

# ANEXO A: SISMOGRAMAS SISMO DE 4 DE DICIEMBRE DE 1948

---

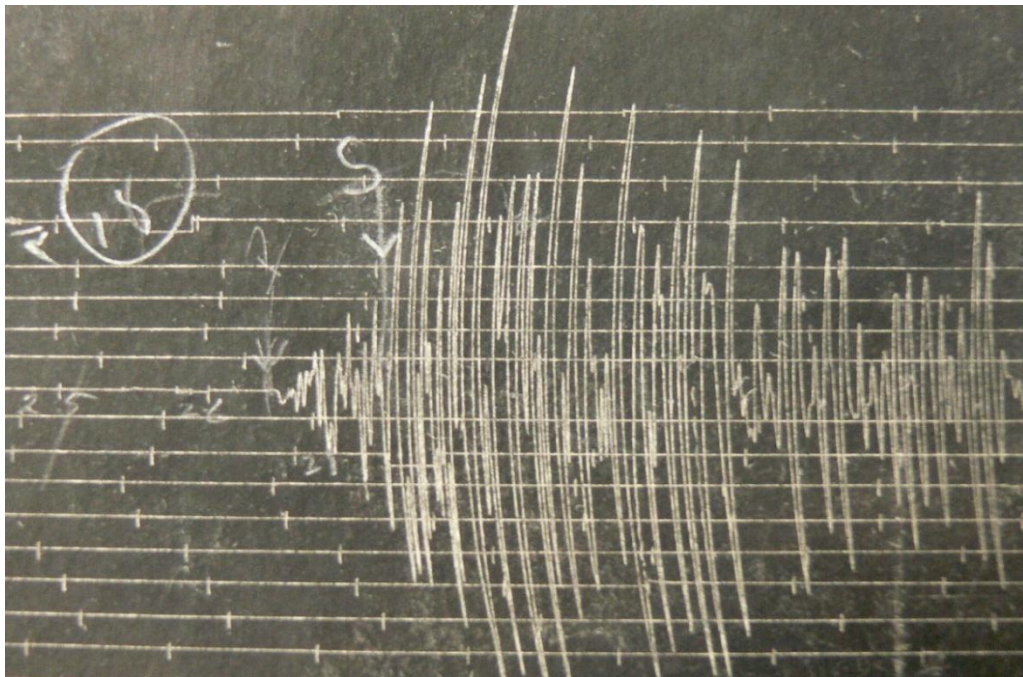


Figura 1. Guadalajara componente EW

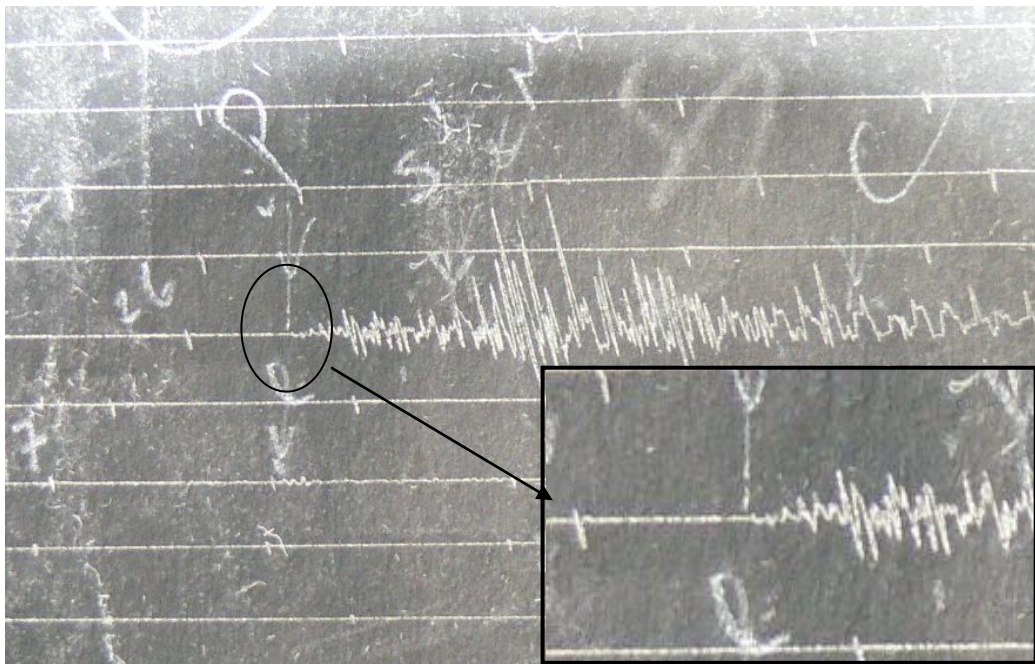


Figura 2. Guadalajara componente Z. El recuadro muestra un acercamiento de la llegada de la onda P señalada en el círculo.



Figura 3. Mazatlán componente Z

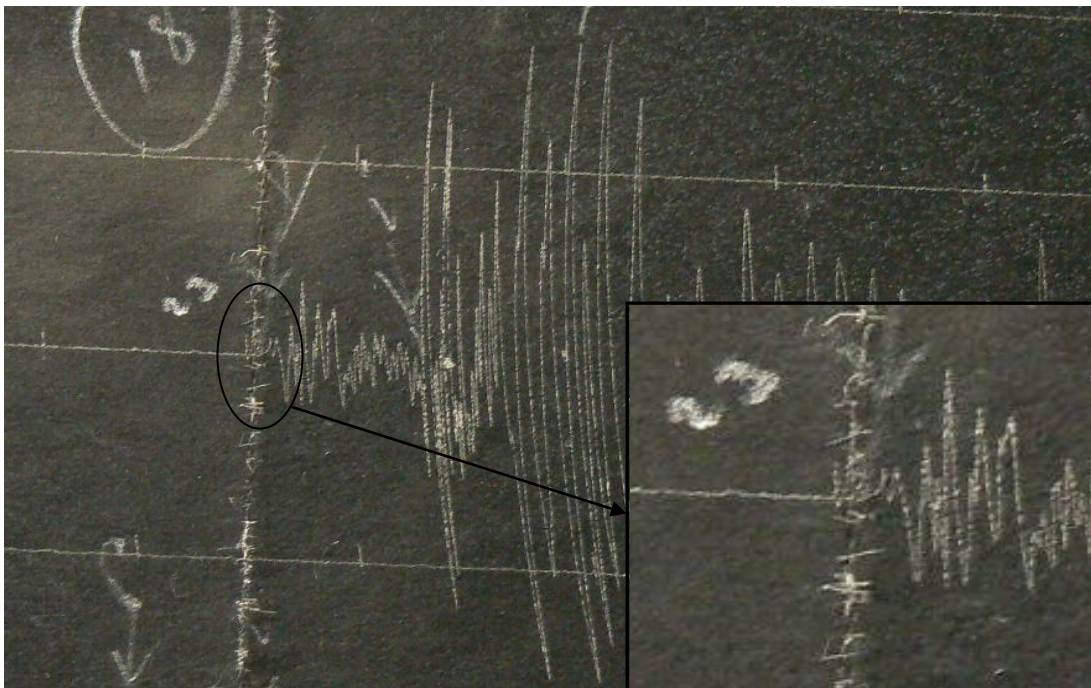


Figura 4. Manzanillo componente Z. El recuadro muestra un acercamiento de la llegada de la onda P señalada en el círculo.

