



Universidade de Brasília

ISOLA

DATA FROM COSTA RICA

DISPOSED BY Mr. QUINTERO

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Event info Windows

eventinfo

Date
Date (YYYYMMDD)
20130608

Origin Time
Hour: 07
Min: 50
Seconds: 04.00

Location
Lat (Deg,Min): 38.00 50.00
DDMM->DDEG
Lon (Deg,Min): 21.00 50.00
Lat (N) (Dec.Degrees): 9.809
Depth (km): 4.5
Lon (E) (Dec.Degrees): -83.879

Comments
Magnitude: 2.9
Location agency: OVSICORI

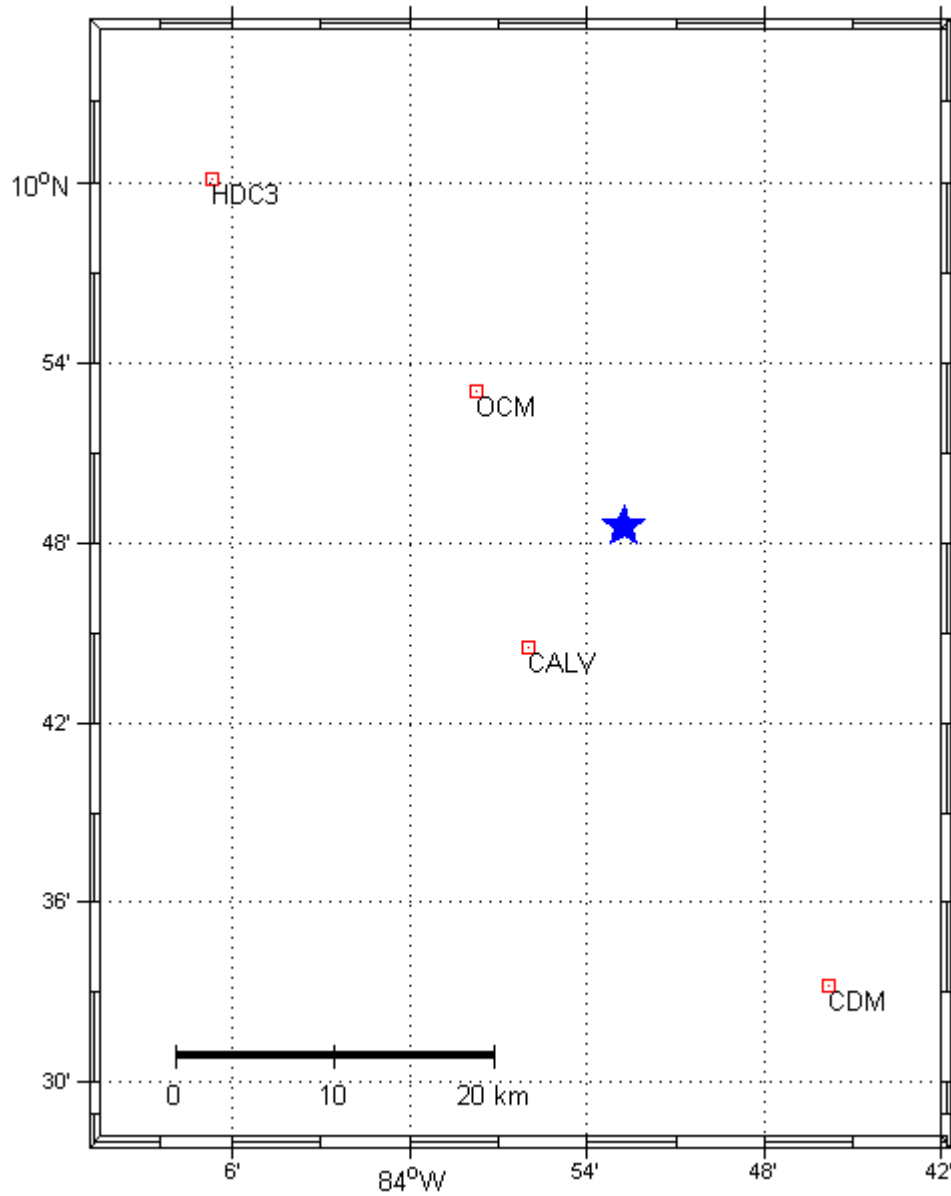
Time Window Length (sec)
16.384
40.96
81.92
163.84
245.76
327.68
409.6
819.2
1638.4

The chosen Time Window Length should be large enough to include the travel time from epicenter to stations plus the seismogram duration

Automatic form fill
e.g. 20100118 1556 8.38 38 25.19 21E55.44 8.29 5.23
Paste your EventInfo here

