

# Data Analysis

A photograph of a person riding a brown horse at night. The rider is wearing a dark jacket and light-colored pants. The horse is in motion, and the background is dark with some blurred lights, suggesting an outdoor setting at night.

*Taimi Mulder*

*Quanterra/Antelope User Group Meeting  
Marrakech, Maroc  
2009 mars 11-12*

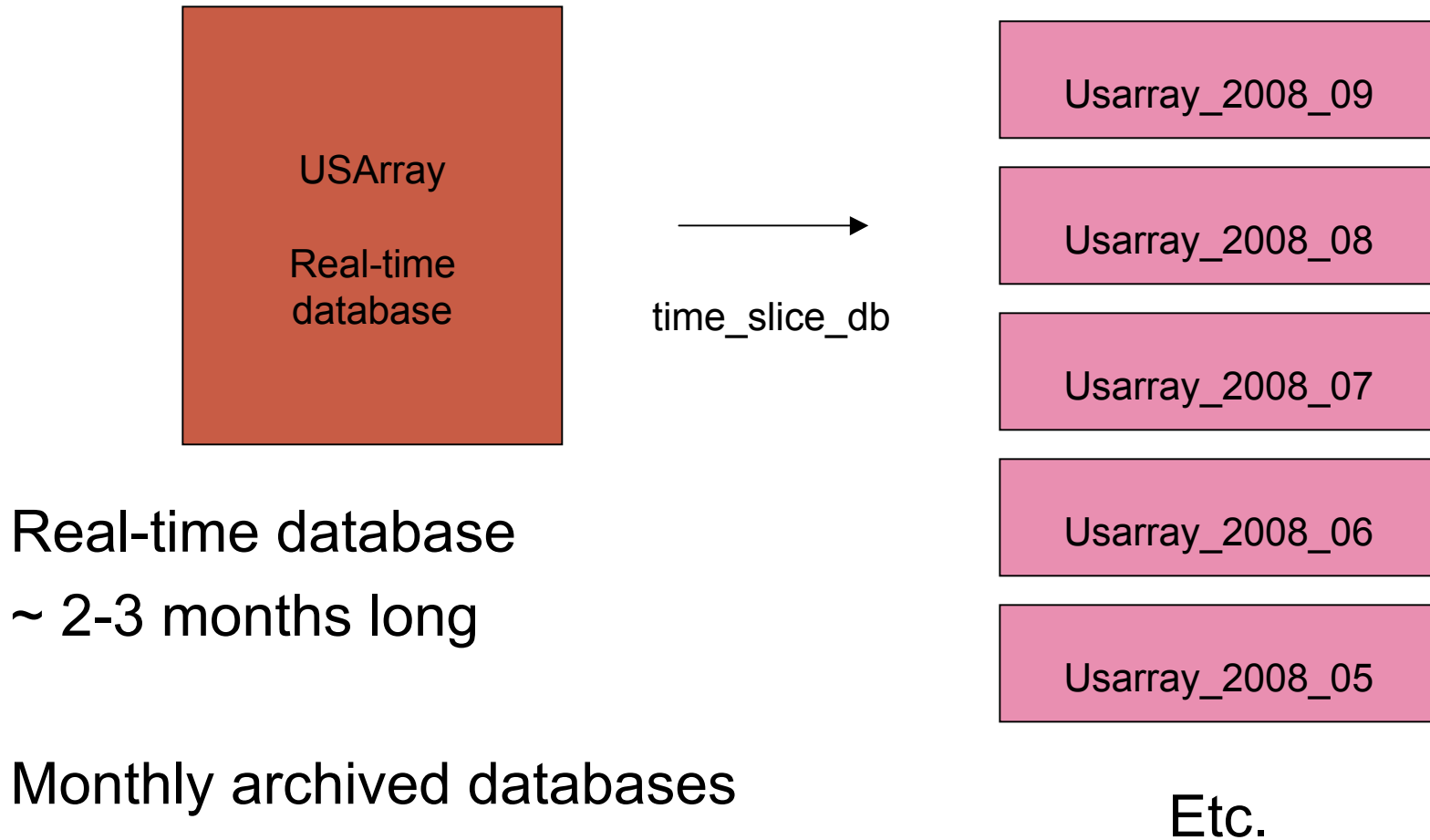
- Database Splitting
- Velocity Models
- Location Procedures
- Location Checks

# dbcentral



- Collects all databases in one place
- Desired time entered in "Time:" bar
- Select program to run on database

