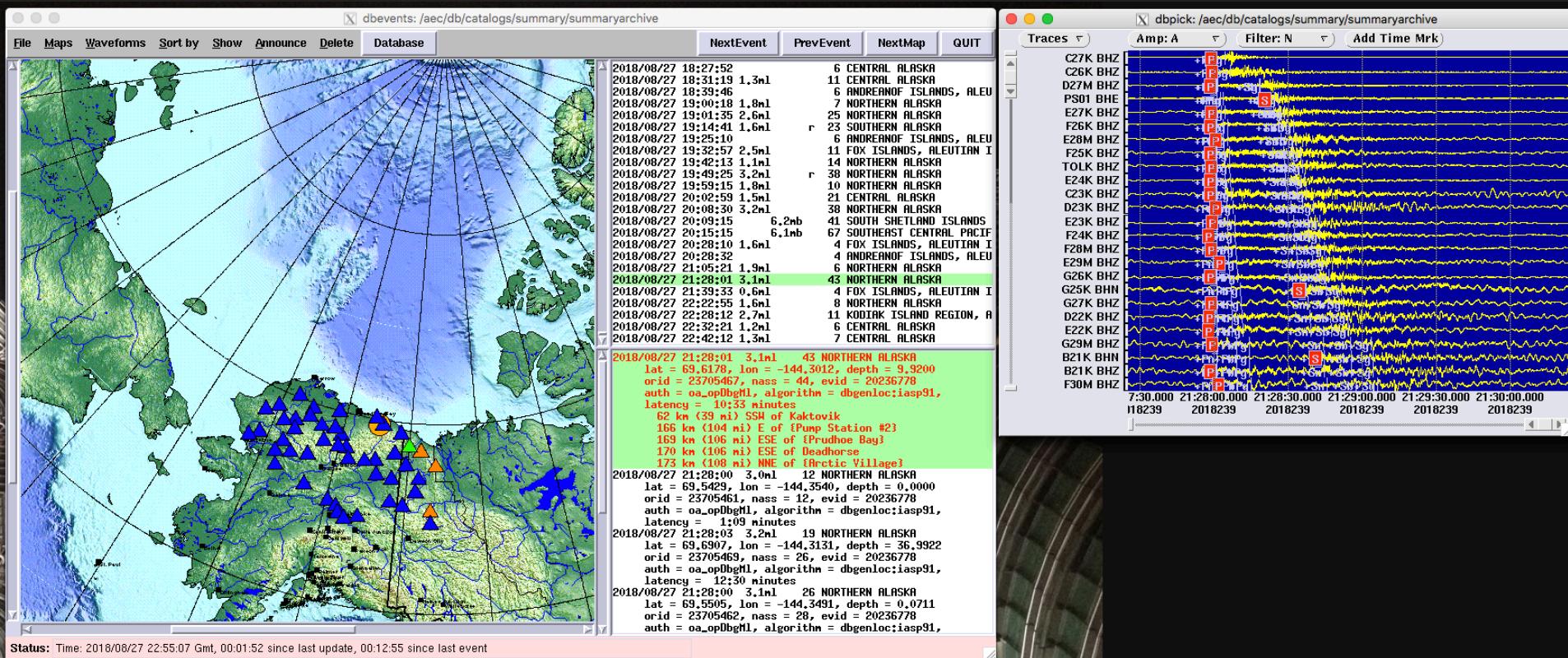


When a large earthquake occurs, geophysicists have many tools at their disposal to determine the properties of the fault (or faults) that ruptured during the earthquake.



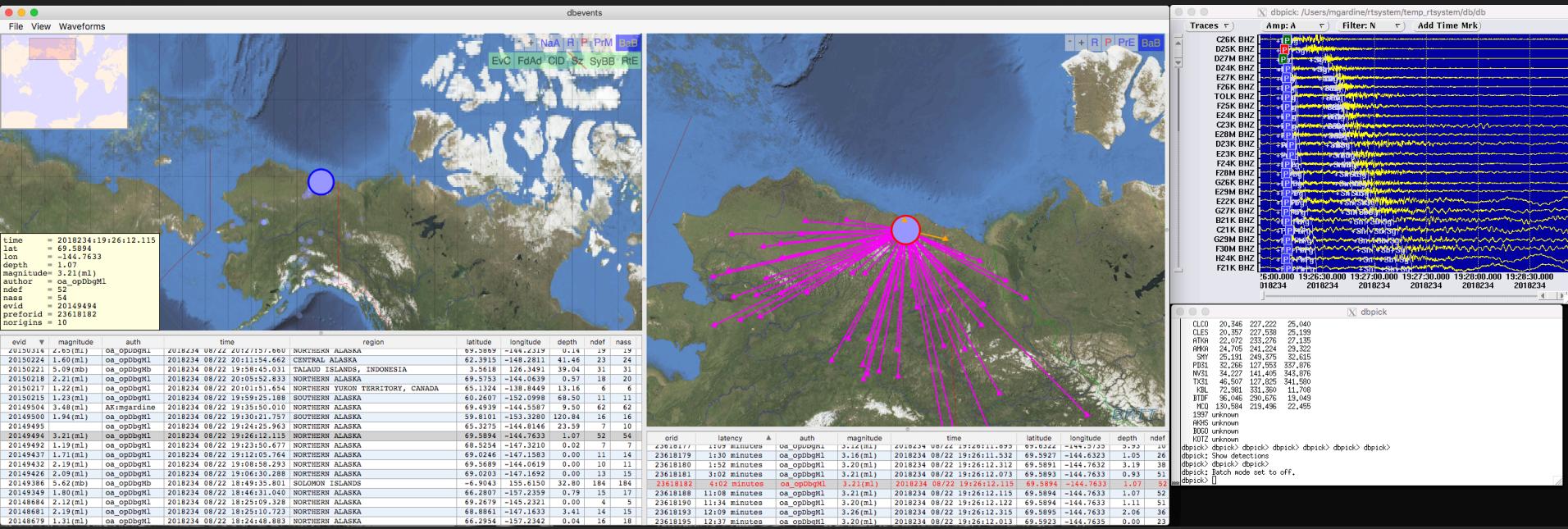
ALASKA EARTHQUAKE CENTER

dbevents



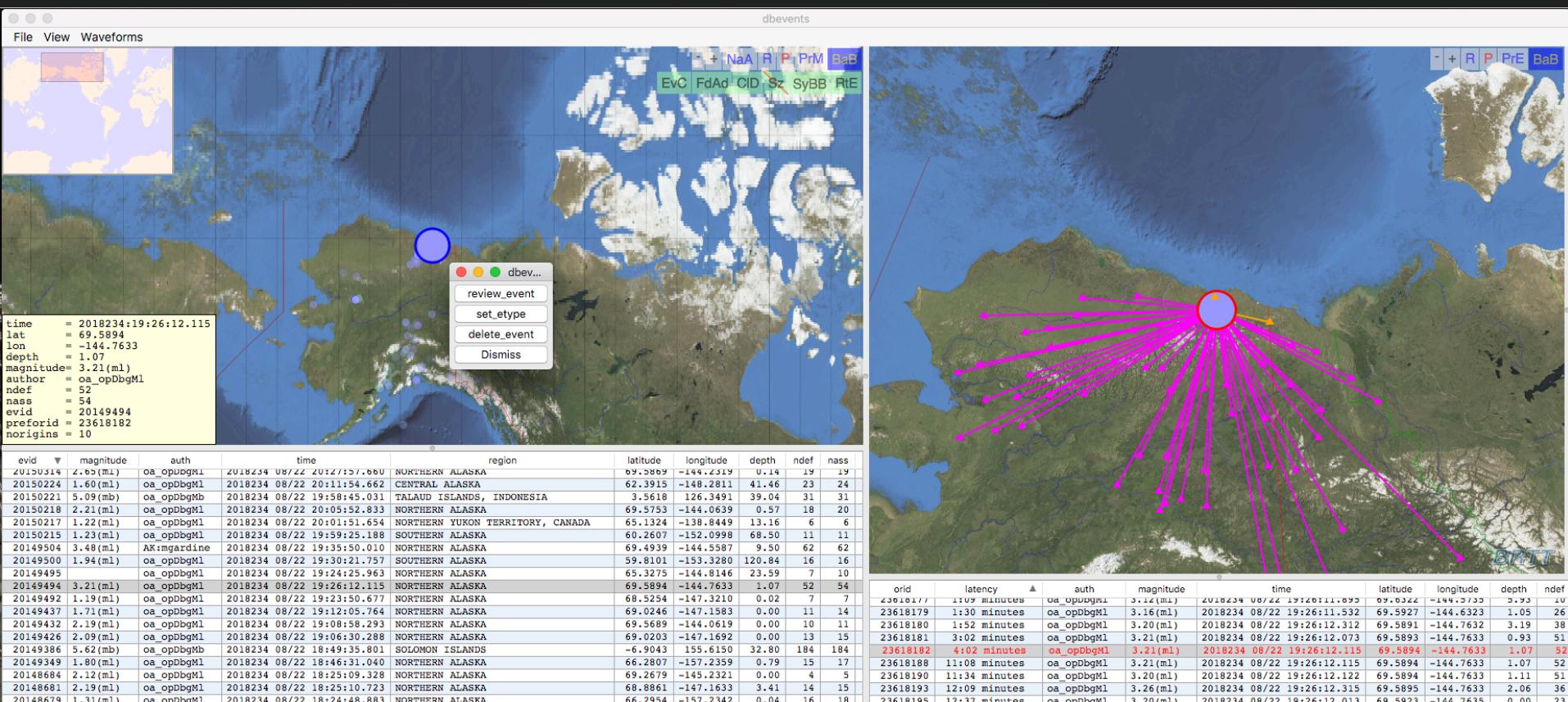
ALASKA EARTHQUAKE CENTER

dbevents

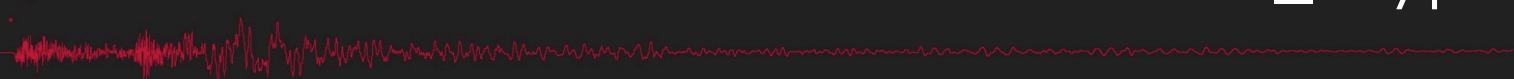


ALASKA EARTHQUAKE CENTER

dbevents



ALASKA EARTHQUAKE CENTER



dbevents – set_etype

dbevents

File View Waveforms

Event Details:

- time = 2018234 19:26:12.115
- lat = 69.5894
- lon = -144.7633
- depth = 1.07
- magnitude = 3.21(m1)
- author = oa_opDbgM1
- ndef = 52
- nass = 54
- evid = 20149494
- preforid = 23618182
- origins = 10

Review Options:

- review_event
- set_etype
- delete_event
- Dismiss

Map View:

The map shows the event location in Northern Alaska. A blue circle marks the event's position. A blue arrow points from the event details to the map. A legend at the top right shows symbols for NaA, R, P, PrM, BaB, EvC, FdAd, CID, Sz, SyBB, RtE, R, P, PrE, and Bab.