Save
Exit
Read

Map of Stations and Epicenter

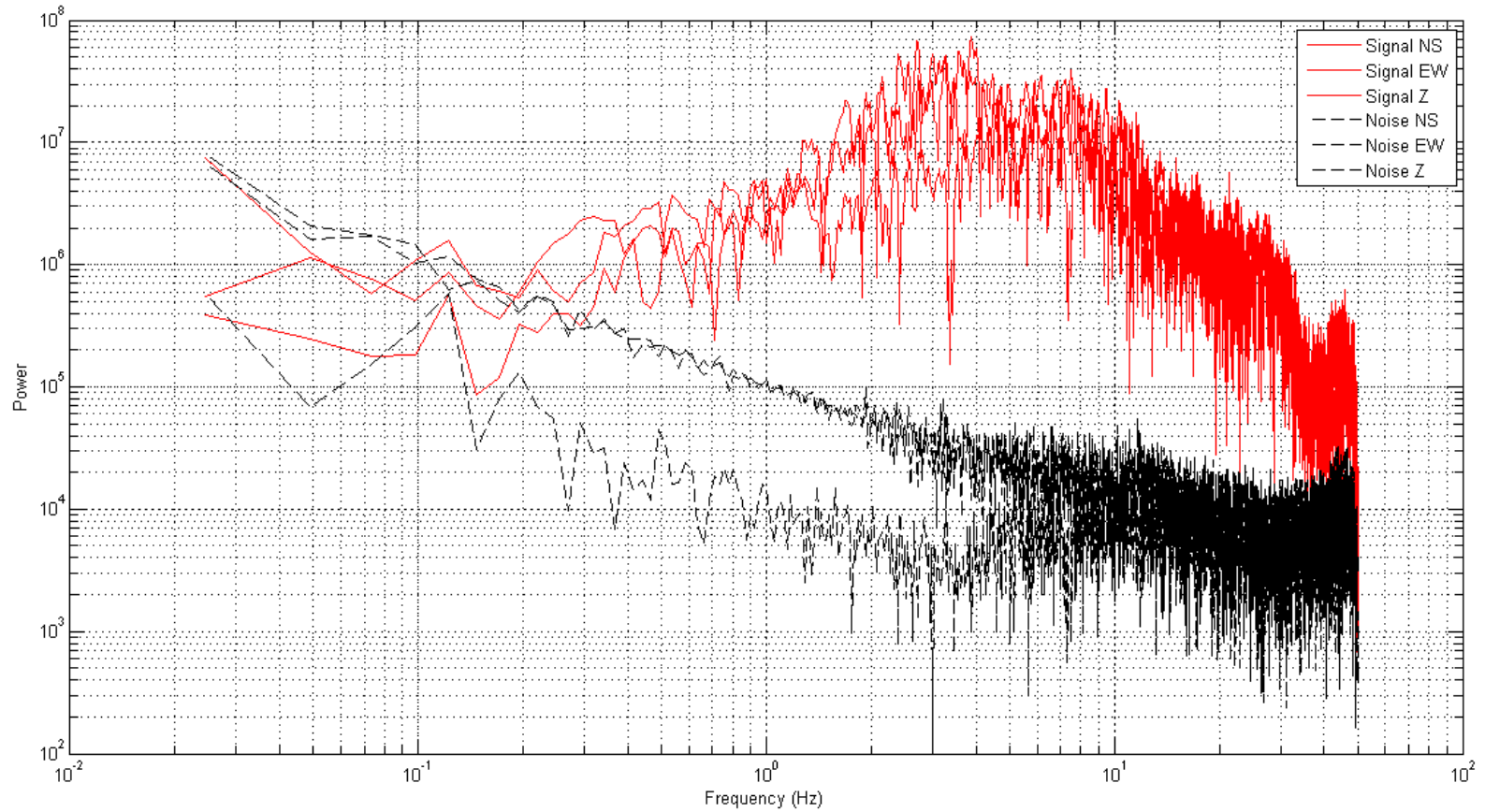


Station Selected

No	Station	Azimuth (Deg)	Distance (km)
001	CALV	218.7	9.52
002	OCM	312.3	12.35
003	CDM	155.9	30.94

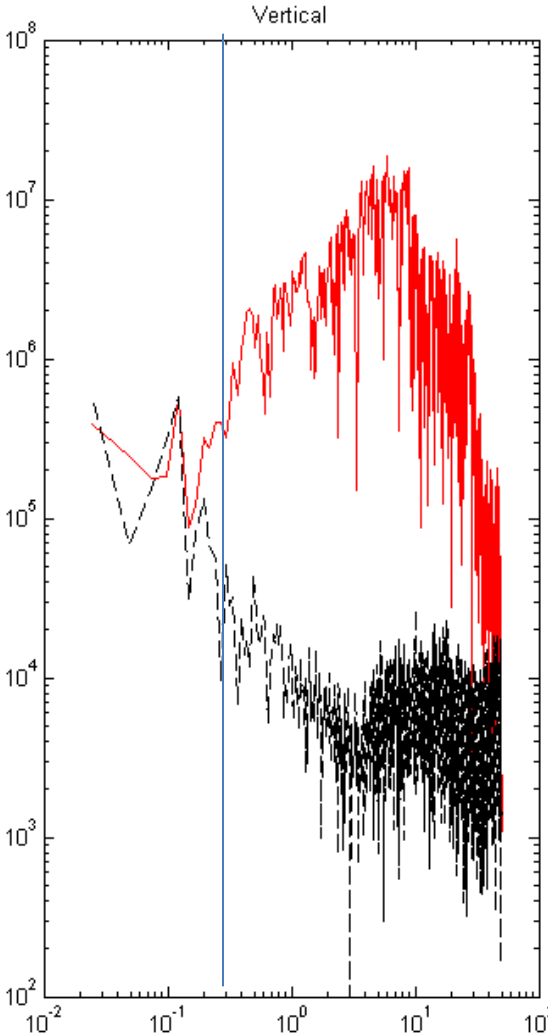
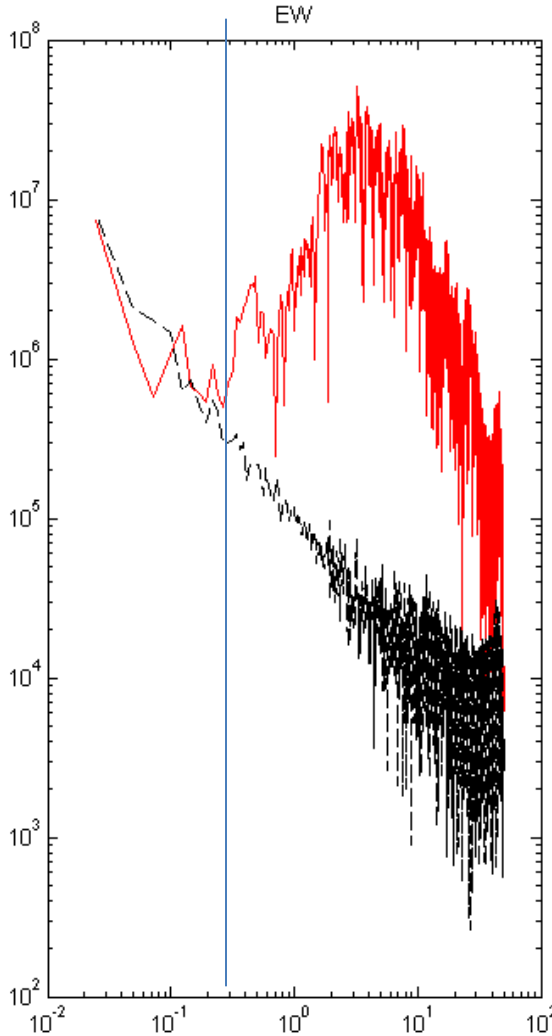
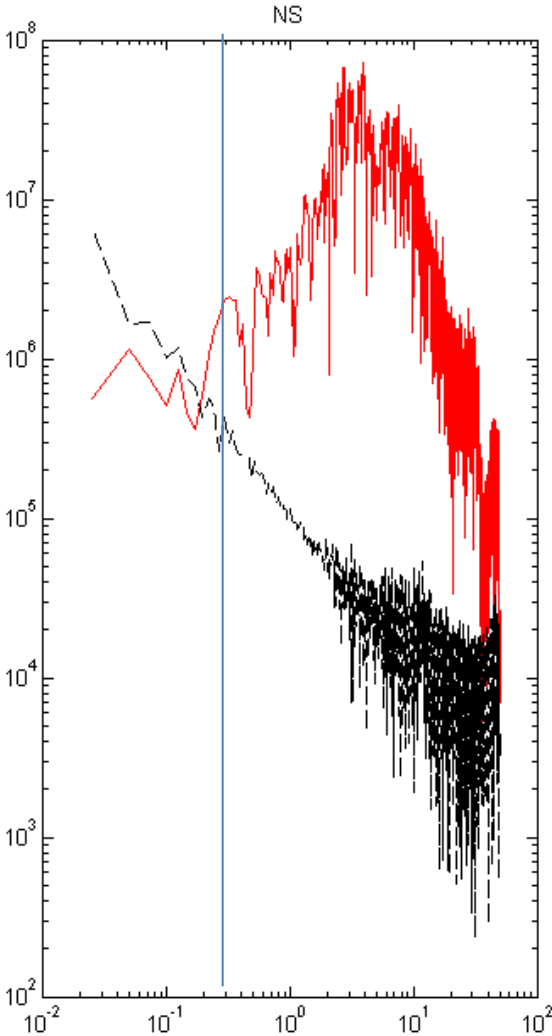
Calculate SNR

