

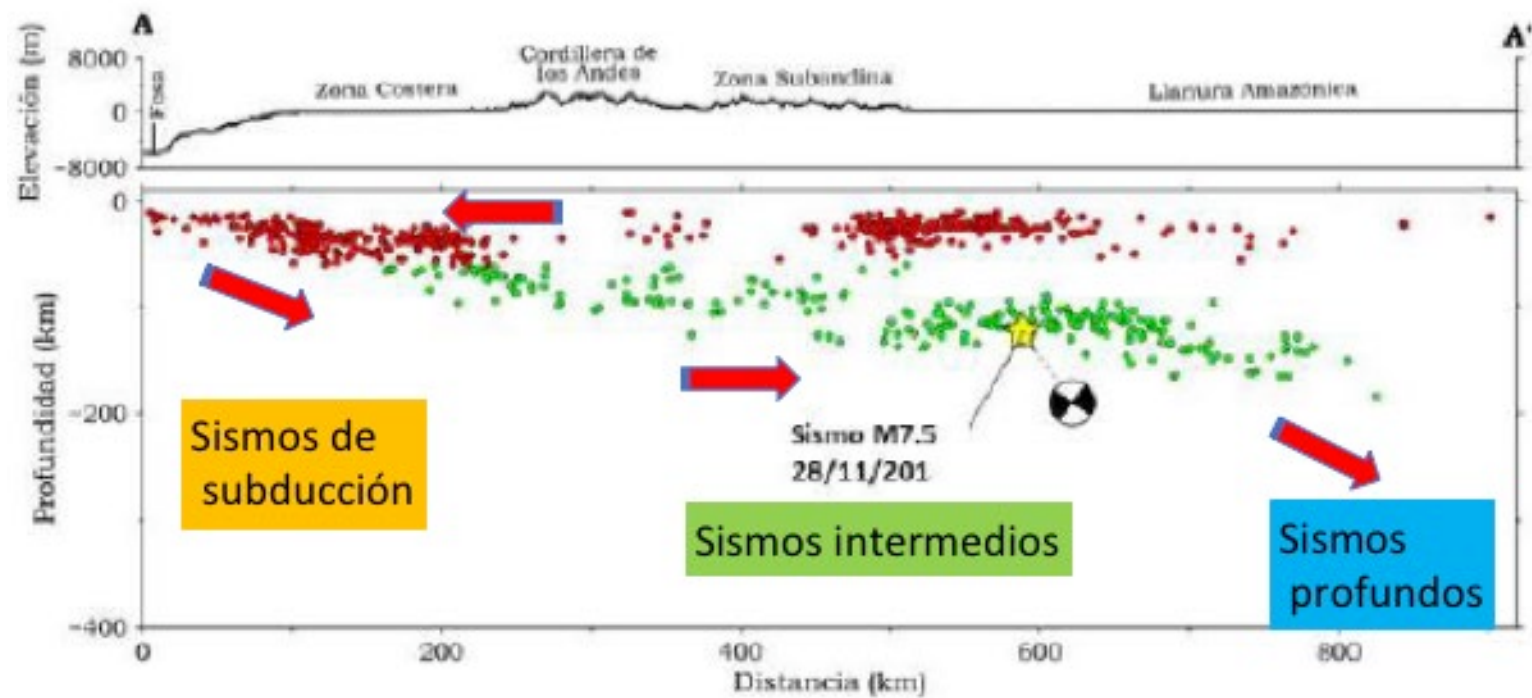
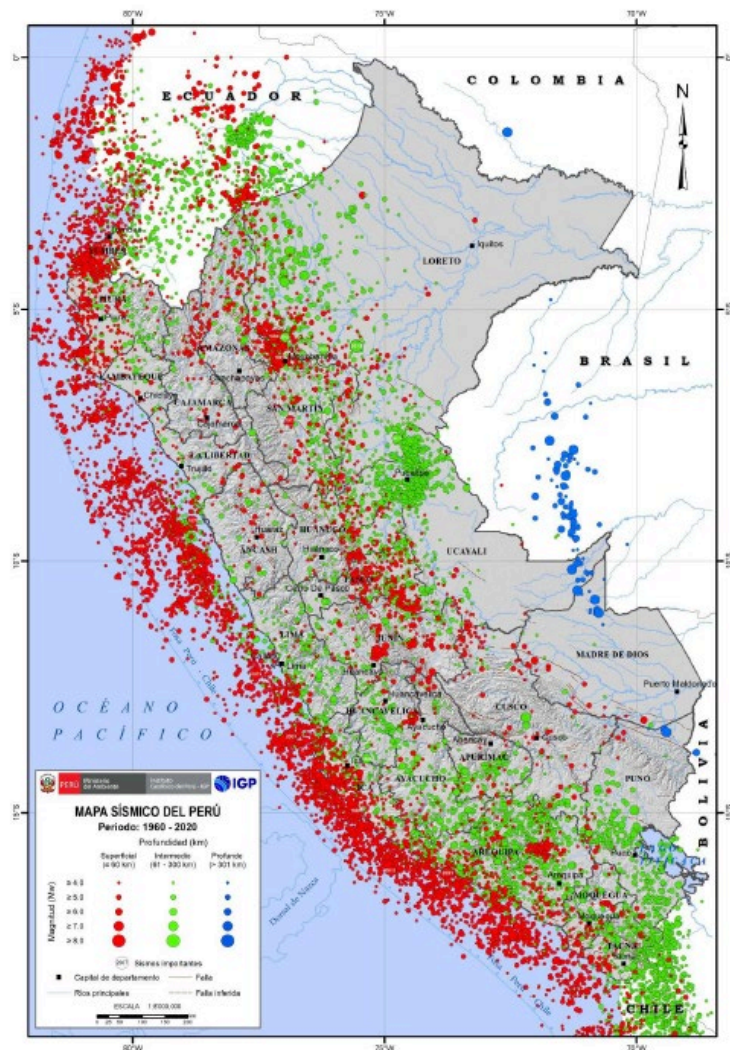
Southern Peru Seismicity – Review Peru