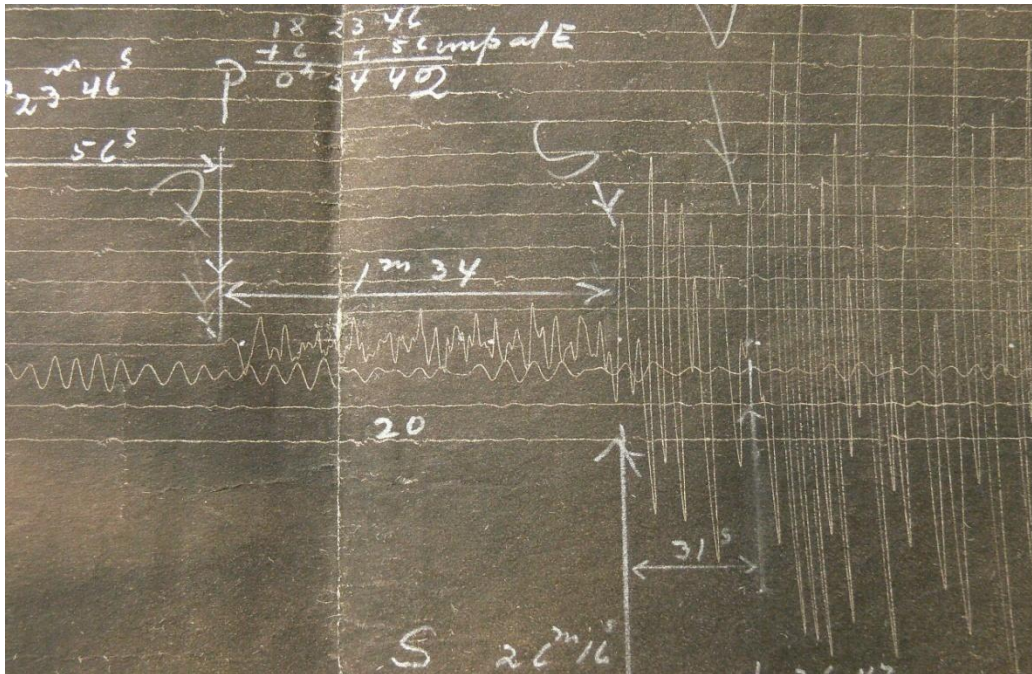


Figura 5. Tacubaya componente EW

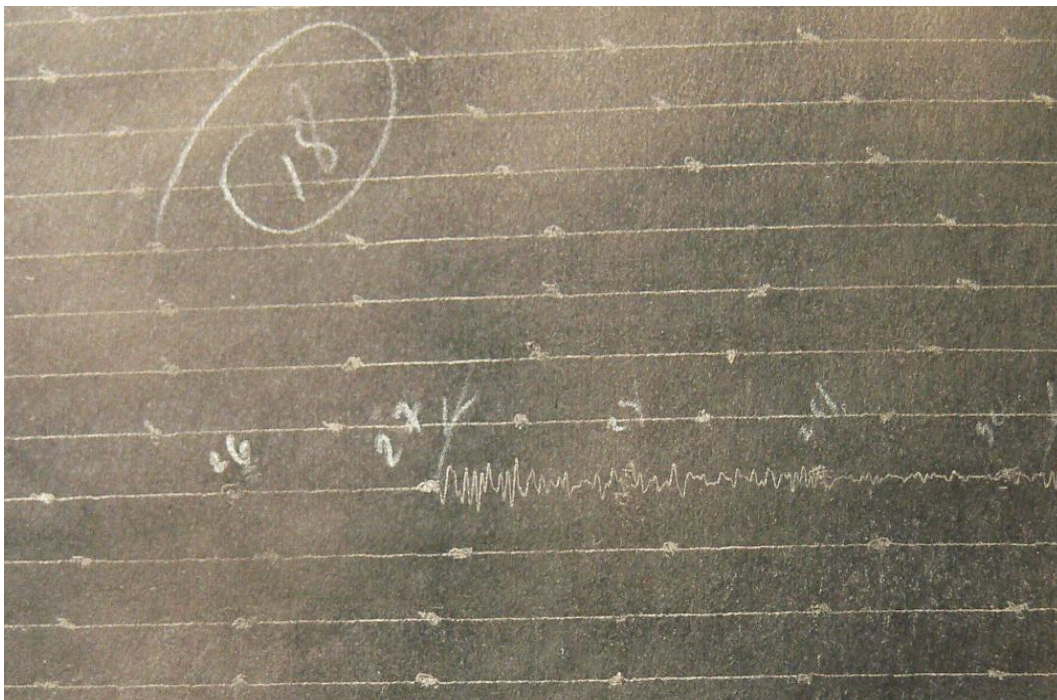


Figura 6. Mérida componente EW

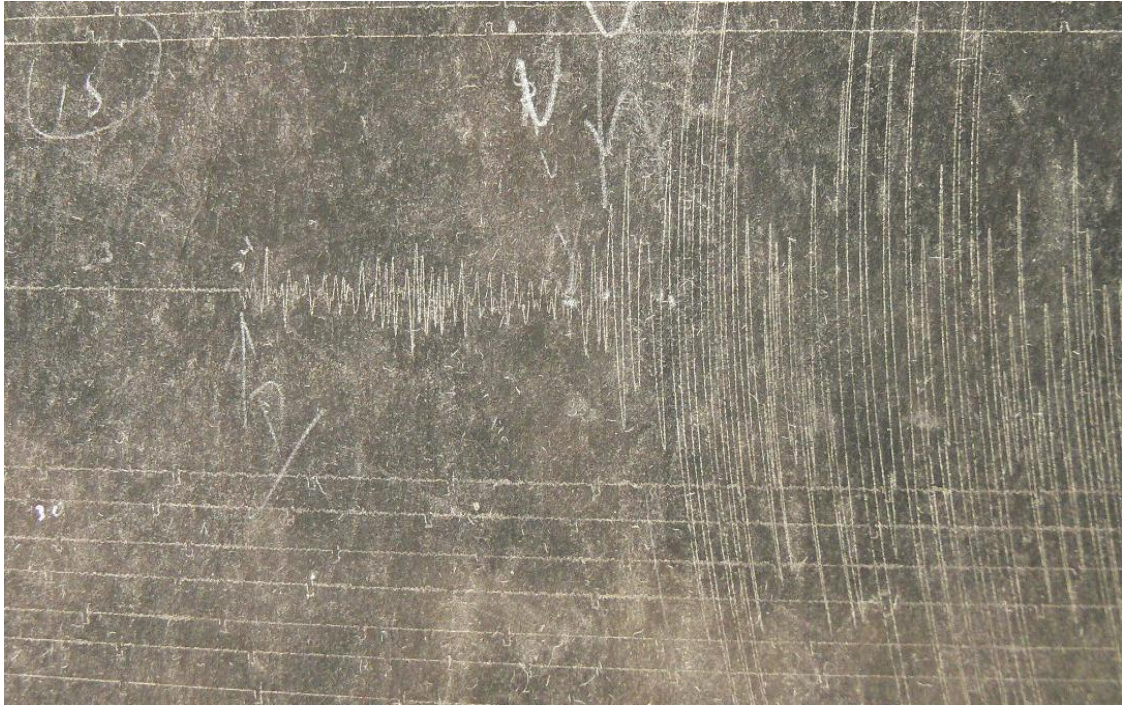


Figura 7. Veracruz componente EW

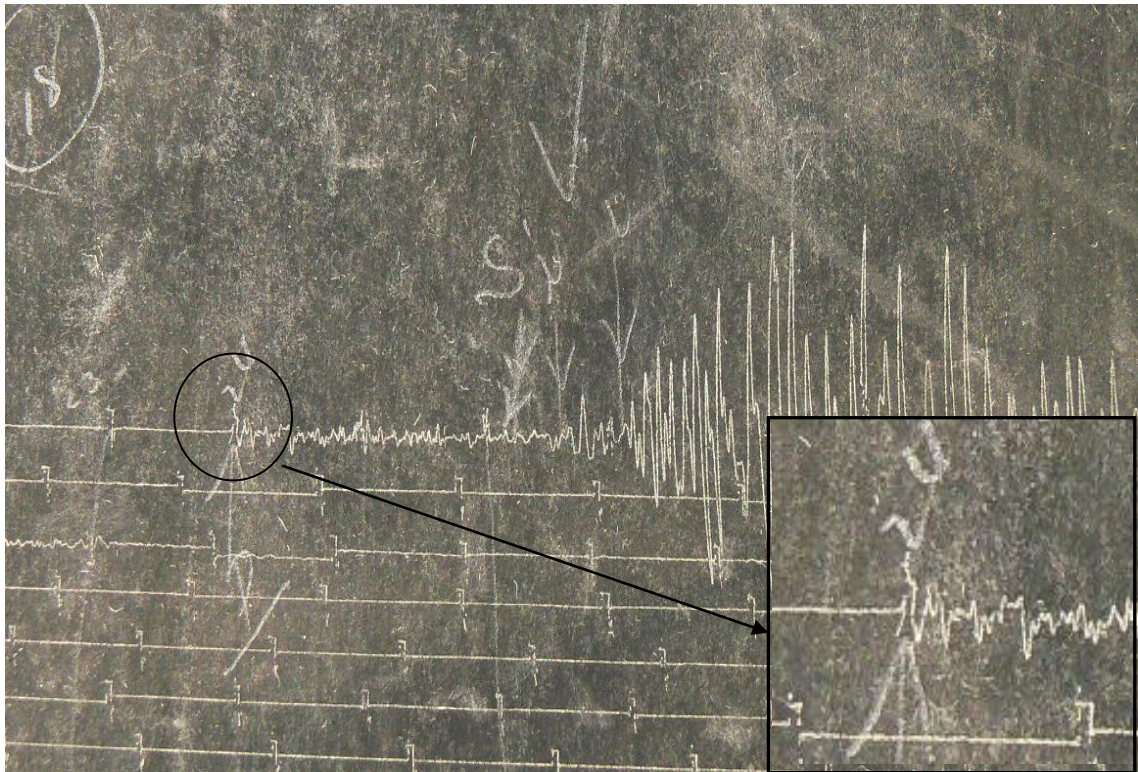


Figura 8. Veracruz componente Z. El recuadro muestra un acercamiento de la llegada de la onda P señalada en el círculo.

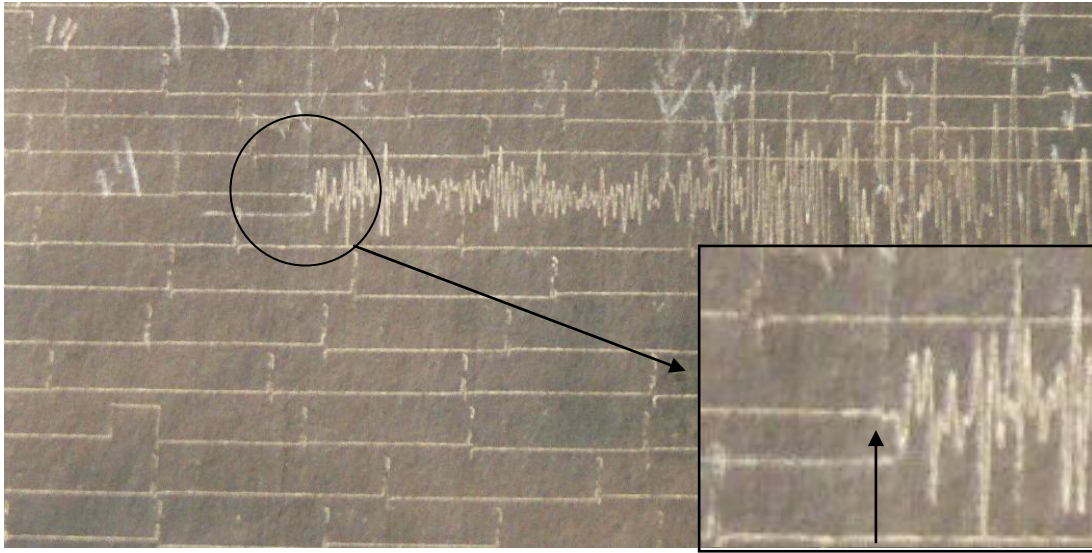


Figura 9. Puebla componente EW. El recuadro muestra un acercamiento de la llegada de la onda P marcada con la flecha y señalada en el círculo.

