

*Strong ground motion and source
parameters During the 31 March 2006
Darb-e-Astane (Silakhor) earthquake*

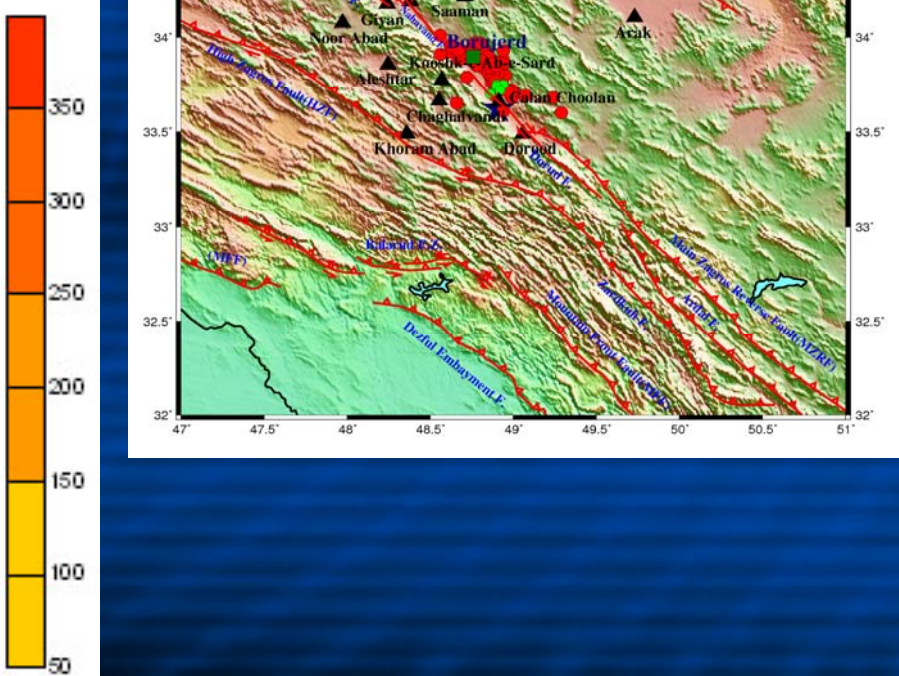
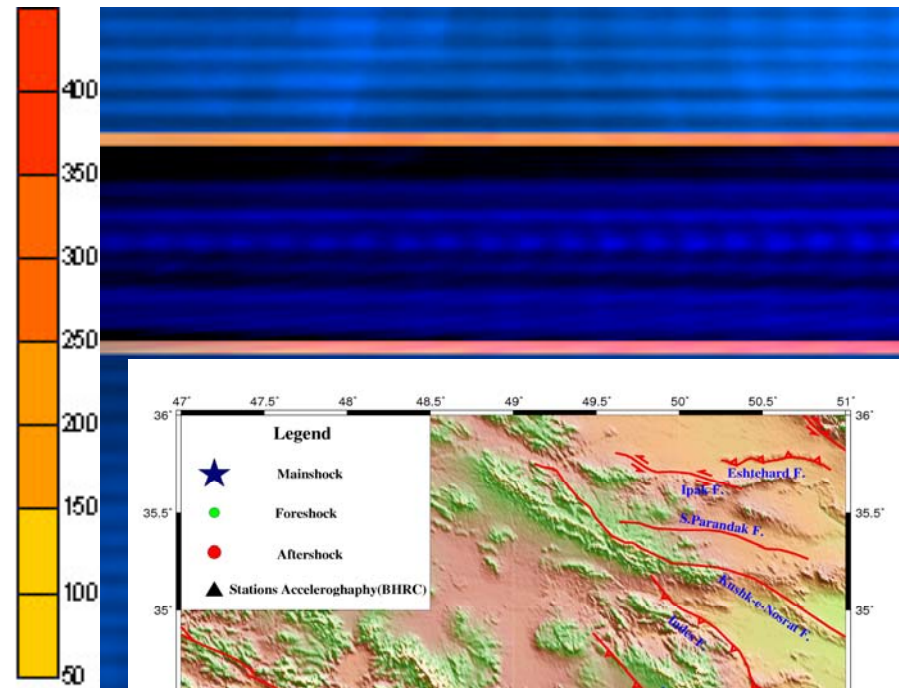
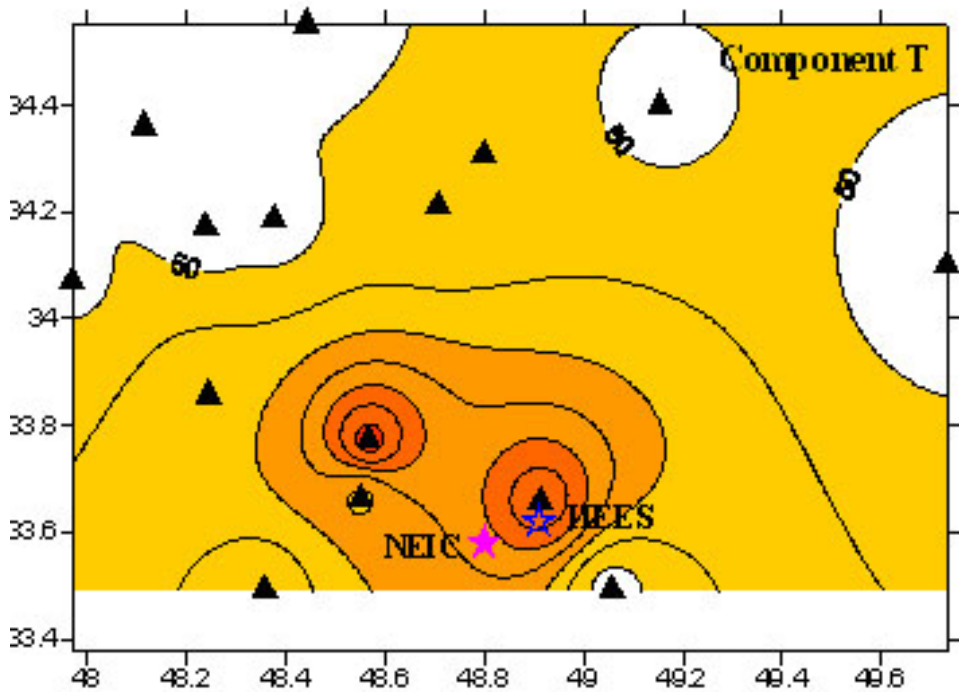
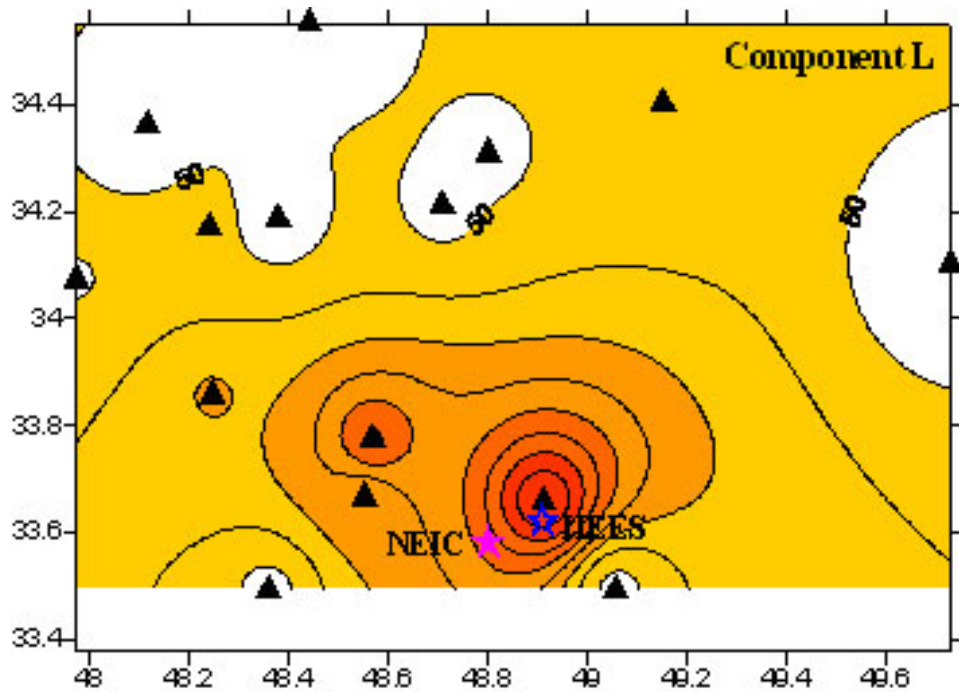
H.Hamzehloo