Edmundo O. Norabuena
Hernando J. Tavera

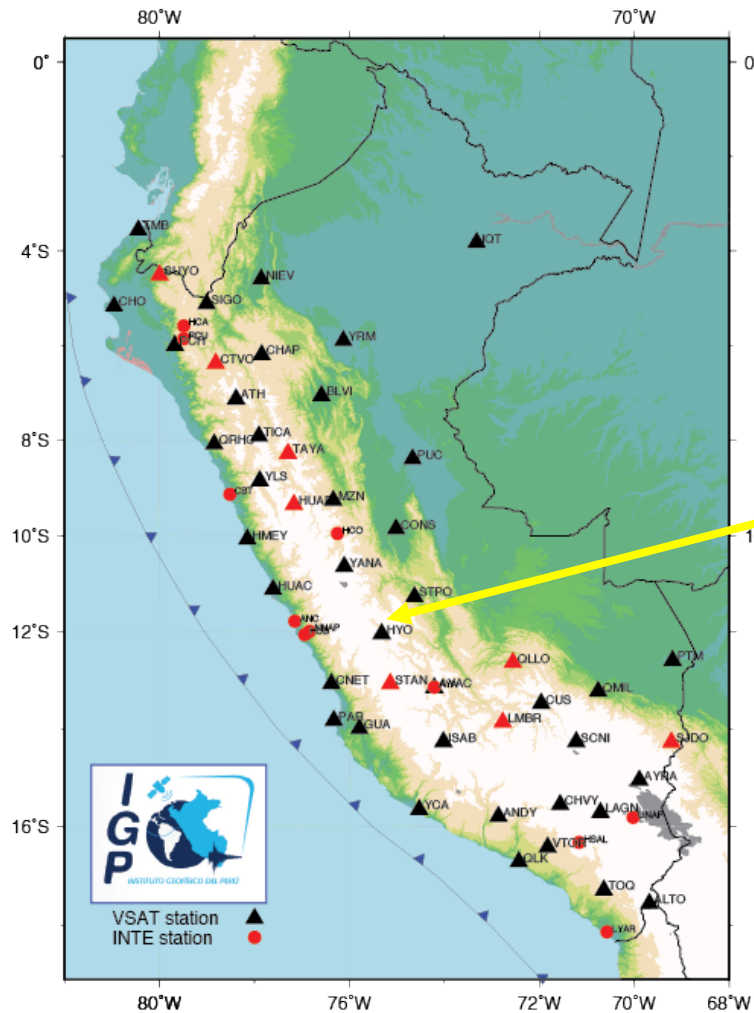
UNESCO/IOC Meeting – Arica August 2023



Peruvian Seismic Ecosystem



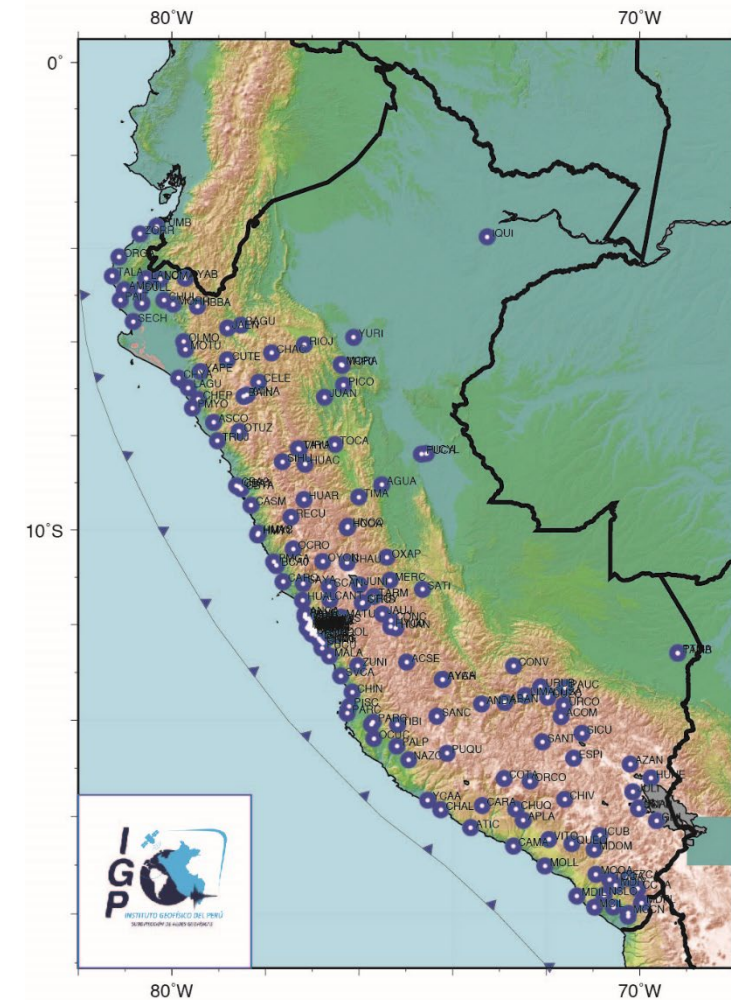
Red Geofisica Nacional - REDGEN



Sistema espejo de Sicaya



El Alto - Tacna



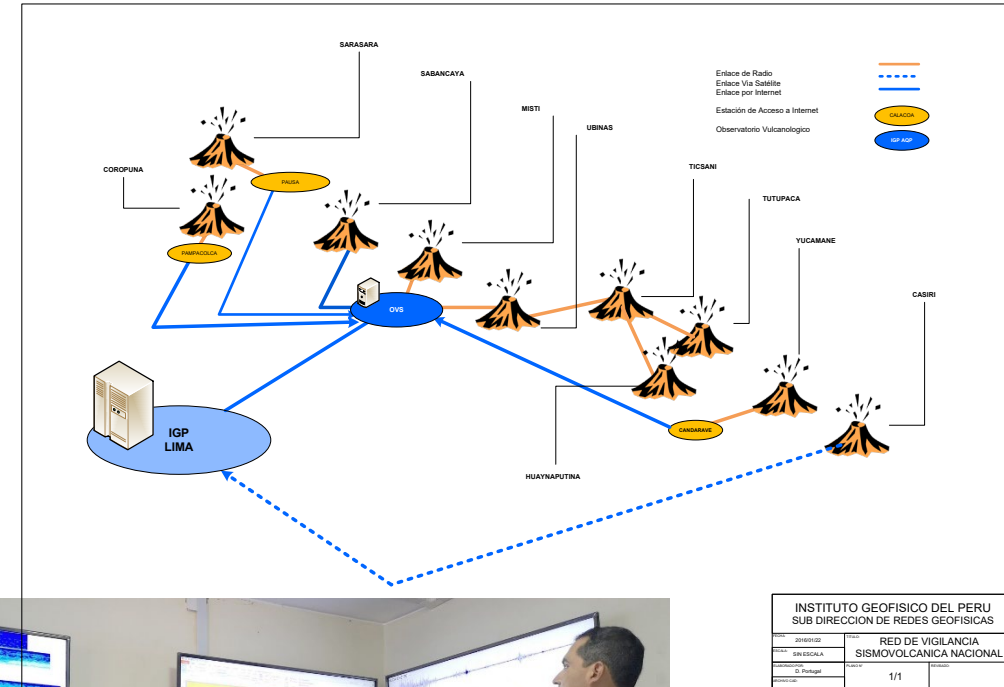
National Seismological Center - CENSIS