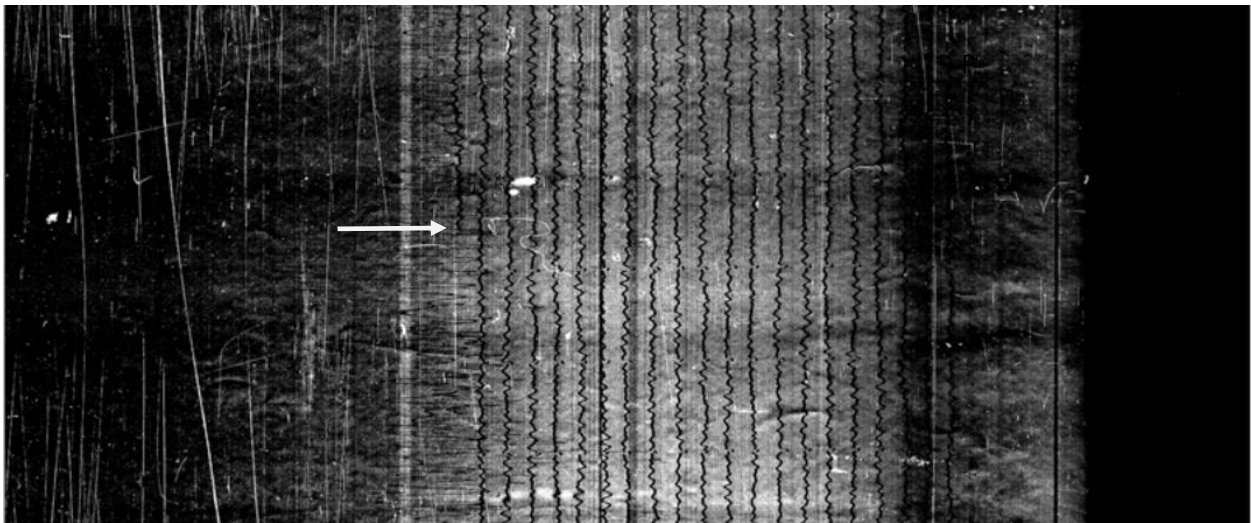


Figura 12. Tucson componente Z. La flecha indica la onda P

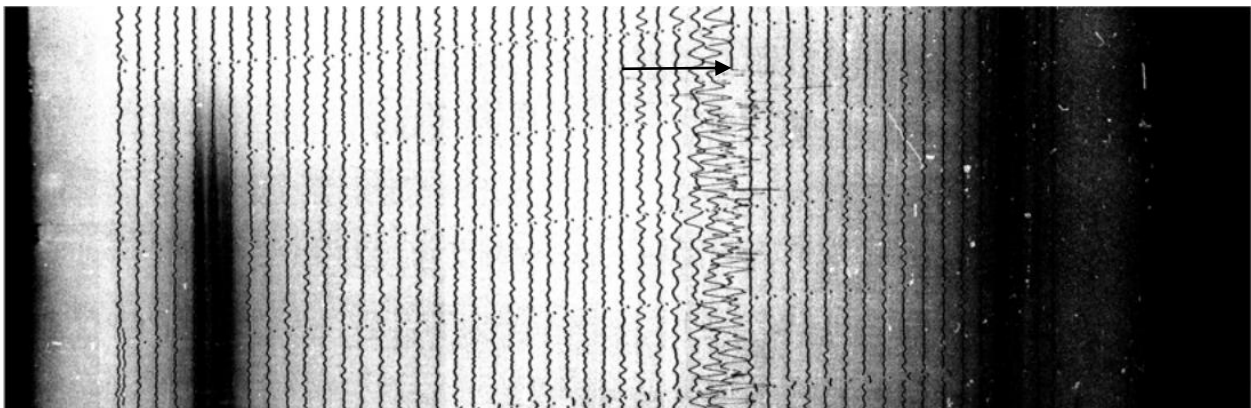


Figura 13. Pasadena componente Z. La flecha indica la onda P

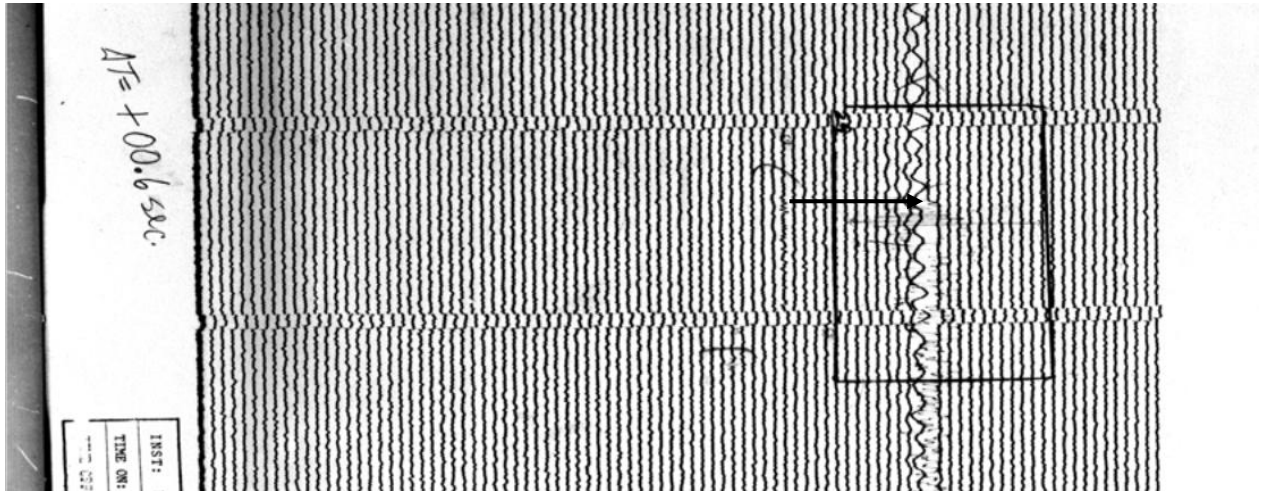


Figura 14. Monte Hamilton componente Z. La flecha indica la onda P

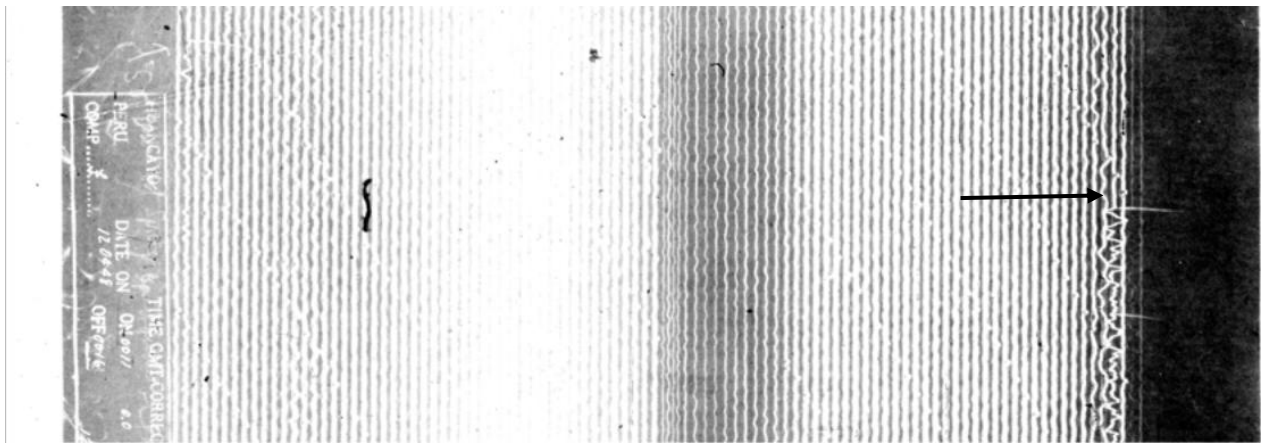


Figura 15. Huancayo componente Z. La flecha indica la onda P

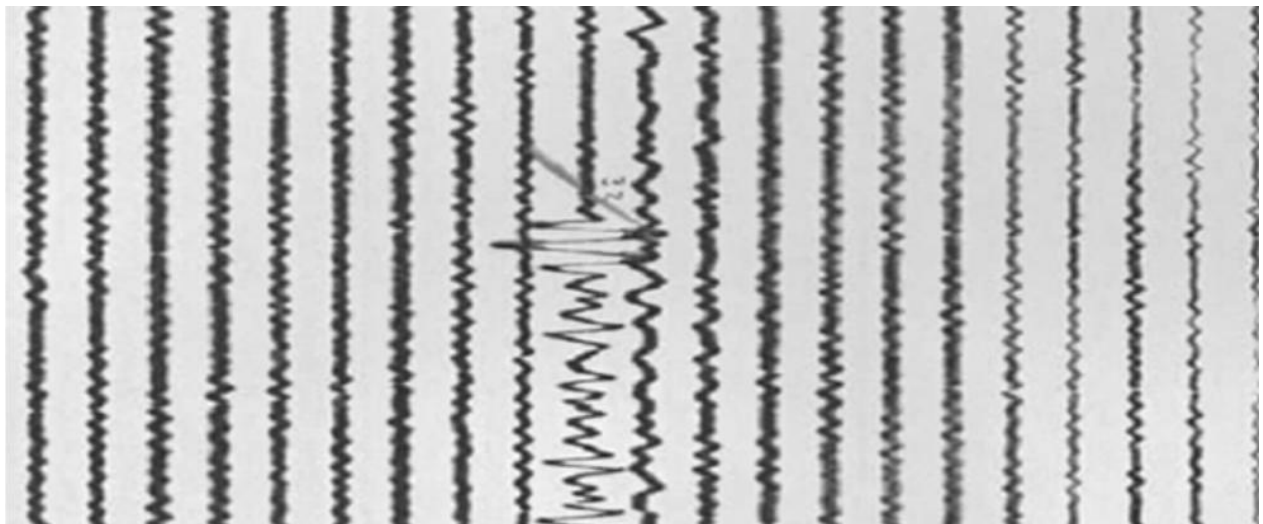


Figura 16. La Paz componente Z

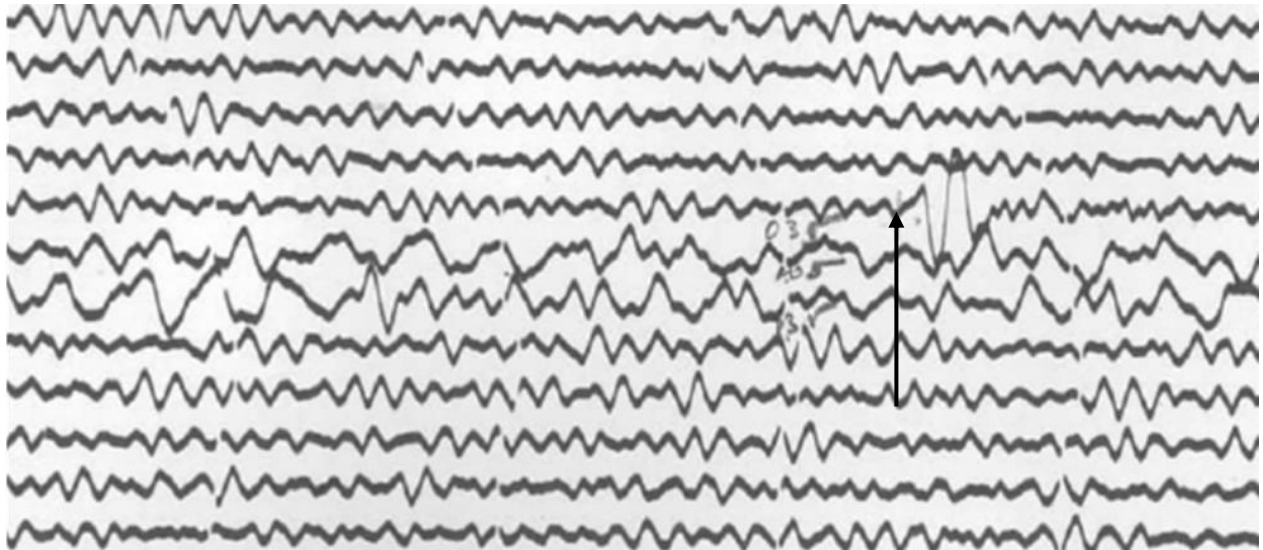


Figura 17. De Bilt componente Z. La flecha indica la onda P

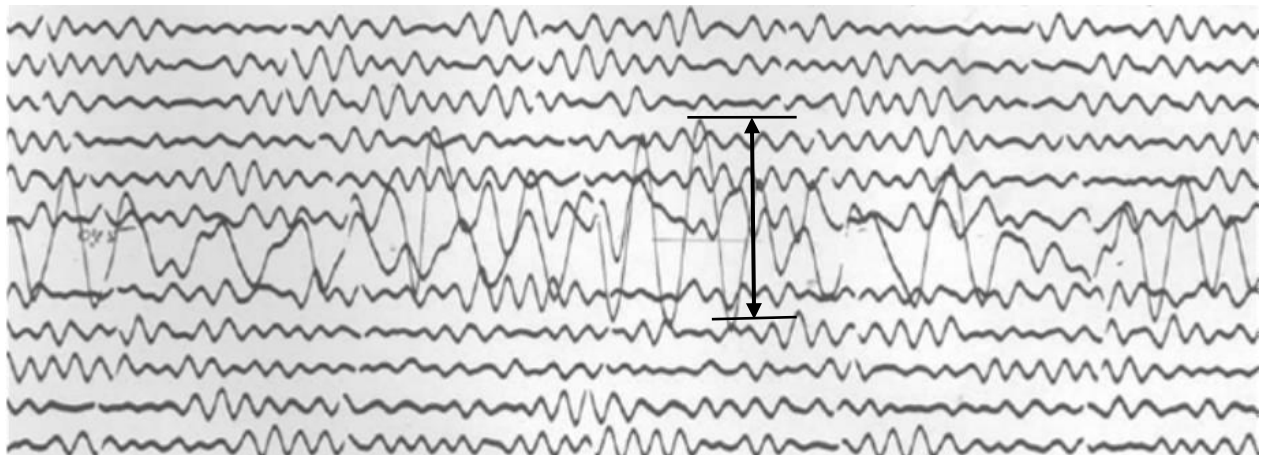


Figura 18. De Bilt componente EW. La flecha indica la amplitud de la onda superficial utilizada en el cálculo de la magnitud.

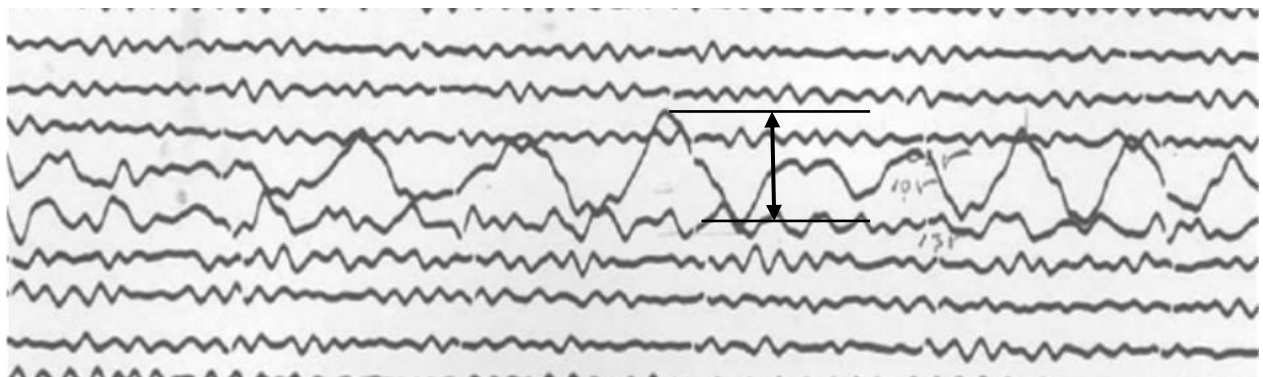


Figura 19. De Bilt componente NS. La flecha indica la amplitud de la onda superficial utilizada en el cálculo de la magnitud.

# ANEXO B: TABLAS

---



Tabla B-1. Mecanismos focales obtenidos del catálogo GCMT

#	Fecha	Hora	Latitud	Longitud	Prof	Mag	Mo	Exp	Strike	Dip	Slip	Strike2	Dip2	Slip2
1	1977-09-21	13:15:58	19.9669	-109.2599	15	5.8	6.61	24	209	24	-50	346	72	-106
2	1980-11-01	22:52:22	18.9198	-107.7156	15	6.3	3.98	25	108	78	174	199	84	12
3	1981-06-01	15:12:52	19.1178	-106.92	10	6.2	2.52	25	288	90	180	18	90	0
4	1982-08-18	3:58:23	18.1025	-105.5268	15	5.4	1.53	24	281	90	180	11	90	0
5	1982-10-25	15:55:20	18.4609	-105.9103	15	5.3	1.14	24	41	79	1	311	89	169
6	1982-12-08	13:02:52	22.7077	-106.8175	15	5.2	8.52	23	160	90	180	250	90	0
7	1983-05-08	14:39:38	20.0045	-109.3972	15	5.4	1.4	24	336	69	-179	245	89	-21
8	1983-05-08	16:25:10	19.951	-109.3444	24	5.7	4.68	24	141	90	180	231	90	0
9	1983-05-08	15:05:09	19.9718	-109.3071	10	5.8	7.21	24	233	60	3	141	87	150
10	1983-05-09	20:09:15	19.9744	-109.4335	10	6.3	4.2	25	114	50	170	210	82	41
11	1984-02-17	20:33:47	20.6487	-109.0256	10	6	1.38	25	57	72	16	322	75	162
12	1985-01-25	6:45:47	19.6779	-108.8939	10	5.4	1.54	24	131	70	-172	38	83	-20