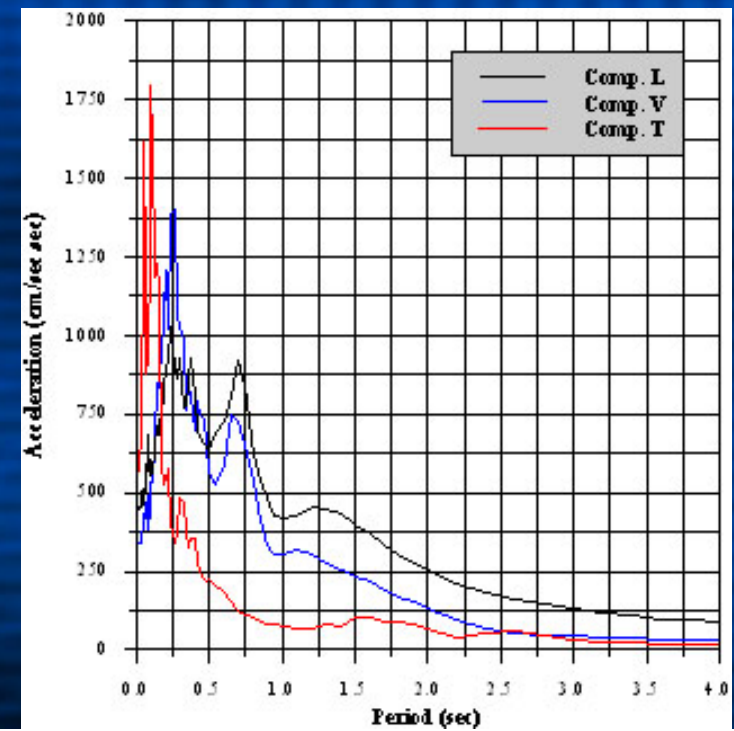
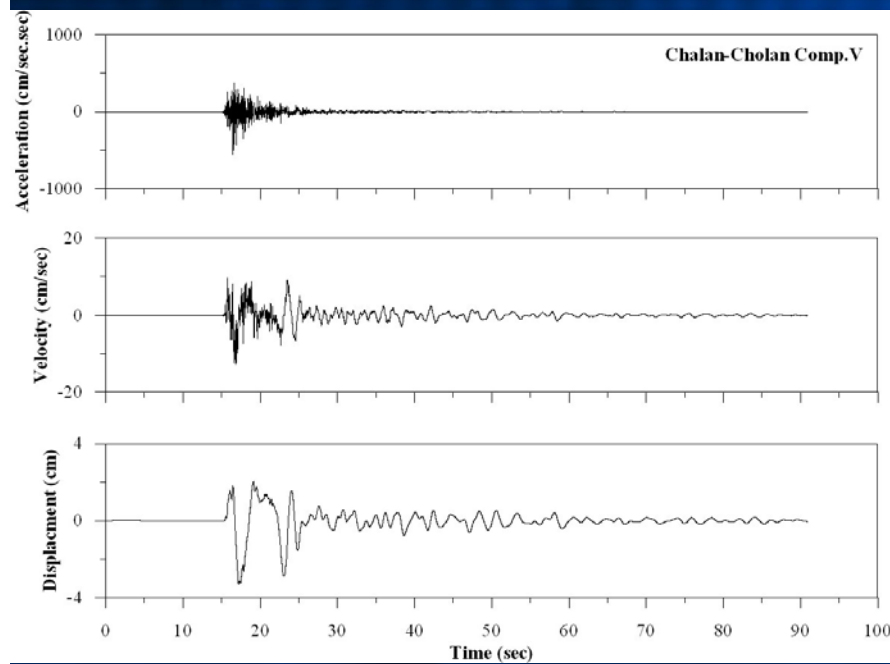
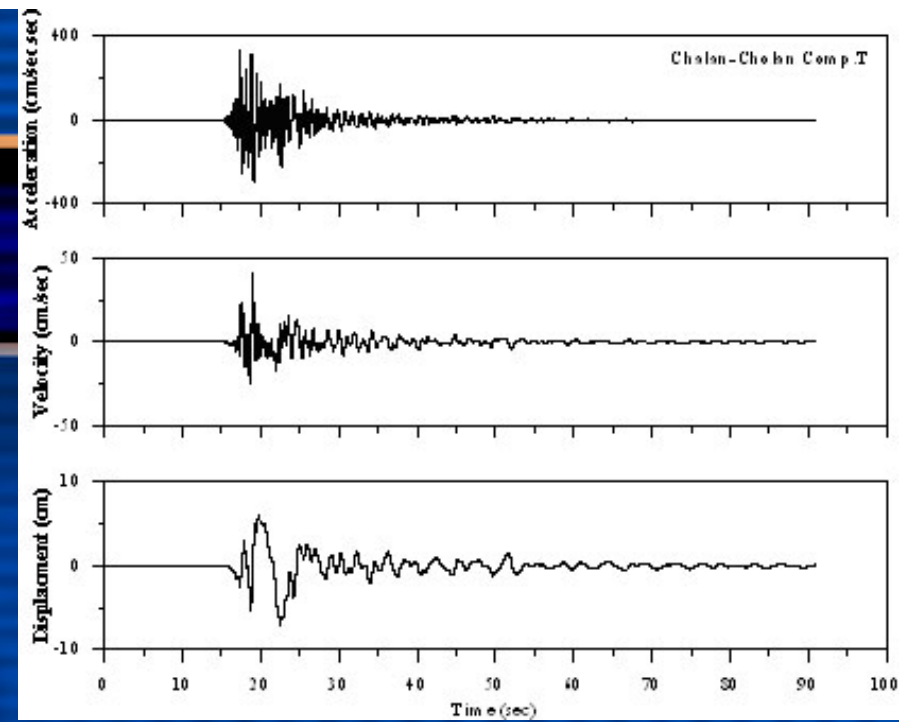
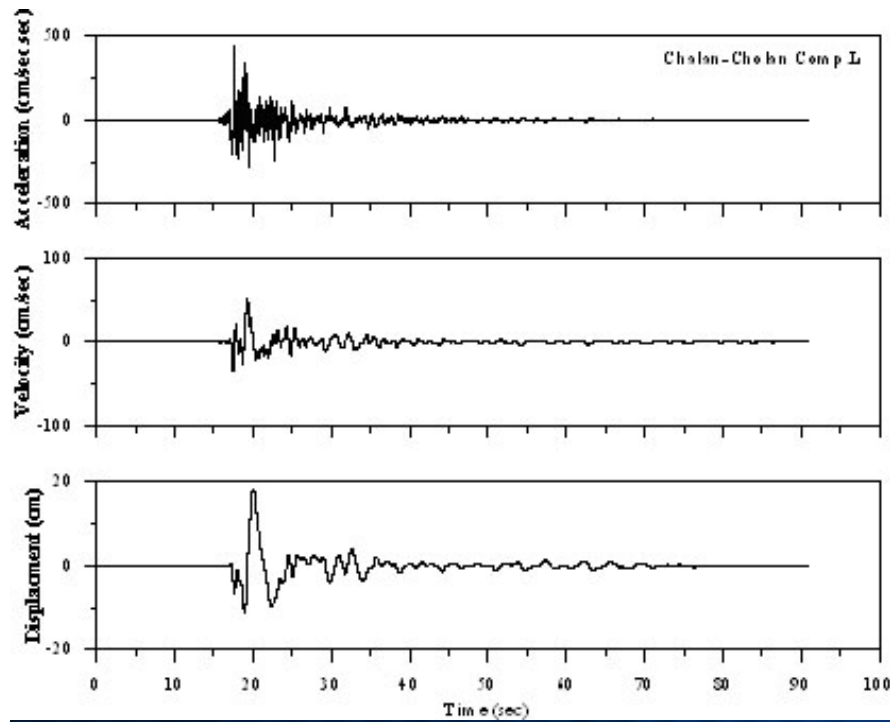
*International Institute of Earthquake
Engineering and Seismology*

