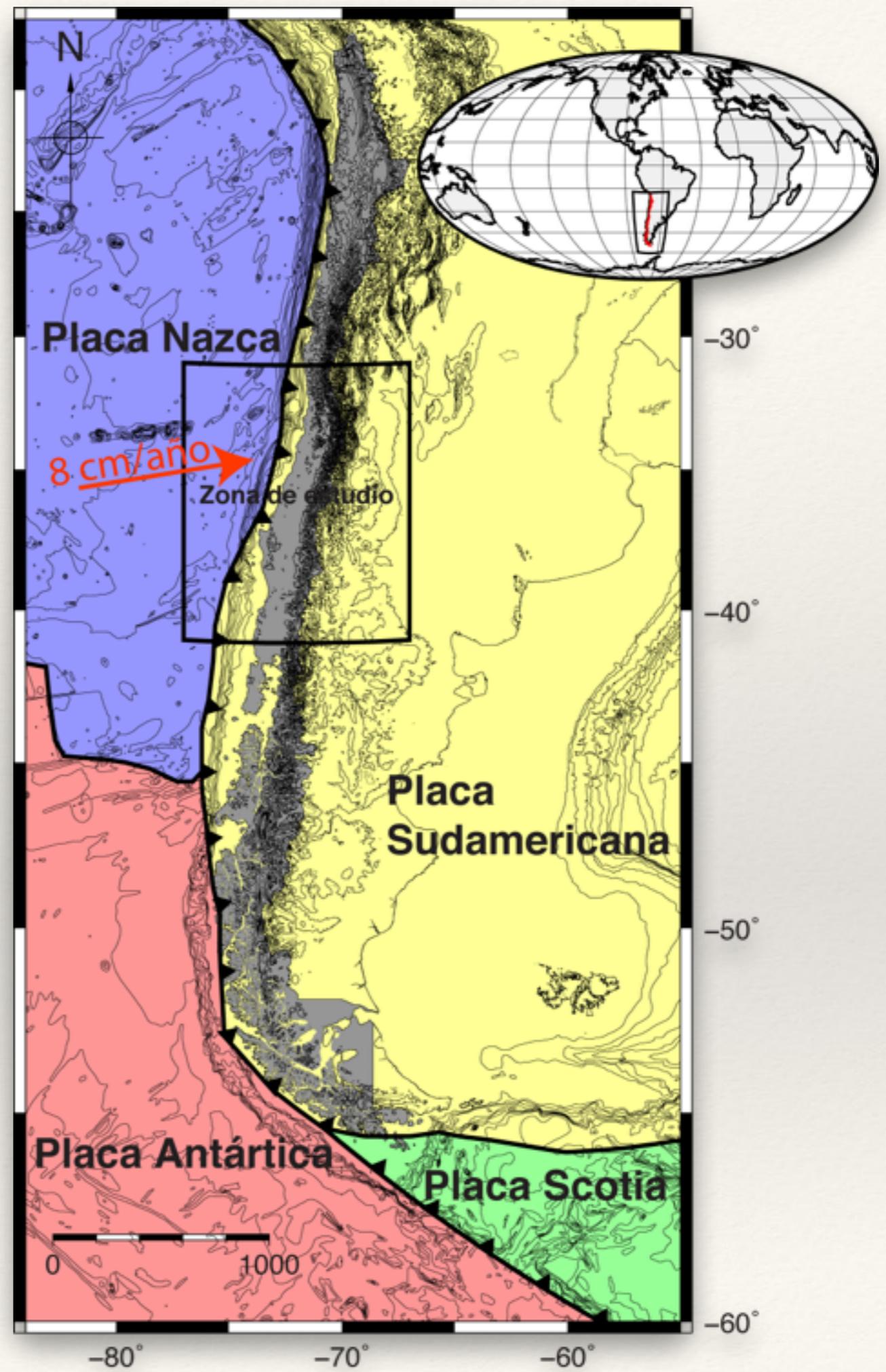
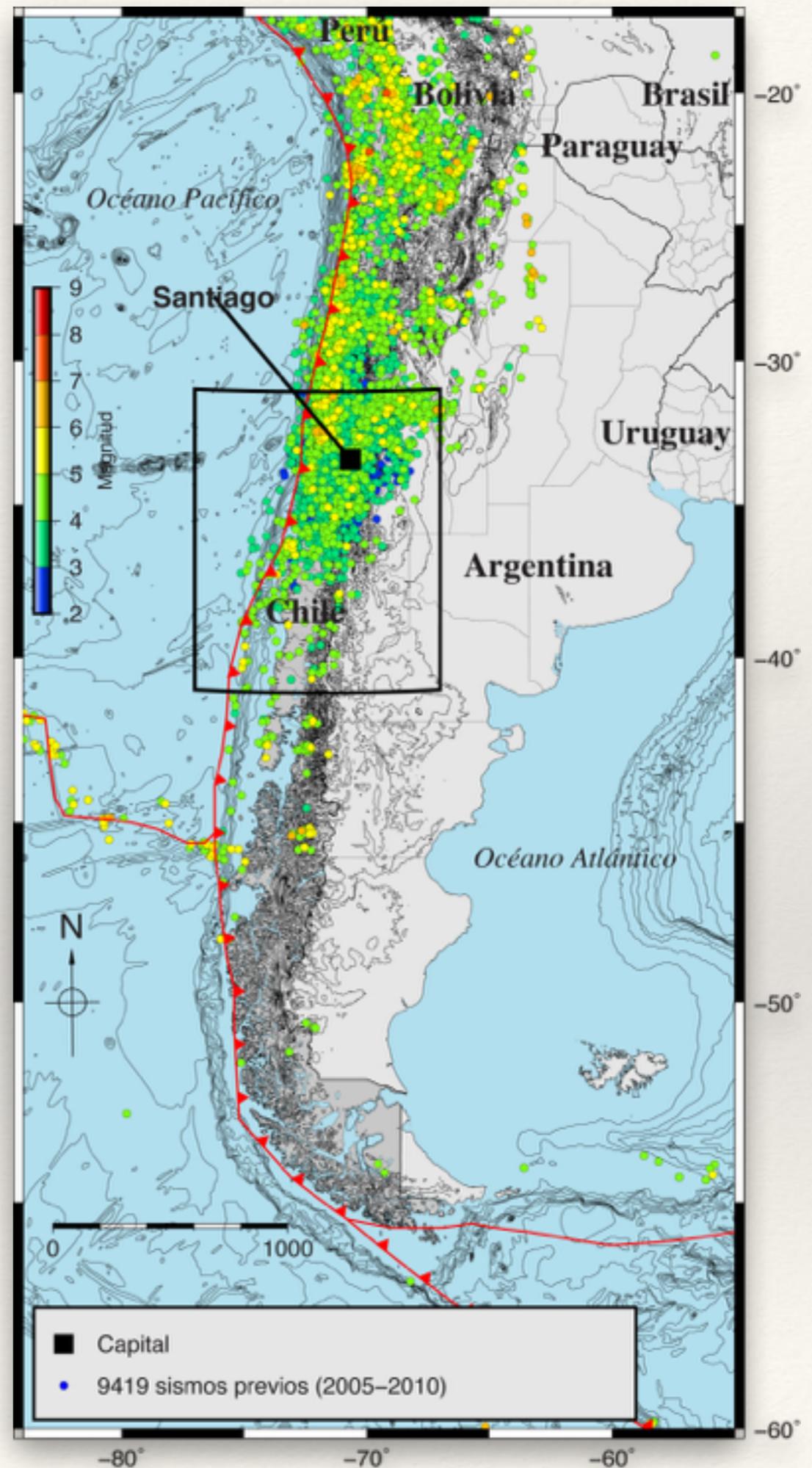

Terremoto de Chile 2010

Universidad de Costa Rica
Escuela Centroamericana de Geología
Geología Numérica
Estudiante
Leonardo van der Laat