Spectrum ST_OCM



Calculate SNR

Spectrum ST_OCM



Try Filter

Station CALV

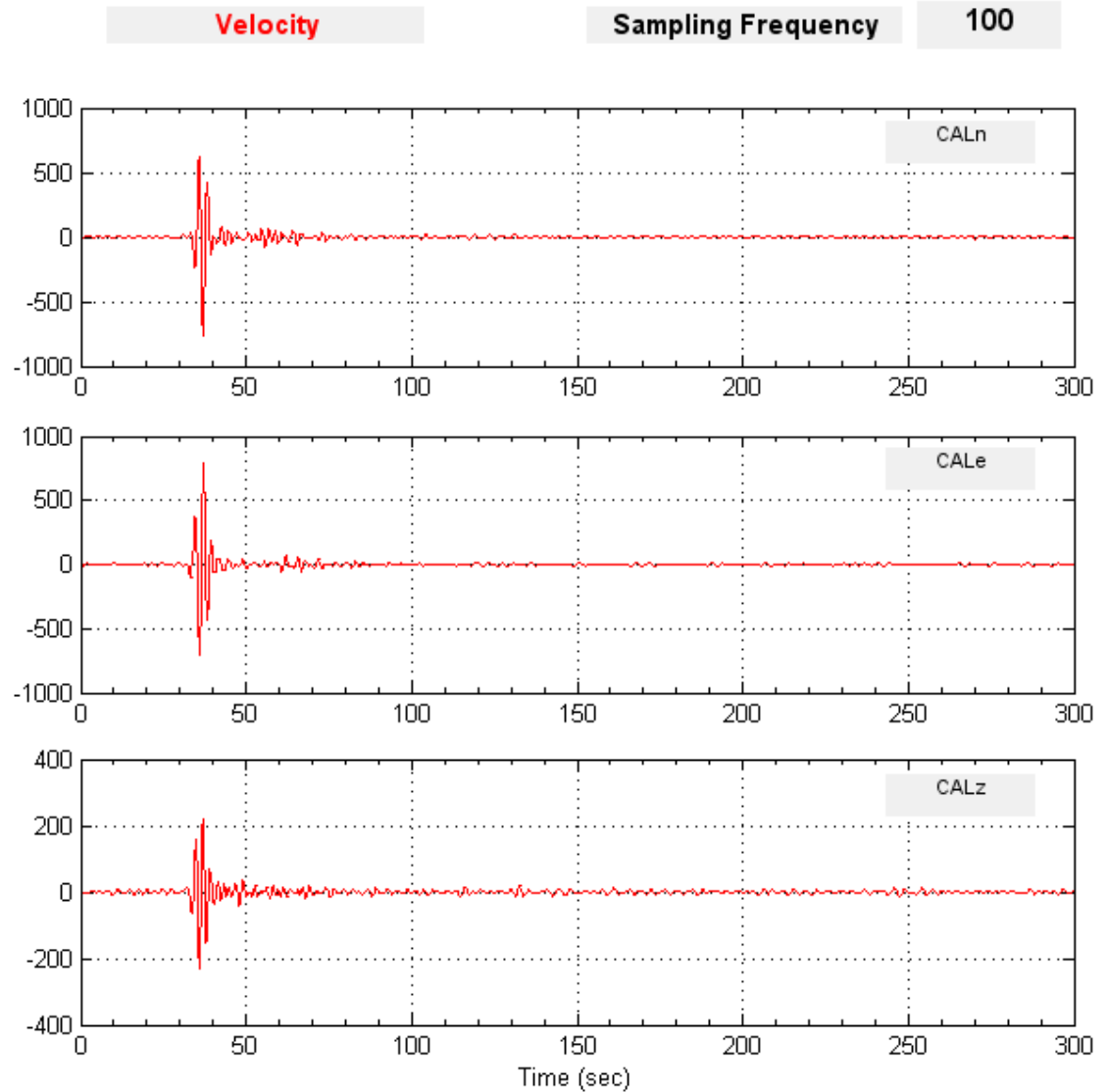
Load Ascii file	Exit
Integrate	Restart

Pre-defined filters

Frequency (Hz)	Period (sec)
1-5	1.0-0.2
0.2-1.0	5.0-1.0
0.08-0.2	12.5-5.0
0.06-0.08	16.5-12.5
0.05-0.07	20.0-14.3
0.03-0.06	33.3-16.5
0.01-0.03	100-33.3

My filter

0.2	(Hz)	0.5
Low		High
5	(sec)	2



Try Filter Integrate

Load Ascii file	Exit
Integrate	Restart

Pre-defined filters

Frequency (Hz)	Period (sec)
1-5	1.0-0.2
0.2-1.0	5.0-1.0
0.08-0.2	12.5-5.0
0.06-0.08	16.5-12.5
0.05-0.07	20.0-14.3
0.03-0.06	33.3-16.5
0.01-0.03	100-33.3