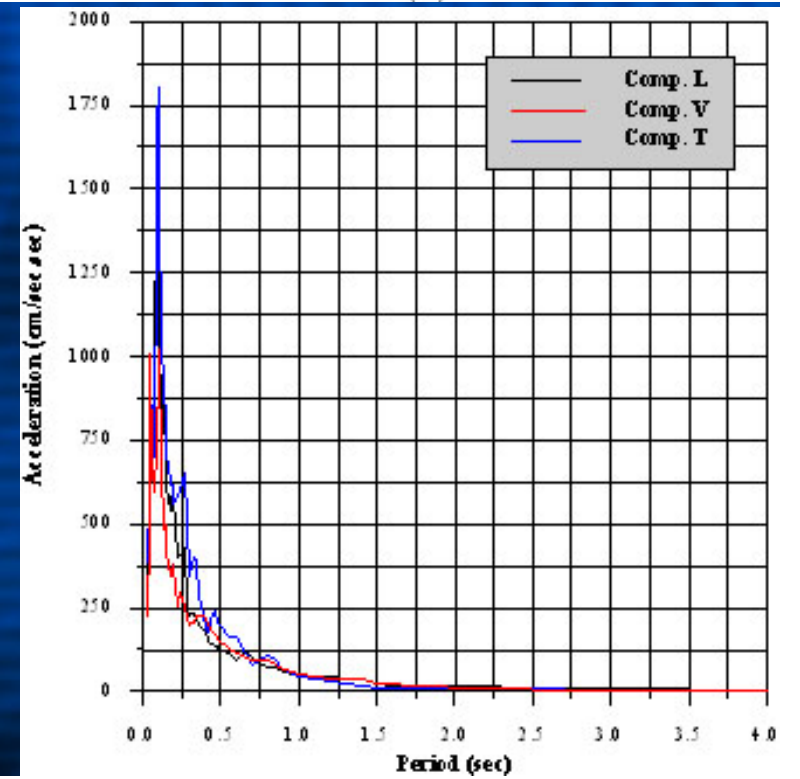
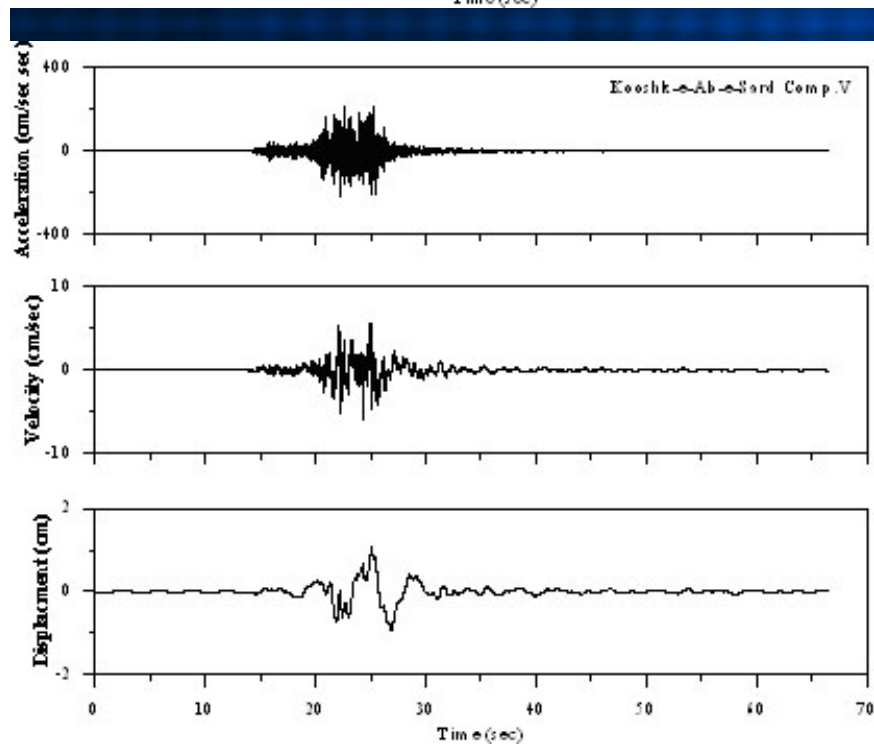
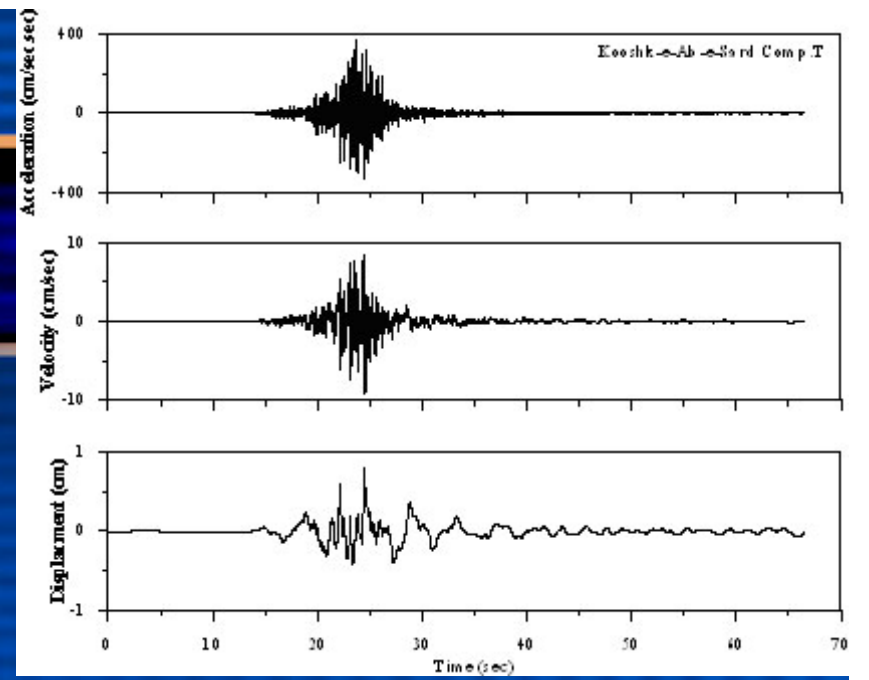
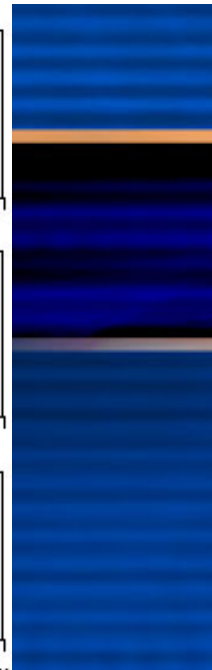
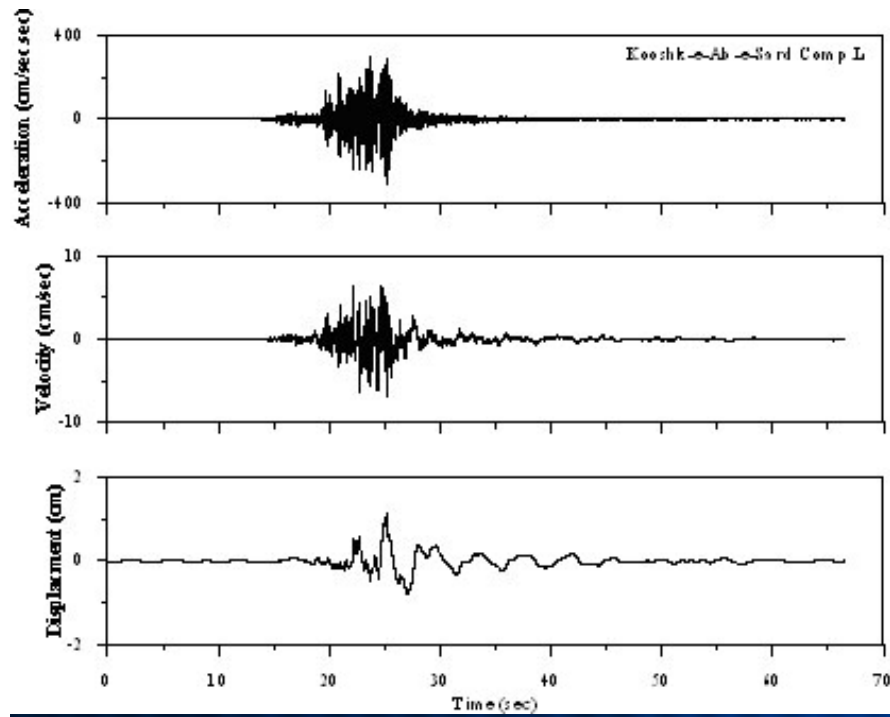
- Epicenter: 48.91, 33.62 (IIEES)
- Depth 14 (km)
- M_L : 6.1
- P.G.A.H: 446 cm/s.s
- P.G.A.V: 561 cm/s.s.
- M_L^{SGM} : 6.1 ± 0.1
- M_W^{SGM} : 6.0 ± 0.1