Contexto Tectónico

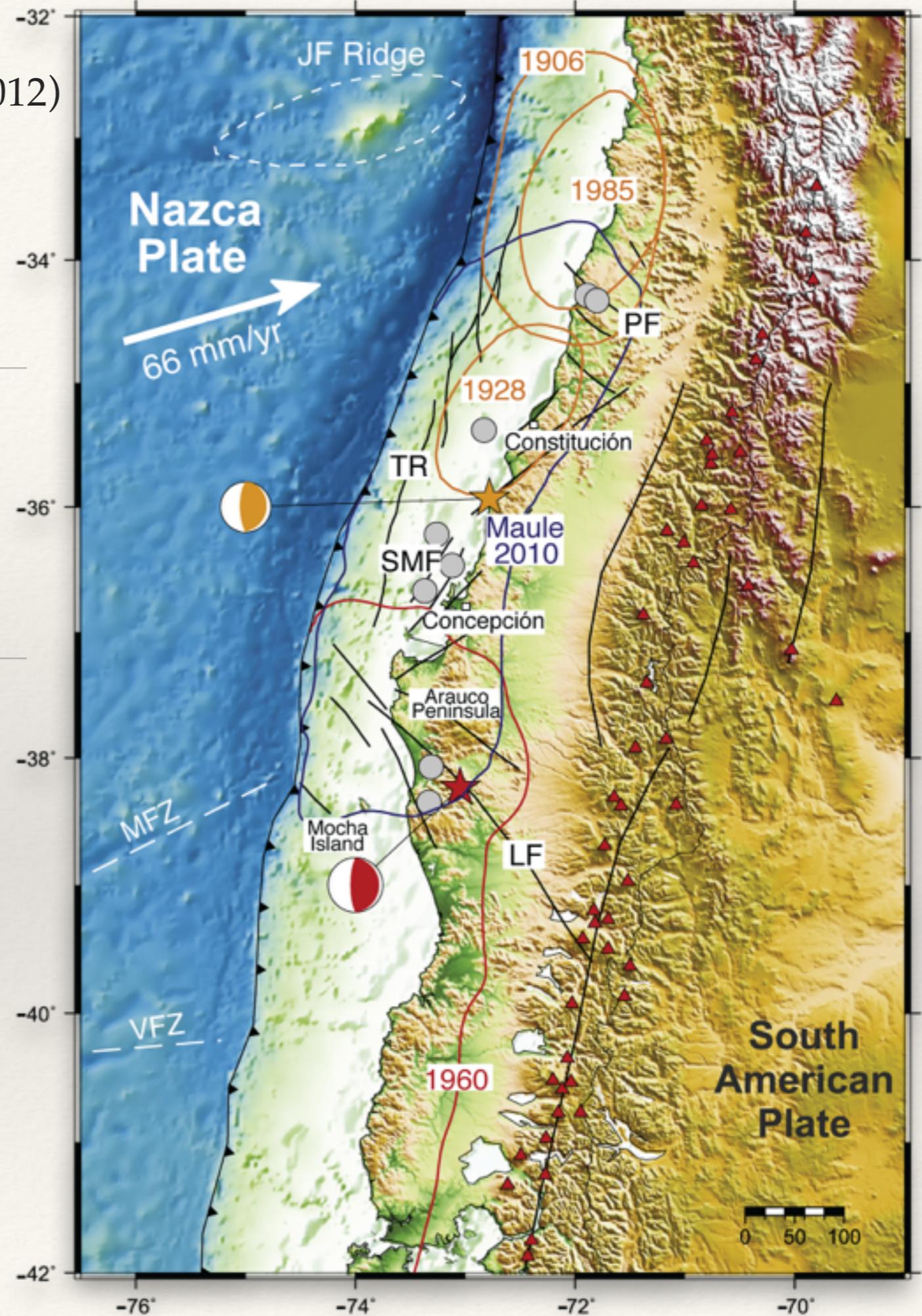


Sismicidad regional previa al terremoto



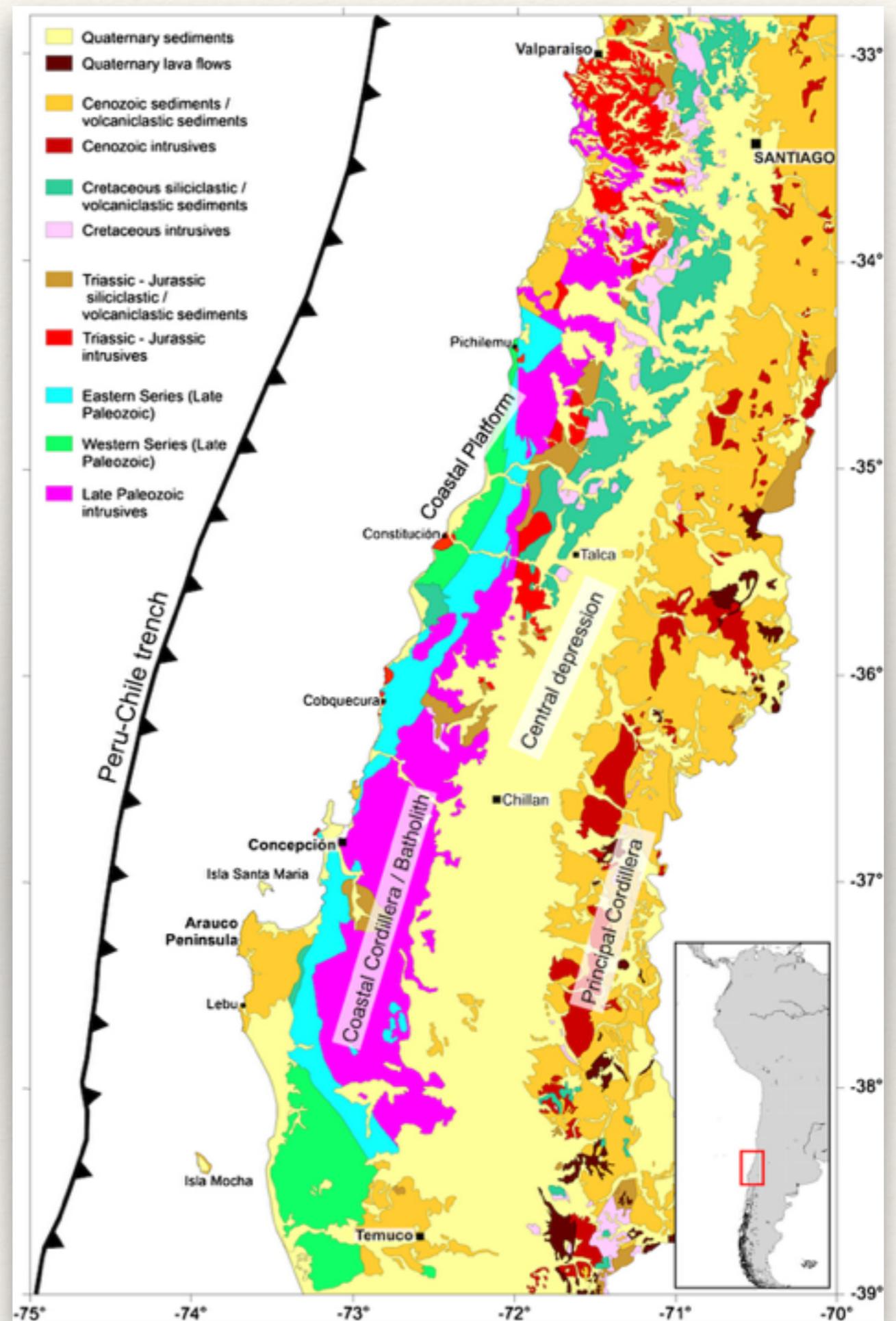
Moreno et al. (2012)