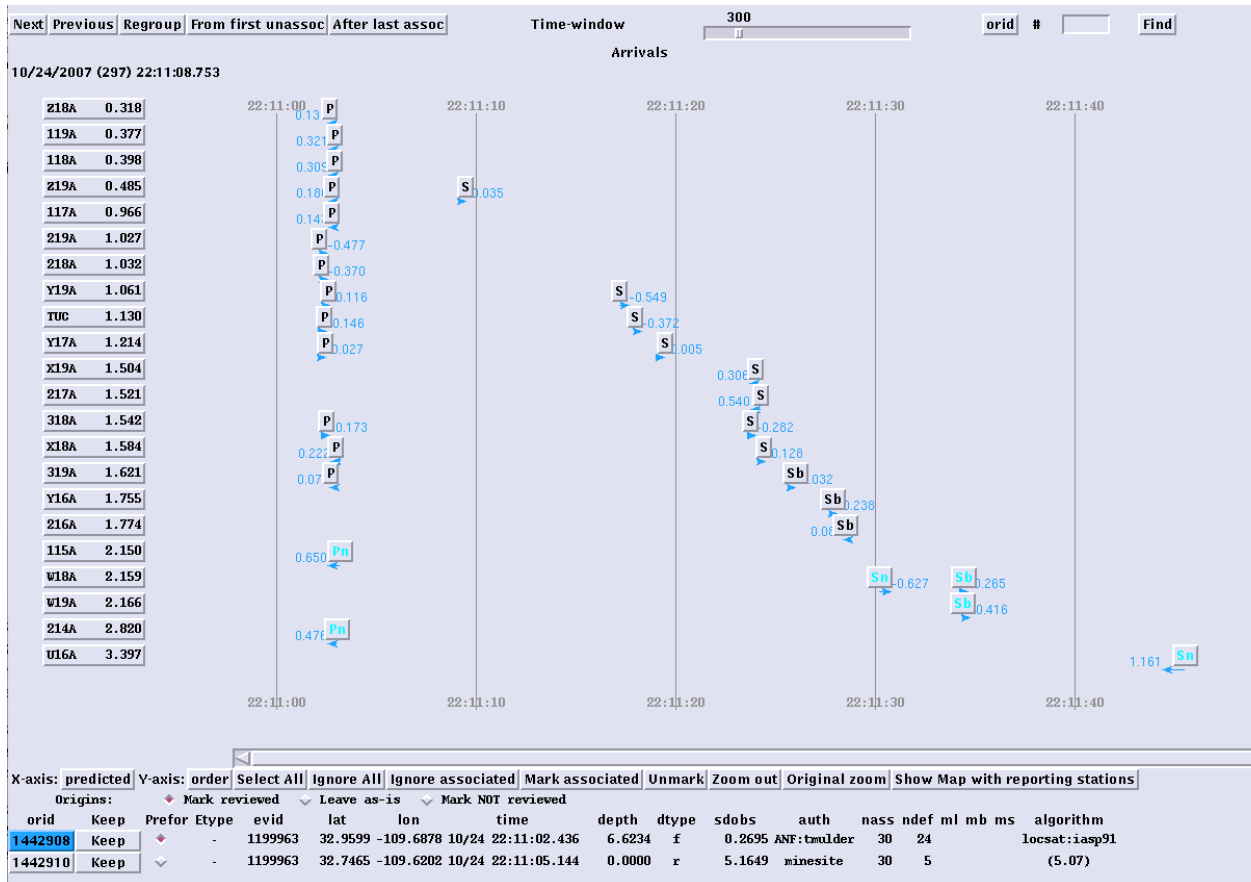
# Db splitting



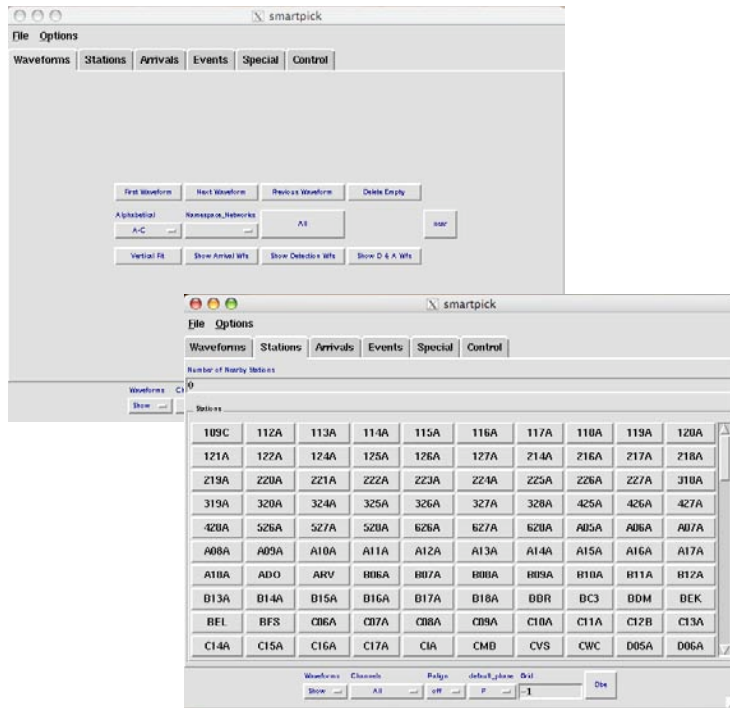
# dbloc2

Gui interface  
for many other  
programs

In particular...