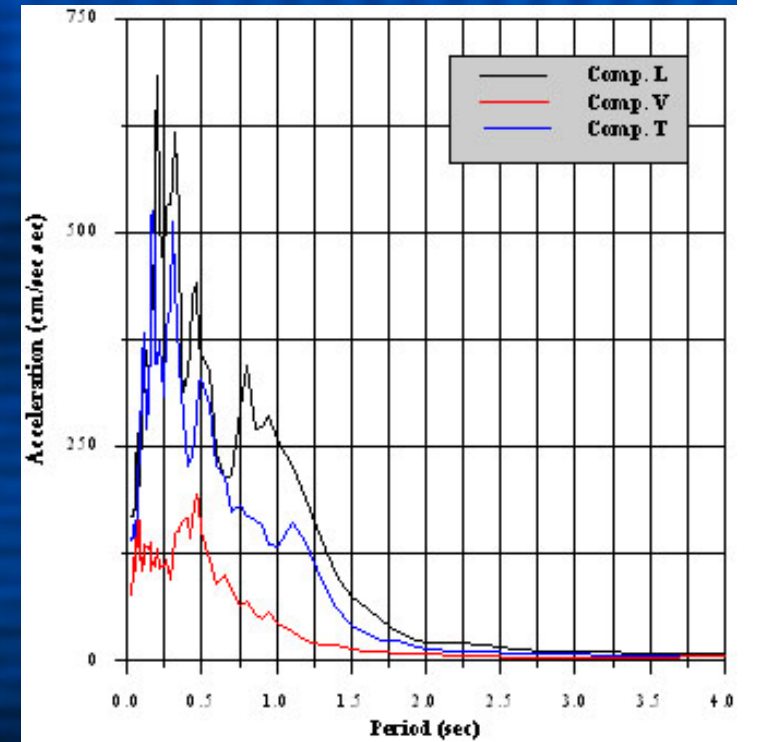
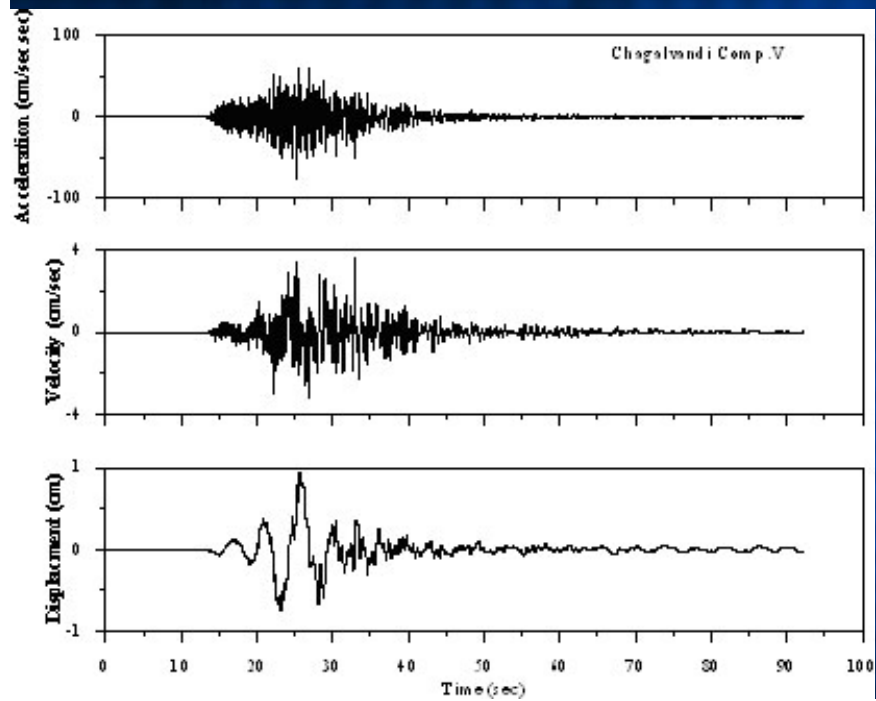
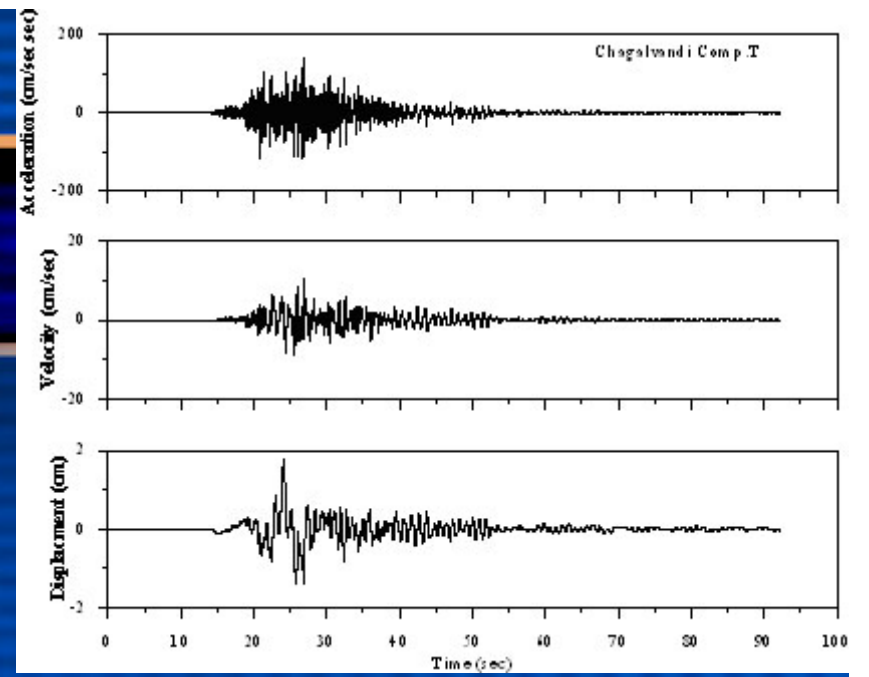
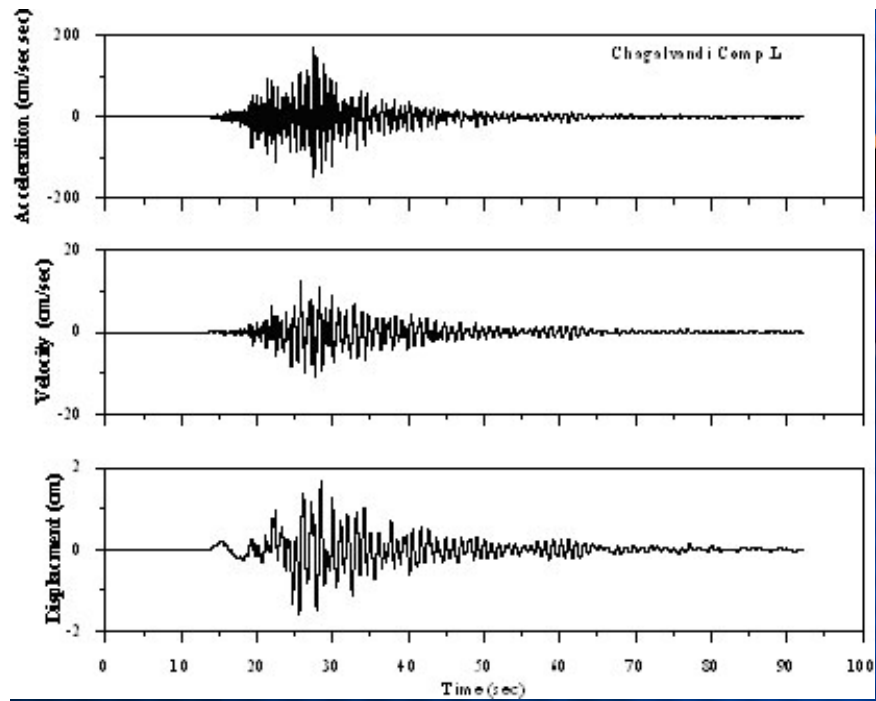
No	Station	Record No.	Geog. Coord.		U.P.G.A (cm/s/s)			Altitude (m)	Azimuth		Epicenter		F.D (km)	Magnitude		Ref.
			E	N	L	V	T		L	T	E	N		M	ML	
1	Chaghalvandi	4018/03	48.553	33.664	172	73	154	1660	110	200	48.99	33.64	-	-	-	BHRC
2	Khoram Abad	4019/02	48.359	33.491	37	16	61	1045	3	93						
3	Saaman	4020	48.708	34.21	37	43	58	1800	207	297						
4	Toyserkan	4021	48.442	34.552	12	7	13	1850	230	320						
5	Dorood	4022/02	49.059	33.491	37	33	36	1683	215	305	48.86	33.48	18	5.9	-	IGTU
6	Noor Abad	4024	47.972	34.072	49	16	38	1756	156	246						
7	Aleshtar	4025	48.246	33.856	154	71	148	1255	15	105						
8	Firoozan	4026	48.115	34.36	24	13	23	1542	215	305	48.91	33.62	14	-	6.1	IIEES
9	Chalan Choolan	4027/08	48.913	33.659	432	524	357	1538	99	189						
10	Khondab	4028/01	49.154	34.401	52	21	34	1685	45	135						
11	Malayer	4029	48.801	34.309	45	32	51	1776	20	110						
12	Givan	4033	48.241	34.172	59	20	30	1617	22	112						
13	Kooshk-e-Ab-e-Sard	4035/03	48.569	33.773	328	237	394	1827	342	72	48.8	33.58	10	5.7	-	NEIC
14	Nahavand	4038	48.378	34.186	18	15	28	1691	92	192						
15	Arak	4039	49.731	34.101	8	9	11	1760	242	332						