Contexto sismotectónico



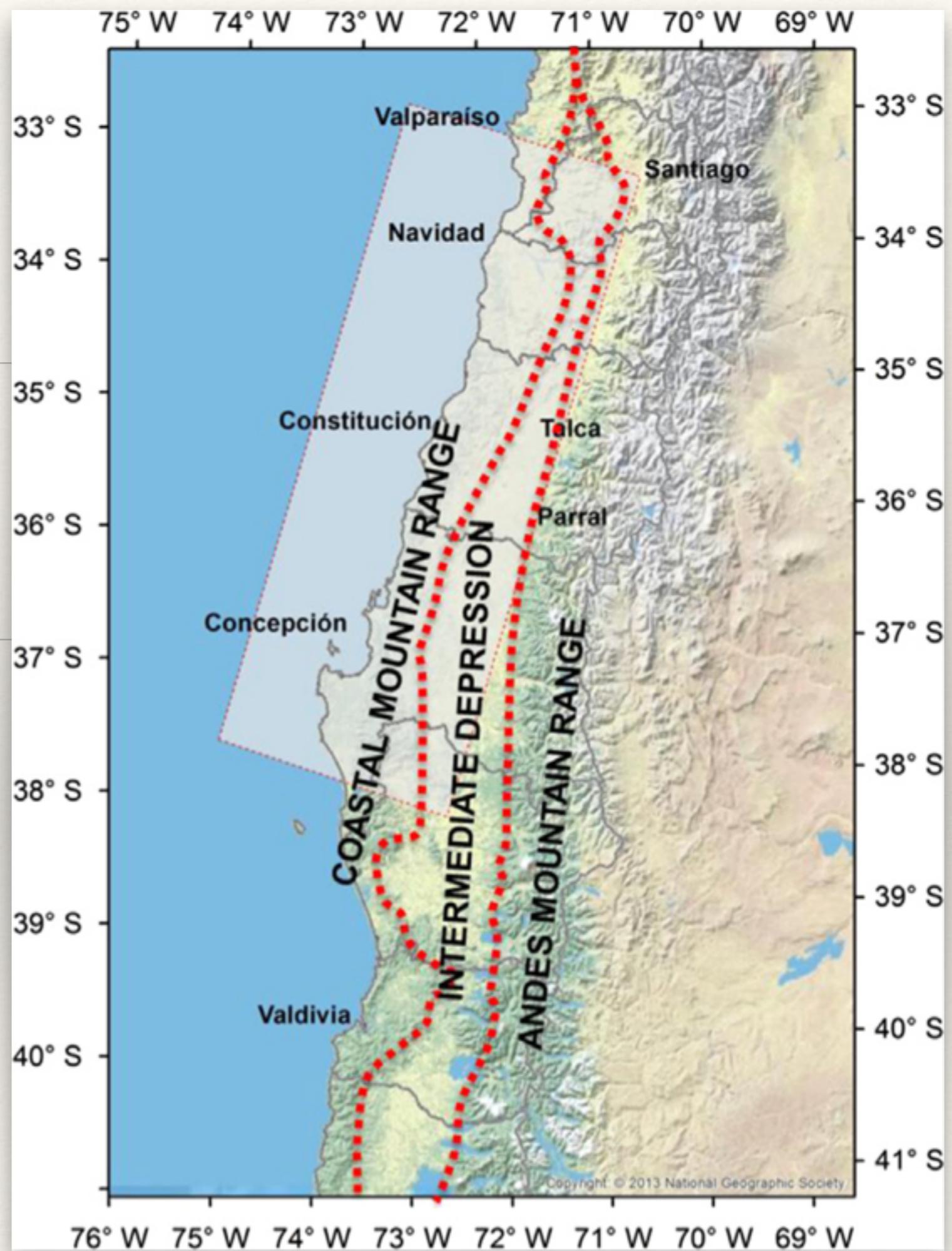
Hicks et al. (2014)

Contexto geológico



Verdugo & González (2015)

Contexto morfológico



Ciudades vulnerables

Número de habitantes por ciudad:

Valparaíso 1.066.893

Santiago 6.158.080

Rancagua 277.090

Talca 253.743

Chillán 204.180

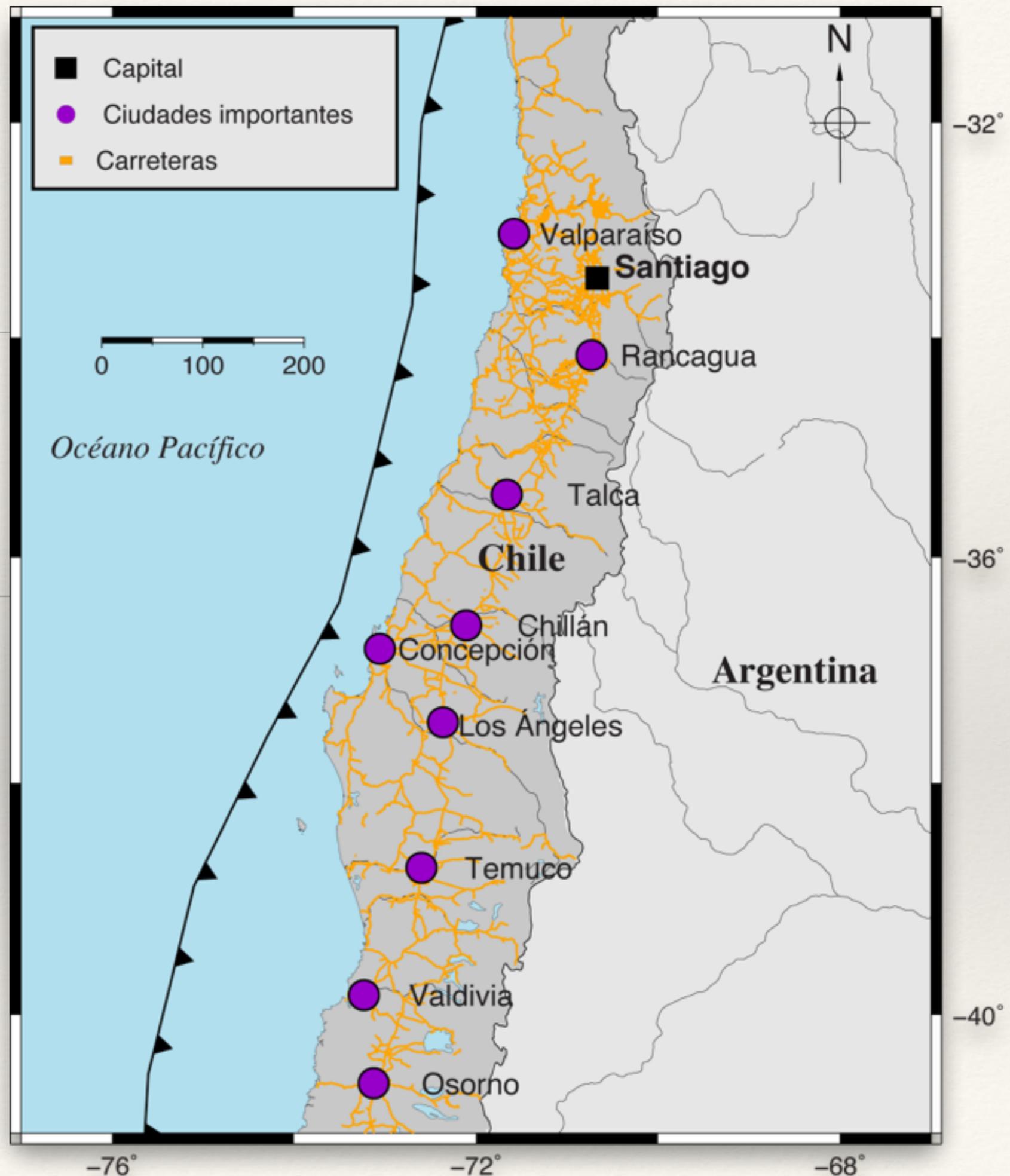
Concepción 1.083.043

Los Ángeles 187.494

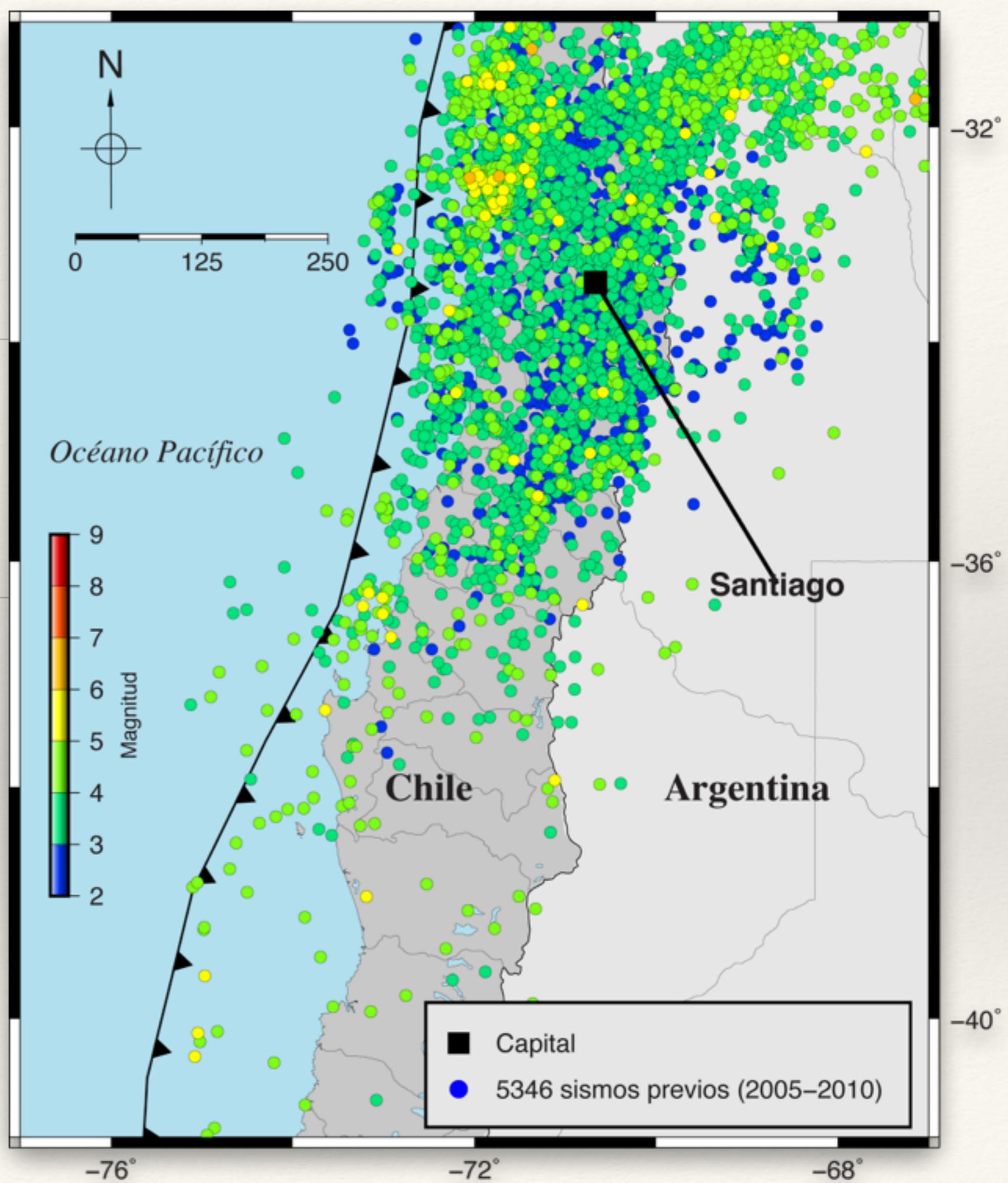
Temuco 410.520

Valdivia 154.445

Osorno 153.797

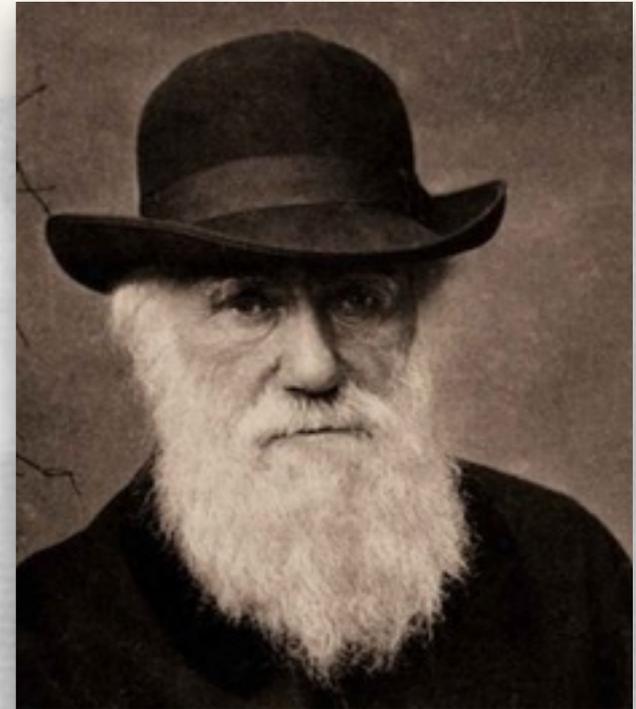


Sismicidad previa al terremoto

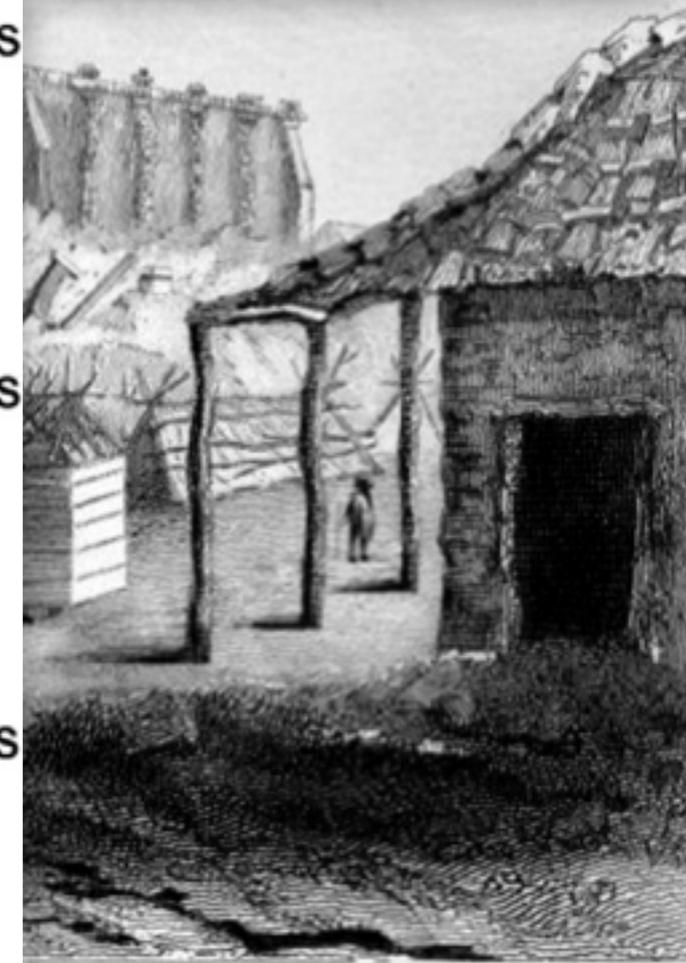
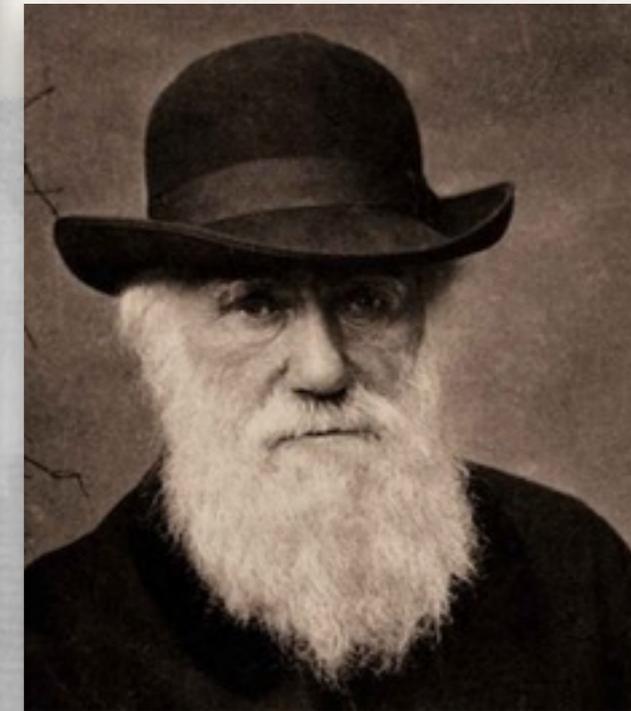
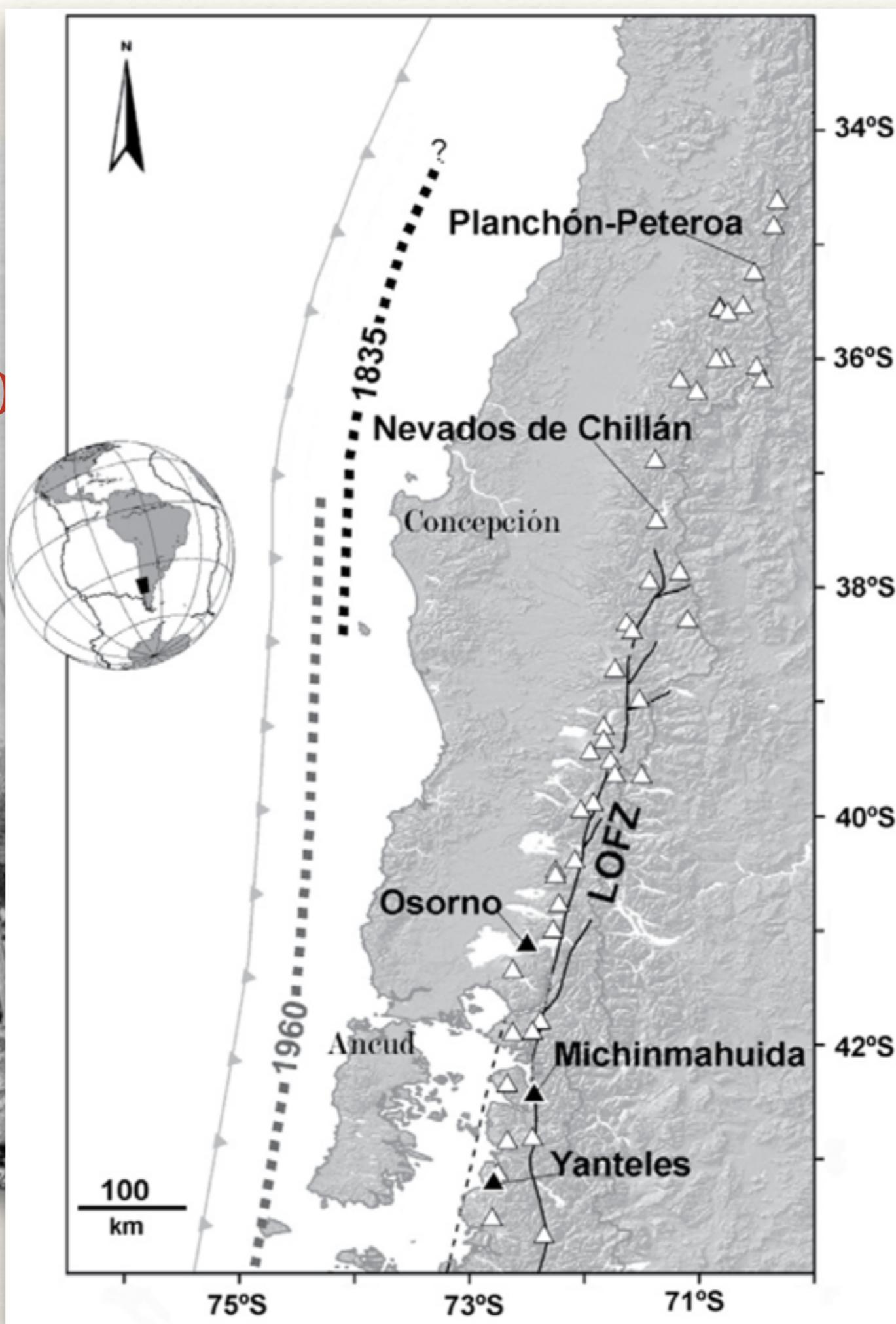