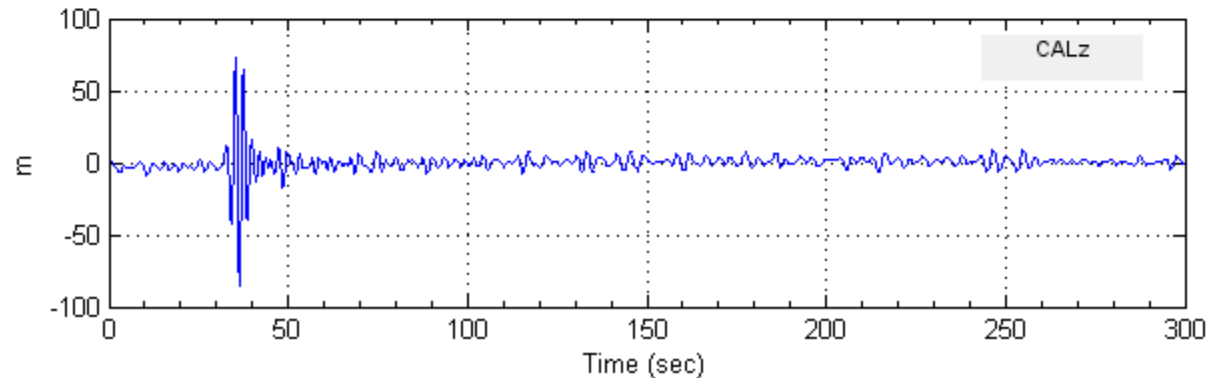
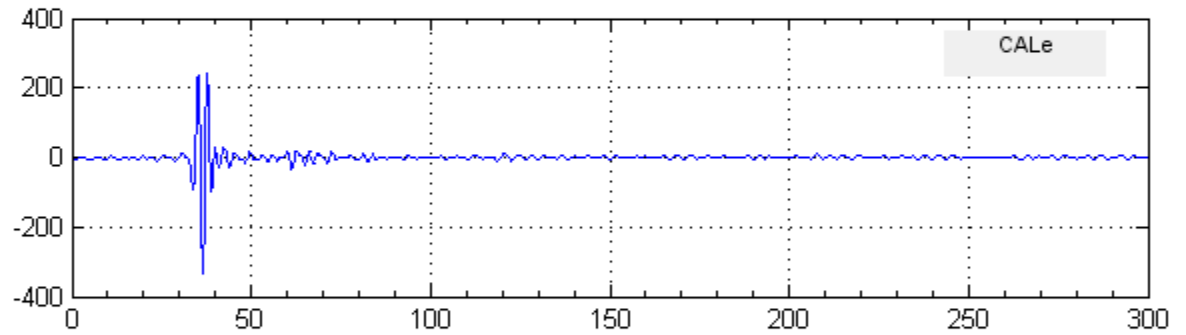
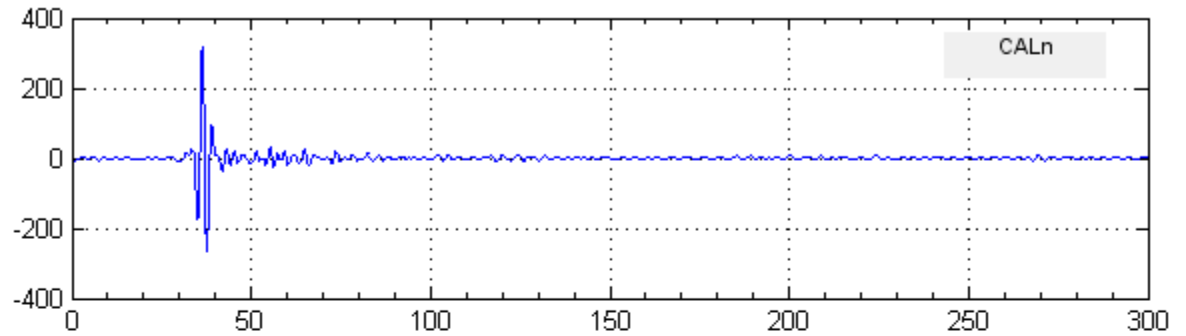
My filter