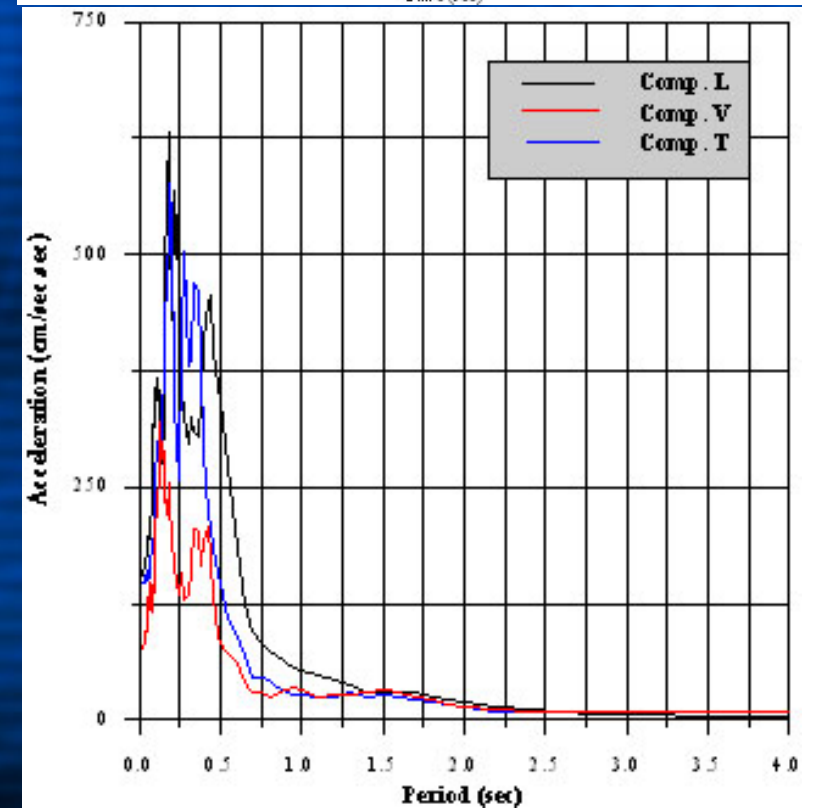
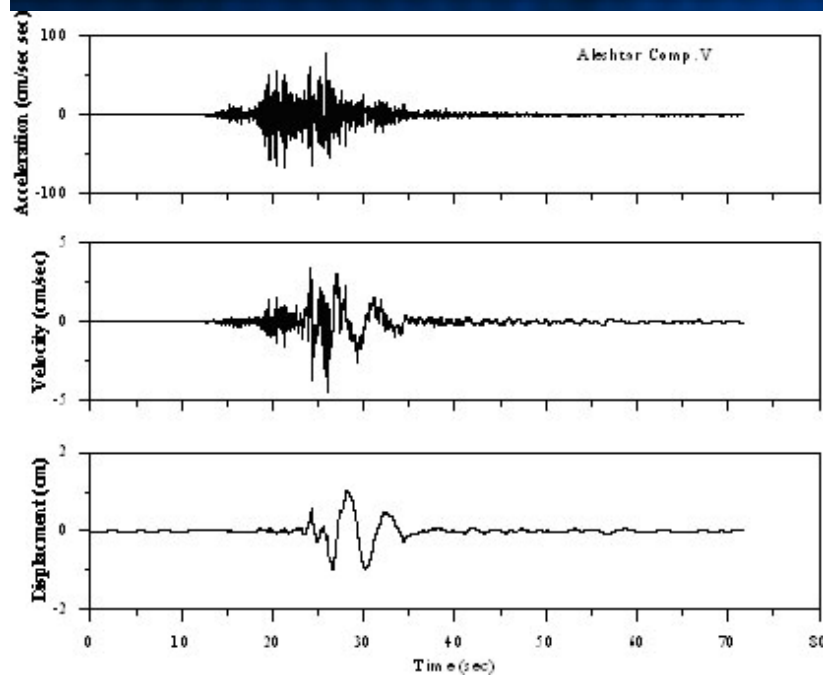
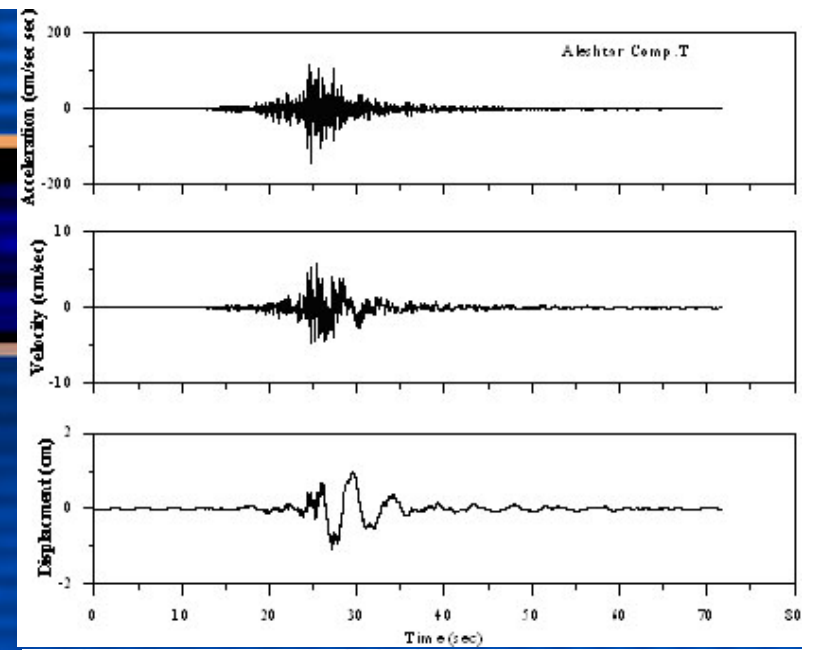
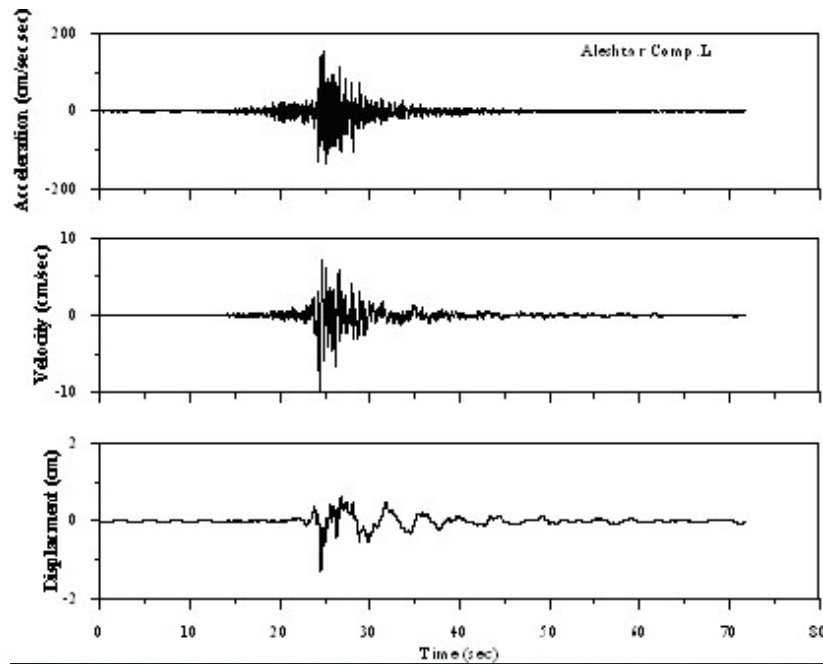


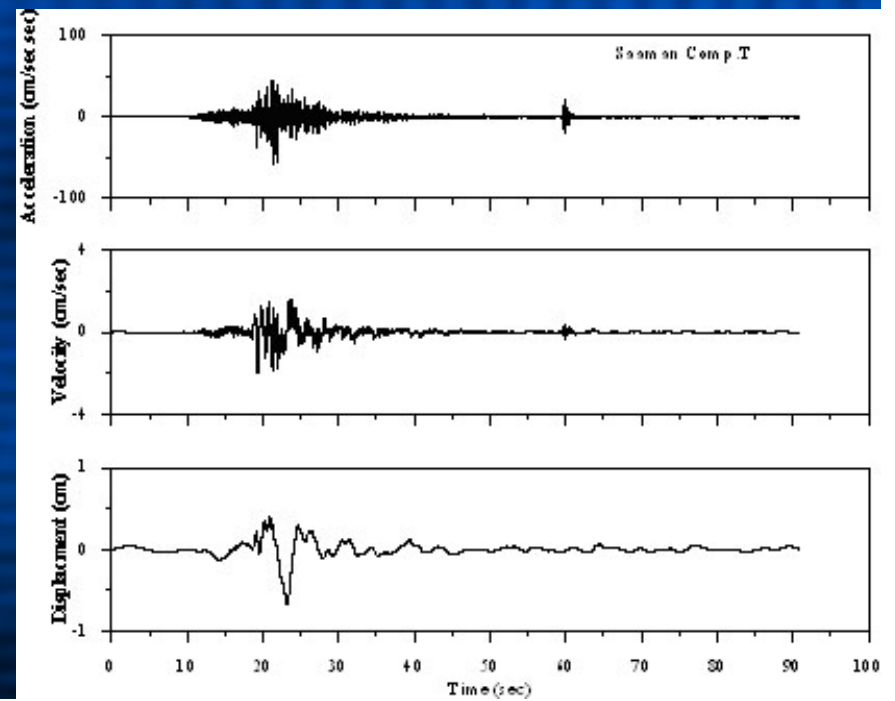
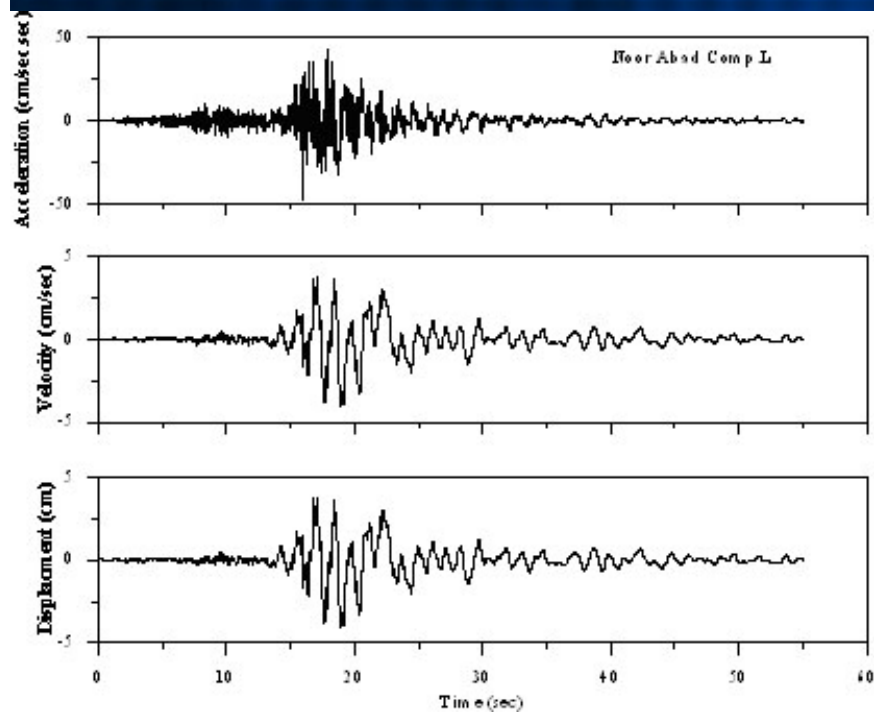
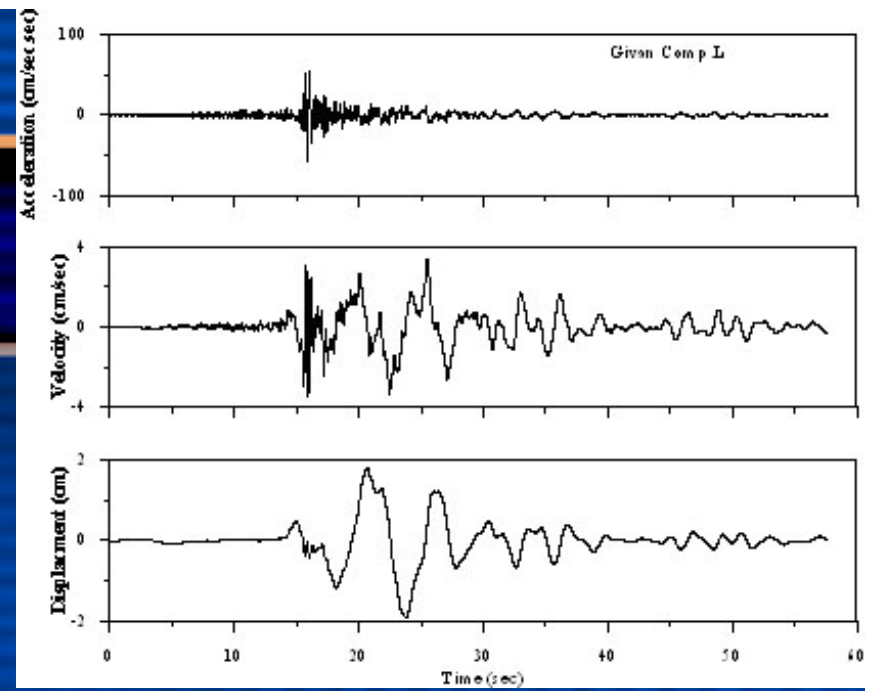
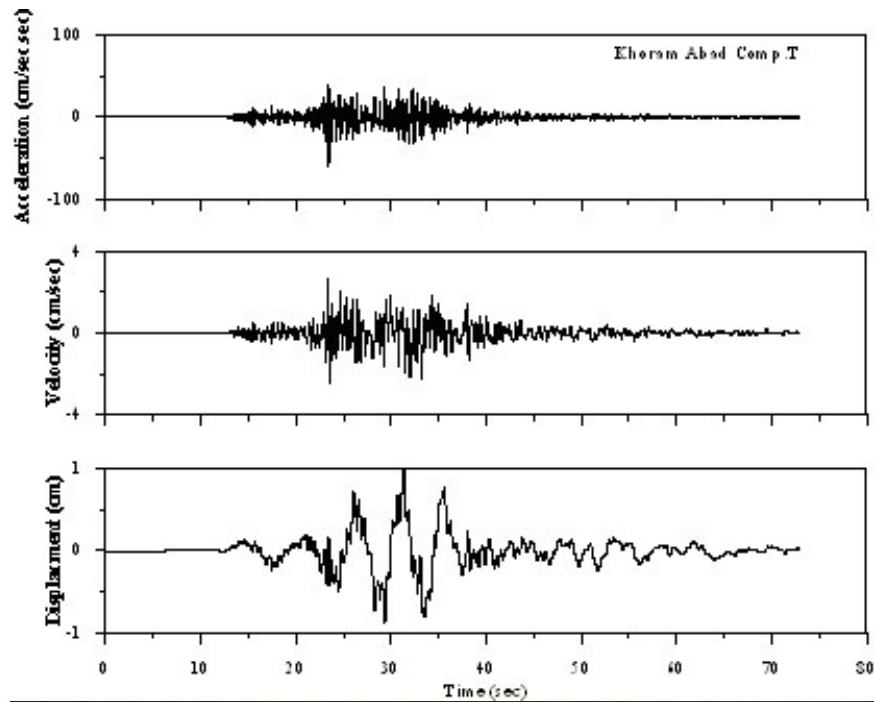