Terremoto de 1835

- 8.2 M_{fa}
- 50 fallecidos
- Tsunami



Terremoto 1835





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Interseismic strain accumulation measured by GPS in the seismic gap between Constitución and Concepción in Chile

J.C. Ruegg^{a,*}, A. Rudloff^b, C. Vigny^b, R. Madariaga^b, J.B. de Chabalier^a, J. Campos^c, E. Kausel^c, S. Barrientos^c, D. Dimitrov^d

^a *Institut de Physique du Globe (IPGP), Paris, France*

^b *Laboratoire de Géologie, Ecole Normale Supérieure (ENS), CNRS, Paris, France*

^c *Departamento de Geofísica (DGF), Universidad de Chile, Santiago, Chile*

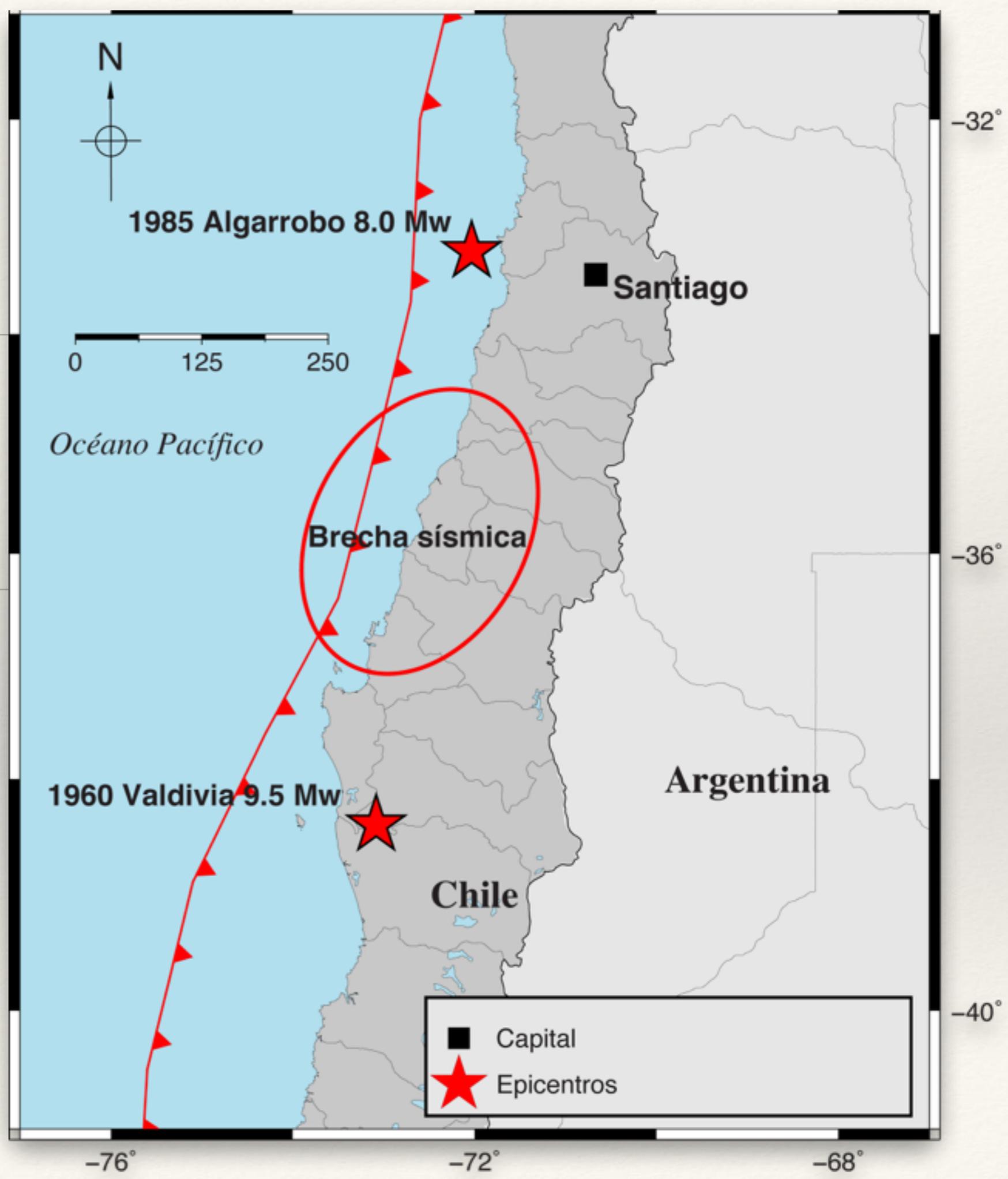
^d *Bulgarian Academy of Sciences, Sofia, Bulgaria*