Event Log:

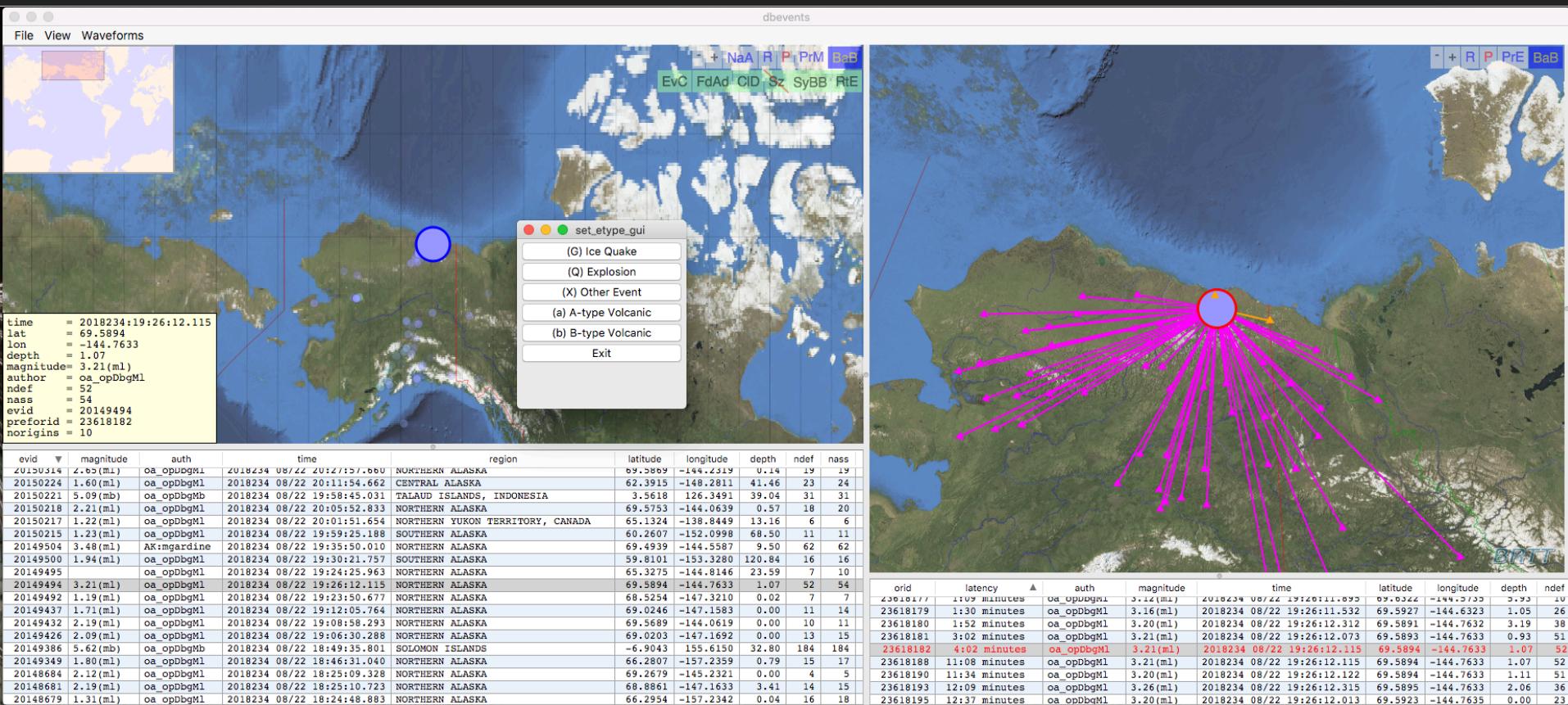
| eid | magnitude | auth | time | region | latitude | longitude | depth | ndef | nass |
|----------|-----------|------------|----------------------------|----------------------------------|----------|-----------|--------|------|------|
| ZU10314 | 2.67(m1) | oa_opDbgM1 | 2018234 08/22 19:26:12.115 | NORTHERN ALASKA | 69.5894 | -144.7633 | 0.14 | 19 | 19 |
| 20150224 | 1.60(m1) | oa_opDbgM1 | 2018234 08/22 20:11:54.662 | CENTRAL ALASKA | 62.3915 | -148.2811 | 41.46 | 23 | 24 |
| 20150221 | 5.09(mb) | oa_opDbgM1 | 2018234 08/22 19:58:45.031 | TALAUD ISLANDS, INDONESIA | 3.5618 | 126.3491 | 39.04 | 31 | 31 |
| 20150218 | 2.21(m1) | oa_opDbgM1 | 2018234 08/22 20:05:52.833 | NORTHERN ALASKA | 69.5753 | -144.0639 | 0.57 | 18 | 20 |
| 20150217 | 1.22(m1) | oa_opDbgM1 | 2018234 08/22 20:01:51.654 | NORTHERN YUKON TERRITORY, CANADA | 65.1324 | -138.8449 | 13.16 | 6 | 6 |
| 20150215 | 1.23(m1) | oa_opDbgM1 | 2018234 08/22 19:59:25.188 | SOUTHERN ALASKA | 60.2607 | -152.0998 | 68.50 | 11 | 11 |
| 20149504 | 3.48(m1) | AKmgardine | 2018234 08/22 19:35:50.010 | NORTHERN ALASKA | 69.4939 | -144.5587 | 9.50 | 62 | 62 |
| 20149500 | 1.94(m1) | oa_opDbgM1 | 2018234 08/22 19:30:21.757 | SOUTHERN ALASKA | 59.8103 | -153.3280 | 120.84 | 16 | 16 |
| 20149495 | 3.21(m1) | oa_opDbgM1 | 2018234 08/22 19:24:25.963 | NORTHERN ALASKA | 65.3275 | -144.8146 | 23.59 | 7 | 10 |
| 20149492 | 1.19(m1) | oa_opDbgM1 | 2018234 08/22 19:26:12.115 | NORTHERN ALASKA | 69.5894 | -144.7633 | 1.07 | 52 | 54 |
| 20149437 | 1.71(m1) | oa_opDbgM1 | 2018234 08/22 19:12:05.764 | NORTHERN ALASKA | 69.0246 | -147.1583 | 0.00 | 11 | 14 |
| 20149432 | 2.19(m1) | oa_opDbgM1 | 2018234 08/22 19:08:58.293 | NORTHERN ALASKA | 69.5689 | -144.0619 | 0.00 | 10 | 11 |
| 20149426 | 2.09(m1) | oa_opDbgM1 | 2018234 08/22 19:06:30.288 | NORTHERN ALASKA | 69.0203 | -147.1692 | 0.00 | 13 | 15 |
| 20149384 | 5.62(mb) | oa_opDbgM1 | 2018234 08/22 18:49:35.801 | SOLOMON ISLANDS | -6.9043 | 155.6150 | 32.80 | 184 | 184 |
| 20149349 | 1.80(m1) | oa_opDbgM1 | 2018234 08/22 18:46:31.040 | NORTHERN ALASKA | 66.2807 | -157.2359 | 0.79 | 15 | 17 |
| 20148684 | 2.12(m1) | oa_opDbgM1 | 2018234 08/22 18:25:09.328 | NORTHERN ALASKA | 69.2679 | -145.2321 | 0.00 | 4 | 5 |
| 20148681 | 2.19(m1) | oa_opDbgM1 | 2018234 08/22 18:25:10.723 | NORTHERN ALASKA | 68.8861 | -147.1633 | 3.41 | 14 | 15 |
| 20148679 | 1.31(m1) | oa_opDbgM1 | 2018234 08/22 18:24:48.883 | NORTHERN ALASKA | 66.2954 | -157.2342 | 0.04 | 16 | 18 |

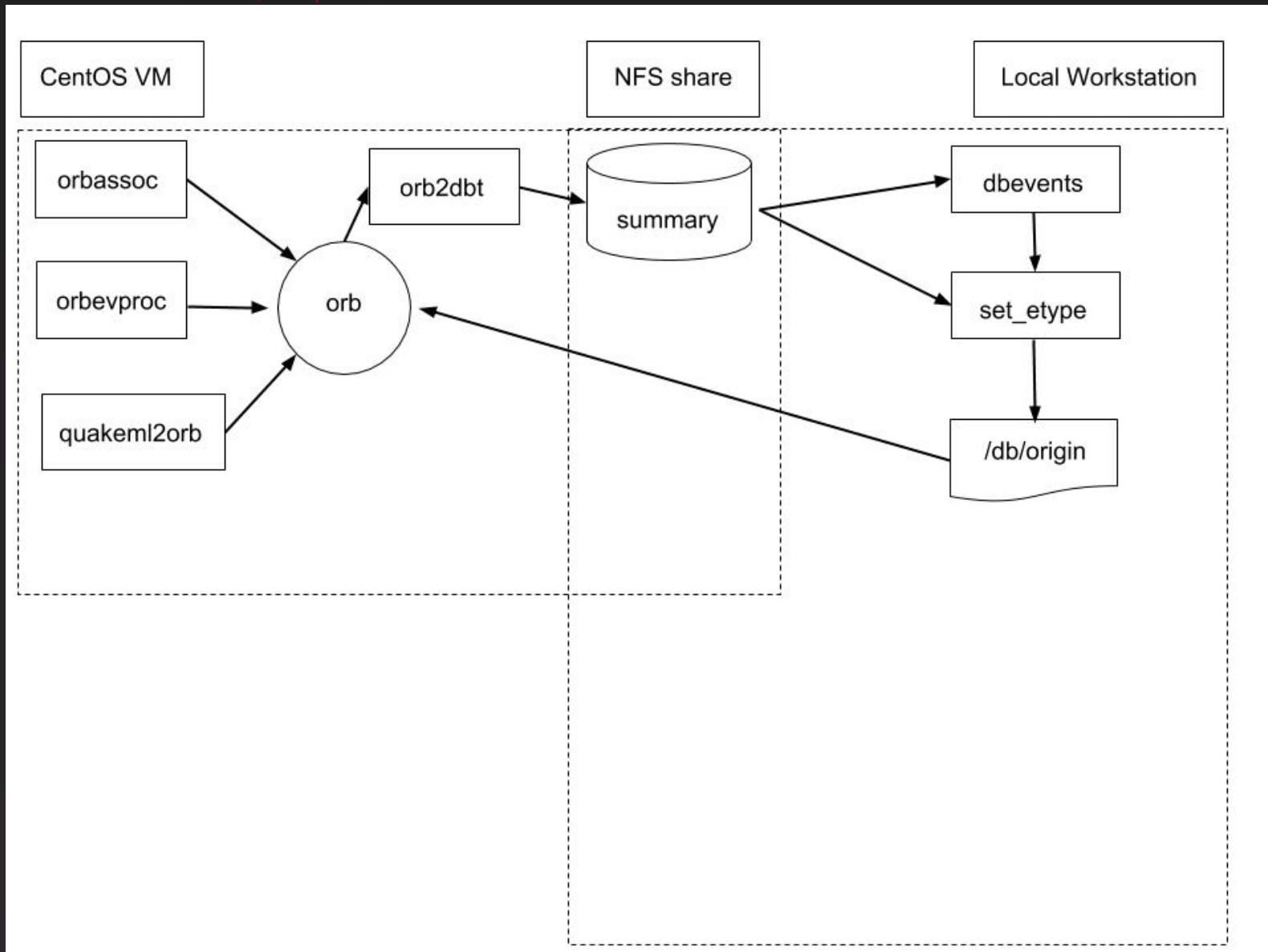
Event Network:

A map showing the event network with magenta arrows radiating from the event's location. A red circle highlights the event. A legend at the top right shows symbols for R, P, PrE, and Bab. The text "BRTT" is visible in the bottom right corner.