0.2	(Hz)	0.5
Low		High
5	(sec)	2

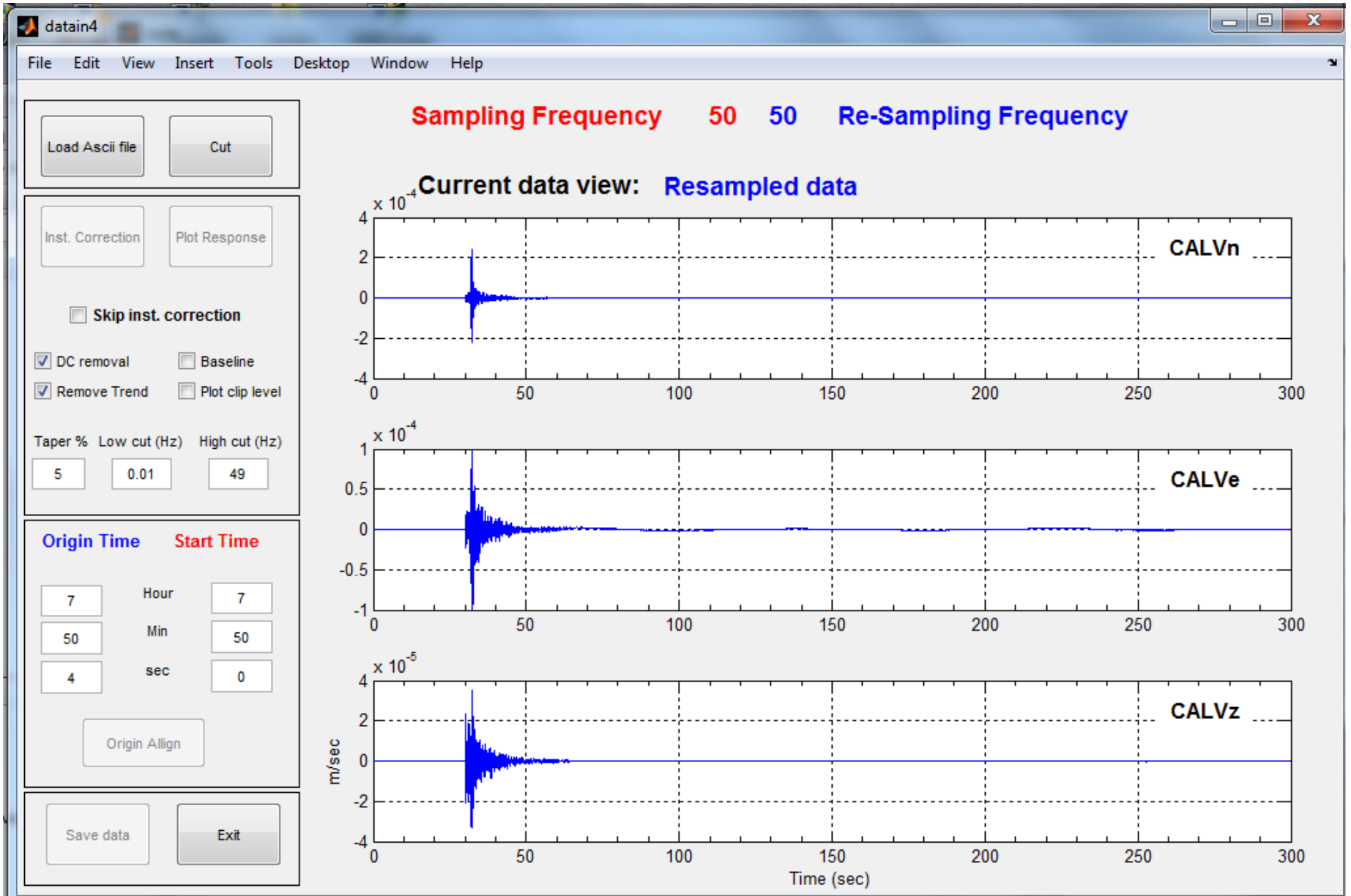
Displacement

Sampling Frequency

100



Data Preparation



Check NoisesSpectrum	
STATION	Frefuence Range
CALV	0,35 - 1
CDM	0,28 - 0,9
OCM	0,35 - 1

Try Filter	
STATION	Frefuence Range
CALV	0,2 -0,5
CDM	0,3 - 0,5
OCM	0,3 - 0,4

Data Source Definition

sourcepreepi

Starting depth (km)
1

Depth step (km)
0.5

No of Sources (< 99)
11

Calculate Exit

Inversion

Info Time Length 163.84 No of Sources 11 No of Stations 3 Min Time shifts (sec) -50 Max Time shifts (sec) 50	Filter (Hz) <input checked="" type="checkbox"/> Common for all stations filter (f1,f2,f3,f4); flat band-pass between f2, f3 cosine tapered between f1, f2 and between f3, f4 f1 f2 f3 f4 <input type="text" value="0.2"/> <input type="text" value="0.3"/> <input type="text" value="0.5"/> <input type="text" value="0.55"/> S/N Ratio using f1 f4 <input type="text" value="16"/> <input type="button" value="Plot S/N curves"/>	<input type="button" value="Select Stations/Freq Band"/> <input type="button" value="Compute Weights"/> <input type="button" value="Reset Weights"/>
Type of Inversion <input type="radio"/> Full MT <input checked="" type="radio"/> Deviatoric MT <input type="radio"/> DC constrained <input type="radio"/> Fixed mechanism Strike <input type="text" value="0"/> Dip <input type="text" value="0"/> Rake <input type="text" value="0"/>	(dt) Time Search (sec) <input type="text" value="1475"/> Start <input type="text" value="29.5"/> <input type="text" value="5"/> Time Step <input type="text" value="0.1"/> <input type="text" value="1550"/> End <input type="text" value="31"/> Trial Time shifts	<input type="button" value="Run"/> <input type="button" value="Exit"/>
Number of Subevents <input type="text" value="1"/>		
Time Function <input checked="" type="radio"/> Delta <input type="radio"/> Triangle Duration <input type="text" value="4"/>	<input type="button" value="Plot Correlation diagram"/> <input type="button" value="Plot Correlation on map"/> <input checked="" type="radio"/> Use Source Number <input type="radio"/> Use Distance-Depth <input type="checkbox"/> Plot DC% contours <input checked="" type="checkbox"/> Draw Contours <input type="checkbox"/> Use fixed interval Plot Scale X <input type="text" value="21"/> Plot Scale Y <input type="text" value="18"/> Beachball Scale <input type="text" value="0.35"/> Font size <input type="text" value="10"/> Contour interval <input type="text" value="0.1"/> Beachball cut off % <input type="text" value="0"/> GMT Palette <input type="text" value="cool"/> <input type="checkbox"/> Invert Palette	<input type="button" value="Results for Single source"/> Source Number <input type="text" value="1"/> Time limits <input type="text" value=""/> Source limits <input type="text" value="11"/>