Brecha sísmica

Área entre -35° y -37° , sin sismo grande desde 1835, lista para un 8 - 8.5 Mw

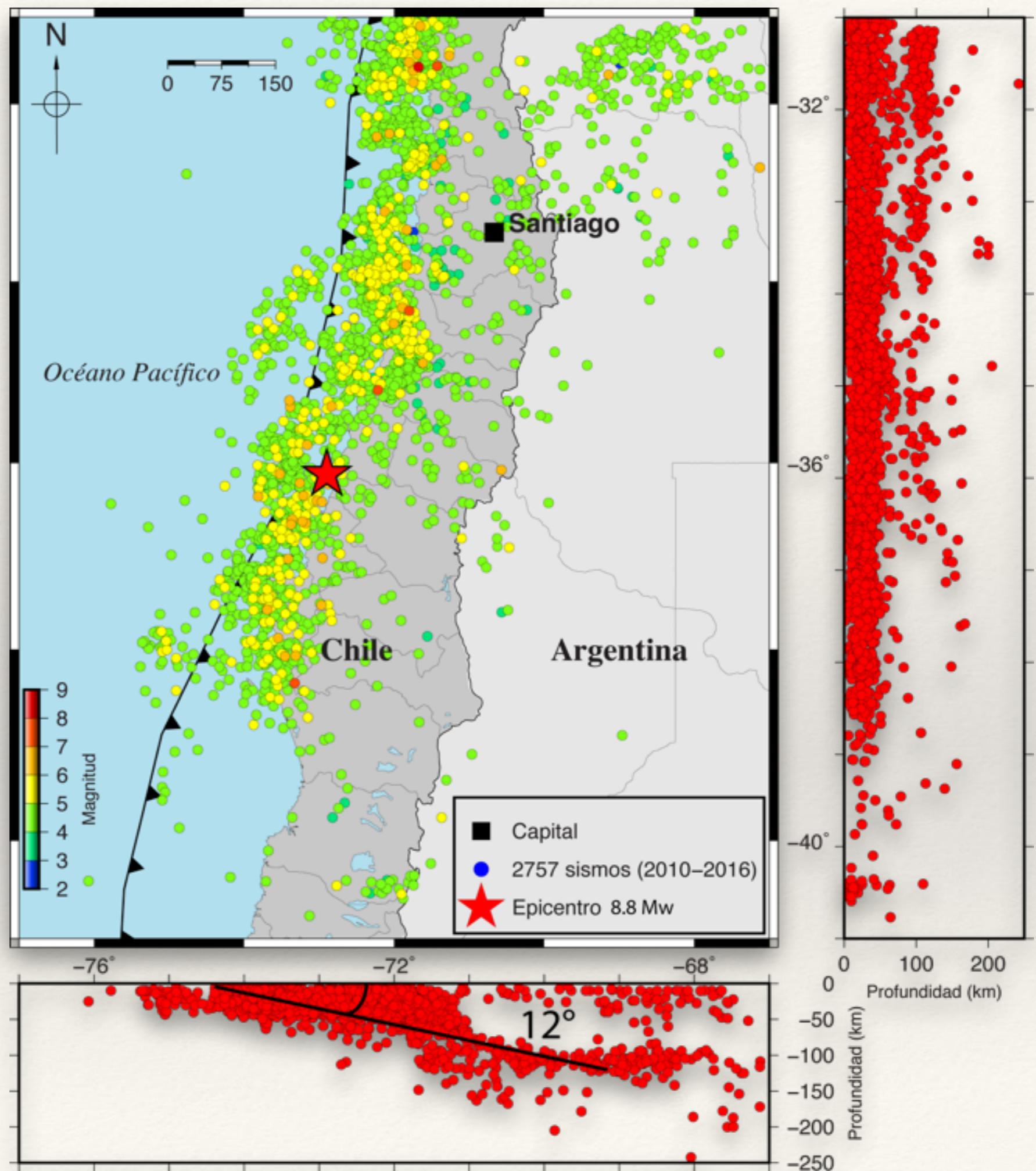
Brecha sísmica

Área entre -35° y -37° , sin sismo grande desde 1835, lista para un 8 - 8.5



Evento principal y sismicidad posterior

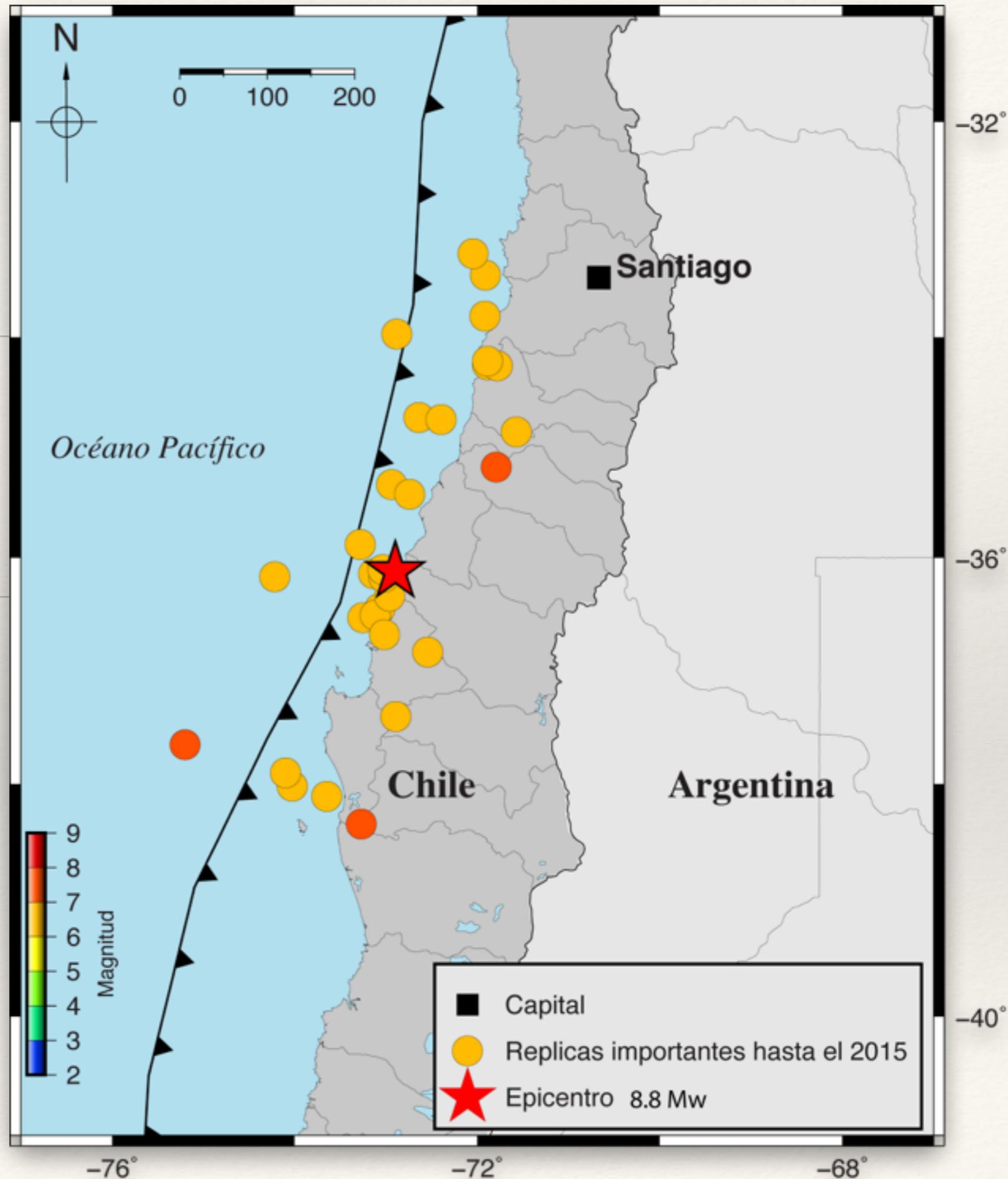
- ❖ 27 de febrero del 2010
- ❖ 03:34 hora local
- ❖ 8.8 M_w (6to más grande)
- ❖ Profundidad: 30.1 km
- ❖ A 12.5 km de la costa
- ❖ 150 km al NO de Concepción
- ❖ Duración máxima: 4 min