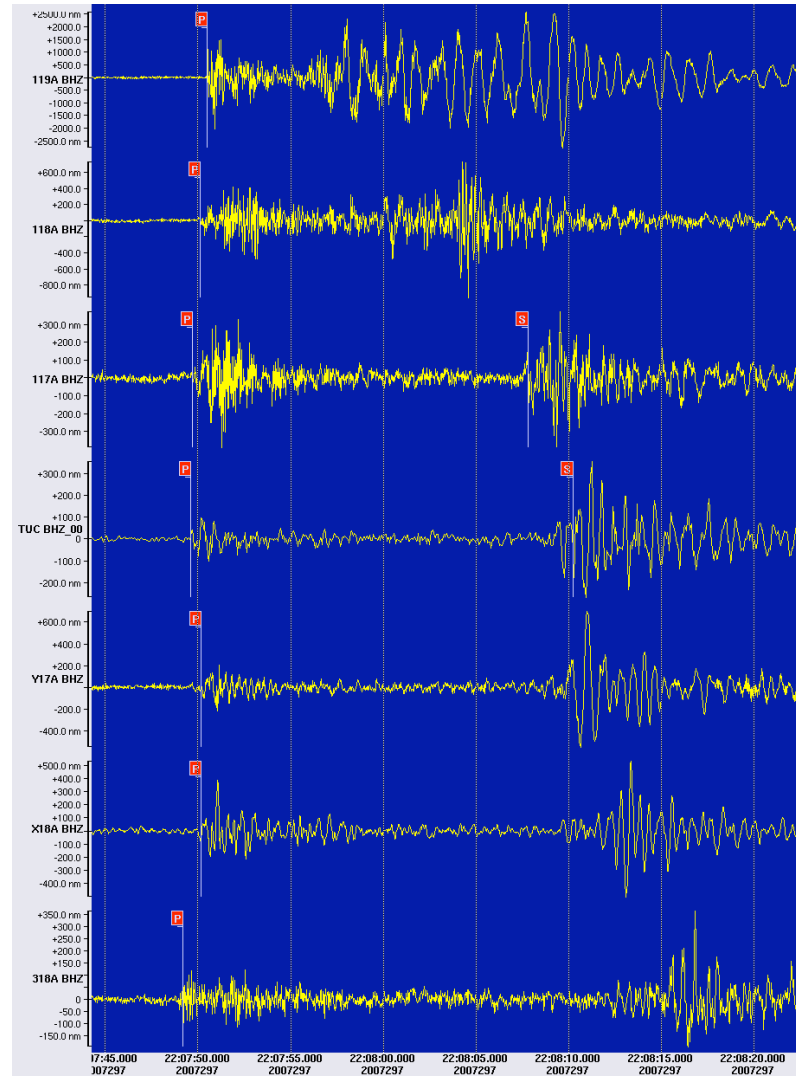


# smartpick

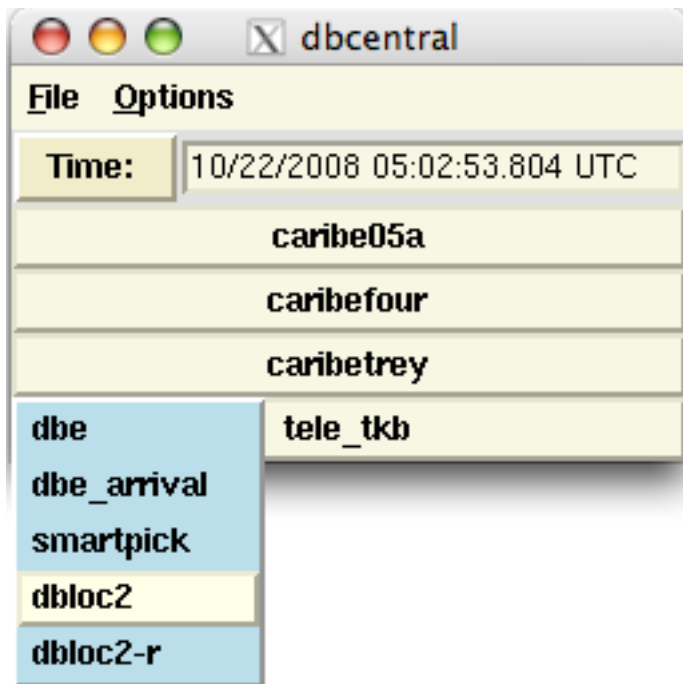


- Smartpick is gui interface for dbpick

# dbpick



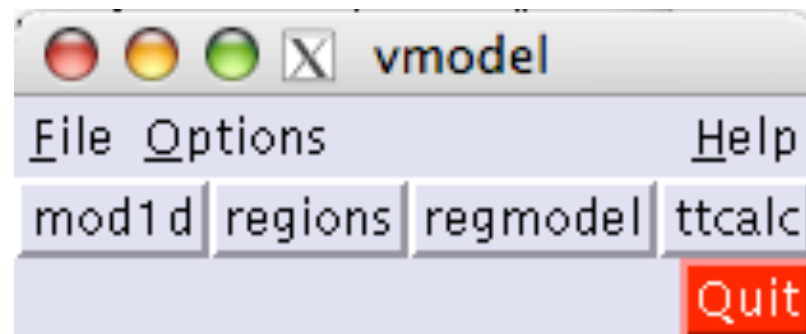
# Velocity models



Stand-alone dataset on external drive,  
Picked arrivals and located events

Experimented with a variety of  
velocity models

Only genloc uses these velocity  
models



# Velocity model tables

modname	paramname	depth	paramval	grad	units	auth
ven_shield	Pvelocity	0.0000	5.68	0	km/s	mulder
ven_shield	Pvelocity	5.0000	6.1	0	km/s	mulder
ven_shield	Pvelocity	10.0000	6.32	0	km/s	mulder
ven_shield	Pvelocity	15.0000	6.48	0	km/s	mulder
ven_shield	Pvelocity	20.0000	6.65	0	km/s	mulder
ven_shield	Pvelocity	25.0000	6.8	0	km/s	mulder
ven_shield	Pvelocity	30.0000	6.96	0	km/s	mulder
ven_shield	Pvelocity	35.0000	7.11	0	km/s	mulder
ven_shield	Pvelocity	40.0000	7.22	0	km/s	mulder
ven_shield	Pvelocity	41.5000	8.13	0	km/s	mulder
xven_shield	Pvelocity	100.0000	8.13	0	km/s	mulder
ven_shield	Svelocity	0.0000	3.209	0	km/s	mulder
ven_shield	Svelocity	5.0000	3.446	0	km/s	mulder
ven_shield	Svelocity	10.0000	3.571	0	km/s	mulder
ven_shield	Svelocity	15.0000	3.661	0	km/s	mulder
ven_shield	Svelocity	20.0000	3.757	0	km/s	mulder
ven_shield	Svelocity	25.0000	3.842	0	km/s	mulder
ven_shield	Svelocity	30.0000	3.932	0	km/s	mulder
ven_shield	Svelocity	35.0000	4.017	0	km/s	mulder
ven_shield	Svelocity	40.0000	4.079	0	km/s	mulder
ven_shield	Svelocity	41.5000	4.593	0	km/s	mulder
xven_shield	Svelocity	100.0000	1	0	km/s	mulder
ven_orogen	Pvelocity	0.0000	5.69	0	km/s	mulder
ven_orogen	Pvelocity	5.0000	6.06	0	km/s	mulder
ven_orogen	Pvelocity	10.0000	6.22	0	km/s	mulder
ven_orogen	Pvelocity	15.0000	6.38	0	km/s	mulder
ven_orogen	Pvelocity	20.0000	6.53	0	km/s	mulder
ven_orogen	Pvelocity	25.0000	6.68	0	km/s	mulder
ven_orogen	Pvelocity	30.0000	6.81	0	km/s	mulder
ven_orogen	Pvelocity	35.0000	6.92	0	km/s	mulder
ven_orogen	Pvelocity	40.0000	6.96	0	km/s	mulder
ven_orogen	Pvelocity	45.0000	6.99	0	km/s	mulder
ven_orogen	Pvelocity	46.3000	8.01	0	km/s	mulder
ven_orogen	Svelocity	0.0000	3.215	0	km/s	mulder
ven_orogen	Svelocity	5.0000	3.424	0	km/s	mulder
ven_orogen	Svelocity	10.0000	3.514	0	km/s	mulder
ven_orogen	Svelocity	15.0000	3.605	0	km/s	mulder
ven_orogen	Svelocity	20.0000	3.689	0	km/s	mulder
ven_orogen	Svelocity	25.0000	3.774	0	km/s	mulder
ven_orogen	Svelocity	30.0000	3.848	0	km/s	mulder
ven_orogen	Svelocity	35.0000	3.91	0	km/s	mulder
ven_orogen	Svelocity	40.0000	3.932	0	km/s	mulder
ven_orogen	Svelocity	45.0000	3.949	0	km/s	mulder
ven_orogen	Svelocity	46.3000	4.525	0	km/s	mulder
ven_average	Pvelocity	0.0000	5.95	0	km/s	mulder
ven_average	Pvelocity	5.0000	6.21	0	km/s	mulder