13	1985-07-08	10:33:21	19.5357	-108.4532	10	5.9	8.15	24	123	66	178	213	88	24
14	1985-08-24	20:27:20	21.9677	-108.3618	10	5.5	2.5	24	165	81	-177	75	87	-9
15	1986-01-01	22:01:18	19.3603	-108.3327	15	5.5	2.57	24	121	77	-175	30	85	-13
16	1986-01-04	23:31:08	19.3868	-108.4916	15	5.6	2.67	24	123	68	171	216	82	22
17	1986-09-25	06:16:02	22.9988	-108.182	15	6	1.19	25	308	84	176	38	86	7
18	1986-11-09	15:00:47	18.6984	-106.719	15	5.4	1.37	24	280	90	180	10	90	0
19	1986-12-07	16:56:40	18.9074	-107.1614	15	6.1	1.77	25	195	71	-8	288	83	-161
20	1987-11-14	22:16:08	19.7591	-109.0209	15	5.9	8.32	24	309	90	180	39	90	0
21	1987-11-14	22:23:02	19.6762	-108.9797	15	6.2	2.25	25	301	90	180	31	90	0
22	1987-11-27	5:02:43	18.6748	-107.0181	15	5.5	2.61	24	201	74	0	110	90	164
23	1988-01-10	3:25:51	19.7828	-109.206	15	5.6	3.19	24	220	87	0	130	90	177
24	1988-04-26	01:43:00	22.9535	-108.0267	15	5.9	7.69	24	36	58	-12	132	80	-148
25	1988-08-03	17:30:15	18.68	-106.502	15	5.4	1.76	24	286	90	180	16	90	0
26	1988-08-21	11:15:51	23.3561	-108.384	15	5.6	3.34	24	306	88	180	36	90	2
27	1989-01-31	17:39:27	22.279	-107.3041	15	5.3	1.16	24	276	74	173	8	84	16
28	1989-02-10	23:42:30	21.5692	-108.2377	15	5.2	8.91	23	265	90	180	355	90	0
29	1989-05-13	12:15:05	18.9876	-107.5152	15	5.2	7.29	23	199	69	2	109	88	159
30	1989-08-29	04:16:23	18.0472	-105.6899	15	6.5	6.87	25	100	76	170	193	80	14
31	1989-12-08	2:26:04	19.25	-105.14	15	5.5	1.89	24	13	22	162	120	83	69
32	1990-01-05	18:26:56	18.7969	-106.8616	15	5.9	10.1	24	284	90	-180	14	90	0
33	1991-01-01	0:06:32	18.0867	-105.8603	15	6.2	2.75	25	275	90	-180	5	90	0
34	1991-01-01	3:19:37	18.0171	-105.8122	15	5.7	5	24	275	90	-180	5	90	0
35	1991-04-01	5:03:59	22.3695	-106.9983	15	5.6	3.27	24	303	10	132	81	82	83
36	1991-11-11	17:45:57	17.9135	-105.55	15	5.9	9.27	24	280	90	-180	10	90	0
37	1992-12-14	4:15:16	19.8579	-109.1843	15	5.2	8.49	23	19	71	-17	115	74	-160
38	1992-12-17	9:19:19	18.4355	-105.4621	15	5.4	1.47	24	281	90	-180	11	90	0
39	1995-05-31	16:08:41	18.998	-107.4129	18	6.3	3.46	25	21	61	-1	112	89	-151