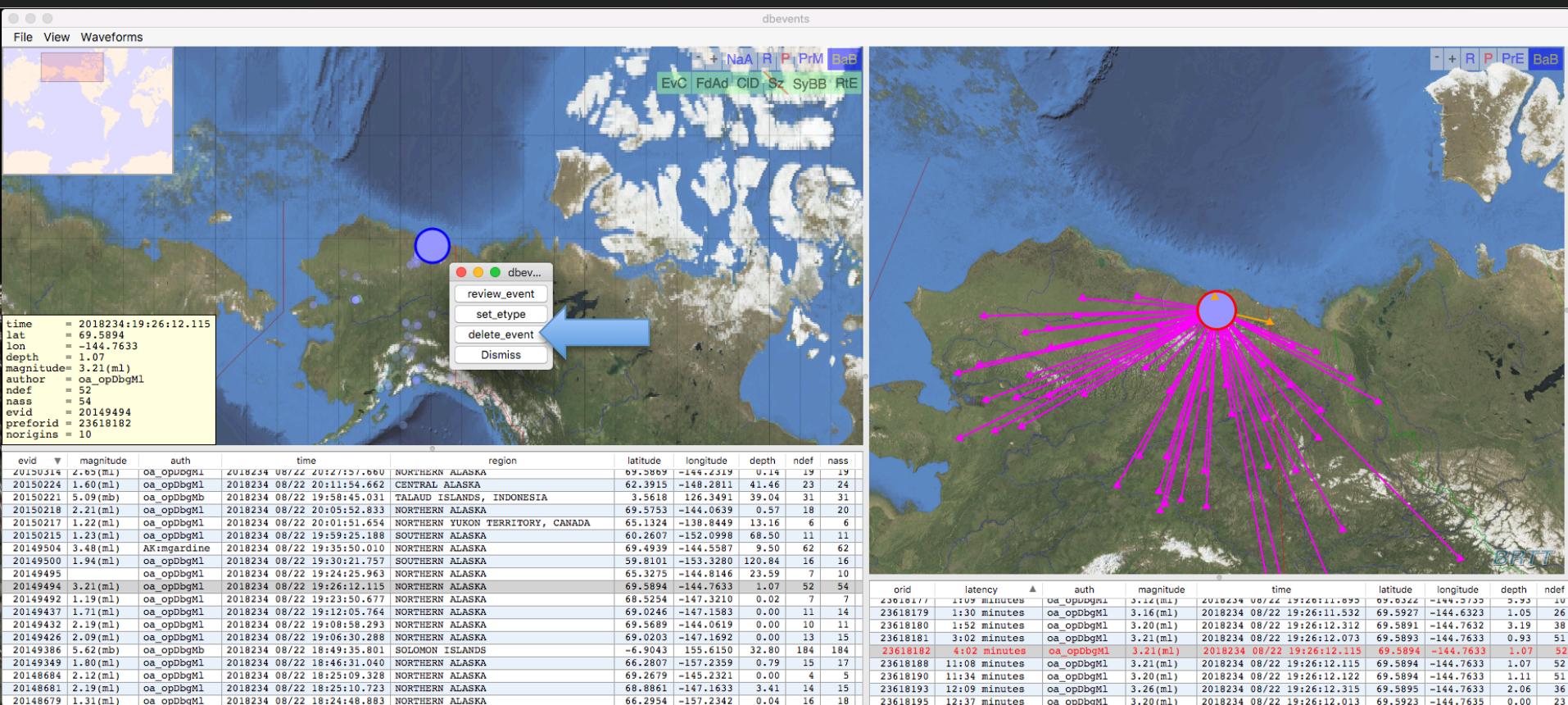
| ord | latency | auth | magnitude | time | latitude | longitude | depth | ndef |
|----------|---------------|------------|-----------|----------------------------|----------|-----------|-------|------|
| 23618177 | 1105 minutes | oa_opDbgM1 | 3.14(m1) | 2018234 08/22 19:26:11.892 | 69.5894 | -144.7633 | 1.07 | 52 |
| 23618179 | 1:30 minutes | oa_opDbgM1 | 3.16(m1) | 2018234 08/22 19:26:11.532 | 69.5927 | -144.6323 | 1.05 | 26 |
| 23618180 | 1:52 minutes | oa_opDbgM1 | 3.20(m1) | 2018234 08/22 19:26:12.312 | 69.5891 | -144.7632 | 3.19 | 38 |
| 23618181 | 3:02 minutes | oa_opDbgM1 | 3.21(m1) | 2018234 08/22 19:26:12.073 | 69.5893 | -144.7633 | 0.93 | 51 |
| 23618182 | 4:02 minutes | oa_opDbgM1 | 3.21(m1) | 2018234 08/22 19:26:12.115 | 69.5894 | -144.7633 | 1.07 | 52 |
| 23618184 | 11:00 minutes | oa_opDbgM1 | 3.21(m1) | 2018234 08/22 19:26:12.115 | 69.5894 | -144.7633 | 1.07 | 52 |
| 23618186 | 11:34 minutes | oa_opDbgM1 | 3.20(m1) | 2018234 08/22 19:26:12.122 | 69.5894 | -144.7633 | 1.11 | 51 |
| 23618193 | 12:09 minutes | oa_opDbgM1 | 3.26(m1) | 2018234 08/22 19:26:12.315 | 69.5895 | -144.7633 | 2.06 | 36 |
| 23618195 | 12:37 minutes | oa_opDbgM1 | 3.20(m1) | 2018234 08/22 19:26:12.013 | 69.5923 | -144.7635 | 0.00 | 23 |

