

Costa Rica Earthquake

By Tom Irvine



A strong earthquake occurred about 40 km (25 miles) south southwest of San Jose, Costa Rica on Nov 20, 2004, at 2:07 AM local time in Costa Rica. The magnitude was 6.2.

The quake struck when leaders of 21 nations were gathered in San Jose, the capital of Costa Rica, for an Ibero-American summit. All leaders were reported safe. "We jumped from the bed like two cats," said Panama's first lady, Vivian de Torrijos. "We're going to be able

to remember the summit with something like that."

Nevertheless, eight people died, including several who were frightened into having fatal heart attacks.

The police station on the Pacific island of Damas reportedly collapsed. Parts of this capital also briefly lost power. Local radio stations said there were scattered reports of collapsed walls, shattered windows, toppled trees and landslide-blocked highways from the quake.

Magnitude 6.2 - COSTA RICA
2004 November 20 08:07:23 UTC

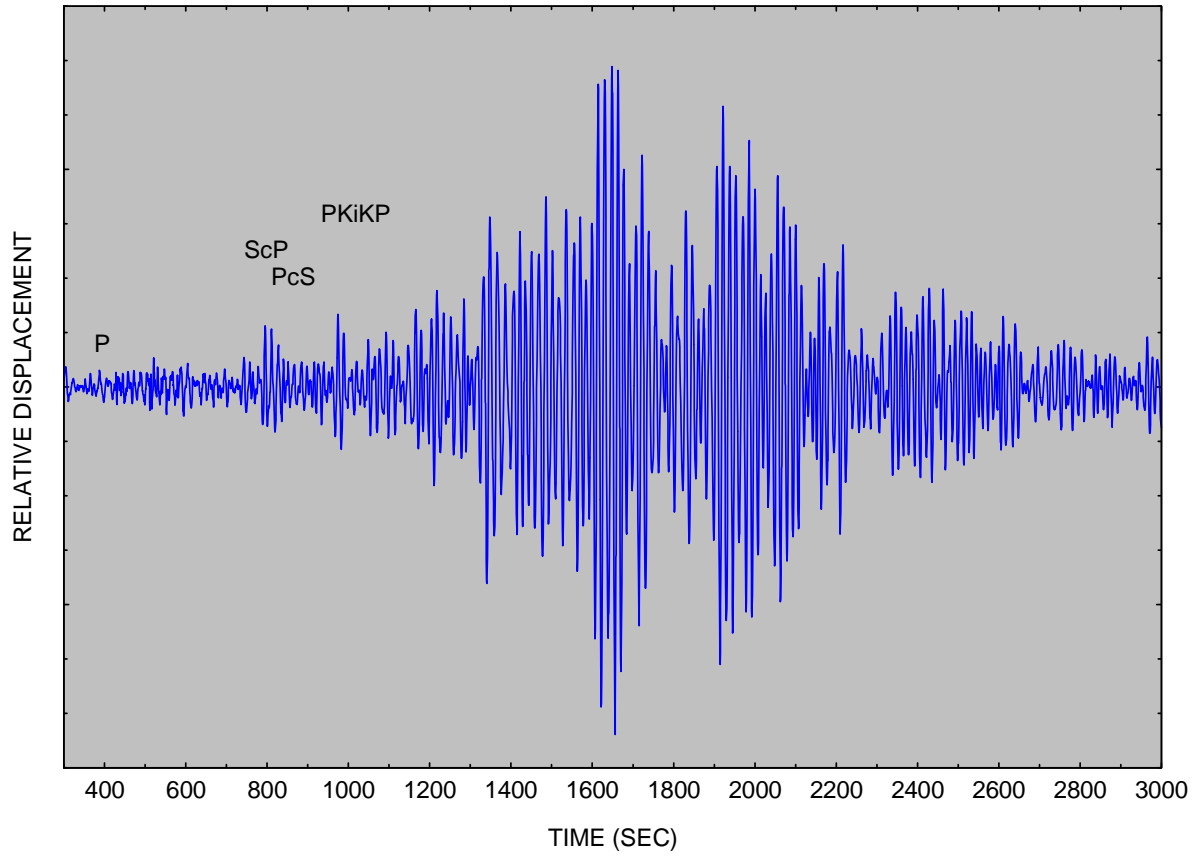


Figure 1.