Seismic – Vulcanological Center

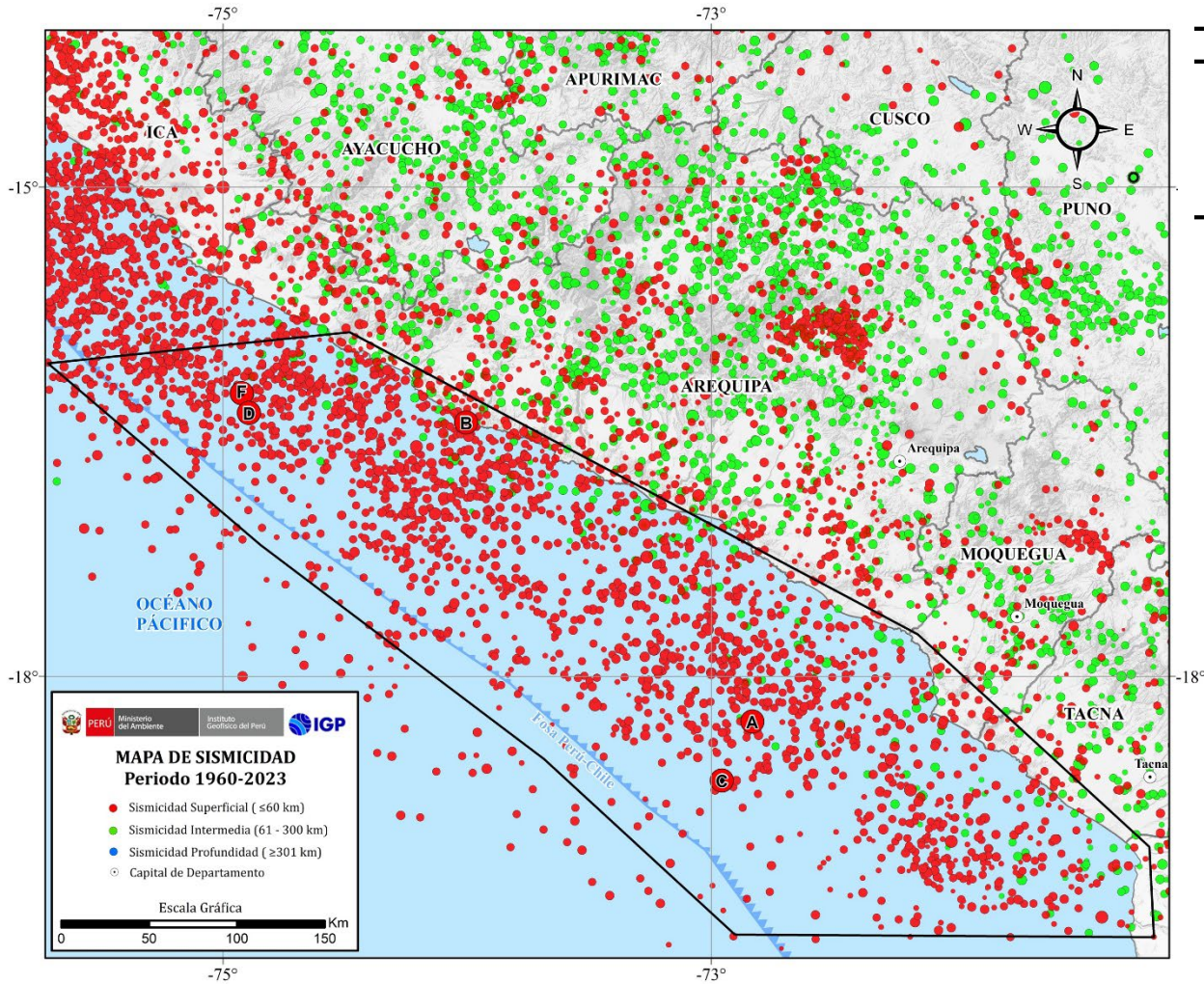


100 Instituto Geofísico del Perú



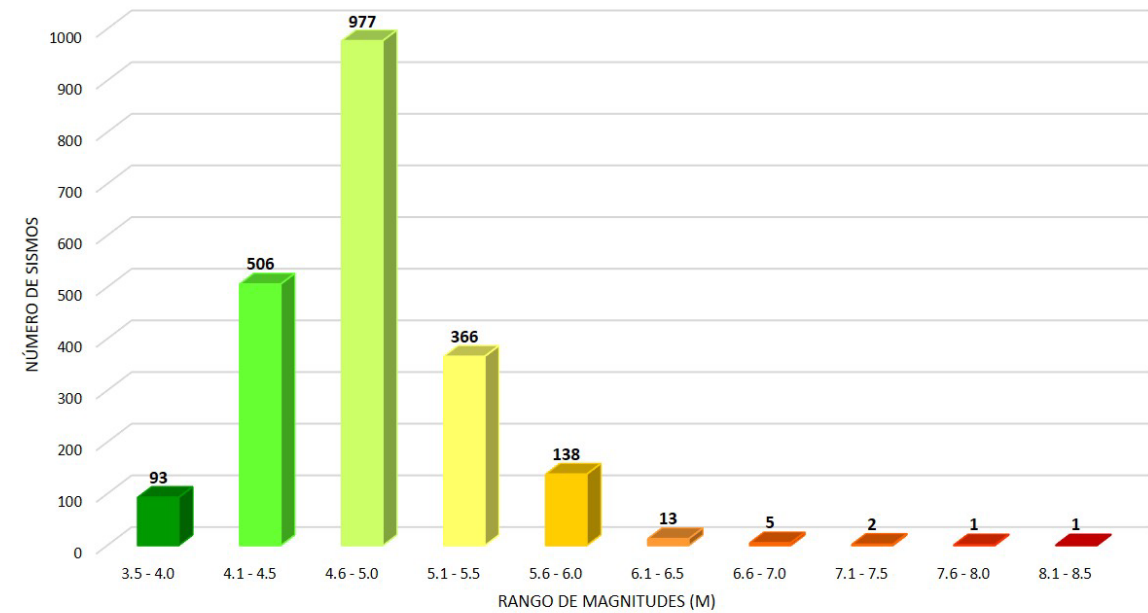
Observatorio Geofísico del Sur

Seismicity in southern Peru

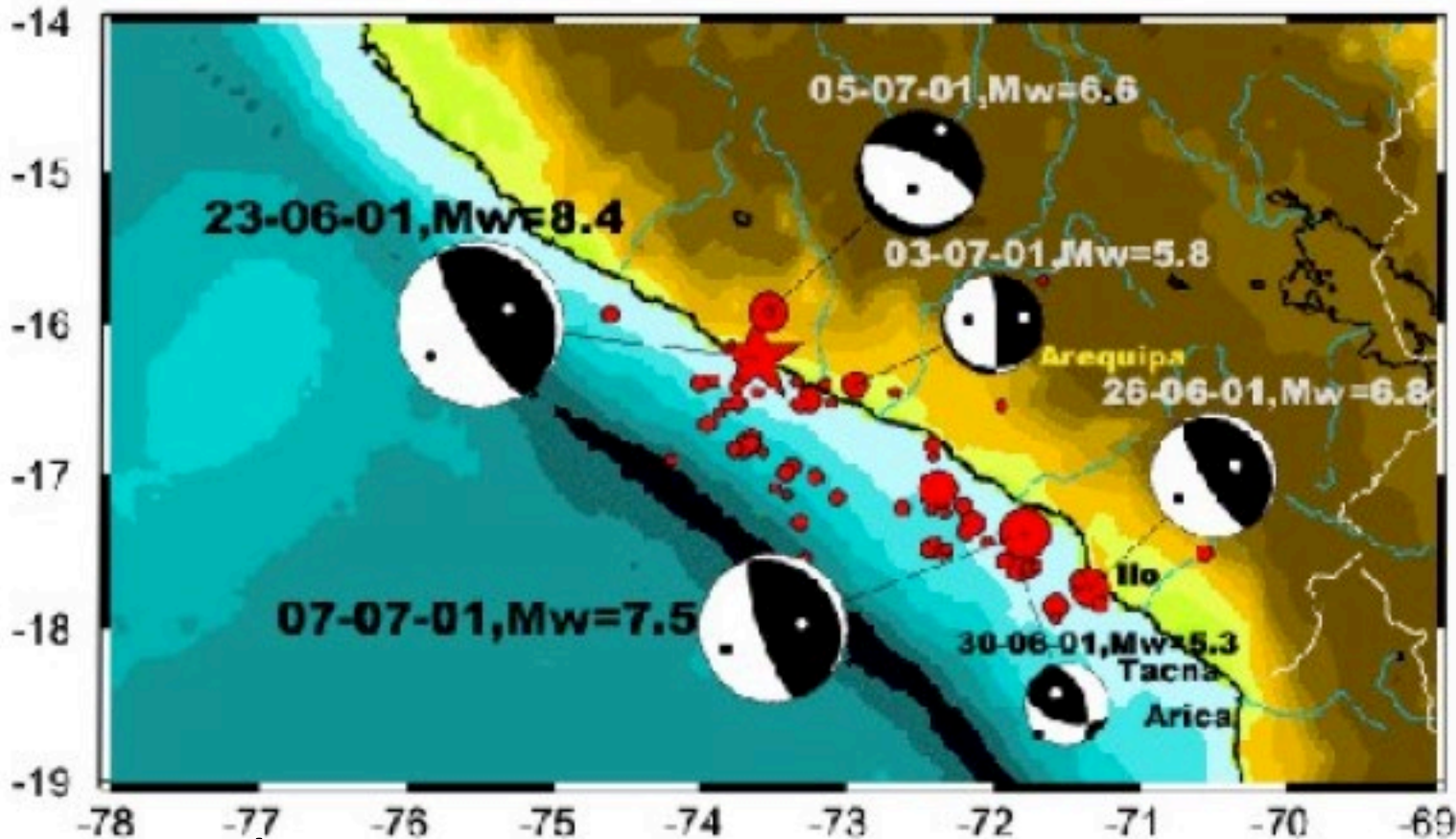


	Fecha	Hora UTC	Latitud	Longitud	Prof. (km)	Magnitud	Año	Región
A	12/04/1988	23:19:38	-17.73	-72.29	36	7.0	1988	Arequipa
B	23/06/2001	20:33:14	-16.2	-73.76	32	8.4	2001	Arequipa
C	7/07/2001	09:38:39	-18.03	-72.45	11	7.6	2001	Moquegua
D	25/09/2013	16:42:40	-16.15	-74.87	31	7.1	2013	Arequipa
E	14/01/2018	09:18:41	-16.05	-74.9	27	7.1	2018	Arequipa

DISTRIBUCIÓN DE SISMOS RESPECTO A UN RANGO DE MAGNITUDES
(Periodo 1960 - 2023, Costa Sur del Perú)