dbevents – set_etype

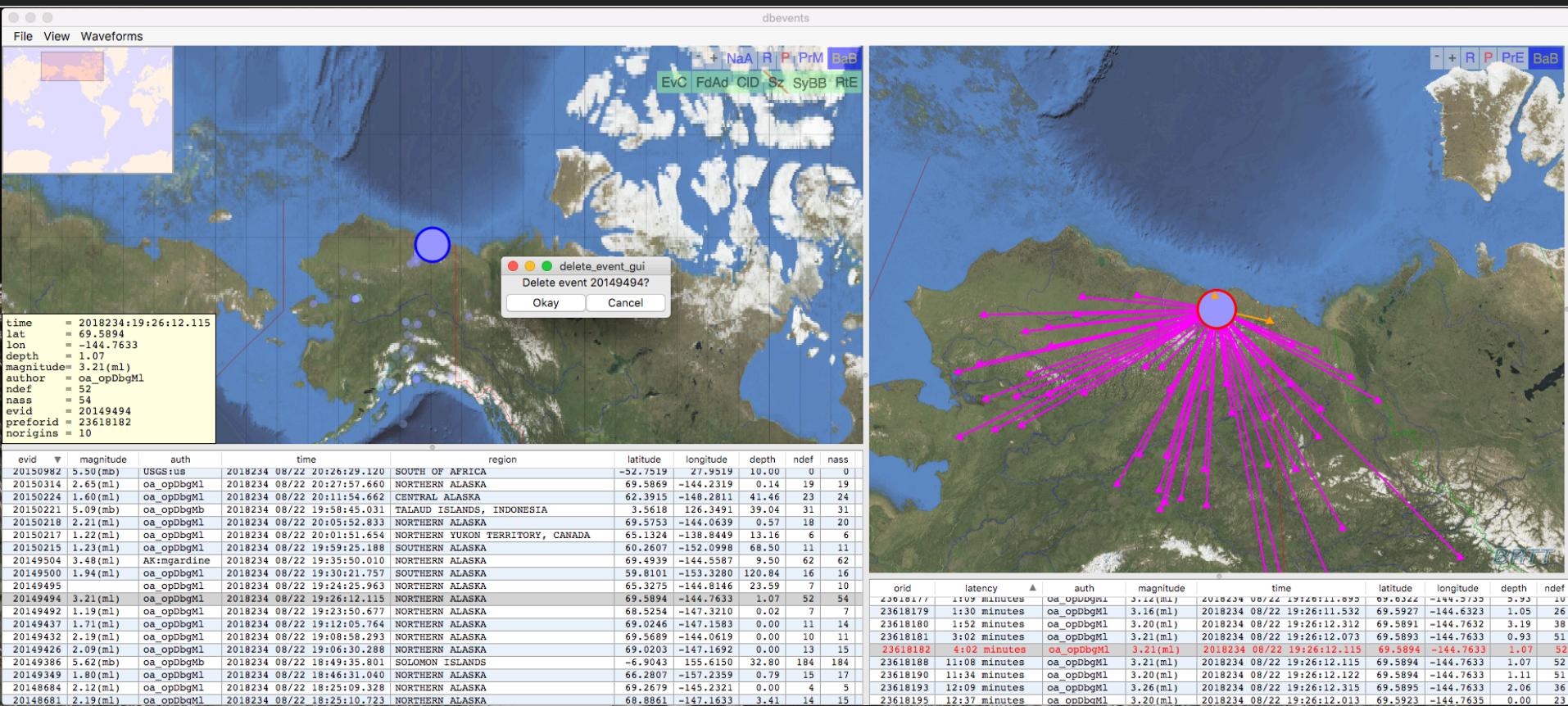




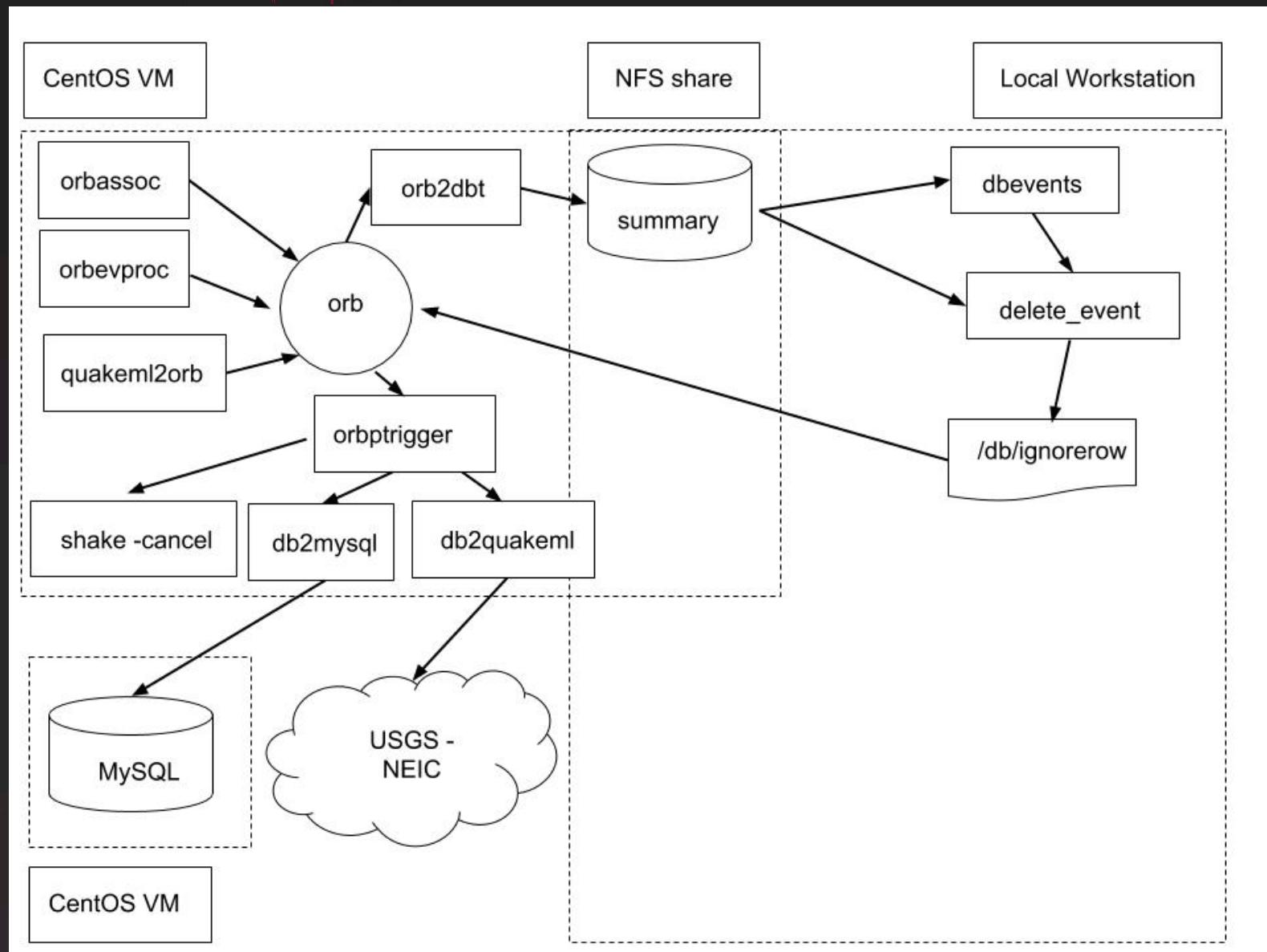
dbevents – delete_event

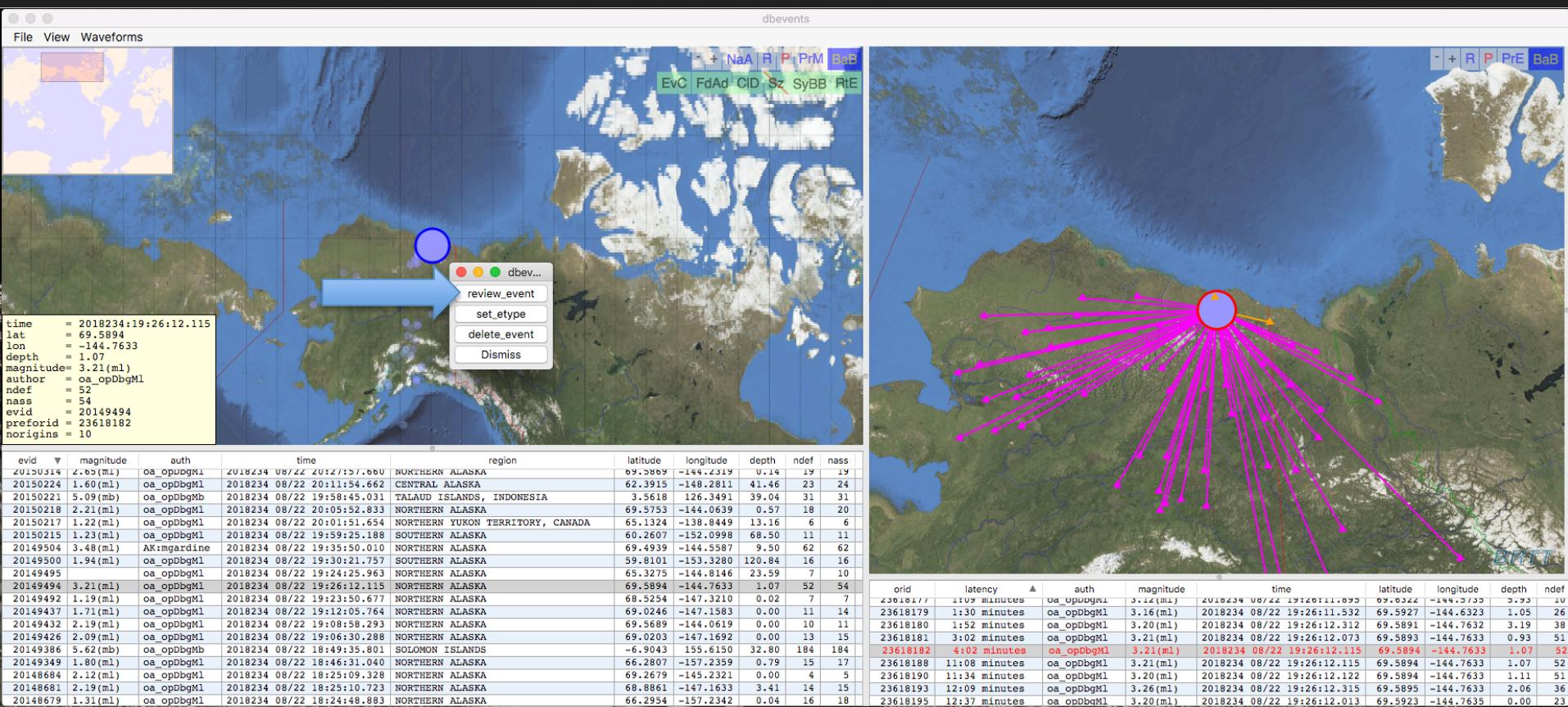


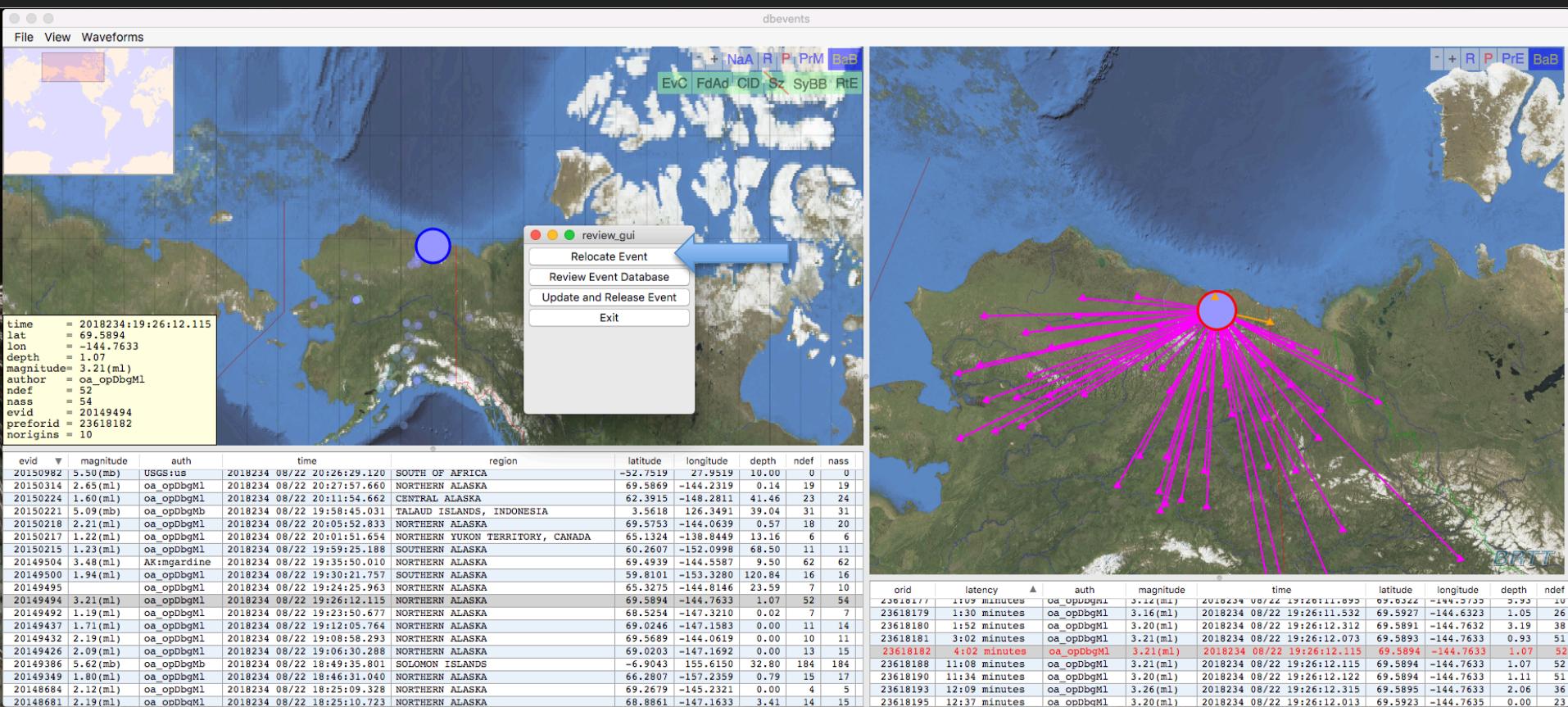
dbevents – delete_event

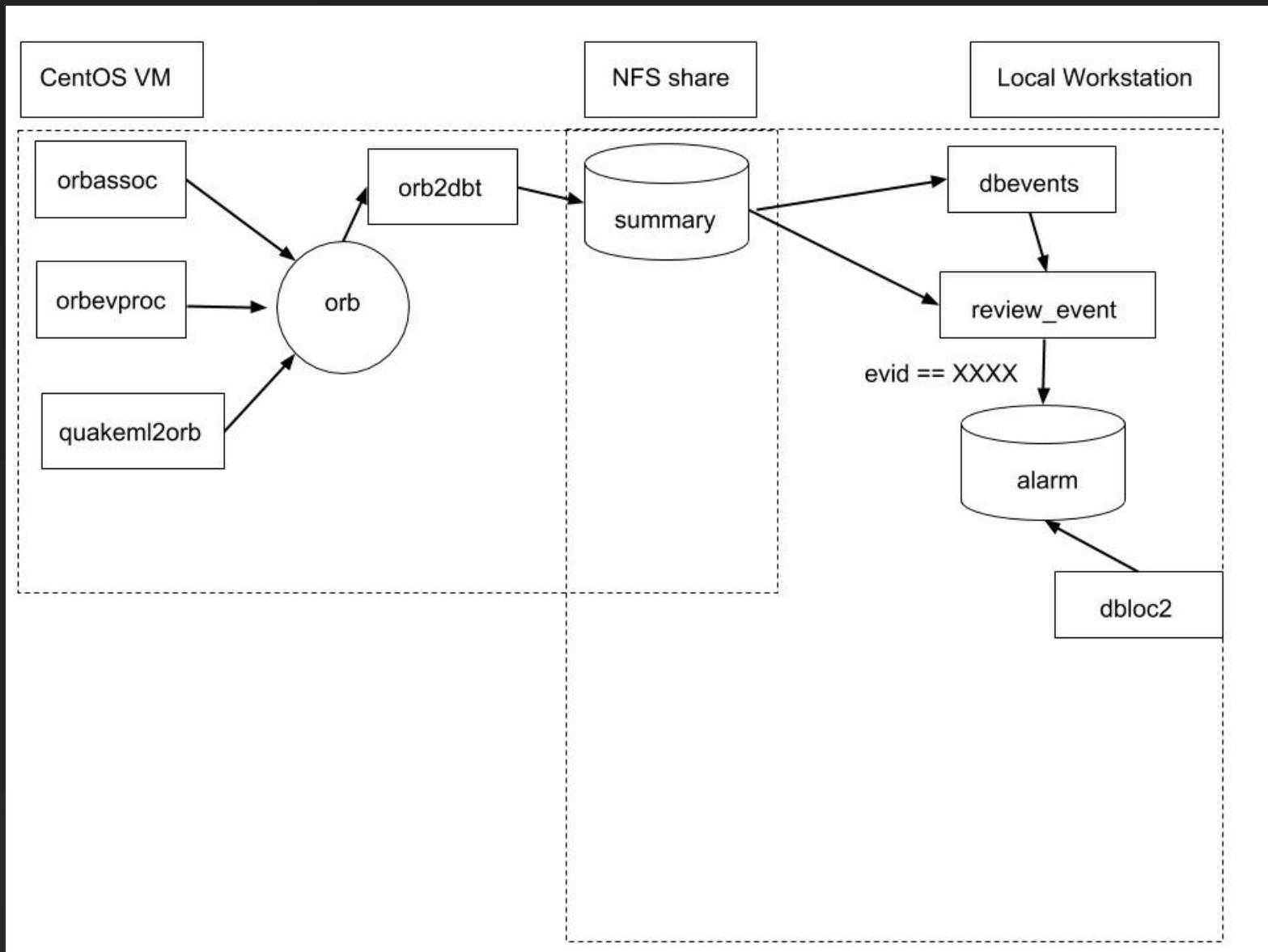


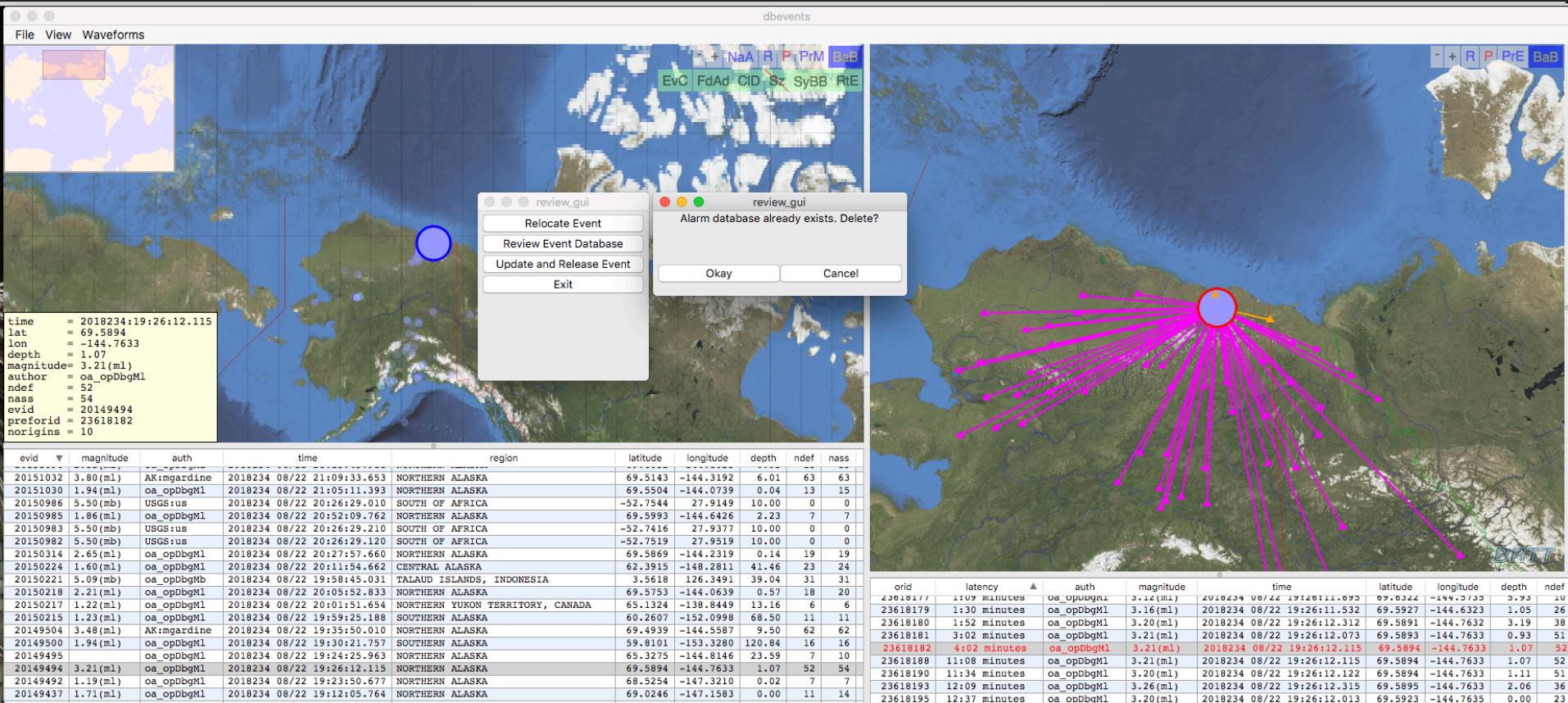
dbevents – delete_event

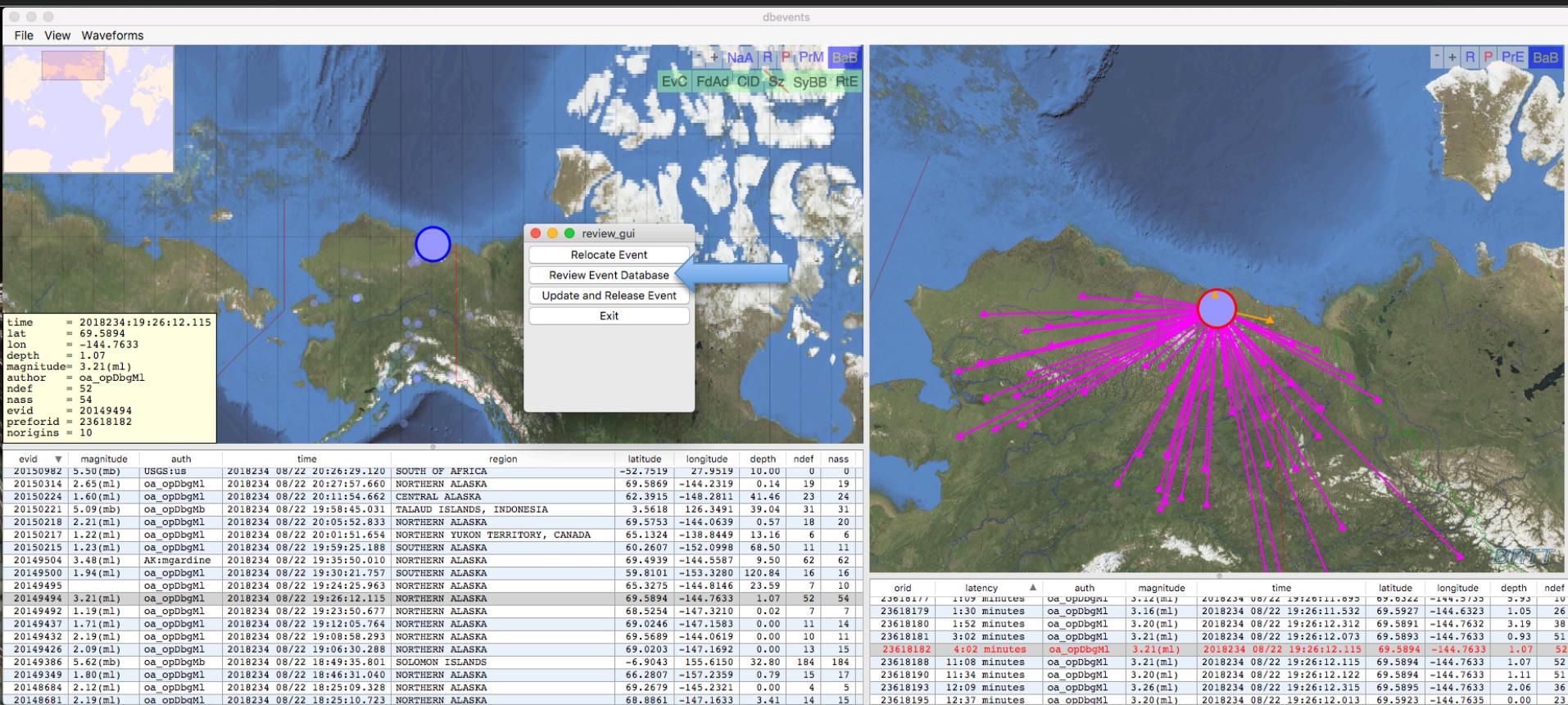




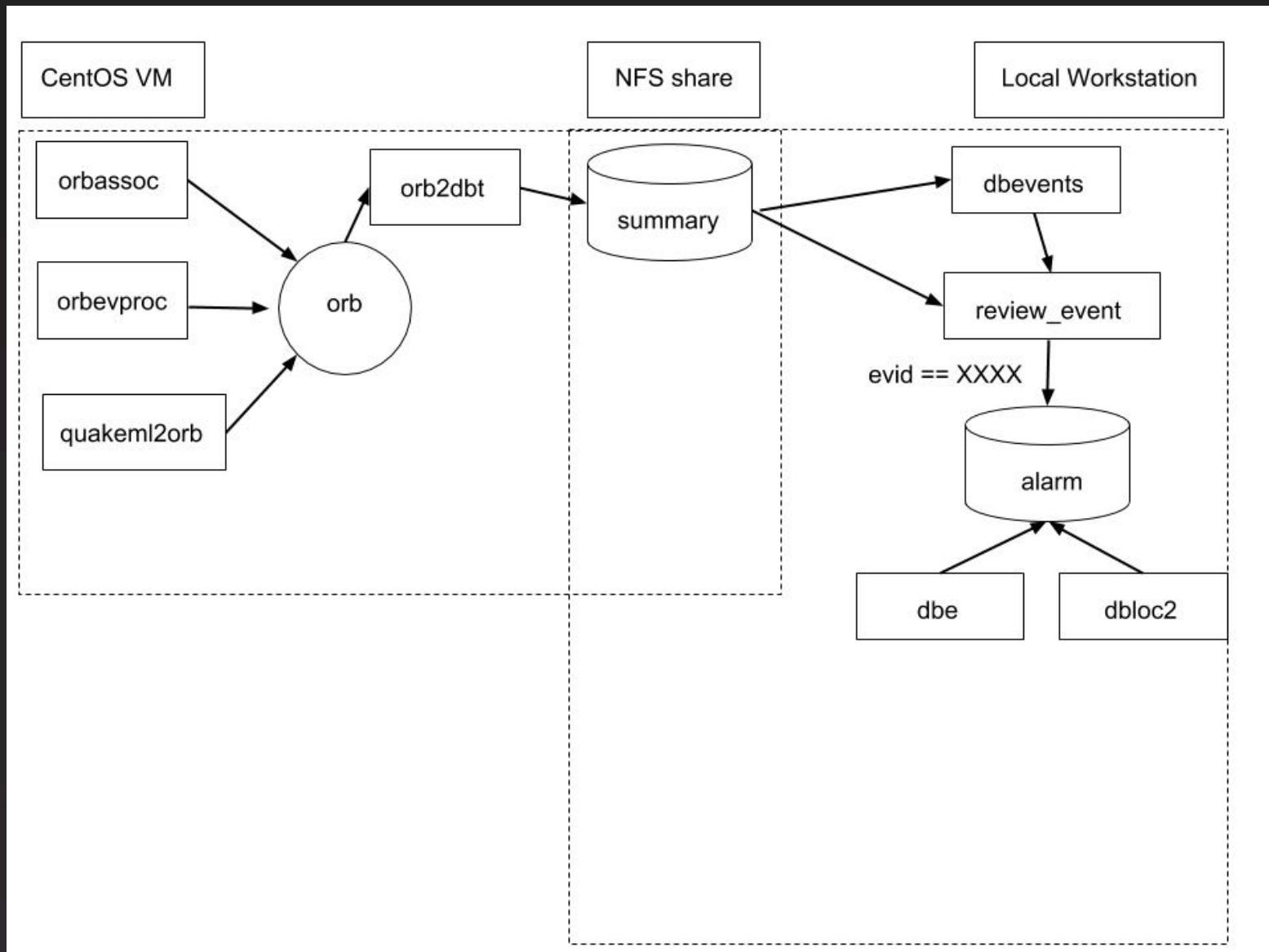








dbevents - review_event



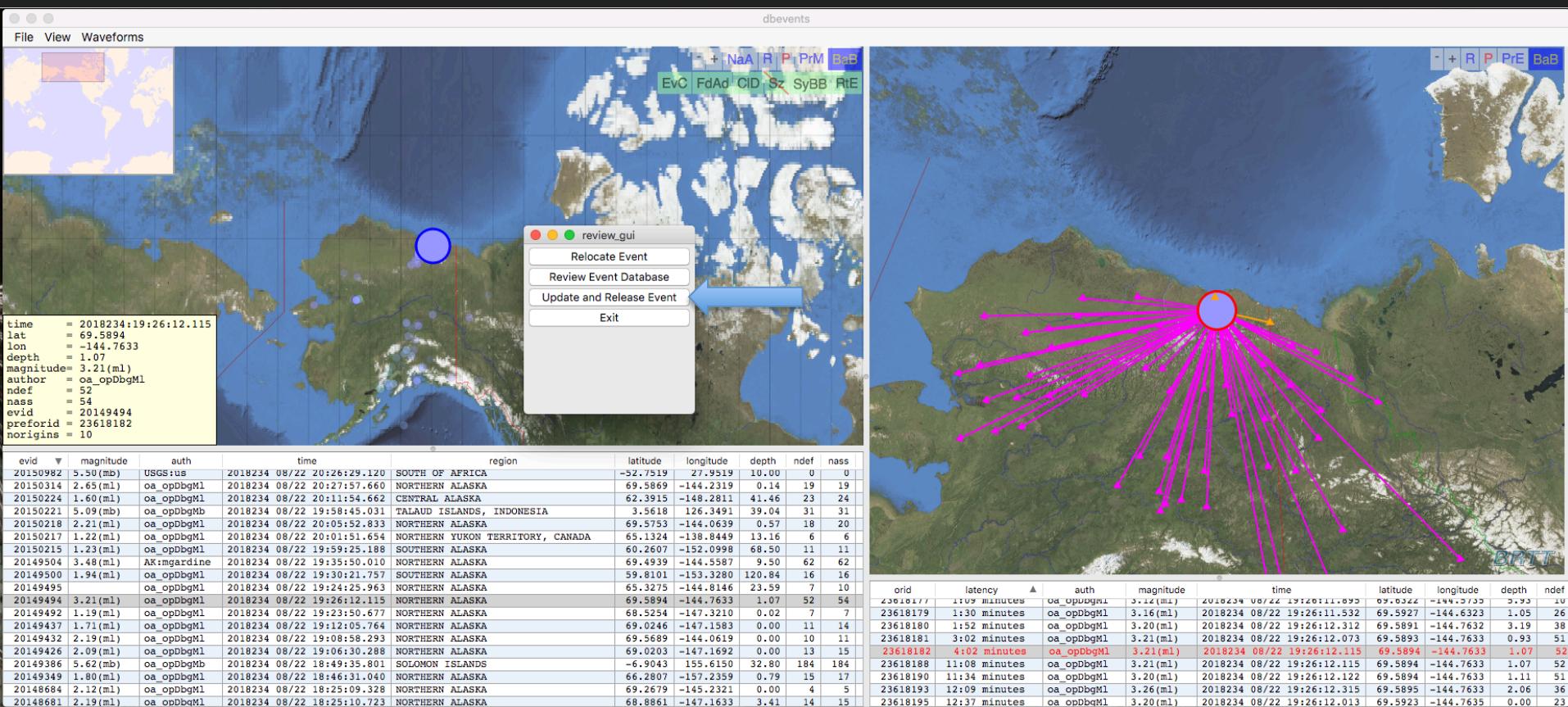