The time history was recorded on my Lehman seismometer in Mesa, Arizona. The time scale is adjusted so that the earthquake occurs at time zero.

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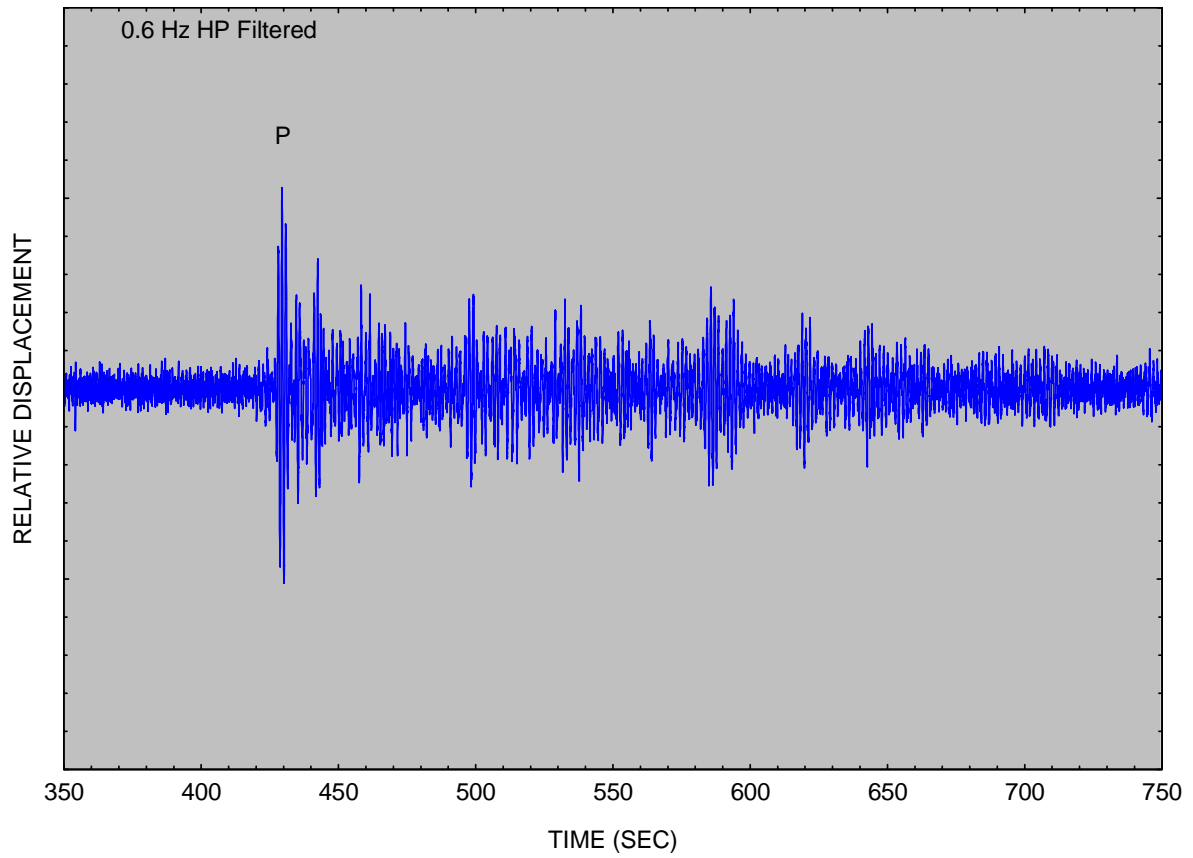


Figure 2.

The data is highpass filtered to reveal the P-wave.