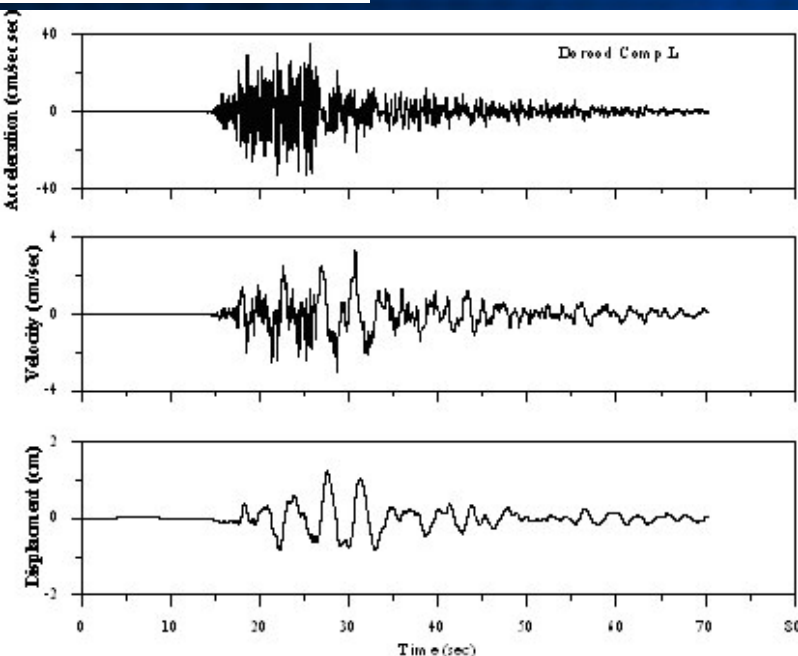
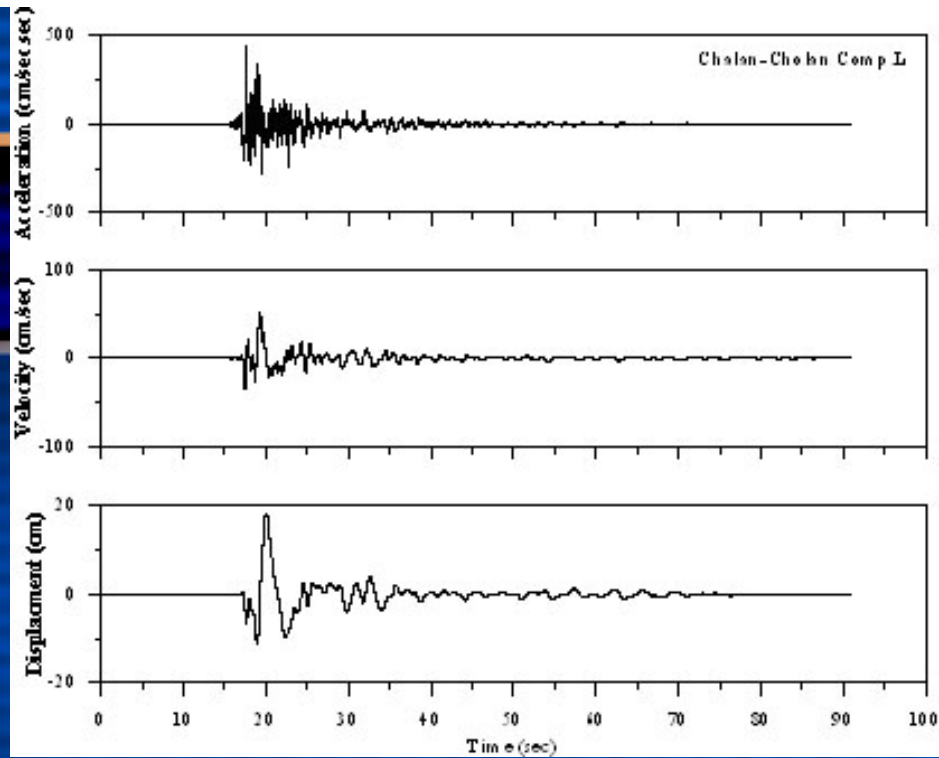
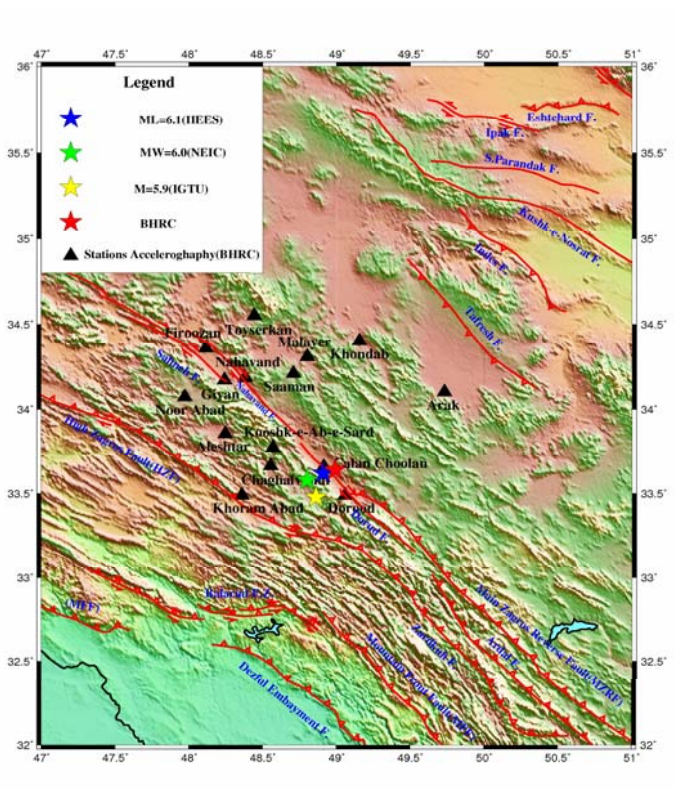