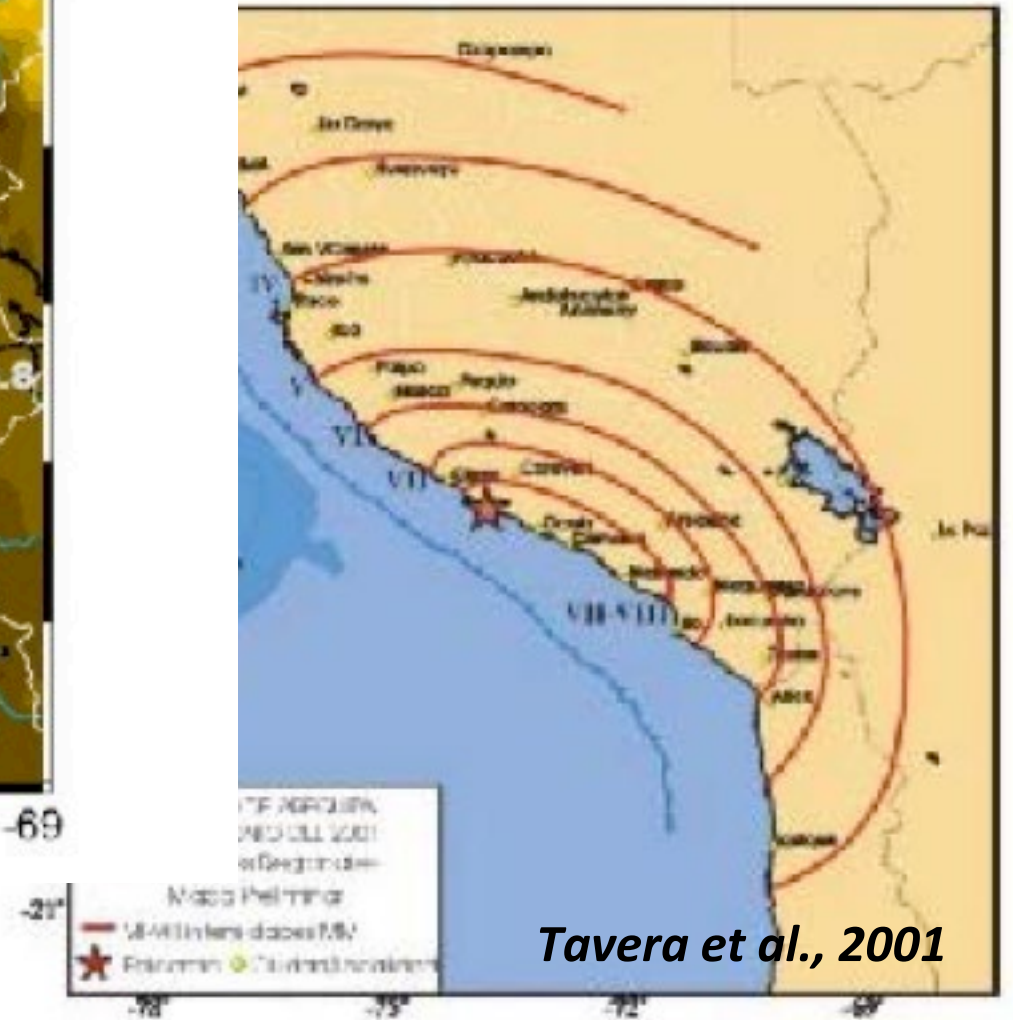


Seismicity in southern Peru



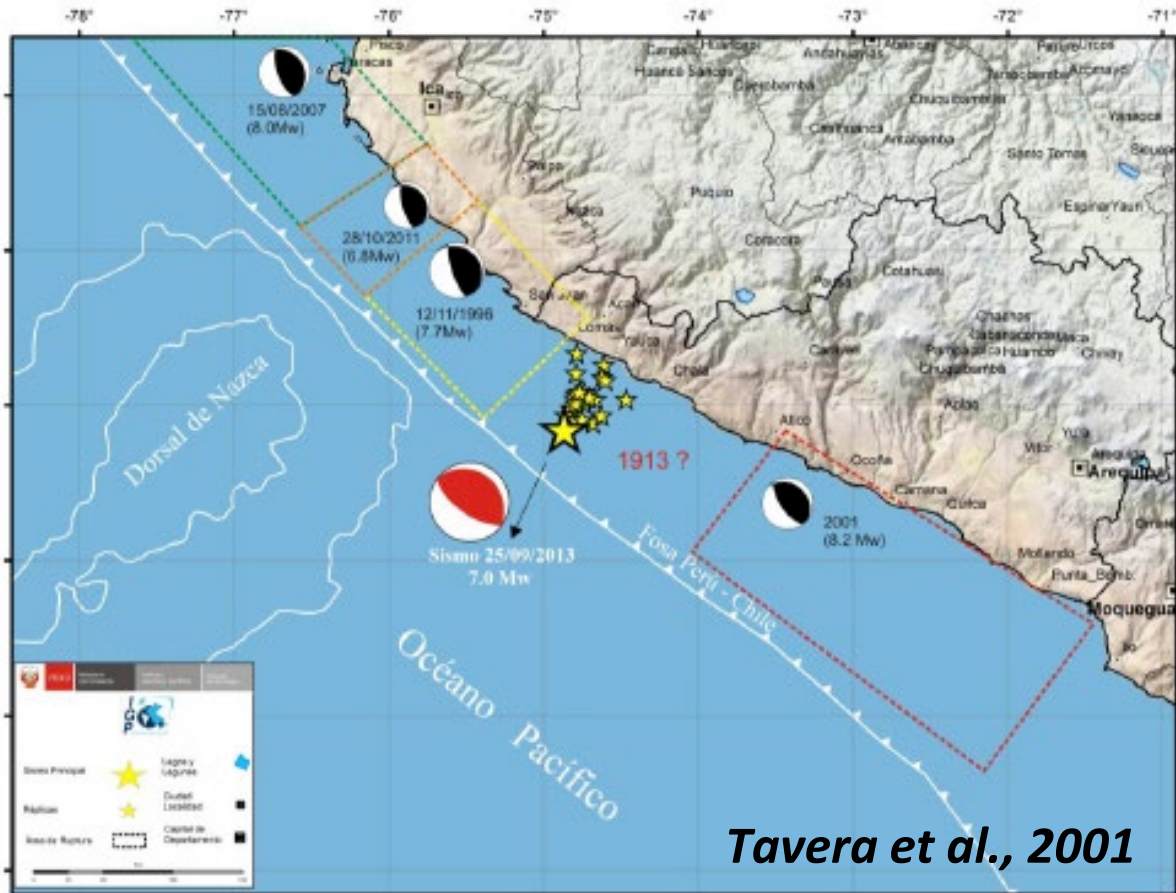
Tavera et al., 2001

Arequipa, June 23, 2001 – Mw 8.4



Tavera et al., 2001

Seismicity in southern Peru



Acari Earthquake, September 2013 – Mw 7.1