Tabla B-1. Mecanismos focales obtenidos del catálogo GCMT (cont)

#	Fecha	Hora	Latitud	Longitud	Prof	Mag	Mo	Exp	Strike	Dip	Slip	Strike2	Dip2	Slip2
40	1995-10-09	15:35:55	19.116	-104.202	42.3	8	11.5	27	302	9	92	120	81	90
41	1995-10-18	23:02:13	19.4178	-104.9311	17	5.4	1.86	24	273	25	49	137	71	107
42	1995-11-21	8:58:34	18.8599	-105.3042	32	5.3	1.27	24	256	83	175	347	85	7
43	1995-12-11	14:09:24	18.9683	-105.4545	15	6.3	3.4	25	83	74	171	175	82	17
44	1995-12-11	19:11:42	18.8164	-105.4543	15	5.7	5.23	24	77	75	-171	345	81	-15
45	1995-12-11	19:44:12	18.6662	-105.4645	15	6.1	1.52	25	83	77	-176	352	86	-13
46	1995-12-14	10:55:40	18.7435	-107.0313	15	5.8	5.84	24	287	84	175	17	85	6
47	1997-04-08	15:23:41	18.7409	-106.3215	15	5.5	2.42	24	96	73	-177	5	87	-17
48	1997-05-01	11:37:34	18.9948	-107.2671	15	6.9	2.77	26	288	77	174	20	84	13
49	1997-05-12	4:41:57	18.7759	-107.0949	15	5.5	2.56	24	19	84	-6	110	84	-173
50	1997-05-12	15:03:04	18.7505	-107.1642	15	5.6	3.35	24	286	64	172	19	82	27
51	1997-11-22	6:25:42	19.4145	-108.4488	15	5.4	1.81	24	120	81	-174	29	84	-9
52	1998-08-27	16:51:46	19.2449	-108.4499	15	5.4	1.35	24	120	63	-172	26	83	-28
53	1999-01-10	20:36:11	22.86	-107.984	15	5.2	7.37	23	35	73	-9	128	81	-163
54	1999-03-12	07:07:40	22.271	-107.355	15	5.3	9.87	23	274	83	-179	183	89	-7
55	1999-04-23	8:58:58	17.995	-104.812	15	5.3	11.7	23	312	52	171	48	83	39
56	1999-11-21	6:46:20	18.917	-107.147	15	6.1	1.9	25	291	77	176	22	86	13
57	2000-02-21	16:29:39	18.542	-107.051	15	5.7	4.33	24	194	88	-1	284	89	-178
58	2000-08-23	15:46:12	21.392	-108.815	15	5.5	2.01	24	183	61	179	273	89	29
59	2000-12-08	16:56:18	22.717	-107.555	15	5.5	2.05	24	89	87	178	179	88	3
60	2000-12-09	17:01:00	18.003	-105.08	15	5.3	10.5	23	288	90	-180	18	90	0
61	2001-04-29	21:26:58	18.759	-104.577	15	6.1	1.94	25	292	18	77	126	72	94
62	2001-05-20	4:21:44	18.864	-104.47	33	6.3	3.64	25	290	17	73	127	74	95
63	2001-05-29	18:48:04	19.824	-109.217	15	5.5	2	24	303	75	-167	210	77	-15
64	2001-11-13	09:47:35	22.383	-106.954	15	6	1.38	25	321	78	-169	229	79	-13
65	2002-04-07	18:34:37	19.646	-109.224	15	5.3	12.2	23	214	53	1	123	89	143
66	2002-10-03	16:08:41	23.3039	-108.496	15	6.5	6.22	25	306	79	-177	216	87	-11
67	2002-11-05	14:05:07	19.146	-104.9414	15	5.2	8.97	23	277	26	-131	141	71	-72
68	2002-11-23	2:33:02	18.507	-106.4622	15	5.4	1.51	24	283	79	-176	192	86	-12
69	2002-11-23	2:53:07	18.5718	-106.5058	15	5.4	13.4	23	199	73	-9	291	81	-163
70	2003-01-22	19:41:44	18.94	-104.2975	20	5.9	8.4	24	299	23	85	124	67	92
71	2003-02-17	4:41:56	18.8805	-104.9616	18	5.3	1.08	24	282	34	64	132	60	106
72	2003-07-02	05:11:40	23.0104	-108.1203	15	5.6	2.96	24	305	82	-173	214	83	-8
73	2003-07-17	19:57:14	18.5205	-107.0692	15	6	1.19	25	20	87	2	289	88	177
74	2003-08-11	1:17:54	18.4215	-105.9933	15	5.6	3.38	24	204	29	-2	296	89	-119
75	2003-08-25	23:25:01	18.6194	-106.6038	15	5.6	3.41	24	31	83	-3	122	87	-173
76	2004-05-02	4:19:25	17.85	-106.03	12	5.3	1.14	24	1	74	-3	91	87	-164
77	2004-05-02	5:17:27	17.86	-106.022	12	5.4	1.45	24	271	69	-178	181	88	-21
78	2005-01-06	0:02:22	19.683	-109.0396	17	5.6	3.19	24	311	82	-172	220	83	-8
79	2005-01-06	0:04:06	19.4183	-109.1208	12	5.4	1.78	24	40	76	-8	132	82	-166

Tabla B-1. Mecanismos focales obtenidos del catálogo GCMT (cont)

#	Fecha	Hora	Latitud	Longitud	Prof	Mag	Mo	Exp	Strike	Dip	Slip	Strike2	Dip2	Slip2
80	2005-04-26	4:05:46	19.7367	-109.2172	12	5.4	1.68	24	299	81	179	30	89	9
81	2005-05-08	17:07:37	20.427	-109.1416	16	5.9	0.81	25	330	74	-174	239	85	-16
82	2005-06-27	11:35:45	18.9321	-107.2379	16	6.1	2.1	25	21	80	8	289	82	170
83	2006-01-05	05:07:29	21.9746	-108.4799	12	5	4.03	23	262	27	-2	354	89	-117
84	2006-01-20	1:38:38	18.7131	-106.9671	22	5.1	6.43	23	287	80	170	18	80	10
85	2006-03-14	23:31:43	19.5037	-108.949	21	5.4	1.66	24	32	82	4	301	86	172
86	2006-04-04	2:30:29	18.7473	-107.0464	26	6	1.14	25	18	81	4	287	86	171
87	2006-06-05	2:36:04	19.5371	-108.7149	20	4.8	1.89	23	301	71	177	32	87	19
88	2006-08-26	7:51:58	19.5854	-108.9082	20	5.2	0.77	24	304	82	174	35	84	8
89	2006-08-26	8:06:17	19.4932	-108.9263	16	5.1	5.23	23	31	66	-7	124	83	-156
90	2007-01-02	19:56:44	18.7651	-107.6419	16	5.2	7.11	23	287	72	162	23	73	19
91	2007-02-11	9:09:09	21.4082	-106.2689	18	5	4.63	23	314	29	114	108	64	77
92	2007-02-15	23:29:36	18.779	-106.1114	22	4.9	2.85	23	280	72	170	13	81	18
93	2007-03-28	18:43:01	19.8278	-109.2681	15	5.3	1.22	24	231	79	-5	322	85	-169
94	2007-07-28	19:11:23	19.8559	-109.0648	26	5.3	1.02	24	39	85	0	309	90	175
95	2007-09-06	3:42:43	19.5453	-105.0188	30	5.2	8.16	23	310	25	96	123	65	87
96	2007-10-05	9:38:55	19.1407	-108.3055	17	5.4	1.43	24	29	72	0	119	90	-162
97	2007-10-23	1:37:05	19.4297	-108.653	14	5	3.75	23	32	75	-5	124	85	-165
98	2008-04-05	22:03:12	19.71	-109.29	21	4.9	2.41	23	44	74	1	314	89	164
99	2008-09-15	6:30:56	18.52	-106.24	19	4.9	2.41	23	190	66	-22	289	70	-155
100	2008-09-26	3:39:24	18.06	-105.94	21	5.1	4.75	23	286	85	178	16	88	5
101	2009-03-01	12:14:45	22.08	-108.53	14.7	4.9	3.13	23	245	67	-21	343	71	-155
102	2009-03-27	17:53:03	18.93	-107.59	13	5.1	5.53	23	289	73	171	21	81	17
103	2009-05-17	6:15:11	19.37	-108.43	19	5.1	5.86	23	31	73	-2	121	89	-163
104	2009-05-28	21:32:28	18.62	-106.46	16	5.3	0.97	24	17	83	0	108	90	-173
105	2009-05-28	22:57:22	18.63	-106.54	13	5.4	1.66	24	14	84	-3	104	87	-174
106	2009-05-29	1:04:42	18.67	-106.64	15	5.5	1.91	24	15	76	2	285	88	166
107	2009-05-29	16:10:53	18.63	-106.53	15	5	3.36	23	281	68	171	14	82	22
108	2009-06-03	21:37:43	19.91	-109.22	15	5.6	2.69	24	226	80	-3	317	87	-170
109	2009-07-11	15:34:26	22.99	-108.17	16.4	5.1	6.02	23	35	77	-4	126	87	-167
110	2009-07-20	10:45:02	19.69	-108.89	13	4.9	2.39	23	26	68	5	294	86	158
111	2009-09-18	18:46:11	19.42	-108.51	16.1	5.6	3.26	24	297	81	177	27	87	9
112	2009-09-24	07:16:25	18.98	-107.51	13.7	6.3	4.14	25	290	82	176	20	86	8
113	2009-10-06	17:22:54	18.99	-107.62	17.7	5.5	1.99	24	276	76	172	8	82	14
114	2009-11-23	06:08:37	18.15	-105.78	18.2	5.6	2.73	24	273	81	177	4	87	9