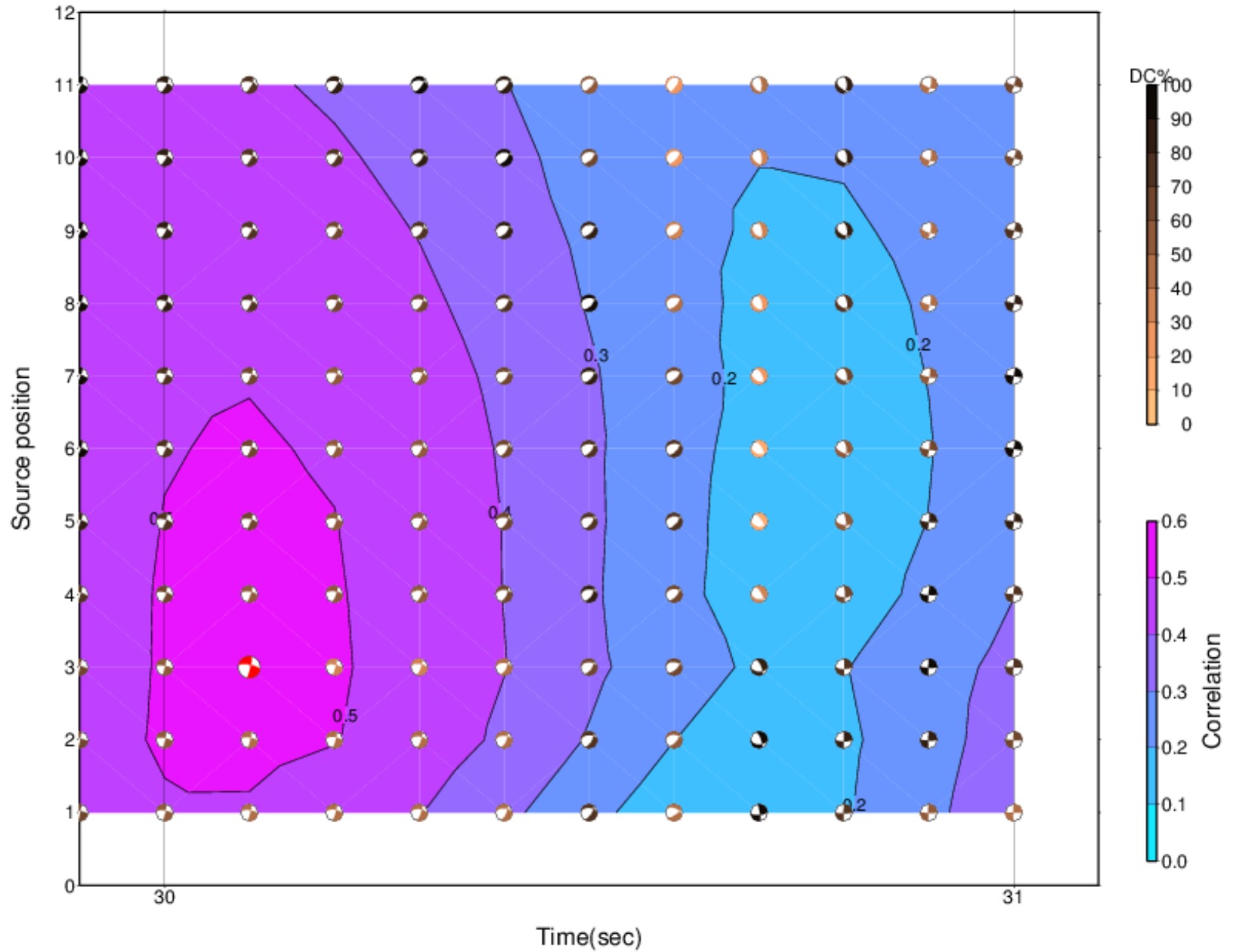
Stations Filters

Figure 1: Select Stations - Filters

Stations	Components				f1	f2	f3	f4
CALV	<input checked="" type="checkbox"/> Use Station	<input checked="" type="checkbox"/> Use NS	<input checked="" type="checkbox"/> Use EW	<input checked="" type="checkbox"/> Use Z	0.15	0.2	0.5	0.55
OCM	<input checked="" type="checkbox"/> Use Station	<input checked="" type="checkbox"/> Use NS	<input checked="" type="checkbox"/> Use EW	<input checked="" type="checkbox"/> Use Z	0.15	0.2	0.5	0.55
CDM	<input checked="" type="checkbox"/> Use Station	<input checked="" type="checkbox"/> Use NS	<input checked="" type="checkbox"/> Use EW	<input checked="" type="checkbox"/> Use Z	0.15	0.2	0.5	0.55

Exit Update and Exit

Correlation Diagrama

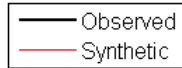


Inversion Results Plotting

Real - Synthetics

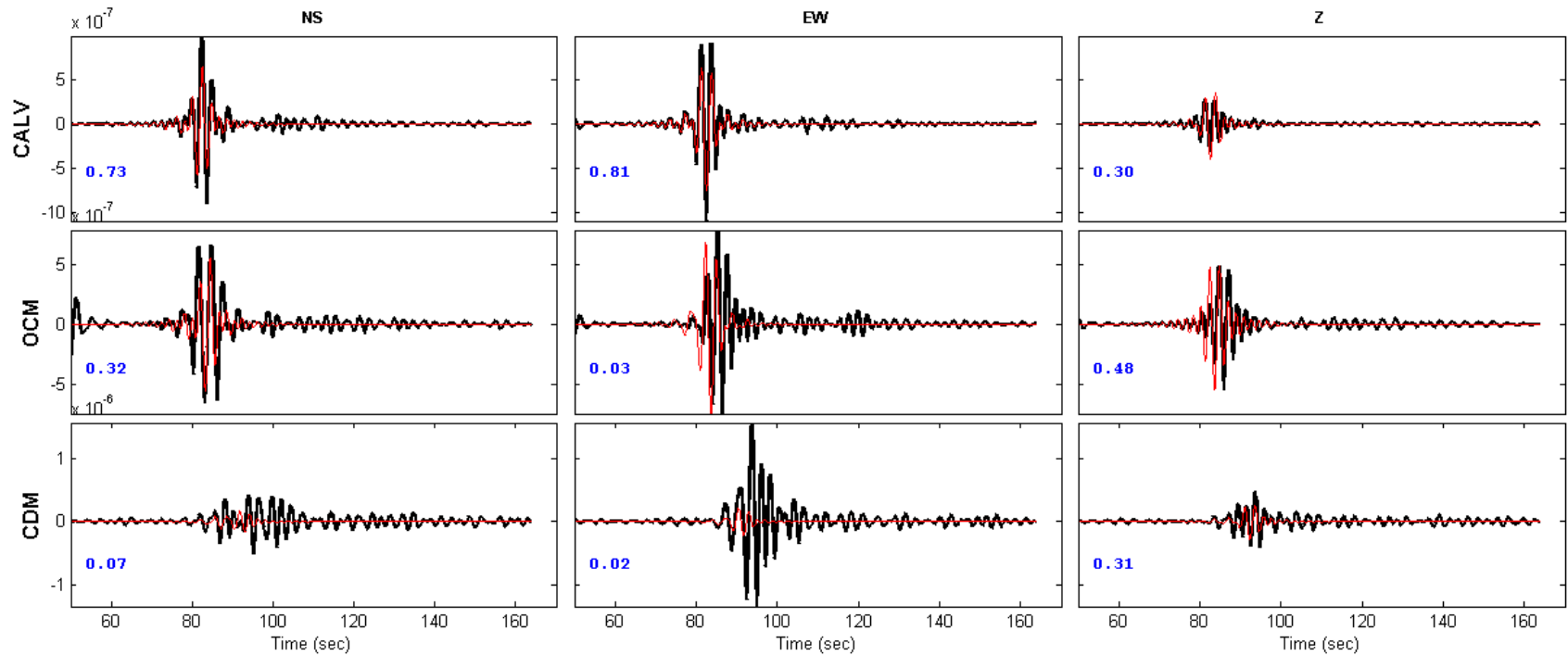
Event date-time: 130608_07_50_04.00

Displacement (m). Inversion band (Hz) 0.2 0.3 0.5 0.55



Gray waveforms weren't used in inversion.