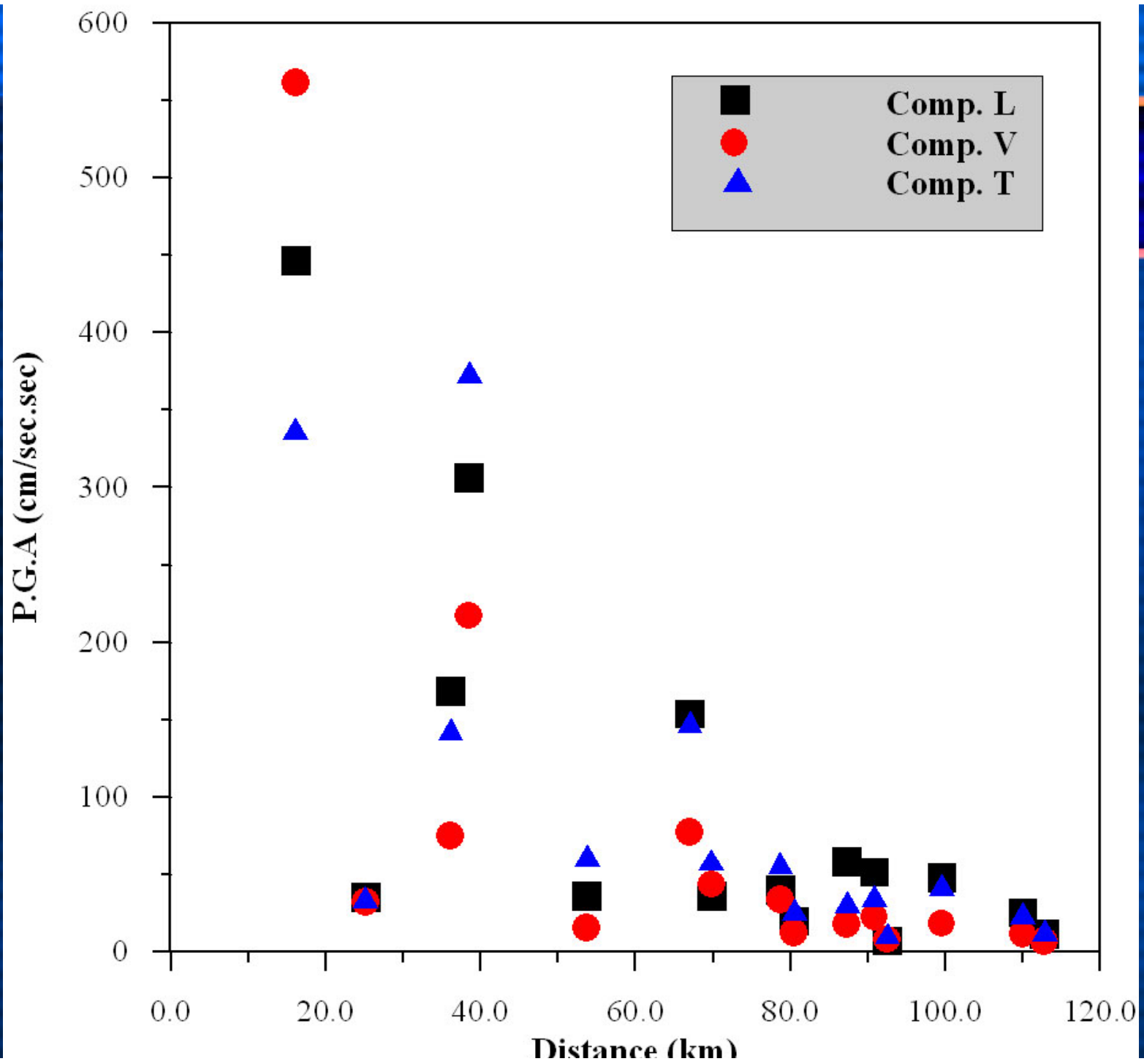






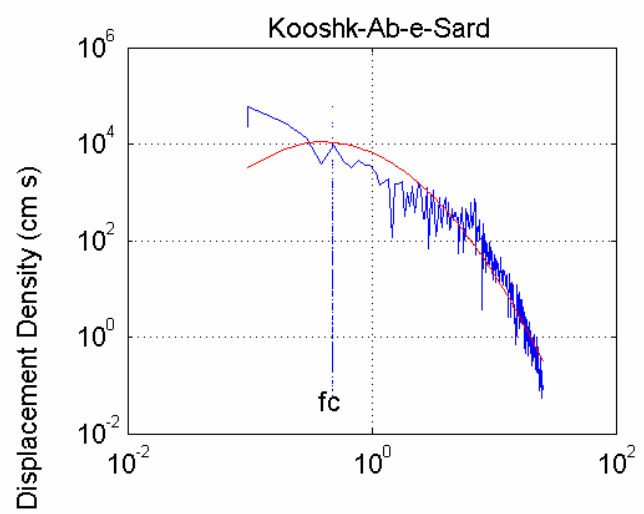
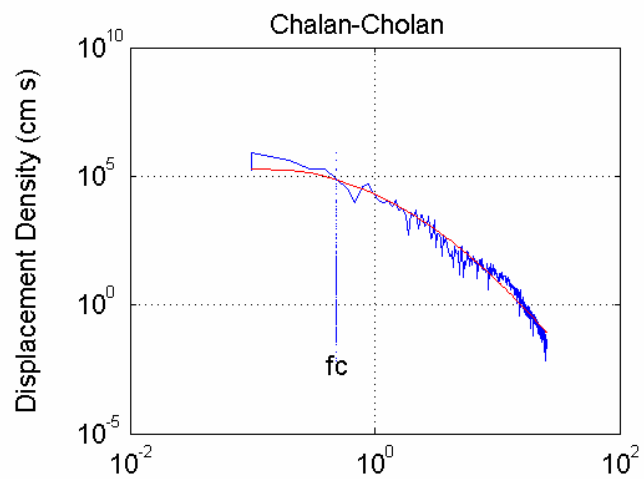
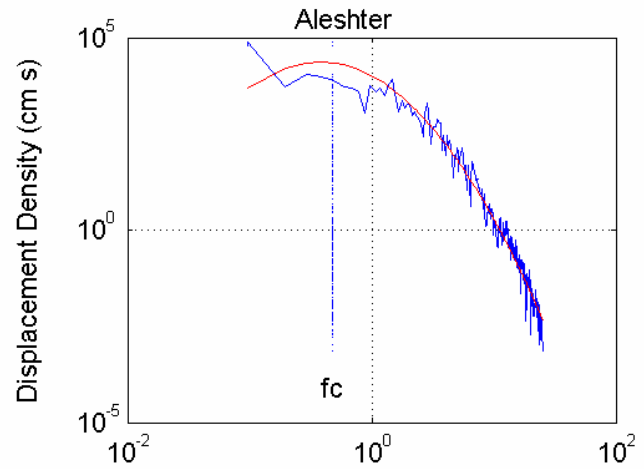
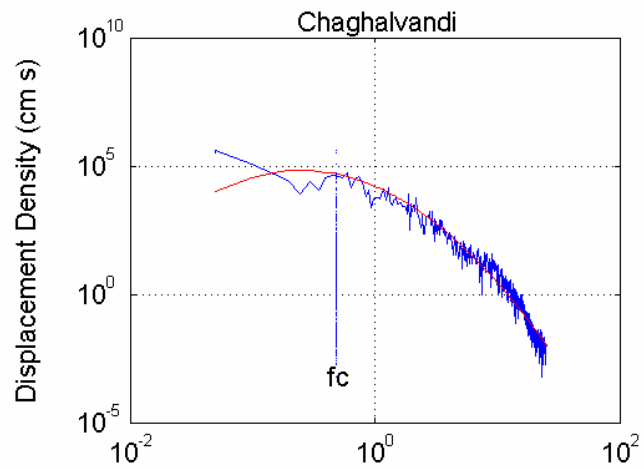