Tabla B-2. Sismos seleccionados para el análisis realizado en este trabajo, con su respectivo vector deslizamiento utilizado en los cálculos de los polos de rotación

evento	Fecha	Hora origen	Latitud [°]	Longitud [°]	Deslizamiento [°]
6	1982-12-08	13:02:52	22.7077	-106.8175	340
27	1989-01-31	17:39:27	22.279	-107.3041	284
31	1989-12-08	2:26:04	19.25	-105.14	30
35	1991-04-01	5:03:59	22.3695	-106.9983	350
40	1995-10-09	15:35:55	19.116	-104.202	31
41	1995-10-18	23:02:13	19.4178	-104.9311	45
54	1999-03-12	07:07:40	22.271	-107.355	269
59	2000-12-08	16:56:18	22.717	-107.555	270
61	2001-04-29	21:26:58	18.759	-104.577	36
64	2001-11-13	09:47:35	22.383	-106.954	310
70	2003-01-22	19:41:44	18.94	-104.2975	35
71	2003-02-17	4:41:56	18.8805	-104.9616	39
91	2007-02-11	9:09:09	21.4082	-106.2689	22
95	2007-09-06	3:42:43	19.5453	-105.0188	36
1948	1948-12-04	00:22:47	21.6	-106.7	16
1976	1976-02-09	21:29:57	21.63	-106.59	3

Tabla B-3. Malla de polos de rotación

#	Latitud [°]	Longitud [°]
polo 1	22	-107
polo 2	22	-107.2
polo 3	22	-107.4
polo 4	22	-107.6
polo 5	22	-107.8
polo 6	22	-108
polo 7	21.8	-107
polo 8	21.8	-107.2
polo 9	21.8	-107.4
polo 10	21.8	-107.6
polo 11	21.8	-107.8
polo 12	21.8	-108
polo 13	21.6	-107
polo 14	21.6	-107.2
polo 15	21.6	-107.4
polo 16	21.6	-107.6
polo 17	21.6	-107.8
polo 18	21.6	-108
polo 19	21.4	-107
polo 20	21.4	-107.2
polo 21	21.4	-107.4
polo 22	21.4	-107.6
polo 23	21.4	-107.8
polo 24	21.4	-108
polo 25	21.2	-107
polo 26	21.2	-107.2
polo 27	21.2	-107.4
polo 28	21.2	-107.6
polo 29	21.2	-107.8
polo 30	21.2	-108
polo 31	21	-107
polo 32	21	-107.2

#	Latitud [°]	Longitud [°]
polo 33	21	-107.4
polo 34	21	-107.6
polo 35	21	-107.8
polo 36	21	-108
polo 37	22.2	-107
polo 38	22.2	-107.2
polo 39	22.2	-107.4
polo 40	22.2	-107.6
polo 41	22.2	-107.8
polo 42	22.2	-108
polo 43	22.4	-107
polo 44	22.4	-107.2
polo 45	22.4	-107.4
polo 46	22.4	-107.6
polo 47	22.4	-107.8
polo 48	22.4	-108
polo 49	22.4	-108.2
polo 50	22.2	-108.2
polo 51	22	-108.2
polo 52	21.8	-108.2
polo 53	21.6	-108.2
polo 54	21.4	-108.2
polo 55	21.2	-108.2
polo 56	21	-108.2
polo 57	22.4	-108.4
polo 58	22.2	-108.4
polo 59	22	-108.4
polo 60	21.8	-108.4
polo 61	21.6	-108.4
polo 62	21.4	-108.4
polo 63	21.2	-108.4
polo 64	21	-108.4

# ANEXO C: MAPAS

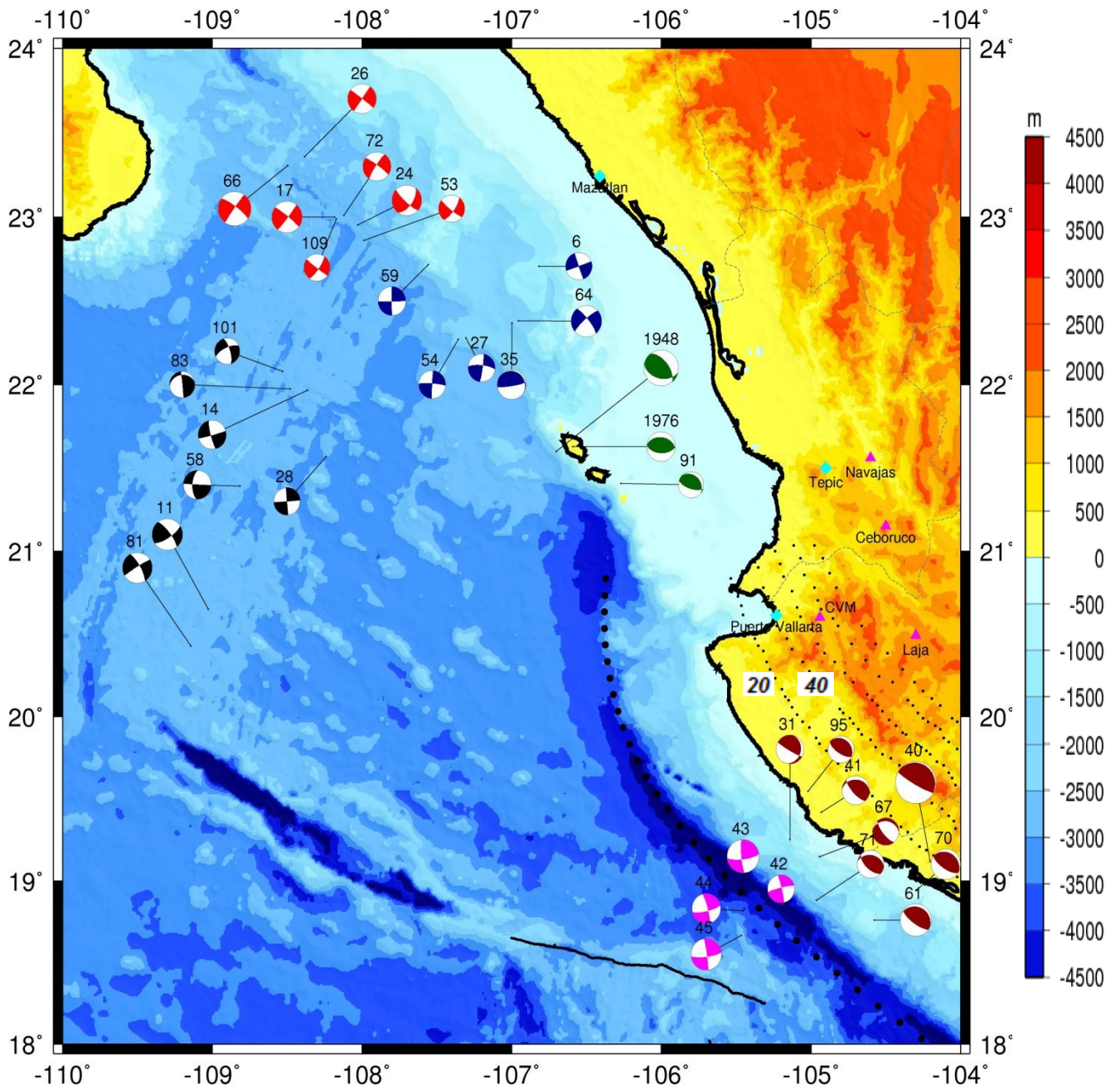


Figura C-1. Distribución espacial de los mecanismos focales seleccionados. Rojo oscuro: Sismos denominados de subducción. Verde: Sismos denominados Islas Marias. Azul: Sismos denominados Norte de las Islas Marias. Rojo: Sismos asociados a la Falla Transformada de Tamayo. Negro: Sismos asociados a la Dorsal Pacífico-Rivera. Rosa: Sismos asociados a la posible frontera Rivera-Cocos. Diamantes cian representan ciudades. Triángulos magenta representan volcanes. El número superior del mecanismo focal, indica el número de evento que se puede consultar en la tabla B-1