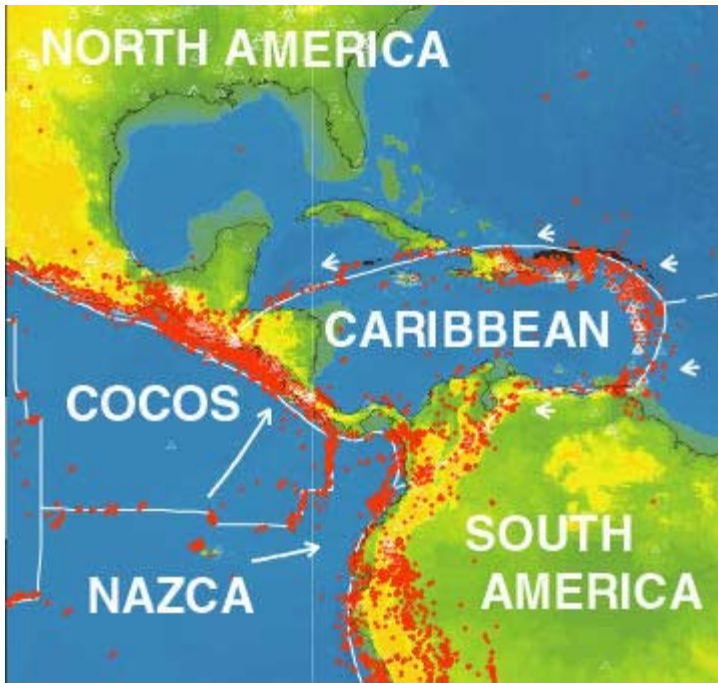


Figure 3.

Costra Rica is located on the Caribbean plate. The Cocos plate is subducted under the Caribbean plate.



Magnitude 6.2

Date-Time **Saturday, November 20, 2004 at 08:07:23 (UTC)**

= Coordinated Universal Time

Saturday, November 20, 2004 at 2:07:23 AM

= local time at epicenter

Time of Earthquake in other Time Zones

Location 9.552°N, 84.223°W

Depth 25.2 km (15.7 miles) set by location program

Region **COSTA RICA**

Distances

45 km (30 miles) SSW of **SAN JOSE, Costa Rica**

80 km (50 miles) SE of **Puntarenas, Costa Rica**

140 km (85 miles) WSW of **Limon, Costa Rica**

155 km (95 miles) NW of **Golfo, Costa Rica**

Location horizontal +/- 4 km (2.5 miles); depth fixed by

Uncertainty location program

Parameters Nst=229, Nph=229, Dmin=114.5 km,
Rmss=0.85 sec, Gp= 40°,
M-type=teleseismic moment magnitude (Mw),
Version=7

DATE-(UTC)-TIME LAT LON DEPTH MAG Q COMMENTS
 2004/11/20 08:07:23 9.55N 84.22W 25.2 6.2 US: COSTA
 RICA

Expected 20s period surface wave amplitude [4.39E+01 μm]
 [1.38E+01 $\mu\text{m/s}$]
 Expected 1s period body wave amplitude [3.16E-01 μm]
 [1.99E+00 $\mu\text{m/s}$]

delta azimuth (degrees clockwise from north)
 (deg) eq-to-station station-to-eq
 34.78 317.1 126.7

#	code	travel time(s)	arrival time			
			dy	hr	mn	sec
1	P	408.34	0	8	14	11
2	pP	415.87	0	8	14	18
3	sP	419.18	0	8	14	22
4	PnPn	484.90	0	8	15	27
5	PP	487.44	0	8	15	30
6	PnPn	488.61	0	8	15	31
7	PnPn	488.64	0	8	15	31
8	PnPn	488.64	0	8	15	31
9	PcP	561.17	0	8	16	44
10	S	738.13	0	8	19	41
11	pS	746.98	0	8	19	49
12	sS	751.04	0	8	19	54
13	ScP	784.78	0	8	20	27
14	PcS	787.90	0	8	20	30
15	SnSn	873.82	0	8	21	56
16	SS	890.33	0	8	22	13
17	SS	925.52	0	8	22	48
18	PKiKP	1003.70	0	8	24	6
19	pPKiKP	1012.19	0	8	24	15
20	sPKiKP	1015.29	0	8	24	18
21	ScS	1028.19	0	8	24	31
22	SKiKP	1213.48	0	8	27	36
23	PKKPdf	1895.04	0	8	38	58
24	SKKPdf	2104.78	0	8	42	27
25	PKKSdf	2107.87	0	8	42	30
26	SKKSdf	2317.55	0	8	46	0
27	P'P'df	2402.22	0	8	47	25
28	P'P'ab	2499.23	0	8	49	2
29	S'S'df	3251.54	0	9	1	34
30	LQ	882.81	0	8	22	5
31	LR	979.79	0	8	23	42