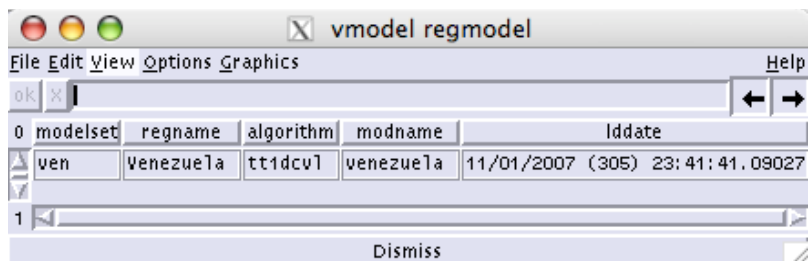
modname	paramname	depth	paramval	grad	units	auth	lddate
genericLg	Svelocity	0.0000	3.499	0	km/s	mulder	11/20/2007 (324) 0:50:54.47529
genericLg	Svelocity	0.1000	3.5	0	km/s	mulder	11/20/2007 (324) 0:50:54.47715
genericPg	Pvelocity	0.0000	6.19	0	km/s	mulder	11/20/2007 (324) 0:50:54.47833
genericPg	Pvelocity	0.1000	6.2	0	km/s	mulder	11/20/2007 (324) 0:50:54.47956
genericPb	Pvelocity	0.0000	6.499	0	km/s	mulder	11/20/2007 (324) 0:50:54.48080
genericPb	Pvelocity	0.1000	6.5	0	km/s	mulder	11/20/2007 (324) 0:50:54.48193
genericSb	Svelocity	0.0000	3.7499	0	km/s	mulder	11/20/2007 (324) 0:50:54.48308
genericSb	Svelocity	0.1000	3.75	0	km/s	mulder	11/20/2007 (324) 0:50:54.48437
ven_orogen	Pvelocity	0.0000	5.69	0	km/s	mulder	11/20/2007 (324) 0:53:02.17419

Special phase designations:  
genericPg  
genericLg

modname	paramname	depth	paramval
genericLg	Svelocity	0.0000	3.499
genericLg	Svelocity	0.1000	3.5
genericPg	Pvelocity	0.0000	6.19
genericPg	Pvelocity	0.1000	6.2



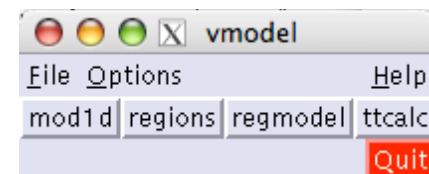
# Velocity model tables



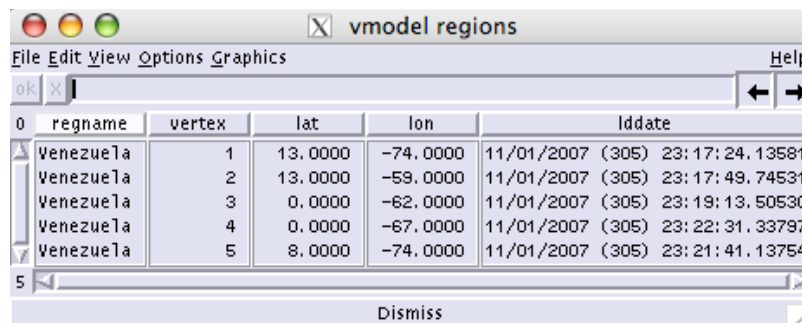
Screenshot of the vmodel regmodel window. The window title is "vmodel regmodel". The menu bar includes "File", "Edit", "View", "Options", "Graphics", and "Help". Below the menu bar is a search bar with "ok" and "x" buttons. The main table has columns: modelset, regname, algorithm, modname, and lddate. The table contains one row with the following data:

modelset	regname	algorithm	modname	lddate	
0	ven	Venezuela	tt1dcv1	venezuela	11/01/2007 (305) 23:41:41.09027

At the bottom of the window is a "Dismiss" button.



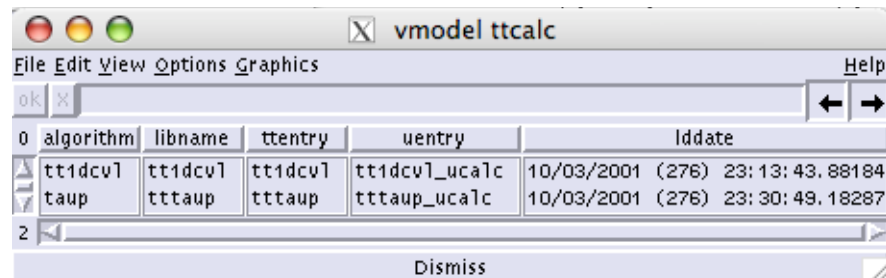
Screenshot of the vmodel window. The window title is "vmodel". The menu bar includes "File", "Options", and "Help". Below the menu bar are buttons for "mod1d", "regions", "regmodel", and "ttcalc". A red "Quit" button is located at the bottom right.



Screenshot of the vmodel regions window. The window title is "vmodel regions". The menu bar includes "File", "Edit", "View", "Options", "Graphics", and "Help". Below the menu bar is a search bar with "ok" and "x" buttons. The main table has columns: regname, vertex, lat, lon, and lddate. The table contains five rows with the following data:

regname	vertex	lat	lon	lddate
Venezuela	1	13.0000	-74.0000	11/01/2007 (305) 23:17:24.13581
Venezuela	2	13.0000	-59.0000	11/01/2007 (305) 23:17:49.74531
Venezuela	3	0.0000	-62.0000	11/01/2007 (305) 23:19:13.50530
Venezuela	4	0.0000	-67.0000	11/01/2007 (305) 23:22:31.33797
Venezuela	5	8.0000	-74.0000	11/01/2007 (305) 23:21:41.13754

At the bottom of the window is a "Dismiss" button.