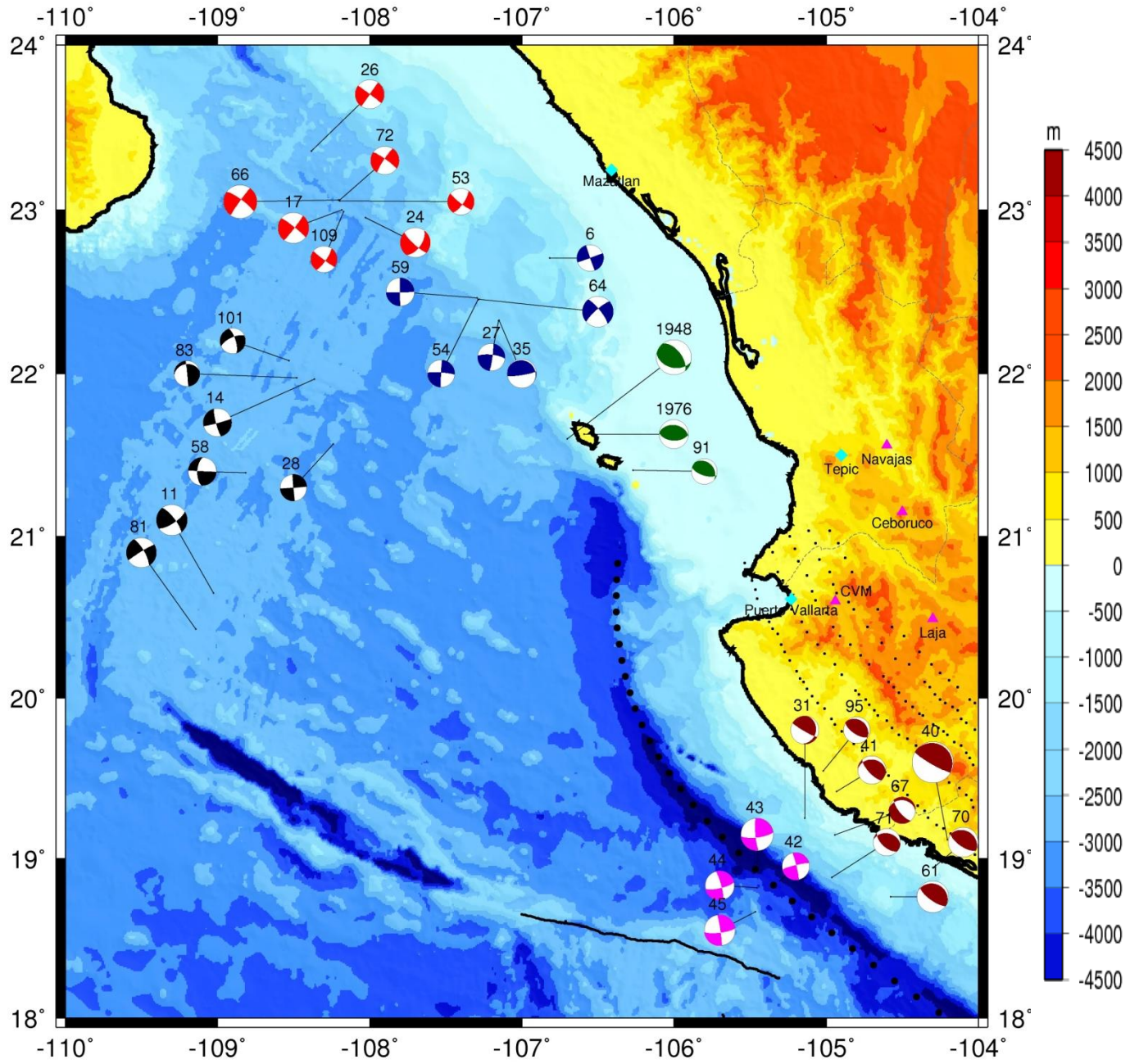


Figura C-2. Distribución espacial de sismos relocados. Misma simbología que la utilizada en la figura C-1

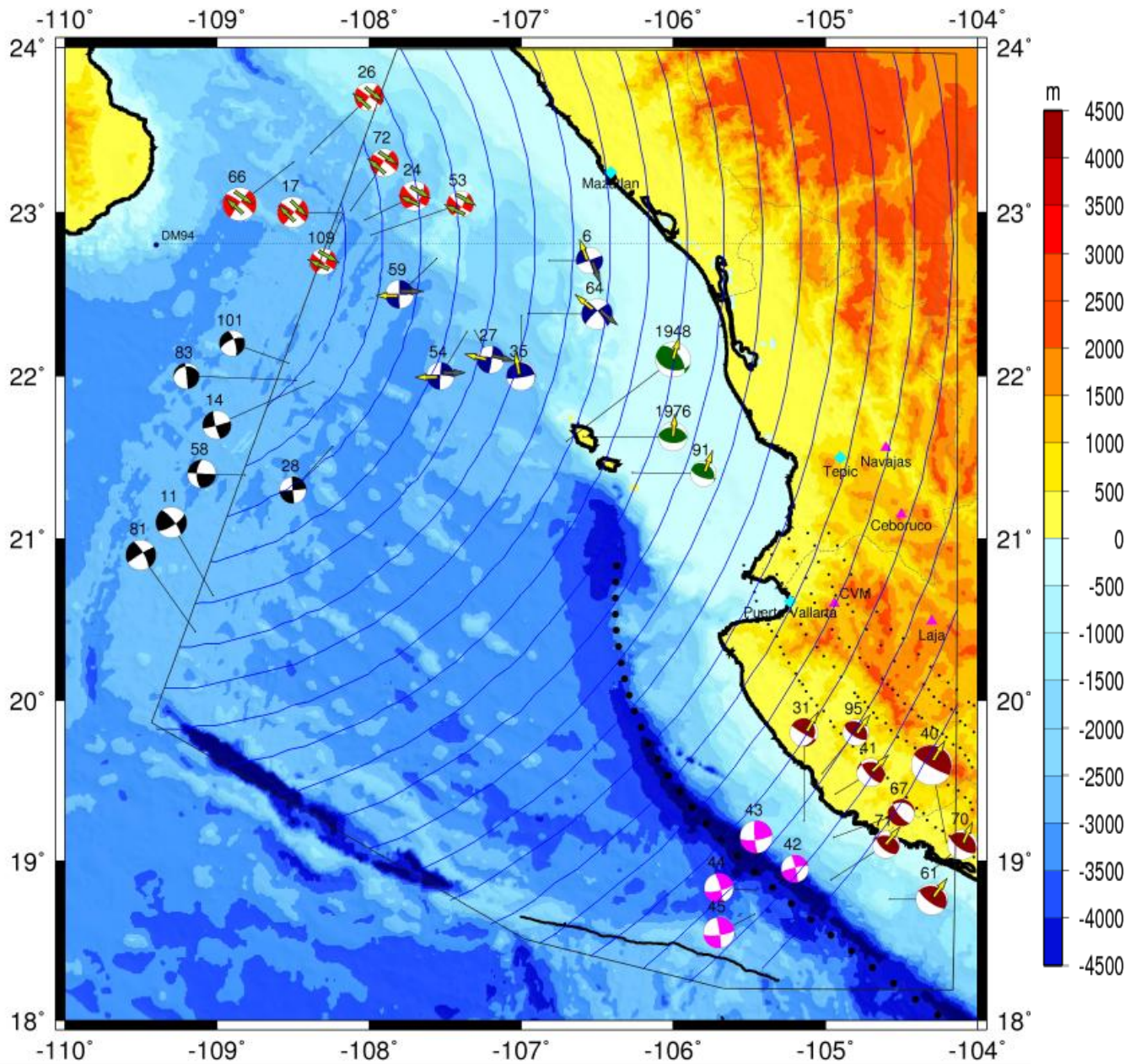


Figura C-3. Polo de rotación DeMets et al. (1994). Flechas en amarillo indican el vector desplazamiento considerado en los cálculos del ECM. Flechas en verde indican movimiento relativo entre placas. Líneas azules indican líneas de flujo del movimiento relativo de la placa de Rivera respecto a la placa de Norteamérica. Resto de la simbología, la misma que la utilizada en la figura C-1.