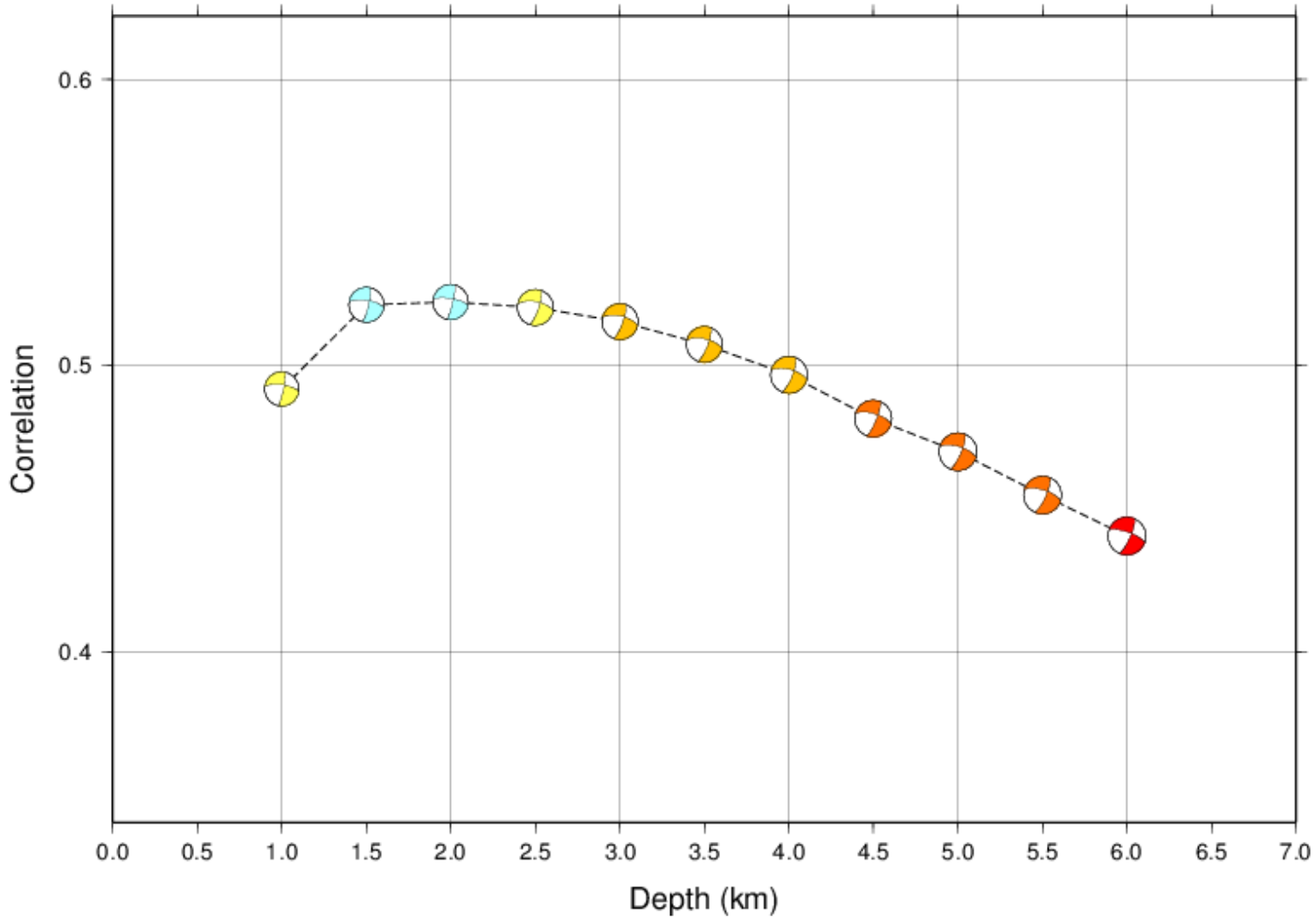
Blue numbers are variance reduction



Inversion Results Plotting

Correlation vs Source

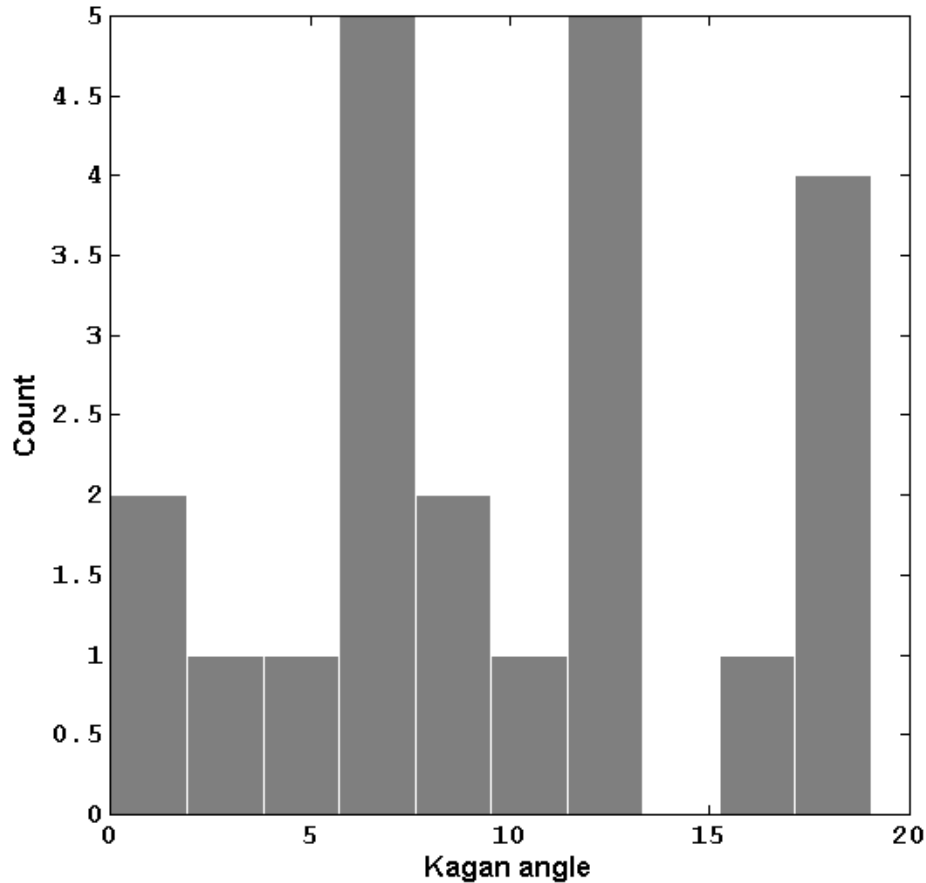
Correlation vs Depth Plot



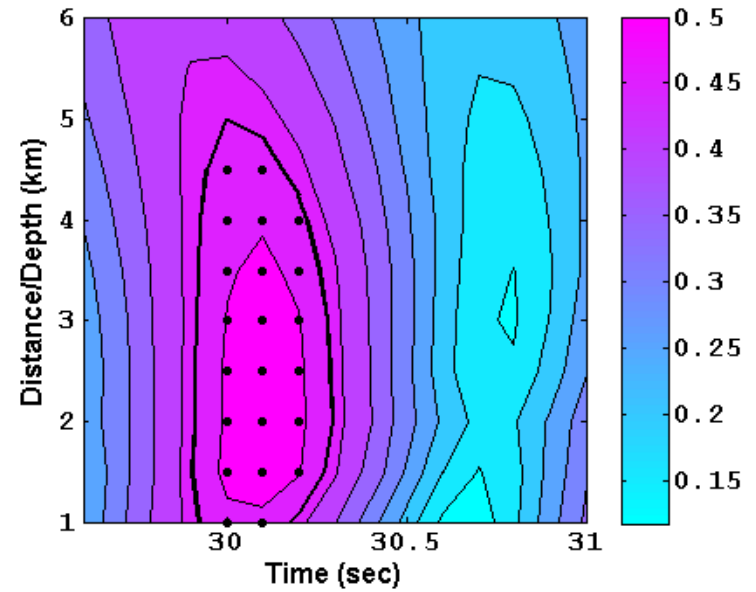
Inversion Results Plotting

Kagan angle for reference solution STR = 13 DIP = 82 RAKE = -163
Mean = 10.02 STD = 5.58 Median = 9.64 Var = 31.09

FMVAR = 10 ± 6



Maximum Correlation = 0.52 Correlation Threshold = 0.47
STVAR = 0.13



Inversion Results Plotting

MOMENT TENSOR SOLUTION

HYPOCENTER LOCATION (OVSICORI)

Origin time 20130608 07:50:04.00
 Lat 9.809 Lon -83.879 Depth 4.5

CENTROID

Trial source number : 3 (Fixed Epicenter inversion)