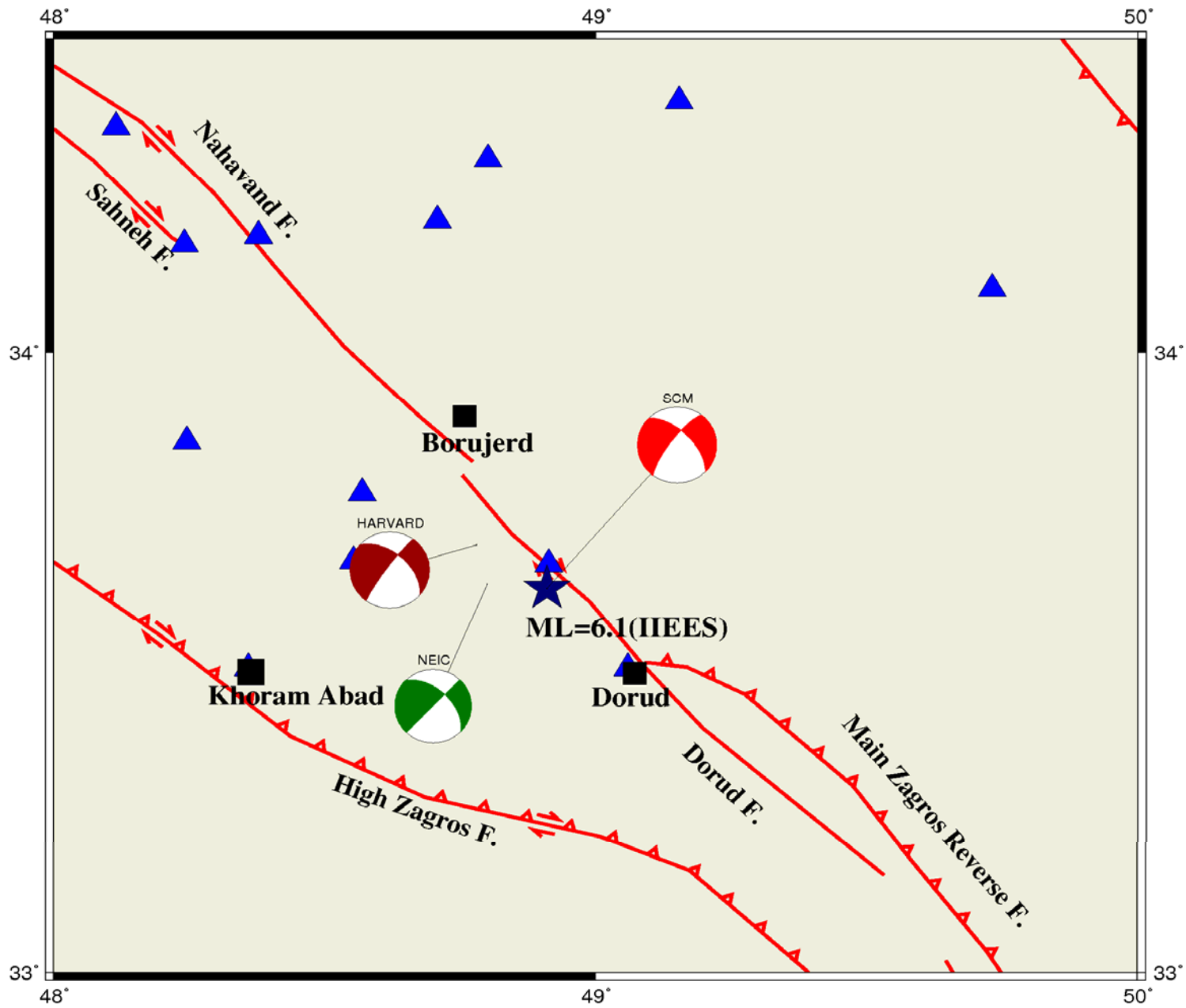




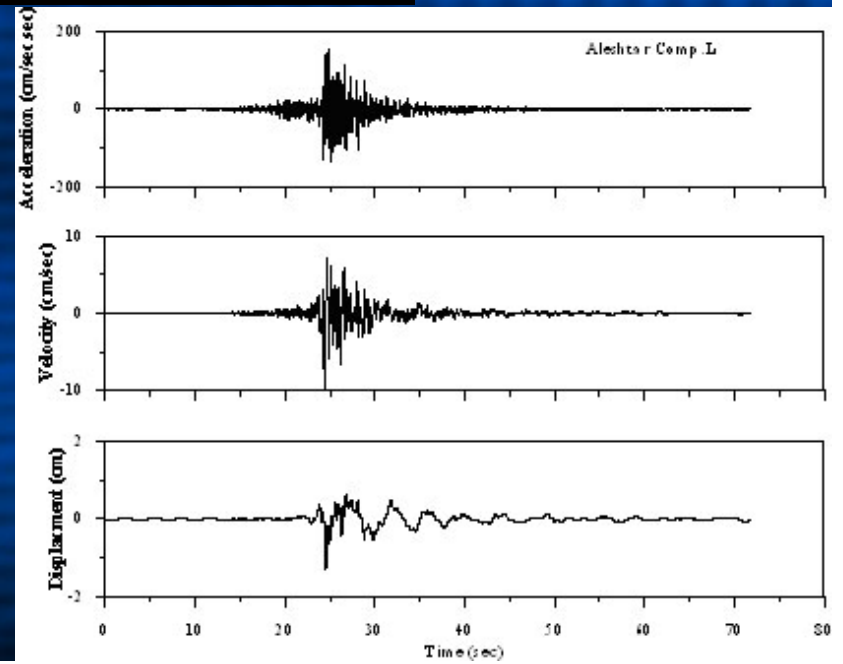
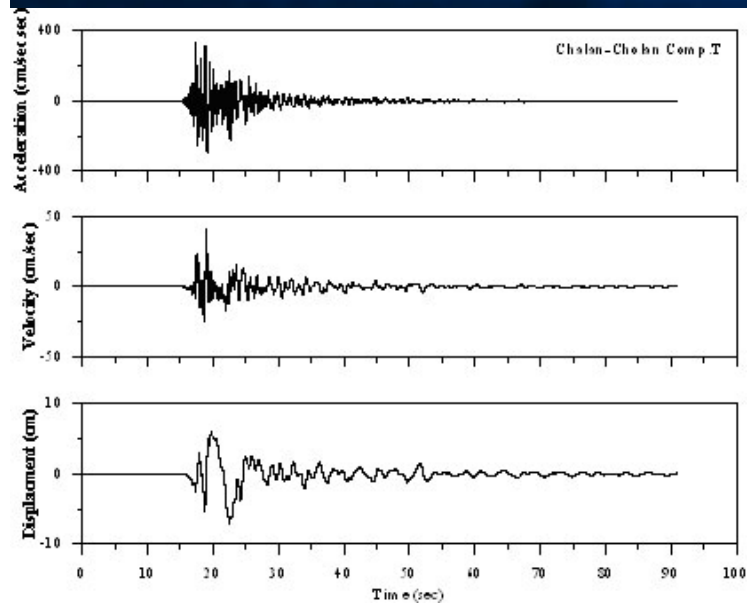
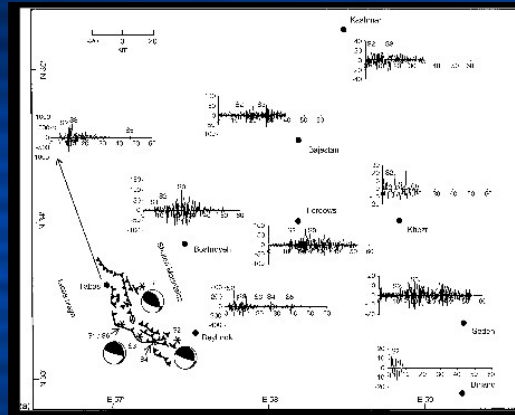
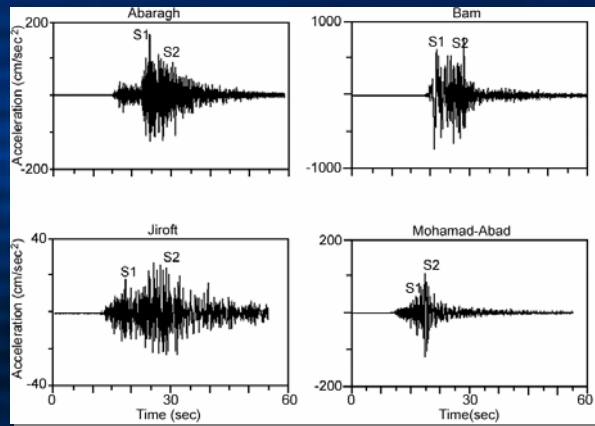
Source parameters from strong ground motion data

station	R(Km)	M_w	f_c	$M_0(\text{dyn-cm}) * 10^{25}$	r(km)	$\Delta \sigma$ (bar)	Δu (cm)
Chaghlvandi	39.82	6	0.27	1.12	4.7	45	45
Khoram Abad	61.99	6	0.33	1.12	3.9	84	68
Saaman	48.69	5.9	0.31	0.8	4.1	51	44
Toyserkan	85.96	6	0.25	1.12	5.1	37	39
Dorood	19.05	5.7	0.24	0.4	5.4	11	12
Noor Abad	109.5	6.2	0.21	2.24	6.3	40	52
Aleshtar	75.8	6.1	0.33	1.6	3.9	119	96
Chalan Choolan	19.0	5.9	0.14	0.8	9	5	9
Khondab	63	6	0.25	1.12	5.1	37	39
Malaver	51.9	6	0.22	1.12	5.8	25	30
Givan	84.8	6.1	0.16	1.58	8.1	13	22
Kooshk-e-Abe-Sard	39.6	6	0.43	1.12	3	179	11
Nahavand	72.3	6.1	0.13	1.58	10.2	7	14
Arak	97.8	6.1	0.18	1.58	7.4	17	26





- $M_W=6.0\pm 0.1$
- Stress drop: 48 bar
- Source radius: 5.8 km
- Strike=315, dip=61 slip=-164 (estimated from strong ground motion data)



Conclusions

- Maximum peak ground acceleration of 561 cm/s.s for vertical component and 447 cm/s.s for horizontal component was recorded at Chalan-Cholan station .
- Two sub-events was identified on the recorded strong ground motion records.
- The estimated local magnitude from strong ground motion for this earthquake is 6.1.