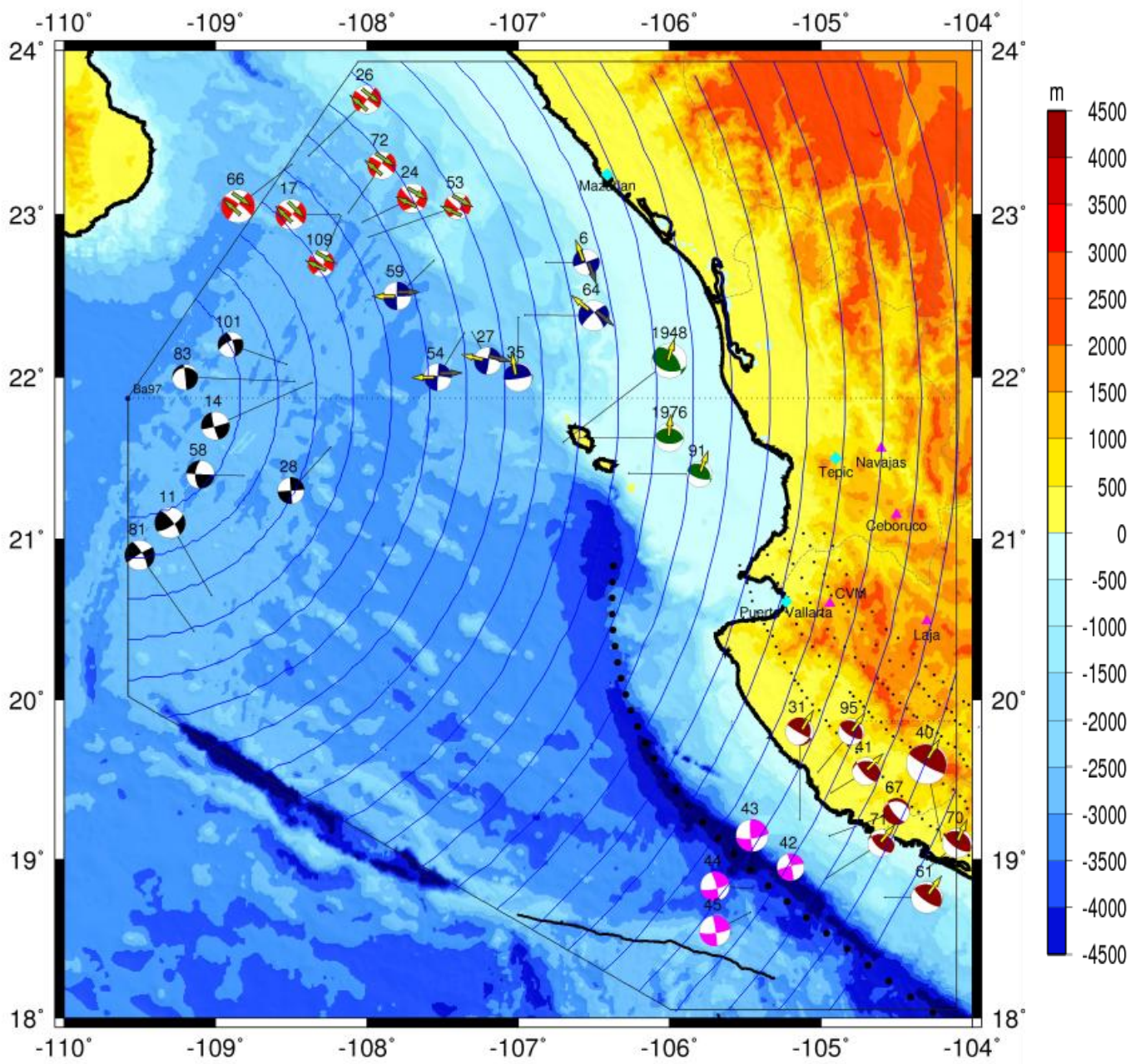


Figura C-5. Polo de rotación Bandy et al. (1997). Misma simbología que la utilizada en la figura C-3

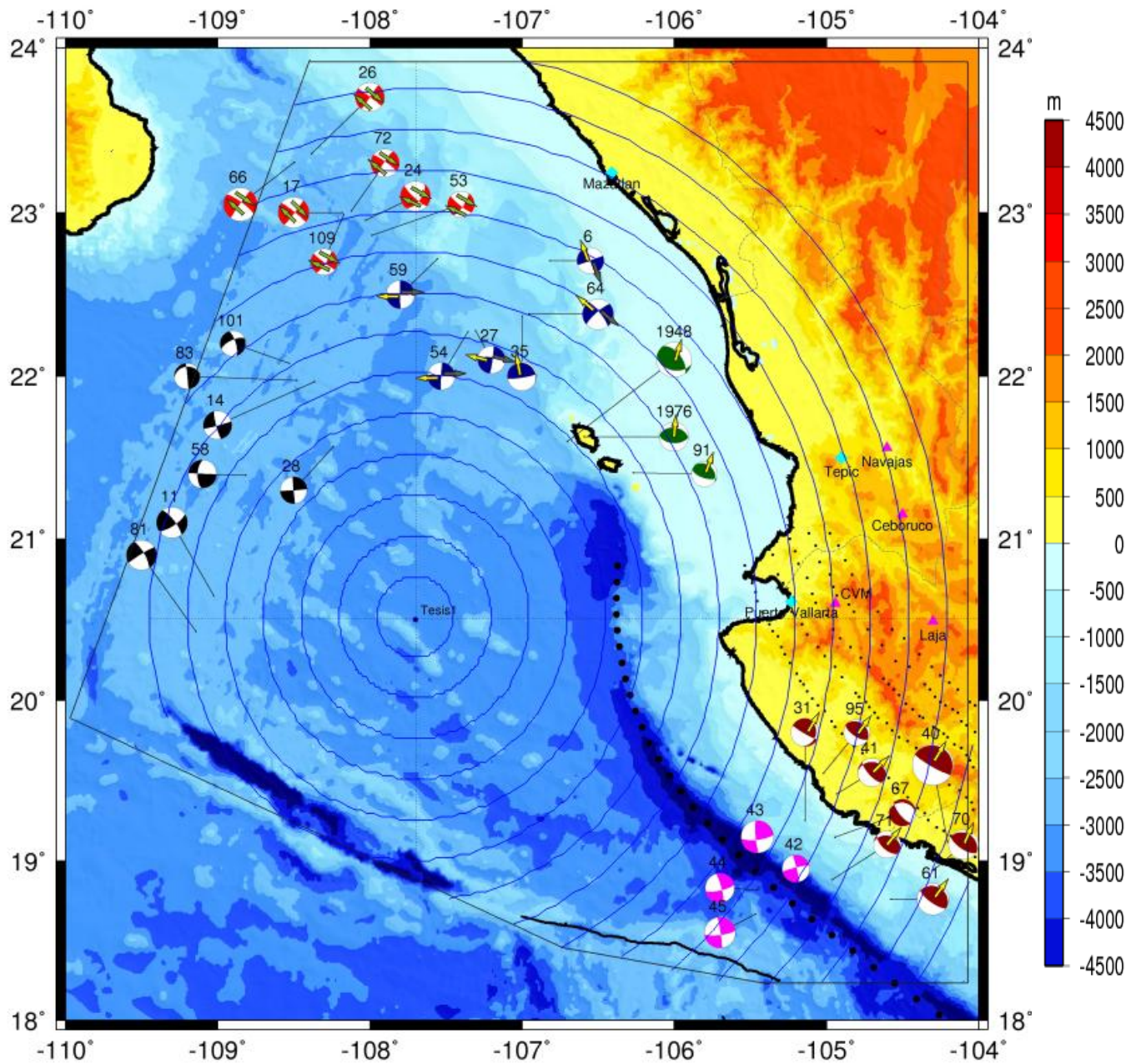


Figura C-6. Primer polo de rotación obtenido en este trabajo (Tesis1). Mismá simbología que la utilizada en la figura C-3

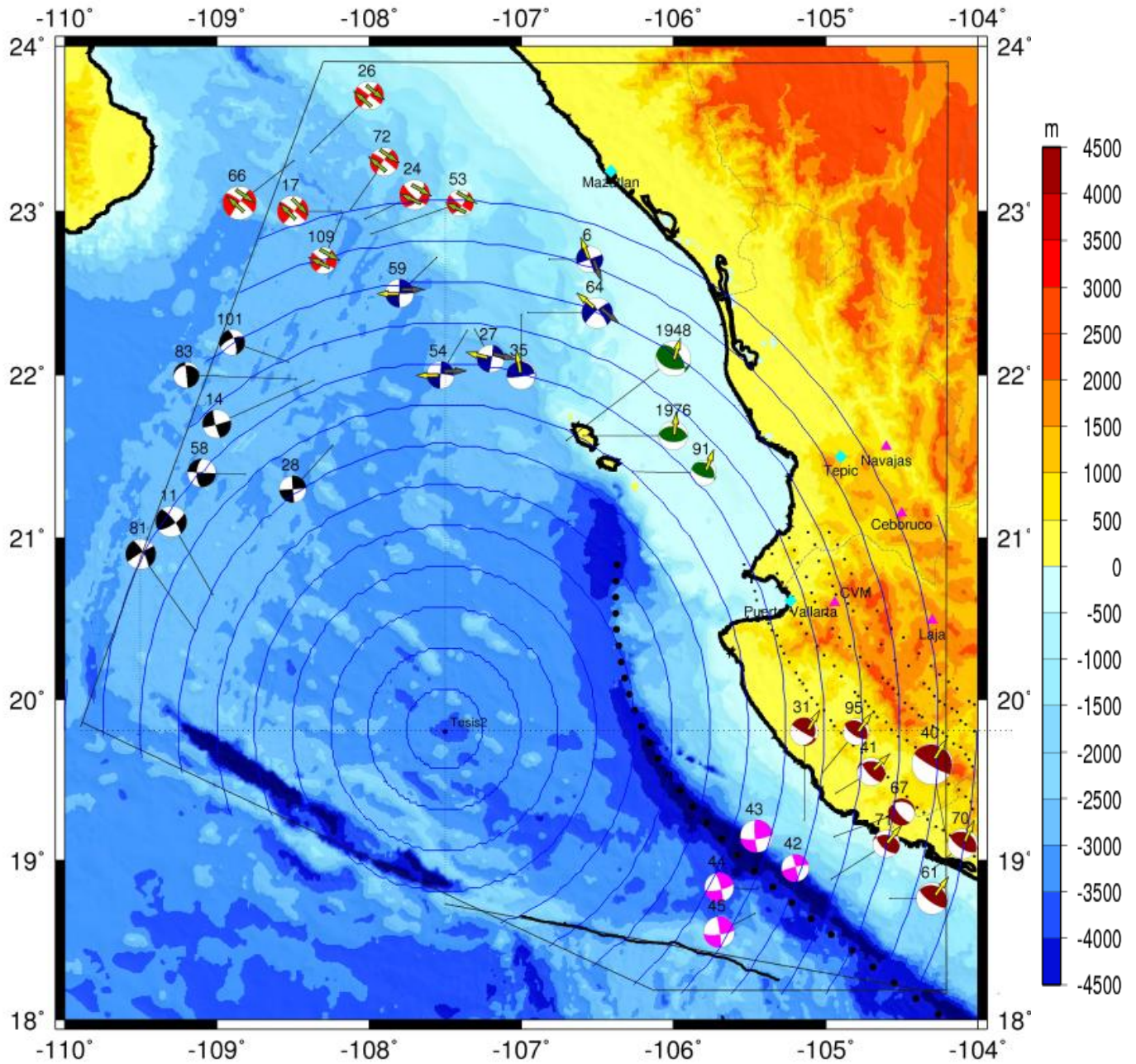


Figura C-7. Segundo polo de rotación obtenido en este trabajo (Tesis 2). Misma simbología que la utilizada en la figura C-3