Historical large EQ

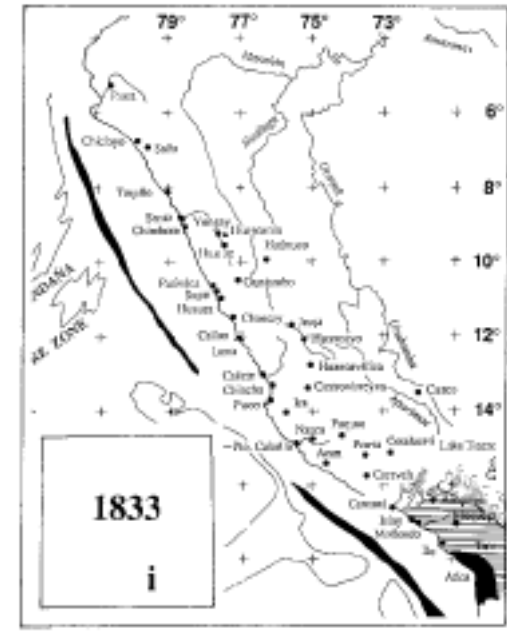
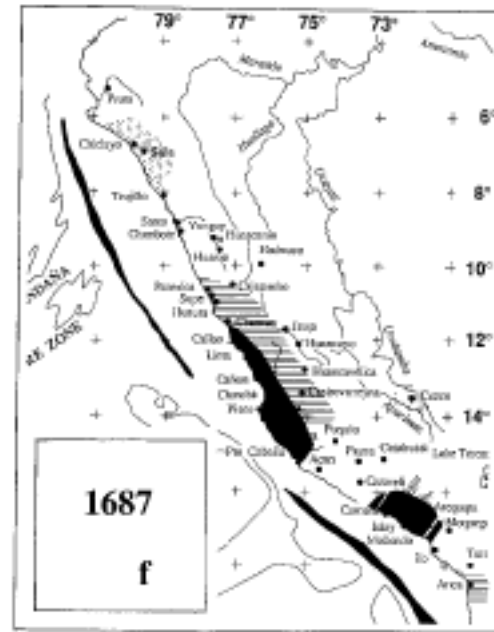
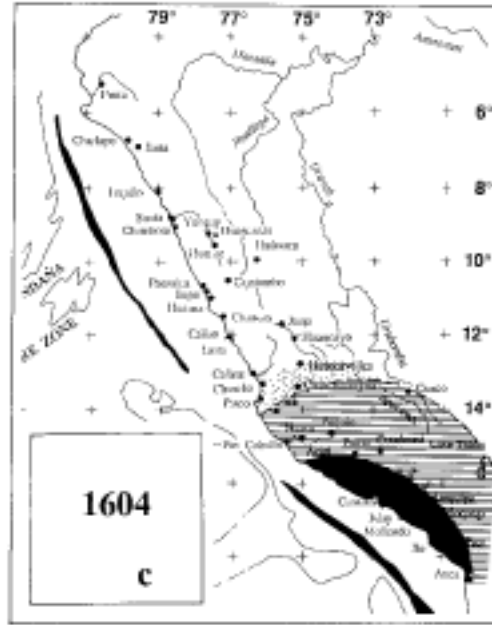
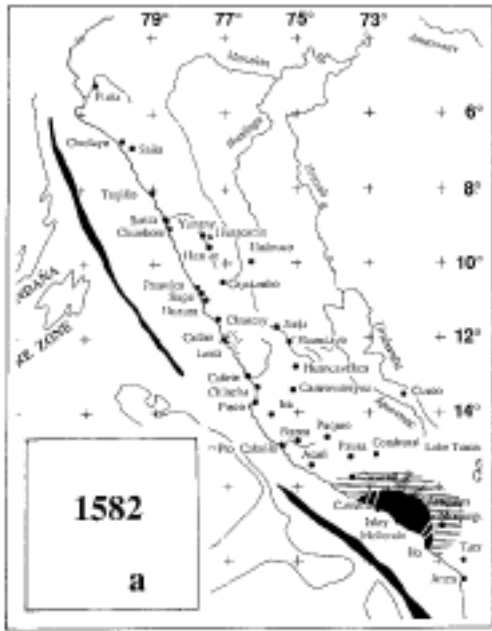
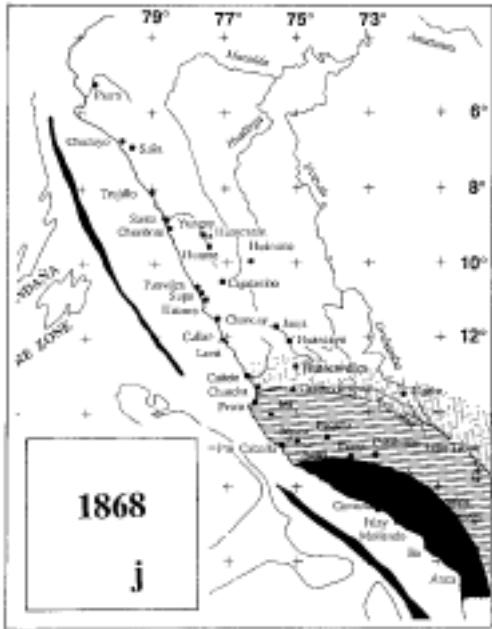