Screenshot of the vmodel ttcalc window. The window title is "vmodel ttcalc". The menu bar includes "File", "Edit", "View", "Options", "Graphics", and "Help". Below the menu bar is a search bar with "ok" and "x" buttons. The main table has columns: algorithm, libname, ttenry, uentry, and lddate. The table contains two rows with the following data:

algorithm	libname	ttenry	uentry	lddate
tt1dcv1	tt1dcv1	tt1dcv1	tt1dcv1_uca1c	10/03/2001 (276) 23:13:43.88184
taup	ttaup	ttaup	ttaup_uca1c	10/03/2001 (276) 23:30:49.18287

At the bottom of the window is a "Dismiss" button.

# Files are in \$ANTELOPE distribution

- % ls \$ANTELOPE/data/tables/genloc  
1dcvl/ db/ taup/ ttlvz/ uniform/

- db/ - velocity model tables

vmodel	vmodel.regmodel	vmodel_example.mod1d
vmodel.mod1d	vmodel.ttcalc	vmodel_example.ttcalc
vmodel.regions	vmodel_example	

- 1dcvl/ - phase parameter files

ven3.pf ven\_average.pf ven\_shield.pf ven\_orogen.pf wabash.pf

# Venezuela: Christiansen & Mooney average crustal model

```
velocity_model_name ven_average
phases Arr{
P &Arr{
travel_time_calculator general
TTmodel ven_average
Tmethod tt1dcvl,tt1dcvl,tt1dcvl_uca1c
time_distance_weight_function &Tbl{
0.0 1.0
3.0 1.0
5.0 0.1
92.0 0.0
360.0 0.0
}
ux_distance_weight_function &Tbl{
0.0 1.0
10.0 1.0
90.0 0.7
92.0 0.0
360.0 0.0
}
uy_distance_weight_function &Tbl{
0.0 1.0
10.0 1.0
90.0 0.7
92.0 0.0
360.0 0.0
}
default_time_uncertainty 0.1
default_slowness_uncertainty 0.01
dt_bound_factor 0.01
du_bound_factor 0.035
time_station_corrections &Tbl{
}
ux_station_corrections &Tbl{
}
uy_station_corrections &Tbl{
}
}
S &Arr{
travel_time_calculator general
TTmodel ven_average
Tmethod tt1dcvl,tt1dcvl,tt1dcvl_uca1c
time_distance_weight_function &Tbl{
0.0 1.0
3.0 1.0
5.0 0.1
92.0 0.0
360.0 0.0
}
ux_distance_weight_function &Tbl{
0.0 1.0
10.0 1.0
90.0 0.7
92.0 0.0
360.0 0.0
}
```

# \$ANTELOPE/data/tables/genloc/1dcvl/en\_average.pf

```
# Venezuela: Christiansen & Mooney average crustal model
velocity_model_name ven_average
phases &Arr{
P &Arr{
travel_time_calculator general
TTmodel ven_average
TTmethod tt1dcvl,tt1dcvl,tt1dcvl_ucale
time_distance_weight_function &Tbl{
0.0 1.0
3.0 1.0
5.0 0.1
92.0 0.0
360.0 0.0
}
```

```
Sg &Arr{
travel_time_calculator general
TTmodel ven_average_Lg
TTmethod tt1dcvl,tt1dcvl,tt1dcvl_ucale
time_distance_weight_function &Tbl{
0.0 0.0
1.0 1.0
15.0 1.0
92.0 0.0
360.0 0.0
}
```

```
Pn &Arr{
travel_time_calculator general
TTmodel ven_average
TTmethod tt1dcvl,tt1dcvl,tt1dcvl_ucale
time_distance_weight_function &Tbl{
0.0 0.0
1.0 0.0
2.0 1.0
30.0 1.0
92.0 0.1
360.0 0.0
}
```

```
Lg &Arr{
travel_time_calculator general
TTmodel ven_average_Lg
TTmethod tt1dcvl,tt1dcvl,tt1dcvl_ucale
time_distance_weight_function &Tbl{
0.0 0.0
1.0 1.0
15.0 1.0
92.0 0.0
360.0 0.0
}
ux_distance_weight_function &Tbl{
0.0 1.0
10.0 1.0
90.0 0.7
360.0 0.0
}
```

# IMPORTANT!

- Backup velocity db (vmodel) and pf files outside distribution.
- Otherwise, if you re-install the antelope distribution, you WILL lose all your work.

# Daily tasks

- Review and locate earthquakes produced from rtsystem automatic locations (orbdetect, orbassoc, orbevproc/orbmag/orbampmag).
- Scan for missed events.
- Associate with external catalogues
  - NEIC (QED)
  - Neighbouring networks
- Assign preferred origin

## For each event:

- Review & adjust arrivals as necessary (dbpick).
  - Remove unwanted arrivals (S on vertical channels).
  - Add arrivals as necessary.
  - Arrival should be placed as close to the beginning of the phase as possible.
  - Add error bar for each arrival (automatic arrivals and analyst added arrivals).
  - P-phase on vertical (Z) component.
  - S-phase on horizontal components.
- Locate event (dbloc2).
- Associate with external catalogues (dbloc2).
  - NEIC (QED)
  - Neighbouring networks
- Assign preferred origin (dbloc2).