 Centroid Lat (N)9.809 Lon (E)-83.879
 Centroid Depth (km) : 2
 Centroid time : +30.1 (sec) relative to origin time

Moment (Nm) : 8.766e+12

Mw : 2.6

VOL% : 0

DC% : 45

CLVD% : 55

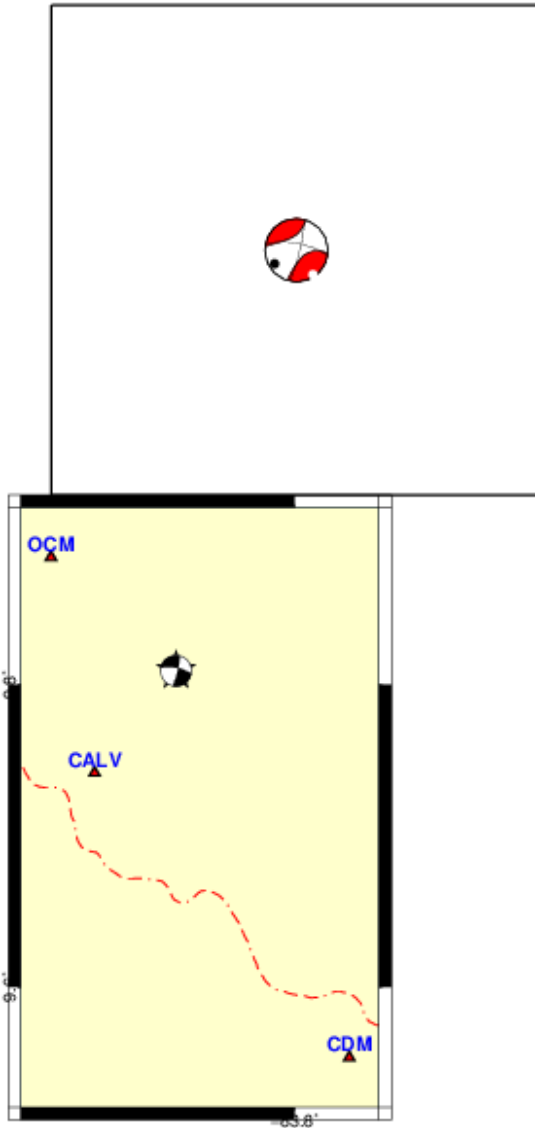
Var.red.:(for stations used in inversion):	0.27	SNR	CN	FMVAR	STVAR
Var.red.(for all stations)	:0.27	17	2.6	10±6	0.13

Strike	Dip	Rake		Frequency band used in inversion (Hz)
13	82	-163		0.2 - 0.3 -- 0.5 - 0.55

Strike	Dip	Rake		Stations-Components Used-Distance
281	74	-9		

P-axis Azimuth	Plunge		NS	EW	Z	D(km)
238	18		CALV	+	+	10
T-axis Azimuth	Plunge		OCM	+	+	12
146	6		CDM	+	+	31

Mrr	Mtt	Mpp
-2.971	4.762	-1.790
Mrt	Mrp	Mtp
-0.356	-1.760	7.500
Exponent (Nm): 12		



Polarity