dbe: /Users/mgardine/Development/code_testing/review_event/alarm

File Edit View Options Graphics Help Tables New Window

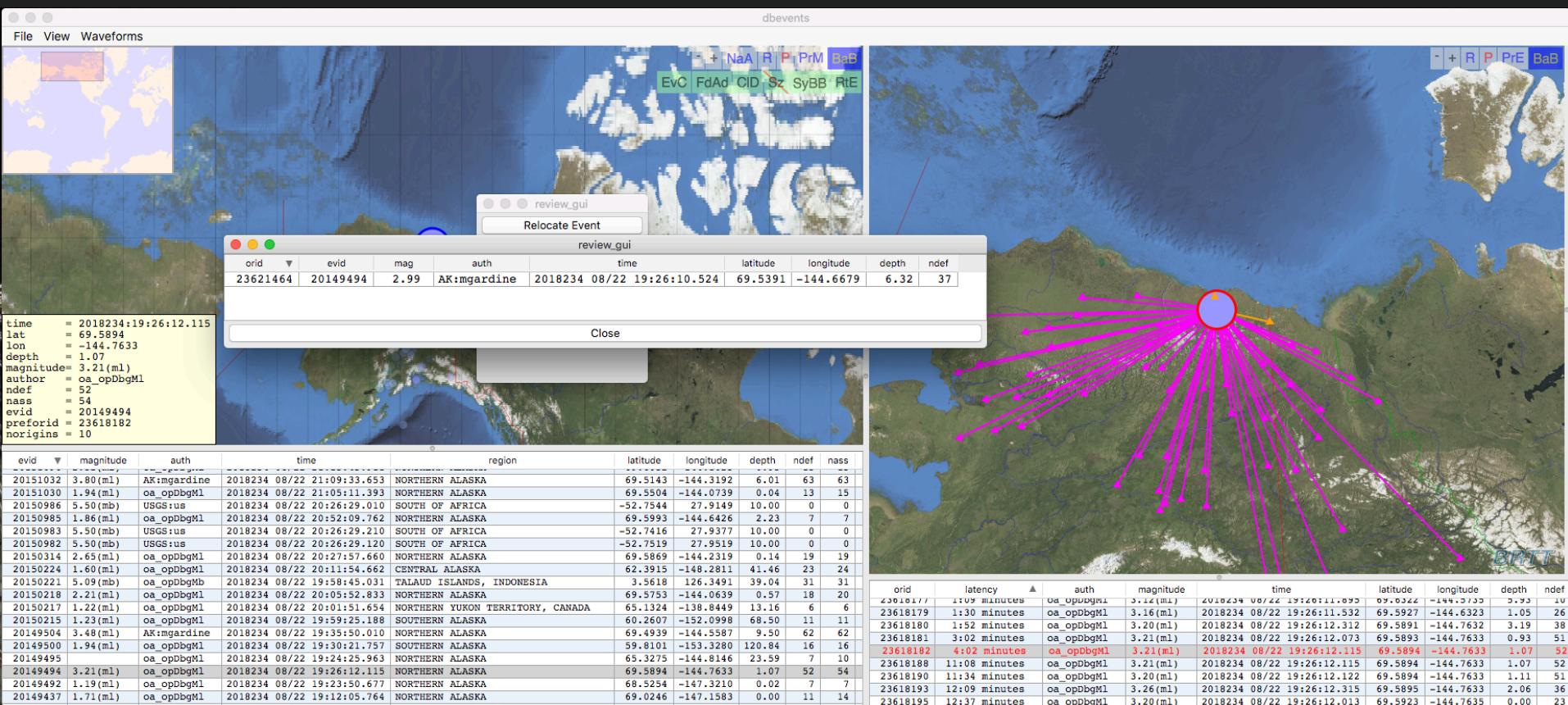
| affiliation | arrival | assoc | calibration | emodel | event | instrument | lastid | netmag | network | origerr | origin | predarr | schanloc | sensor | site | sitechan | snetsta | stage | stamag | wfdisc | dsensor | sensormodel |
|-------------|---------|-----------|-------------|----------------------------------|----------|------------|---------|--------|---------|---------|--------|---------|----------|--------|---------|-----------------|-------------|----------------------------------|--------|--------|---------|-------------|
| lat | lon | depth | | time | orid | evid | jdate | nass | ndef | grn | smn | review | dtype | ml | mlid | algorithm | auth | | | lddate | | |
| 0 | 69.5391 | -144.6679 | 6.3186 | 8/22/18 (234) 19:26:10.52374 UTC | 23621464 | 20149494 | 2018234 | 37 | 37 | 676 | 42 | y | f | 2.99 | 1096061 | dbgenloc:iosp91 | AK:mgardine | 8/22/18 (234) 23:43:37.47167 UTC | | | | |