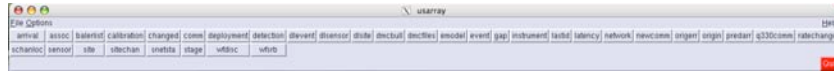
# Weekly tasks

- Database health checks of arrival and assoc tables



# Db health checks - overview

Dbc



Arrival table - rt data

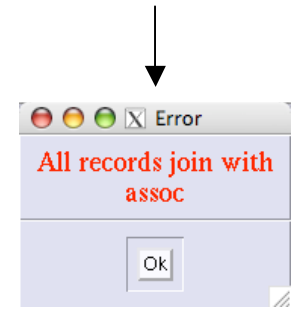
sta	time	arid	chan	iphase	deltm	fm	snr	auth
N21A	9/13/2008 (257) 0:00:07.95004	3900830	BHZ	P	0.559	c	5.0360	dbp-tracker-02/70
N110A	9/13/2008 (257) 0:11:10.62000	3900061	BHZ	P	0.100	local	52.172	
N18A	9/13/2008 (267) 0:11:22.82000	3900884	BHZ	P	0.100	local	17.213	
N17A	9/13/2008 (257) 0:11:28.45000	3900865	BHZ	P	0.100	local	20.747	
N17A	9/13/2008 (257) 0:14:34.57000	3900866	BHZ	S	0.200	local	7.0524	
Z19A	9/13/2008 (257) 0:11:10.22000	3900889	BHZ	F	0.100	local	42.802	
N19A	9/13/2008 (267) 0:11:12.77000	3900870	BHZ	P	0.100	local	18.78	
N20A	9/13/2008 (267) 0:11:22.10000	3900871	BHZ	P	0.100	local	51.953	
N19A	9/13/2008 (257) 0:11:22.45000	3900872	BHZ	P	0.100	local	25.6177	
Z18A	9/13/2008 (257) 0:11:28.17000	3900873	BHZ	P	0.100	local	21.128	
N20A	9/13/2008 (267) 0:11:28.42000	3900874	BHZ	P	0.100	local	47.403	
Z20A	9/13/2008 (267) 0:11:32.00000	3900875	BHZ	P	0.100	local	10.915	
N10A	9/13/2008 (257) 0:11:33.97000	3900876	BHZ	P	0.100	local	17.732	
N21A	9/13/2008 (267) 0:11:33.47000	3900877	BHZ	P	0.102	local	49.327	
Z19A	9/13/2008 (267) 0:11:26.72000	3900878	BHZ	P	0.100	local	24.253	
Z22A	9/13/2008 (267) 0:11:41.72000	3900879	BHZ	P	0.167	local	6.1022	
TUC	9/13/2008 (257) 0:11:52.21000	3900880	BHZ	00	P	0.100	11.654	local
Z23A	9/13/2008 (257) 0:22:38.50000	3900881	BHZ	P	0.100	local	25.595	tele
N22A	9/13/2008 (267) 0:22:39.77000	3900885	BHZ	P	0.100	local	6.2642	tele
L19A	9/13/2008 (257) 0:22:37.20000	3900886	BHZ	P	0.100	local	6.4319	tele
Z17A	9/13/2008 (257) 0:22:41.27000	3900887	BHZ	P	0.100	local	6.940	tele
J18A	9/13/2008 (257) 0:22:38.72000	3900888	BHZ	P	0.100	local	5.7162	tele
Z30A	9/13/2008 (267) 0:25:34.27000	3900889	BHZ	P	0.100	local	5.2573	tele
N22A	9/13/2008 (257) 0:22:42.17000	3900890	BHZ	P	0.100	local	5.2602	tele
Z23A	9/13/2008 (257) 0:22:43.57000	3900891	BHZ	P	0.100	local	10.690	tele

Nojoin with assoc table

sta	time	arid	chan	iphase	deltm	fm	snr	auth
me	<_2008203							
Sort	0:04:56.30606	3720415	BHZ	P	0.324	c	42.399	dbp-tracker-02/1
Subset	0:04:58.58451	3720417	BHZ	P	0.324	c	9.8153	dbp-tracker-02/1
Group	0:04:59.82693	3720419	BHZ	P	0.405	d	10.624	dbp-tracker-02/1
UnGroup	0:05:05.52550	3720421	BHZ	P	0.534	c	42.477	dbp-tracker-02/1
UnGroup	0:05:13.12922	3720423	BHZ	P	0.567	d	6.6049	dbp-tracker-02/1
UnGroup	0:05:15.25104	3720427	BHZ	P	0.486	c	5.426	dbp-tracker-02/1
Join	0:05:16.00451	3720425	BHZ	P	0.567	c	13.82	dbp-tracker-02/1
LeftJoin	0:05:21.91024	3720513	BHZ	P	0.486	c	0.486	dbp-tracker-02/1
Nojoin	0:05:22.48019	3720429	BHZ	P	0.486	c	22.208	dbp-tracker-02/1
OuterJoin	0:05:22.48019	3720435	BHZ	P	0.405	d	5.2062	dbp-tracker-02/1
Theta	0:05:22.48019	3720431	BHZ	P	0.486	c	8.5416	dbp-tracker-02/1
Join Keys	0:05:22.48019	3720514	BHZ	P	0.040	d	0.040	dbp-tracker-02/1
Separate	0:05:22.48019	3720448	BHZ	P	0.534	c	5.1723	dbp-tracker-02/1
Sever	0:05:22.48019	3720437	BHZ	P	0.320	c	16.655	dbp-tracker-02/1
Find Forward	0:05:22.48019	3720446	BHZ	P	0.405	d	8.6162	dbp-tracker-02/1
Find Backward	0:05:22.48019	3720453	BHZ	P	0.040	d	9.0649	dbp-tracker-02/1
Row #	0:05:22.48019	3720515	BHZ	P	0.040	c	9.395	dbp-tracker-02/1
126A	7/20/2008 (202)	3720438	BHZ	P	0.486	c	0.729	dbp-tracker-02/1
126A	7/20/2008 (202)	3720440	BHZ	P	0.405	d	14.851	dbp-tracker-02/1
126A	7/20/2008 (202)	3720460	BHZ	P	0.405	d	38.30	dbp-tracker-02/1
126A	7/20/2008 (202)	3720442	BHZ	P	0.567	d	16.716	dbp-tracker-02/1
126A	7/20/2008 (202)	3720444	BHZ	P	0.324	c	9.8581	dbp-tracker-02/1
126A	7/20/2008 (202)	3720453	BHZ	P	0.324	c	11.091	dbp-tracker-02/1
126A	7/20/2008 (202)	3720450	BHZ	P	0.370	d	14.102	dbp-tracker-02/1