FIG. 4.1. Magnitudinal effects of great historical EQs.

Dorbath et al/. 1990

Historical large EQ



Dorbath et al/. 1990

TABLE 3
HISTORICAL EARTHQUAKES IN PERU: ESTIMATES OF MAGNITUDE

Year	L (km)	H_r (m)	$[M_w]$	$[M_t]$	M (Silgado)
1582	80	1-2	7.5	7.7-8.0	7.9
1586	175	5	8.1	8.5	8.1
1604	450	10-15	8.7	8.8-9.0	8.4
1619	100-150		7.7-8.0		7.8
1664	75		7.5		7.8
1678	100-150	5 (?)	7.7-8.0	8.5	
1687	300	5-10	8.4	8.5-8.8	8.2
1687	150 (?)		8.0		
1715	75		7.5		
1725	75		7.5		
1746	350	15-20	8.6	9.0-9.2	8.4
1784	300	2-4	8.4	8.0-8.4	8.0
1833	50-100		7.2-7.7		
1868	500	14	8.8	8.9	8.6
1940	180	3	8.1	8.2	
1942	200	3	8.2	8.2	
1966	100	2.6	7.7	8.2	
1974	140	1.6	7.9	7.9	

L = rupture length; H_r = local tsunami height; $[M_w]$ = estimate of moment derived magnitude; $[M_t]$ = estimate of tsunami magnitude.

Year	Mw	L (km)
1582	7.5	80
1604	8.7	450
1687	8.4	300
1784	8.4	300
1833	7.5	75
1868	8.8	500

.Peruvian Seismic Alert System - SASPe

No	Departamento	estaciones
01	TUMB	4
02	PIURA	10
03	LAMBAYEQUE	5
04	LA LIBERTAD	11
05	ANCASJ	13
06	LIMA	14
07	ICA	15
08	AREQUIPA	22
09	MOQUEGUA	4
10	TACNA	5
	TOTAL	103