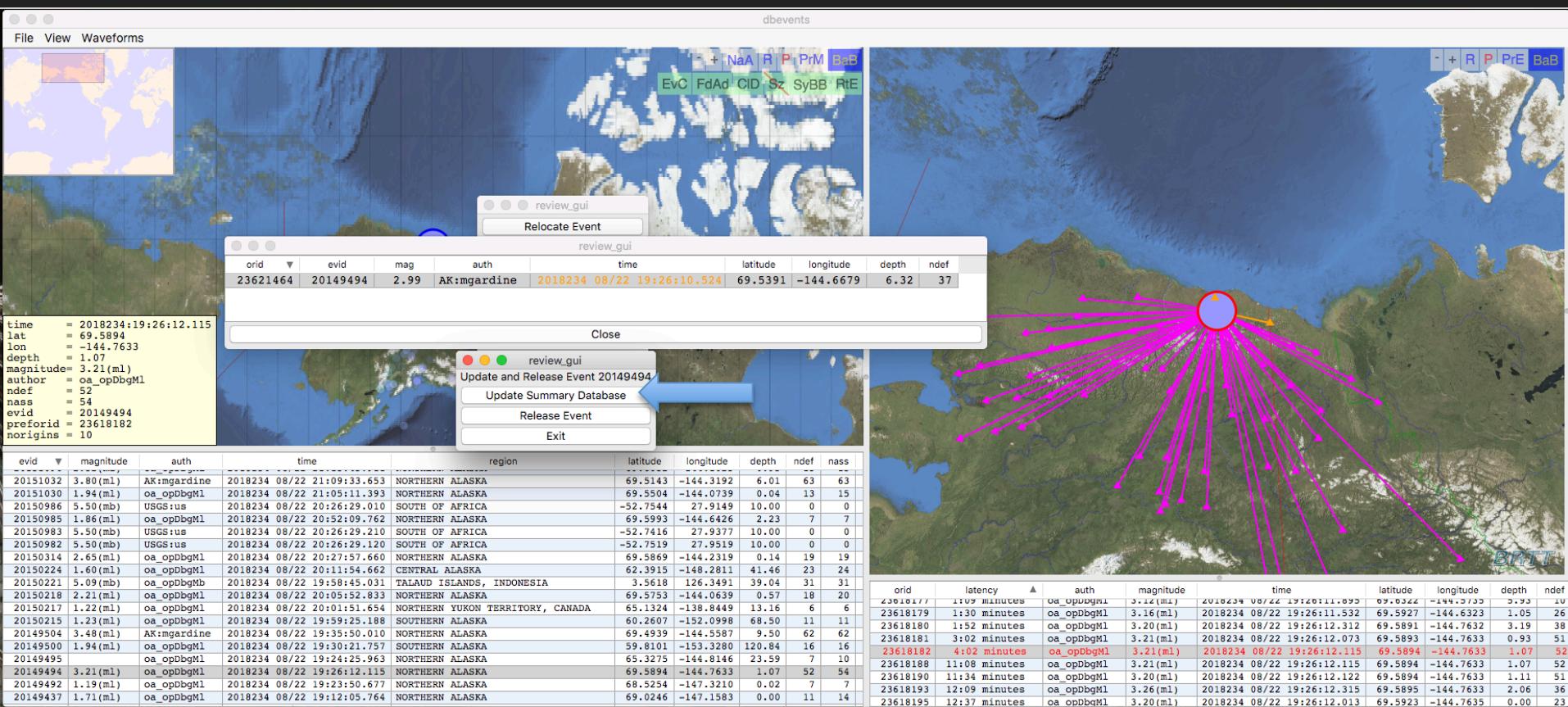
1 Row

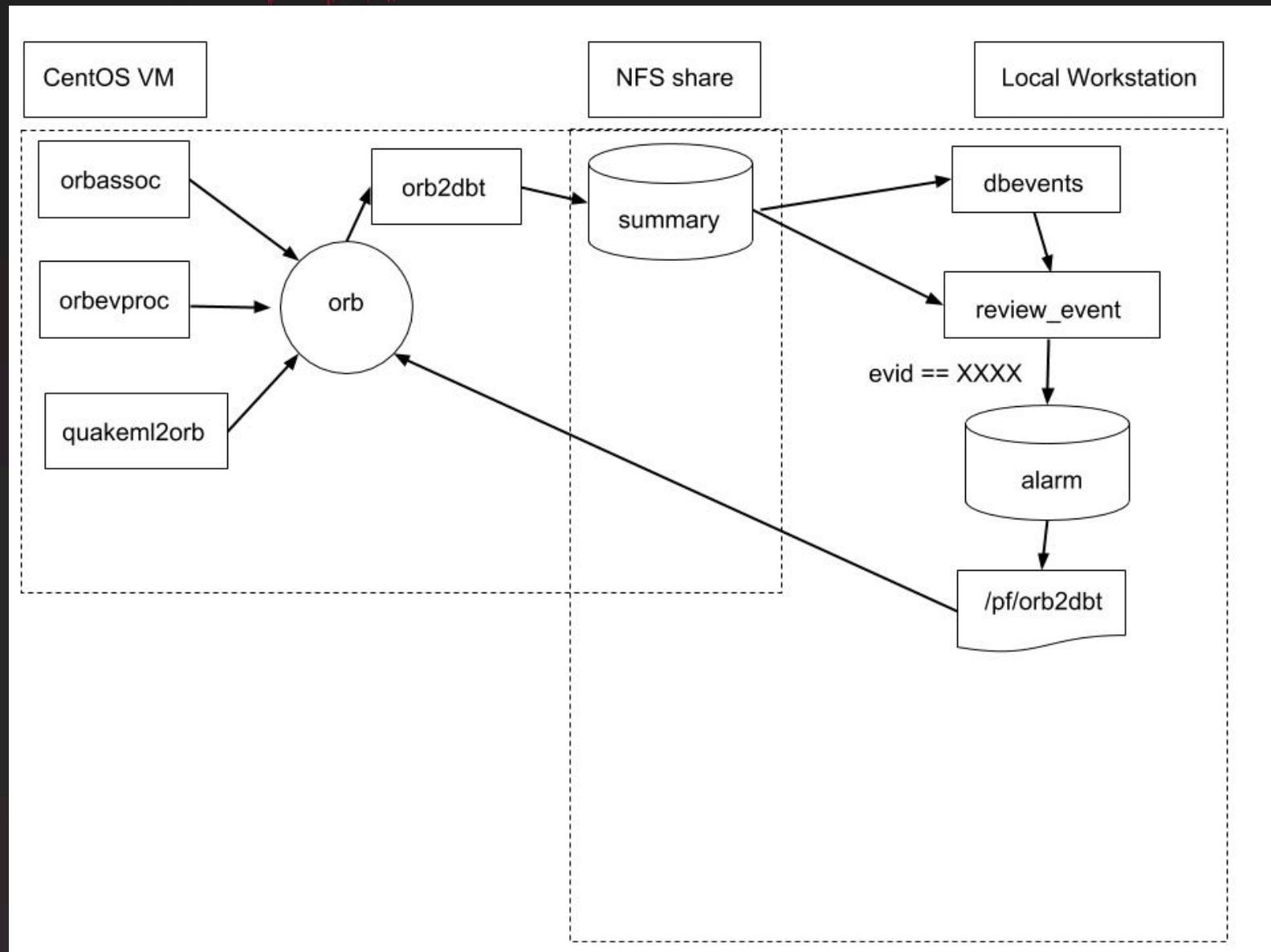
Table 'origin' updated: 8/22/18 (234) 23:43:49.00000 UTC



dbevents – review_event







AEC EQ UPDATE: 08/22/2018 19:26:10, 69.5391 -144.6679, ML 2.99 NORTHERN ALASKA

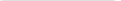
AEC Info/EQ Update x



? mgardin2@alaska.edu

to me ▾

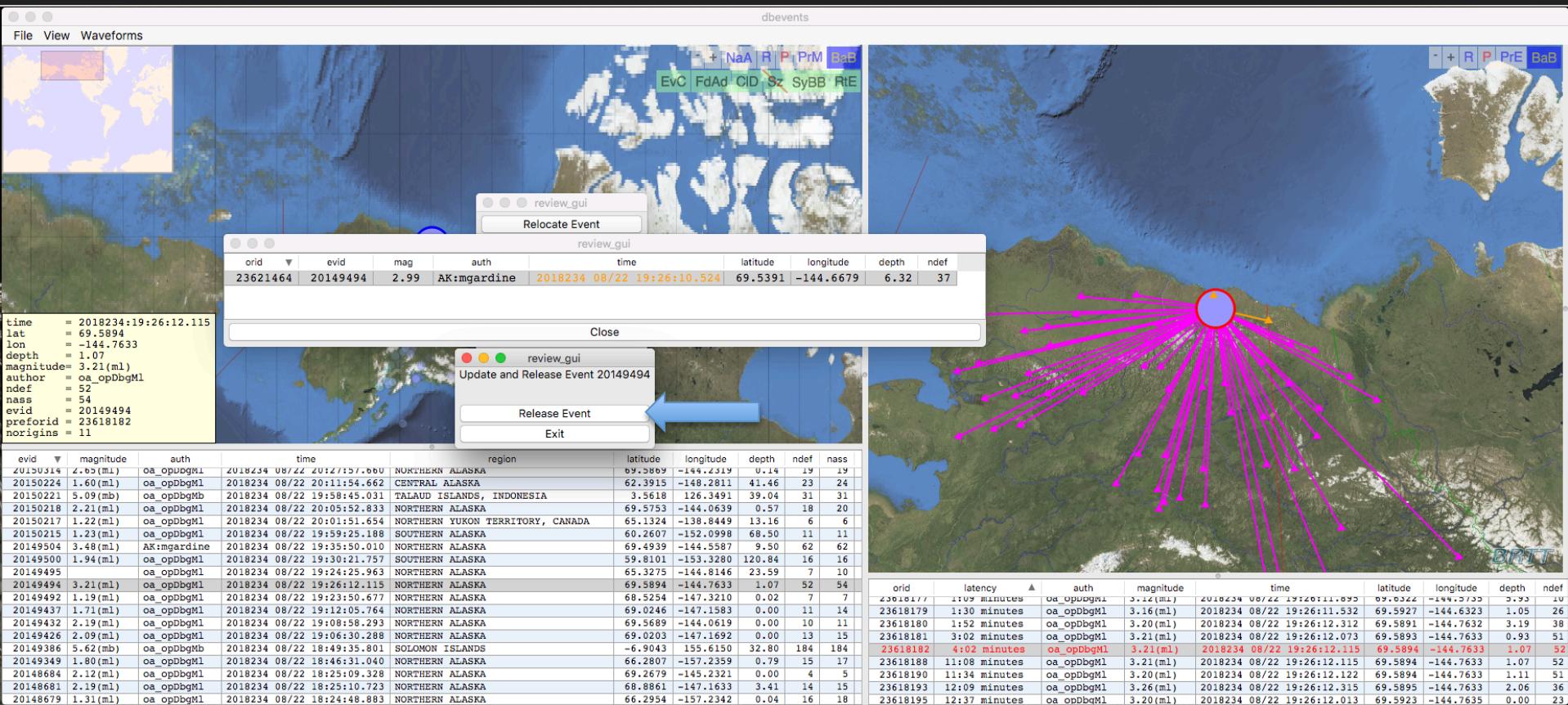
3:44 PM (0 minutes ago) ☆



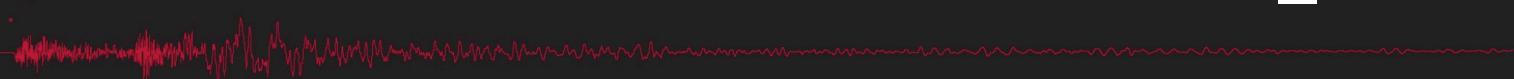
***** Event evid=20149494 has been updated *****

These are the new parameters:

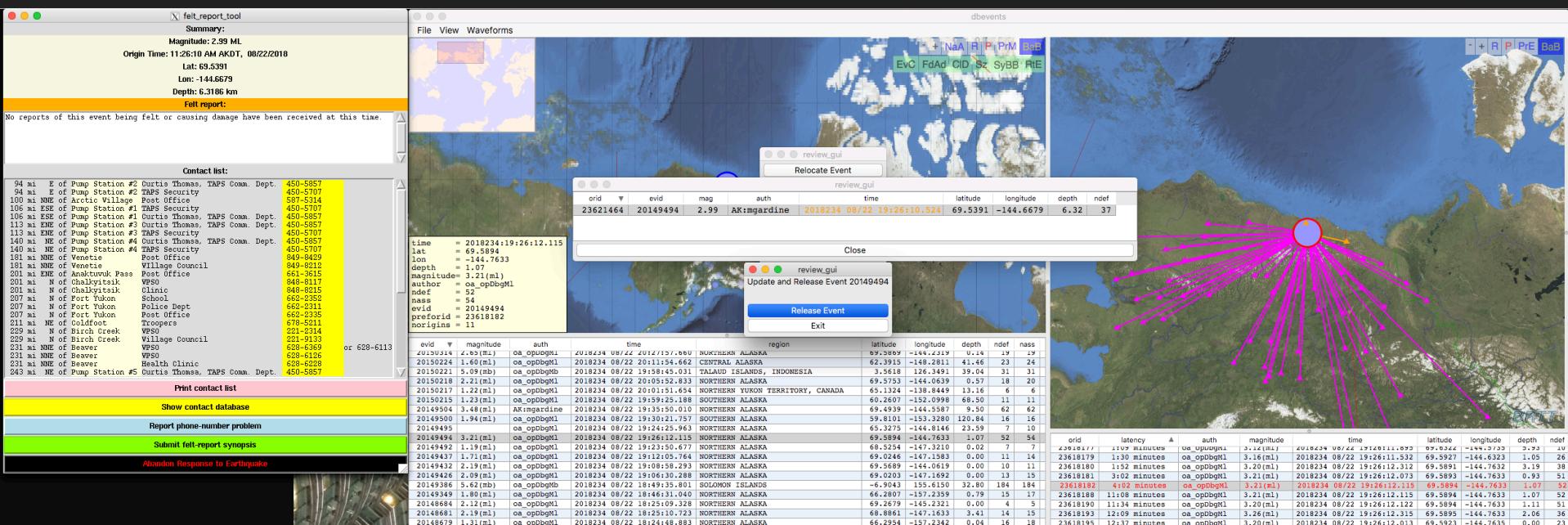
Time: 08/22/2018 19:26:10
Location: 69.5391, -144.6679
Depth: 6.3186 km
Magnitude: ML 2.99
Nass: 2.99



ALASKA EARTHQUAKE CENTER



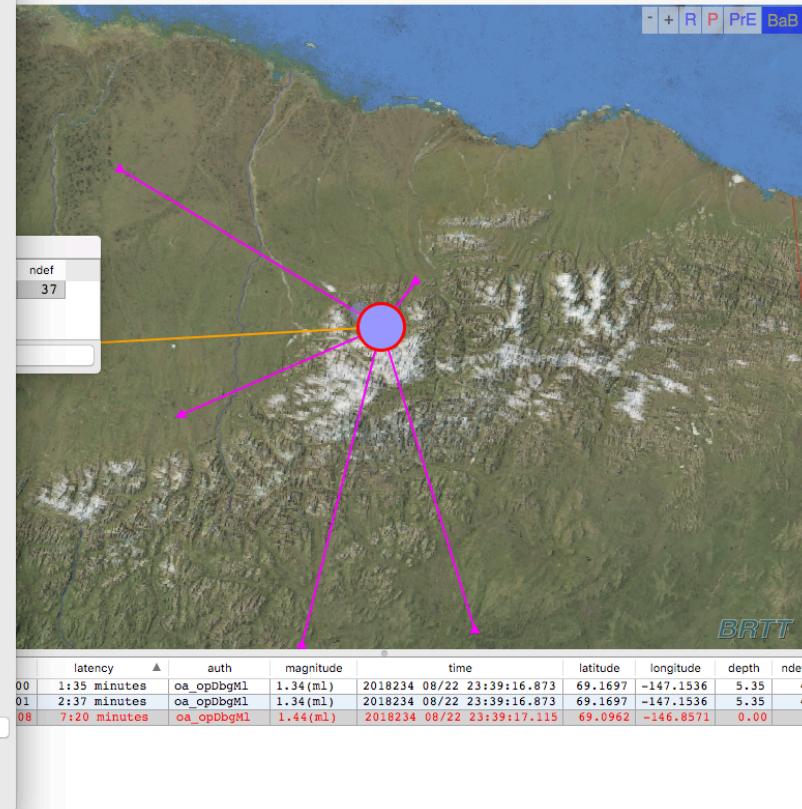
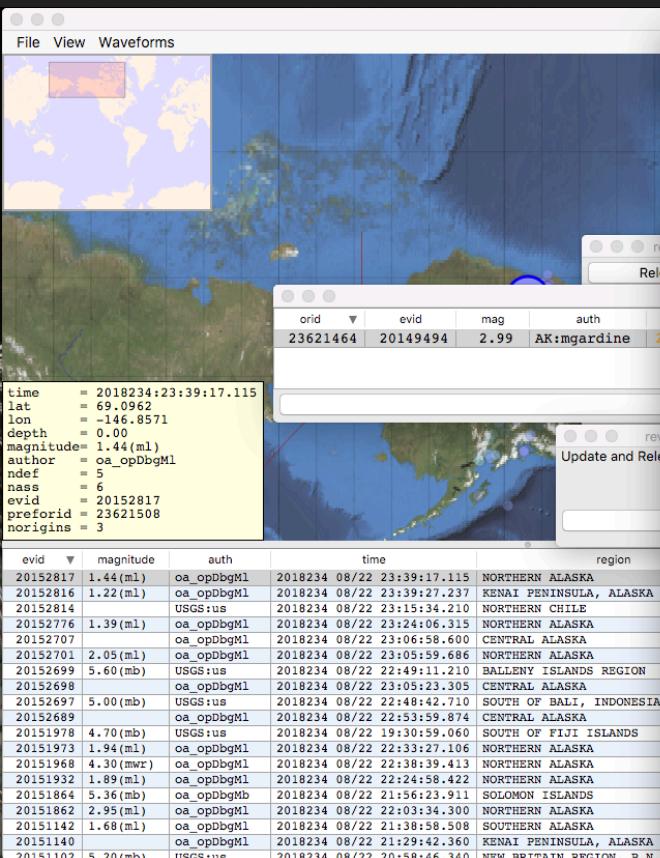
dbevents - review_event