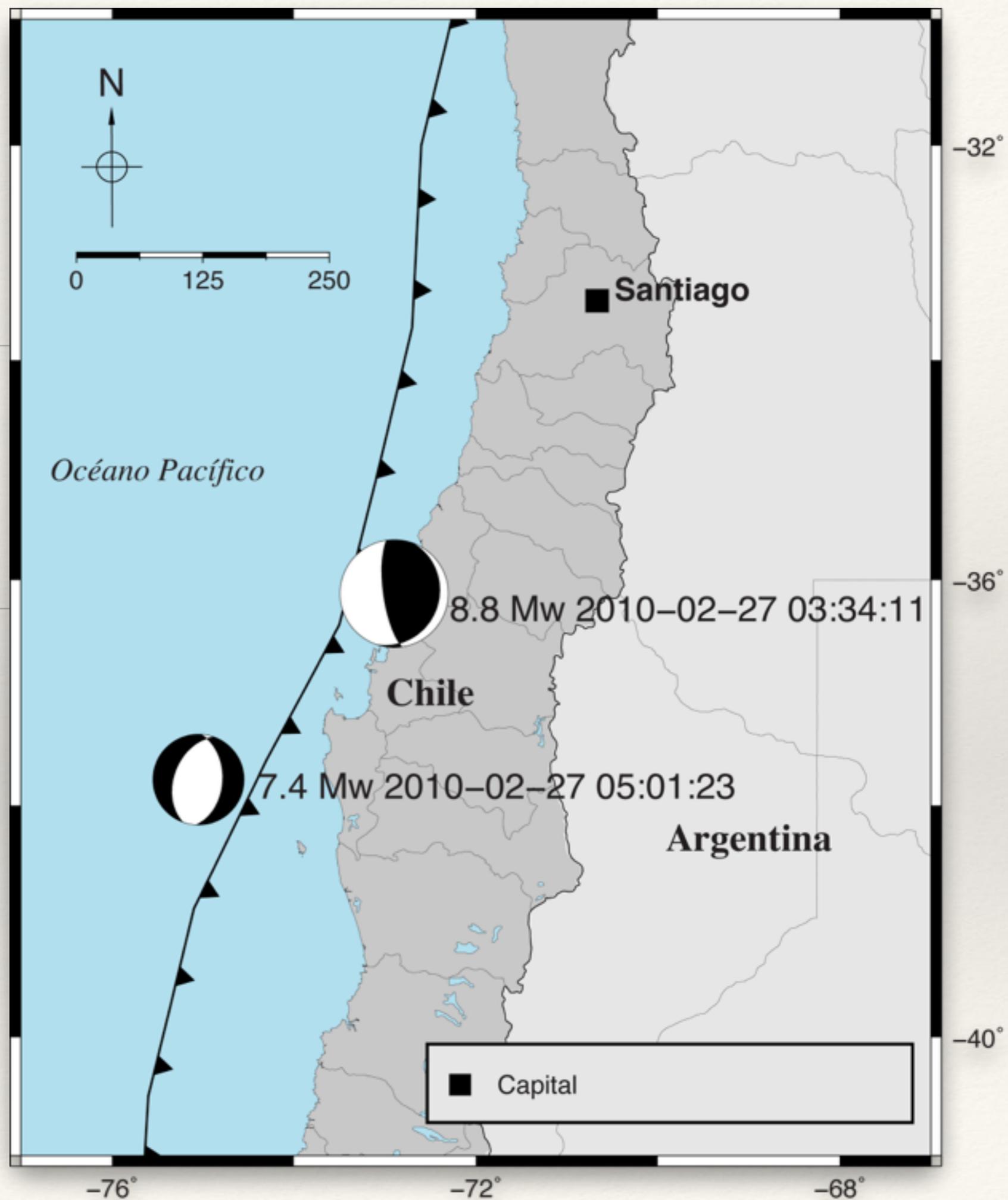
Réplicas del terremoto

2010-02-27

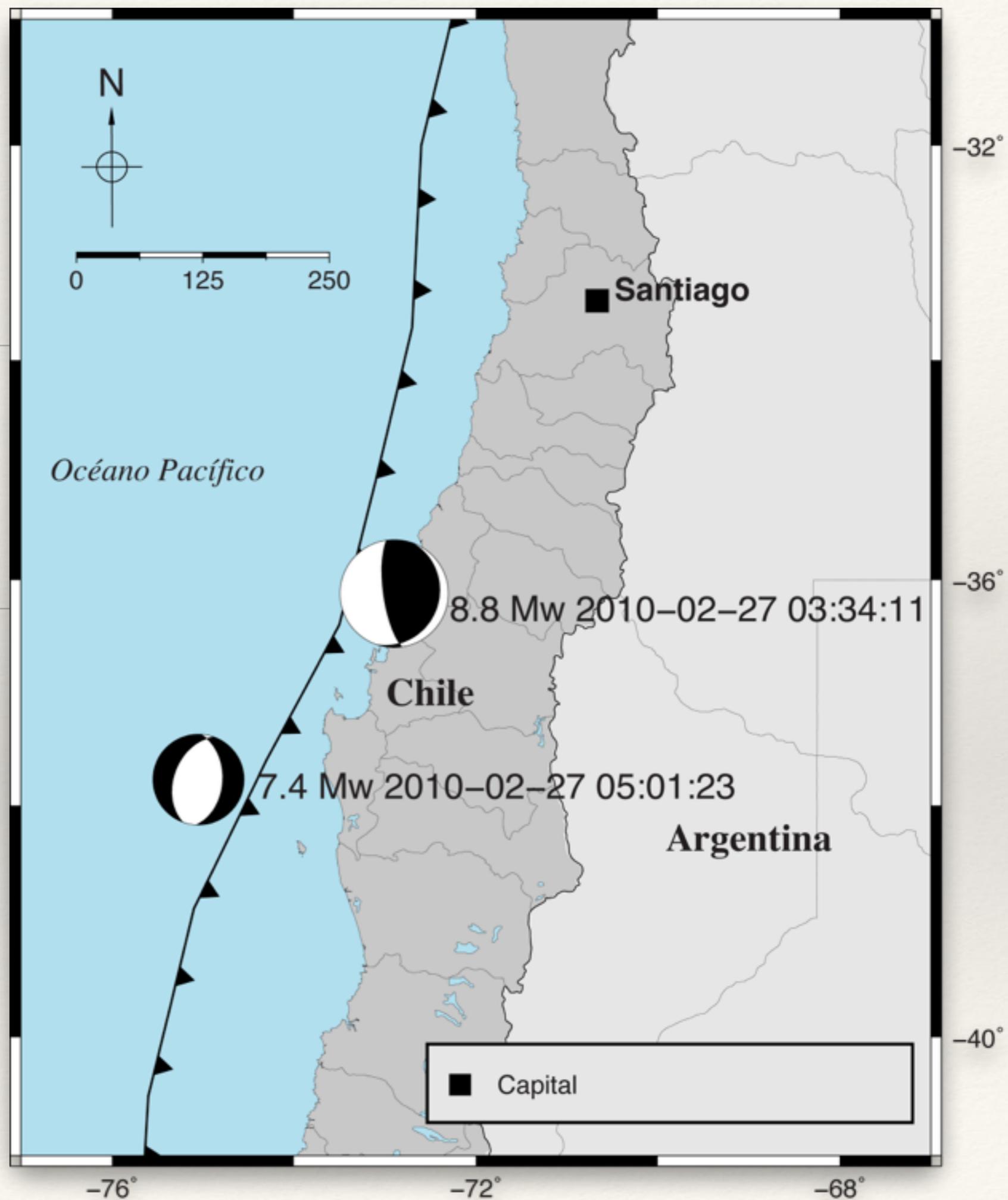
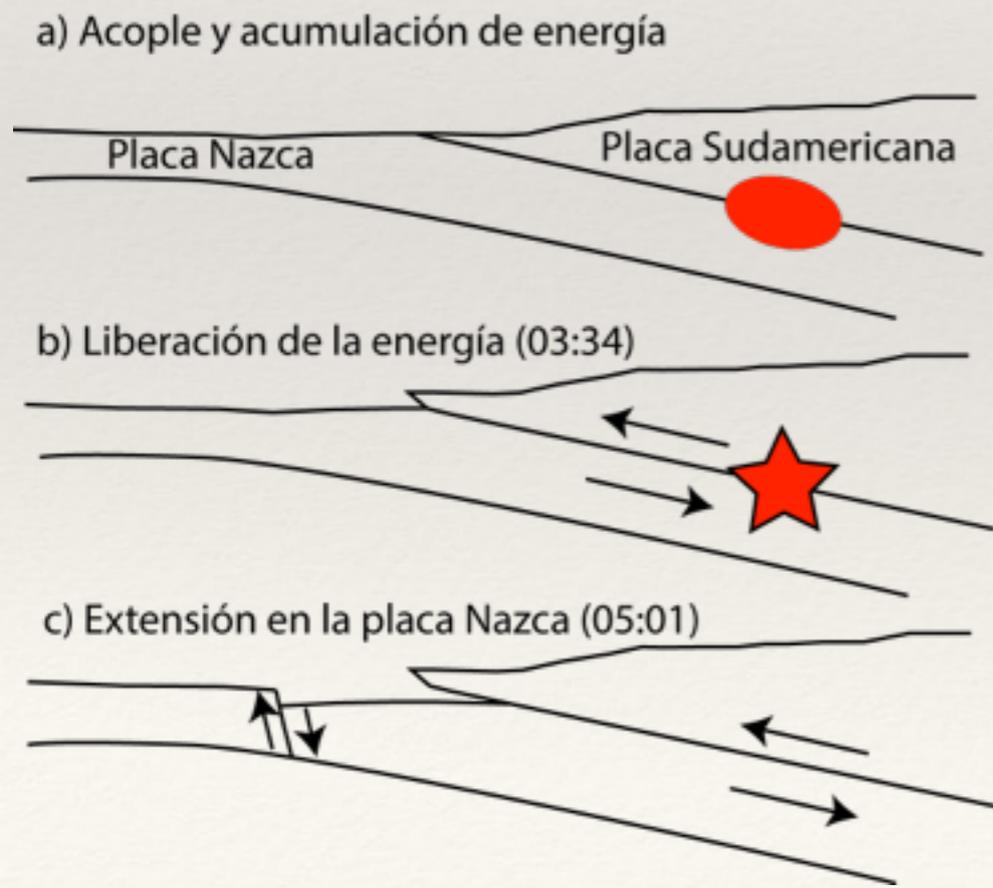
Hora local	M _w
3:52:34	6,2
4:12:28	6,0
4:37:18	6,0
5:01:22	7,4
5:25:29	6,1
7:30:30	6,0
16:00:06	6,3