Arrival table - analyst processed data

sta	time	arid	chan	iphase	deltm	fm	snr	auth
627A	7/20/2008 (202) 0:04:56.30606	3720415	BHZ	P	0.324	c	42.399	dbp-tracker-02/1
628A	7/20/2008 (202) 0:04:58.58451	3720417	BHZ	P	0.324	c	9.8153	dbp-tracker-02/1
628A	7/20/2008 (202) 0:04:59.82693	3720419	BHZ	P	0.405	d	10.624	dbp-tracker-02/1
626A	7/20/2008 (202) 0:05:05.52550	3720421	BHZ	P	0.534	c	42.477	dbp-tracker-02/1
420A	7/20/2008 (202) 0:05:13.12922	3720423	BHZ	P	0.567	d	6.6049	dbp-tracker-02/1
427A	7/20/2008 (202) 0:05:15.25104	3720427	BHZ	P	0.486	c	5.426	dbp-tracker-02/1
425A	7/20/2008 (202) 0:05:16.00451	3720425	BHZ	P	0.567	c	13.82	dbp-tracker-02/1
326A	7/20/2008 (202) 0:05:21.91024	3720513	BHZ	P	0.486	c	0.486	dbp-tracker-02/1
325A	7/20/2008 (202) 0:05:22.48019	3720429	BHZ	P	0.486	c	22.208	dbp-tracker-02/1
328A	7/20/2008 (202) 0:05:22.88801	3720435	BHZ	P	0.405	d	5.2062	dbp-tracker-02/1
324A	7/20/2008 (202) 0:05:25.02950	3720431	BHZ	P	0.486	c	8.5416	dbp-tracker-02/1
225A	7/20/2008 (202) 0:05:21.91024	3720514	BHZ	P	0.040	d	0.040	dbp-tracker-02/1
224A	7/20/2008 (202) 0:05:33.40000	3720448	BHZ	P	0.534	c	5.1723	dbp-tracker-02/1
224A	7/20/2008 (202) 0:05:33.82500	3720437	BHZ	P	0.320	c	16.655	dbp-tracker-02/1
320A	7/20/2008 (202) 0:05:34.69394	3720446	BHZ	P	0.405	d	8.6162	dbp-tracker-02/1
227A	7/20/2008 (202) 0:05:36.88535	3720438	BHZ	P	0.486	c	9.0649	dbp-tracker-02/1
127A	7/20/2008 (202) 0:05:37.80183	3720440	BHZ	P	0.405	d	14.851	dbp-tracker-02/1
319A	7/20/2008 (202) 0:05:38.63794	3720438	BHZ	P	0.486	c	0.395	dbp-tracker-02/1
125A	7/20/2008 (202) 0:05:39.85201	3720516	BHZ	P	0.729	c	0.729	dbp-tracker-02/1
220A	7/20/2008 (202) 0:05:40.82774	3720440	BHZ	P	0.405	d	14.851	dbp-tracker-02/1
124A	7/20/2008 (202) 0:05:41.94209	3720403	BHZ	P	0.405	d	38.30	dbp-tracker-02/1
318A	7/20/2008 (202) 0:05:42.99237	3720442	BHZ	P	0.567	d	16.716	dbp-tracker-02/1
126A	7/20/2008 (202) 0:05:43.11923	3720444	BHZ	P	0.324	c	9.8581	dbp-tracker-02/1
127A	7/20/2008 (202) 0:05:43.16396	3720453	BHZ	P	0.324	c	11.091	dbp-tracker-02/1
125A	7/20/2008 (202) 0:05:44.70996	3720450	BHZ	P	0.370	d	14.102	dbp-tracker-02/1



# Db health checks

Arrival table - analyst processed data

0	sta	time	ari	arid	chan	iphase	deltim	fm	snr	auth
	627A	7/20/2008 (202) 0:04:56.30696	37284	3728415	BHZ	P	0.324	c.	42.399	dbp:tmulder:821
	628A	7/20/2008 (202) 0:04:56.58451	37284	3728417	BHZ	P	0.324	c.	9.9153	dbp:tmulder:821

0	sta	time	arid	chan	iphase	deltim	fm	snr	auth
	X21A	9/13/2008 (257) 0:00:07.95804	3900838	BHZ	P	0.559	c.	5.8368	dbp:tcocx:8278
	118A	9/13/2008 (257) 0:11:18.62500	3900861	BHZ	P	0.100		52.172	local
	Y18A	9/13/2008 (257) 0:11:22.62500	3900864	BHZ	P	0.100		17.213	local

- 1) Subset for day of interest  
View --> subset

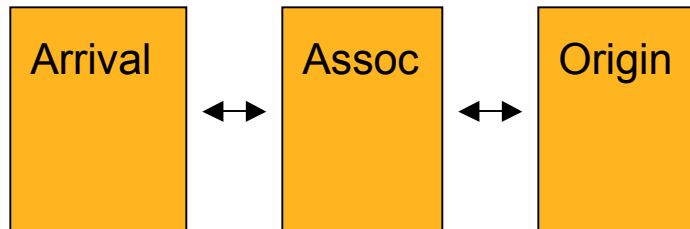
0	sta	time	ari	arid	chan	iphase	deltim	fm	snr	auth
	526A	7/20/2008 (202) 0:05:05.52500	37284	3728421	BHZ	P	0.534	d.	42.477	dbp:tmulder:821
	428A	7/20/2008 (202) 0:05:13.12922	37284	3728423	BHZ	P	0.567	d.	8.6049	dbp:tmulder:821
	427A	7/20/2008 (202) 0:05:15.25104	37284	3728427	BHZ	P	0.486	c.	5.426	dbp:tmulder:821
	425A	7/20/2008 (202) 0:05:16.08451	37284	3728425	BHZ	P	0.567	c.	13.82	dbp:tmulder:821
	326A	7/20/2008 (202) 0:05:21.91024	37284	3755513	BHZ	P	0.486	c.	5.2862	dbp:tmulder:821
	325A	7/20/2008 (202) 0:05:22.48019	37284	3728429	BHZ	P	0.486	c.	22.288	dbp:tmulder:821
	328A	7/20/2008 (202) 0:05:22.68801	37284	3728435	BHZ	P	0.405	d.	5.2862	dbp:tmulder:821
	324A	7/20/2008 (202) 0:05:25.02950	37284	3728431	BHZ	P	0.486	c.	8.5416	dbp:tmulder:821
	226A	7/20/2008 (202) 0:05:31.24241	37284	3755514	BHZ	P	0.648	d.	5.1723	dbp:tmulder:821
	225A	7/20/2008 (202) 0:05:33.40000	37284	3728448	BHZ	P	0.534	d.	5.1723	dbp:tmulder:821
	224A	7/20/2008 (202) 0:05:33.81500	37284	3728437	BHZ	P	0.320	d.	16.655	dbp:tmulder:821
	320A	7/20/2008 (202) 0:05:37.69394	37284	3728446	BHZ	P	0.405	d.	8.616	dbp:tmulder:821
	227A	7/20/2008 (202) 0:05:36.88535	37284	3728433	BHZ	P	0.648	d.	9.395	dbp:tmulder:821
	127A	7/20/2008 (202) 0:05:37.90193	37284	3755515	BHZ	P	0.648	c.	9.395	dbp:tmulder:821
	319A	7/20/2008 (202) 0:05:38.63794	37284	3728438	BHZ	P	0.486	c.	9.395	dbp:tmulder:821
	125A	7/20/2008 (202) 0:05:39.85281	37284	3755516	BHZ	P	0.729	d.	14.651	dbp:tmulder:821
	220A	7/20/2008 (202) 0:05:40.92774	37284	3728440	BHZ	P	0.405	d.	38.38	dbp:tmulder:821
	124A	7/20/2008 (202) 0:05:41.94209	37284	3728483	BHZ	P	0.405	d.	16.716	dbp:tmulder:821
	318A	7/20/2008 (202) 0:05:42.99237	37284	3728442	BHZ	P	0.567	d.	9.9351	dbp:tmulder:821
	123A	7/20/2008 (202) 0:05:43.11923	37284	3728444	BHZ	P	0.324	c.	11.091	dbp:tmulder:821
	127A	7/20/2008 (202) 0:05:43.16386	37284	3728453	BHZ	P	0.324	c.	11.091	dbp:tmulder:821
	125A	7/20/2008 (202) 0:05:44.70998	37284	3728450	BHZ	P	0.370	d.	14.102	dbp:tmulder:821