ALASKA EARTHQUAKE CENTER

Seismogram showing seismic waves from an earthquake.

dbevents – review_event



AEC EQ RELEASE: 08/22/2018 19:26:10, 69.5391 -144.6679, 3.2 ml in the northeast Brooks Range region of Alaska



Inbox AEC Info/EQ Release

mgardin2@alaska.edu

3:46 PM (0 minutes ago)

to me

The Alaska Earthquake Center located a minor earthquake that occurred on Wednesday, August 22nd at 11:26 AM AKDT in the northeast Brooks Range region of Alaska. This earthquake had a preliminary magnitude of 3.2 and was located at a depth of about 4 miles (6 km). The magnitude and location may change slightly as additional data are received and processed.

No reports of this event being felt or causing damage have been received at this time.

Distance to nearby locations:

77 km (48 miles) SSW of Kaktovik
152 km (94 miles) E of Pump Station #2
161 km (100 miles) ESE of Deadhorse
161 km (100 miles) ESE of Prudhoe Bay
161 km (100 miles) NNE of Arctic Village
171 km (106 miles) ESE of Pump Station #1
182 km (113 miles) ENE of Pump Station #3
225 km (140 miles) NE of Pump Station #4

Preliminary earthquake parameters:

Origin Time (UTC): 8/22/18 19:26:10

Latitude: 69.5391

Longitude: -144.6679

Depth: 6 km

Magnitude: 3.2 ml

If you felt this earthquake, you may file your report here:

<https://earthquake.usgs.gov/earthquakes/eventpage/ak018arb81n#tellus>

The Alaska Earthquake Center monitors earthquakes in Alaska and provides earthquake information to the citizens and public officials of Alaska. The Center is a cooperative program of the Geophysical Institute of the University of Alaska and the U.S. Geological Survey and is located at the Geophysical Institute in Fairbanks with the Alaska State Seismologist's Office.

Additional information may be obtained from:

AEC, Geophysical Institute, Fairbanks, AK, 99775-7320

Phone: (907) 474-7320

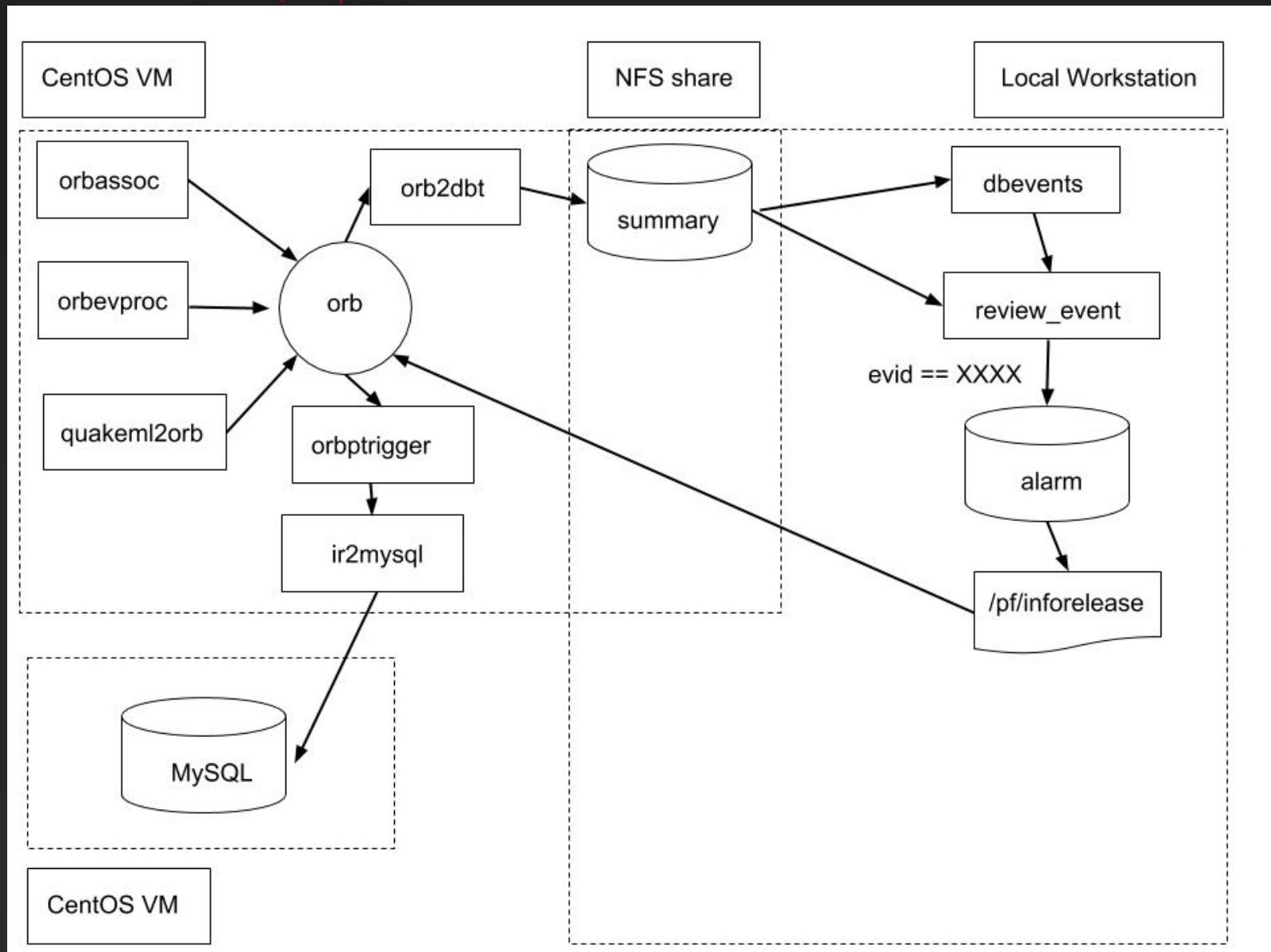
Email: mewest@alaska.edu or naruppert@alaska.edu

URL: <https://earthquake.alaska.edu>

NEIC, Denver, CO, 80225

Phone: (303) 273-8500 Fax: (303) 273-450

URL: <https://earthquake.usgs.gov/earthquakes/map/>





Earthquakes

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About Us



Summary

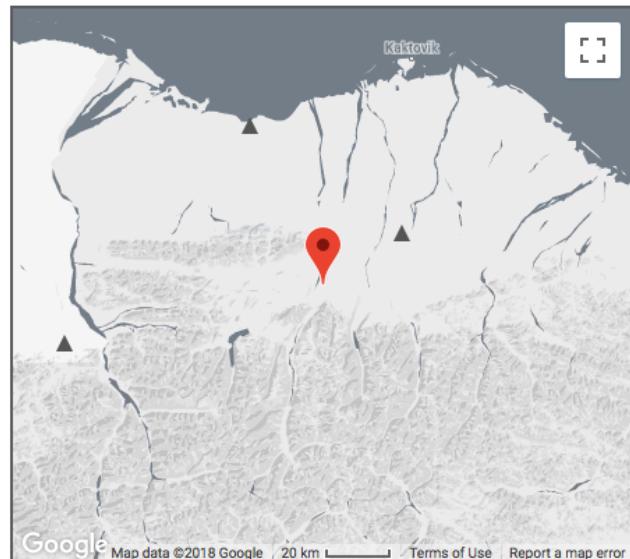
Waveforms

Shakemap

Tectonic Setting

Magnitude 3.8 - 45 miles S of Kaktovik

No reports of this event being felt or causing damage have been received at this time. This event is an aftershock of the August 12, 2018 Kaktovik earthquake.



Nearest Communities

- 45 miles S of Kaktovik
- 101 miles N of Arctic Village
- 103 miles E of Pump Station #2
- 108 miles SE of Prudhoe Bay
- 108 miles SE of Deadhorse
- 114 miles SE of Pump Station #1
- 120 miles NE of Pump Station #3
- 146 miles NE of Pump Station #4

Did You Feel It?

August 22, 2018 13:09:33 AKDT
69.5143°N 144.3192°W Depth 3.7 miles

- General font configurations (available for spreadsheet class, but not others)
- Text entry improvements
 - Multi-line edit (QTextEdit)

felt_report_tool

Summary:
Magnitude: 2.99 ML
Origin Time: 11:26 AM
Lat: 60.6661, Lon: -151.9091, Depth: 5.03 km

No reports of this event being felt or caused damage.

Comments:

| Distance | Place | Contact | Phone | Note |
|----------|-----------------|-------------------------|----------|-------------|
| 24 | Kenai | Troopers | 283-8590 | - |
| 24 | Kenai | Police Dept | 283-7879 | - |
| 31 | Kasilof | Kasilof River Cabins | 262-6348 | - |
| 31 | Kasilof | Kasilof Mercantile | 262-4809 | - |
| 32 | Soldotna | Police Dept | 262-4455 | - |
| 32 | Soldotna | Troopers | 262-5312 | - |
| 35 | Clam Gulch | Clam Shell Lodge | 262-4211 | - |
| 35 | Clam Gulch | Post Office | 262-5137 | - |
| 38 | Tyonek | VPSO | 583-2114 | or 583-2140 |
| 38 | Tyonek | Post Office | 583-2315 | - |
| 40 | Sterling | Post Office | 262-4794 | - |
| 43 | Ninilchik | Ninilchik General Store | 567-3378 | - |
| 43 | Ninilchik | Troopers | 567-3660 | - |
| 43 | Ninilchik | Bar | 567-3388 | - |
| 43 | Ninilchik | Post Office | 567-3401 | - |
| 62 | Anchor Point | Post Office | 235-7666 | |
| 62 | Anchor Point | Good Time Charters | 235-8579 | |
| 72 | Cooper Landing | Post Office | 595-1234 | - |
| 72 | Homer | Troopers | 235-3150 | - |
| 77 | Anchorage | Police Dept | 786-8500 | |
| 77 | Anchorage | Troopers | 269-5722 | |
| 77 | Anchorage | UAA Police Dept | 786-1120 | |
| 79 | Hope | Post Office | 782-3352 | - |
| 79 | Hope | Bed & Breakfast | 782-3436 | - |
| 85 | Fort Richardson | Post Office | 428-2645 | - |
| 85 | Seldovia | City Office | 234-7643 | - |
| 85 | Seldovia | Post Office | 234-7831 | - |
| 85 | Seldovia | Harbor Master | 234-7886 | - |
| 87 | Moose Pass | Trail Lake Lodge | 288-3101 | - |
| 87 | Moose Pass | Post Office | 288-3623 | - |

Print

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Abandon Response to Earthquake