3,000 Km
de costa

$\Delta = 25-30$

Proyecto de Inversion - MEF -

SASP : Estaciones Nor-Perú



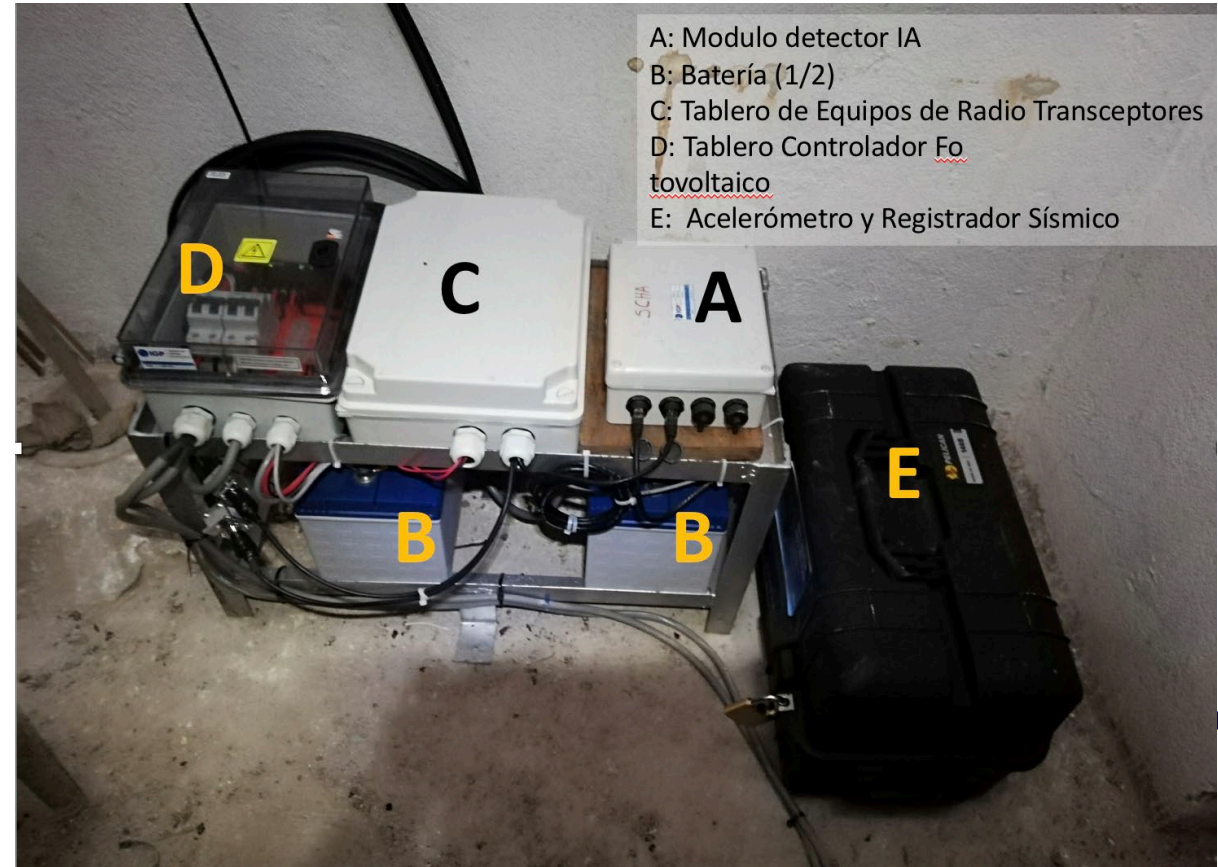
Estación Piura



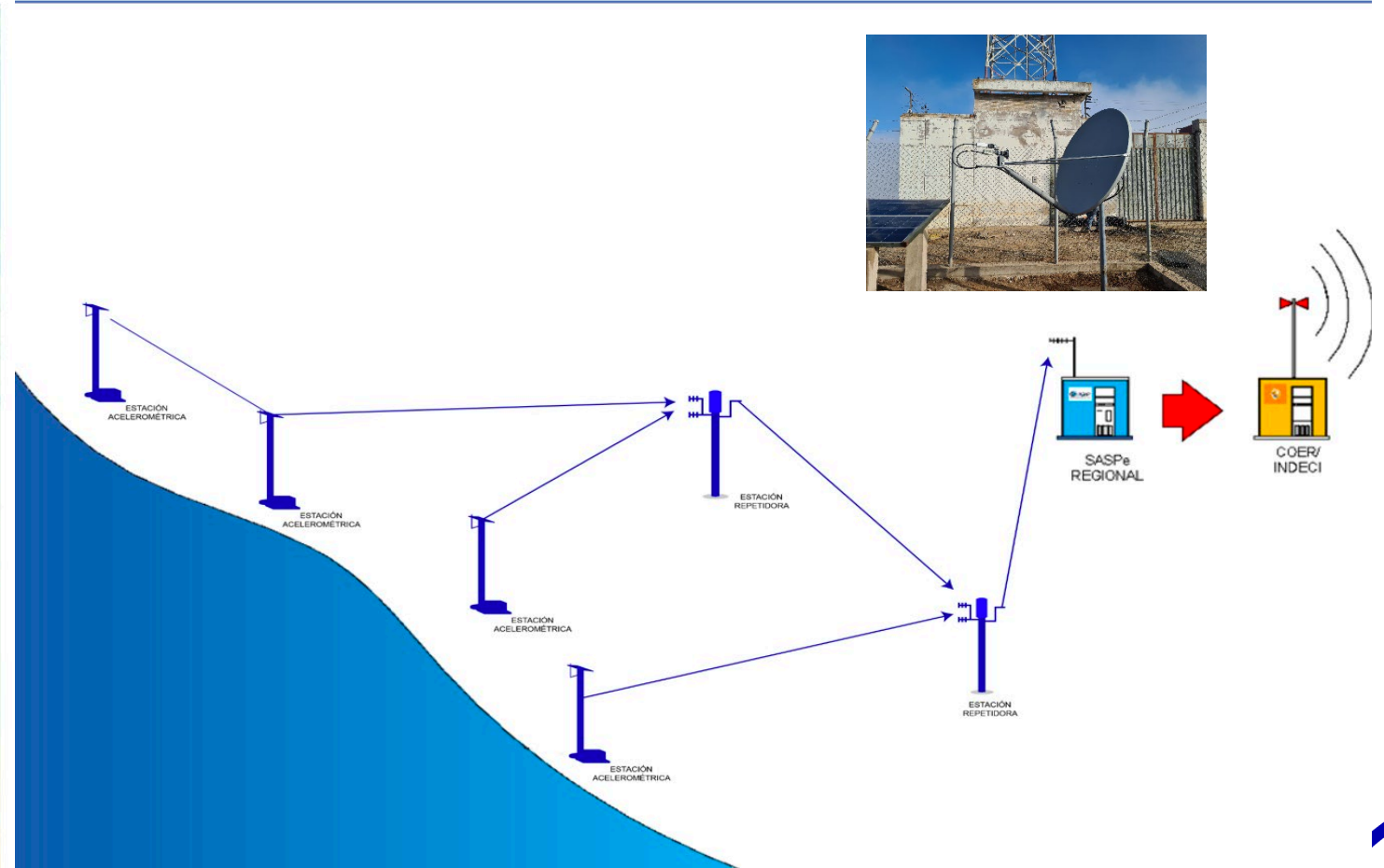
Caja de campo

- A: Modulo detector IA
- B: Bateria (1/2)
- C: Tablero de Equipos de Radio Transceptores
- D: Tablero Controlador Fotovoltaico
- E: Registrador Sísmico CENTAUR

SASPe : Estaciones via Convenio



Sistema de Telecomunicaciones



Servicio Nacional de Áreas Naturales
Protegidas por el Estado

Nodos de Control Regional - NCOR