Arrival table - rt data (before analyst event review)

iphase	deltim	fm	snr	auth
P	0.324	c.	42.399	dbp:tmulder:821
P	0.324	c.	9.9153	dbp:tmulder:821
P	0.405	d.	10.634	dbp:tmulder:821
P	0.534	d.	42.477	dbp:tmulder:821
P	0.567	d.	8.6049	dbp:tmulder:821
P	0.486	c.	5.426	dbp:tmulder:821

- 2) Check:
  - deltim (phase error bar) - filled in & reasonable value (local < 1s, ~1 < tele < 10 s)
  - auth = analyst (not rtsystem system: orbassoc/local/regional/telescismic)

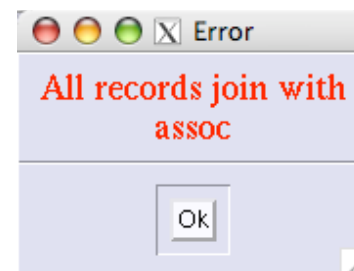
# Db health checks



Nojoin with assoc table

A screenshot of a database viewer window titled "usarray View108". The window displays a table with the following columns: time, arid, chan, lphase, deltim, fm, snr, and auth. The table contains 20 rows of data. A context menu is open over the table, showing options such as Arrange, Record View, Sort, Subset, Group, UnGroup, Join, LeftJoin, Nojoin, Outer Join, Theta, join Keys, Separate, Sever, Find Forward, Find Backward, Row #, and a scrollable list of other tables including assoc, balerlist, calibration, changed, comm, deployment, detection, dlevent, dlsensor, dlsite, dmcbull, dmcfiles, gap, latency, and newcomm. The "Nojoin" option is highlighted.

time	arid	chan	lphase	deltim	fm	snr	auth
04:56.30696	3728415	BHZ	P	0.324	c.	42.399	clbp:tmulder:821
04:56.58451	3728417	BHZ	P	0.324	c.	9.9153	clbp:tmulder:821
04:58.92693	3728419	BHZ	P	0.405	d.	10.634	clbp:tmulder:821
05:05.52500	3728421	BHZ	P	0.534	d.	42.477	clbp:tmulder:821
05:13.12922	3728423	BHZ	P	0.567	d.	8.6049	clbp:tmulder:821
05:15.25104	3728427	BHZ	P	0.486	c.	5.426	clbp:tmulder:821
05:16.08451	3728425	BHZ	P	0.567	c.	13.82	clbp:tmulder:821
05:21.91024	3755513	BHZ	P	0.486	c.		clbp:tmulder:821
05:22.48019	3728429	BHZ	P	0.486	c.	22.288	clbp:tmulder:821
05:22.48019	3728435	BHZ	P	0.405	d.	5.2862	clbp:tmulder:821
05:22.48019	3728431	BHZ	P	0.486	c.	8.5416	clbp:tmulder:821
05:22.48019	3755514	BHZ	P	0.648	d.		clbp:tmulder:821
05:22.48019	3728448	BHZ	P	0.534	d.	5.1723	clbp:tmulder:821
05:22.48019	3728437	BHZ	P	0.320	d.	16.655	clbp:tmulder:821
05:22.48019	3728446	BHZ	P	0.405	d.	8.6162	clbp:tmulder:821
05:22.48019	3728433	BHZ	P	0.648	d.	9.0649	clbp:tmulder:821
05:22.48019	3755515	BHZ	P	0.648	c.		clbp:tmulder:821
05:22.48019	3728438	BHZ	P	0.486	c.	9.395	clbp:tmulder:821
05:22.48019	3755516	BHZ	P	0.729	c.		clbp:tmulder:821
05:22.48019	3728440	BHZ	P	0.405	d.	14.651	clbp:tmulder:821
05:22.48019	3728483	BHZ	P	0.405	d.	38.38	clbp:tmulder:821
05:22.48019	3728442	BHZ	P	0.567	d.	16.716	clbp:tmulder:821
05:22.48019	3728444	BHZ	P	0.324	c.	9.9351	clbp:tmulder:821
05:22.48019	3728453	BHZ	P	0.324	c.	11.091	clbp:tmulder:821
05:22.48019	3728450	BHZ	P	0.370	d.	14.102	clbp:tmulder:821



# Fix problems in dbloc2

- Find event & phase in dbloc2
- In dbpick, fix error bar (deltim): shift + left-mouse
- Select phases in dbloc2 and relocate/associate