Mecanismos focales



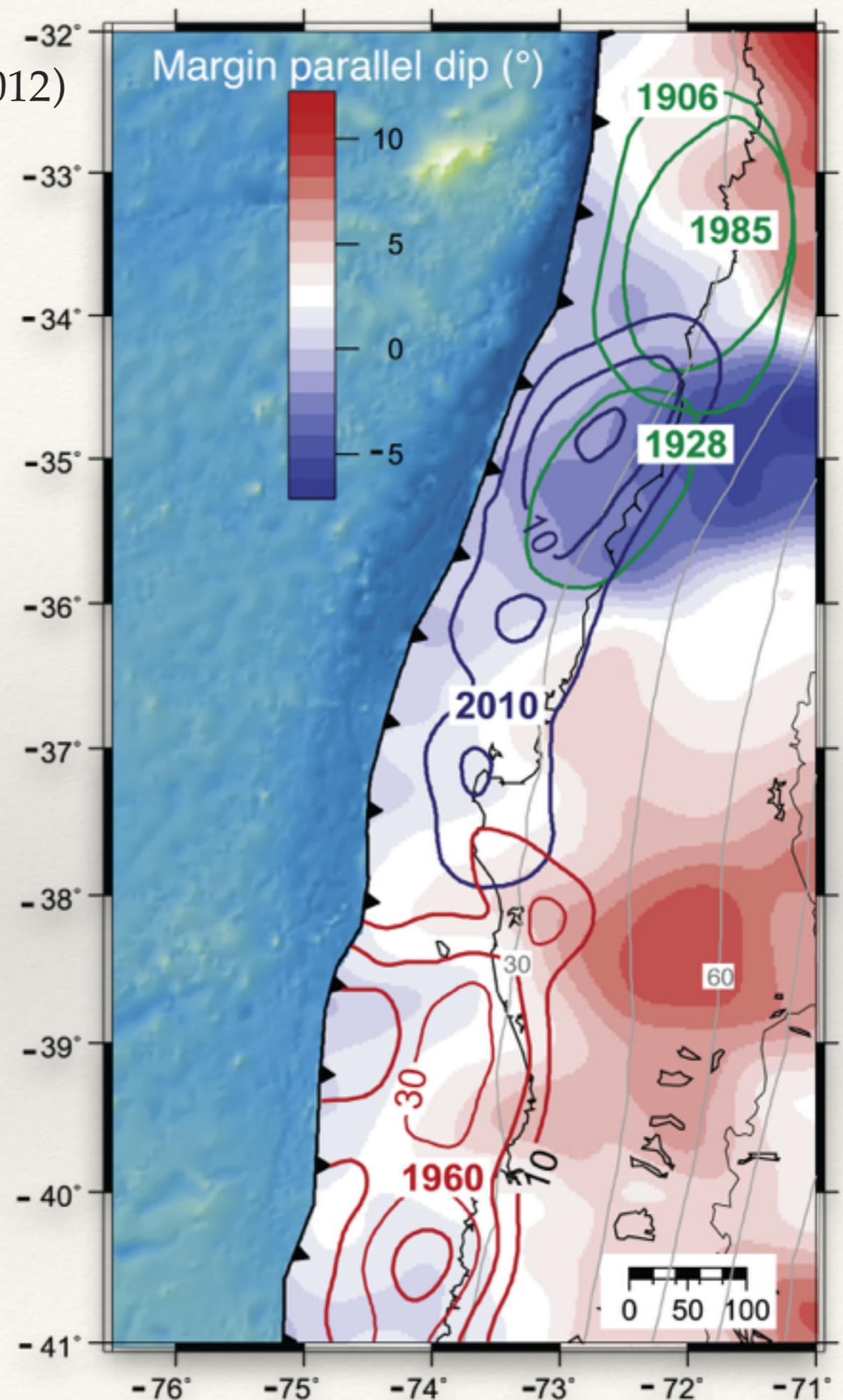
Mecanismos focales



Moreno et al. (2012)

Ruptura del sismo

- Zona de ruptura ~550 x ~170 km
- Desplazamiento de entre 10 y 16 m.
- Se cerró la brecha
- Levantamiento del piso oceánico 1.5 y 2.5 m



Melnick et al. (2012)

Levantamiento de terrazas

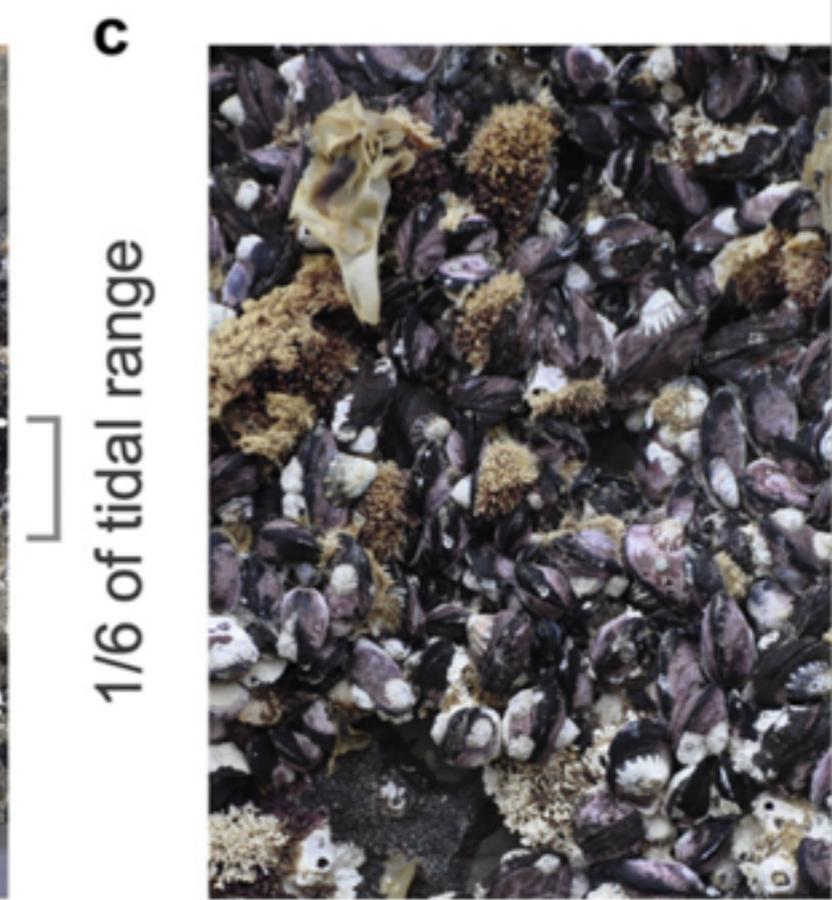
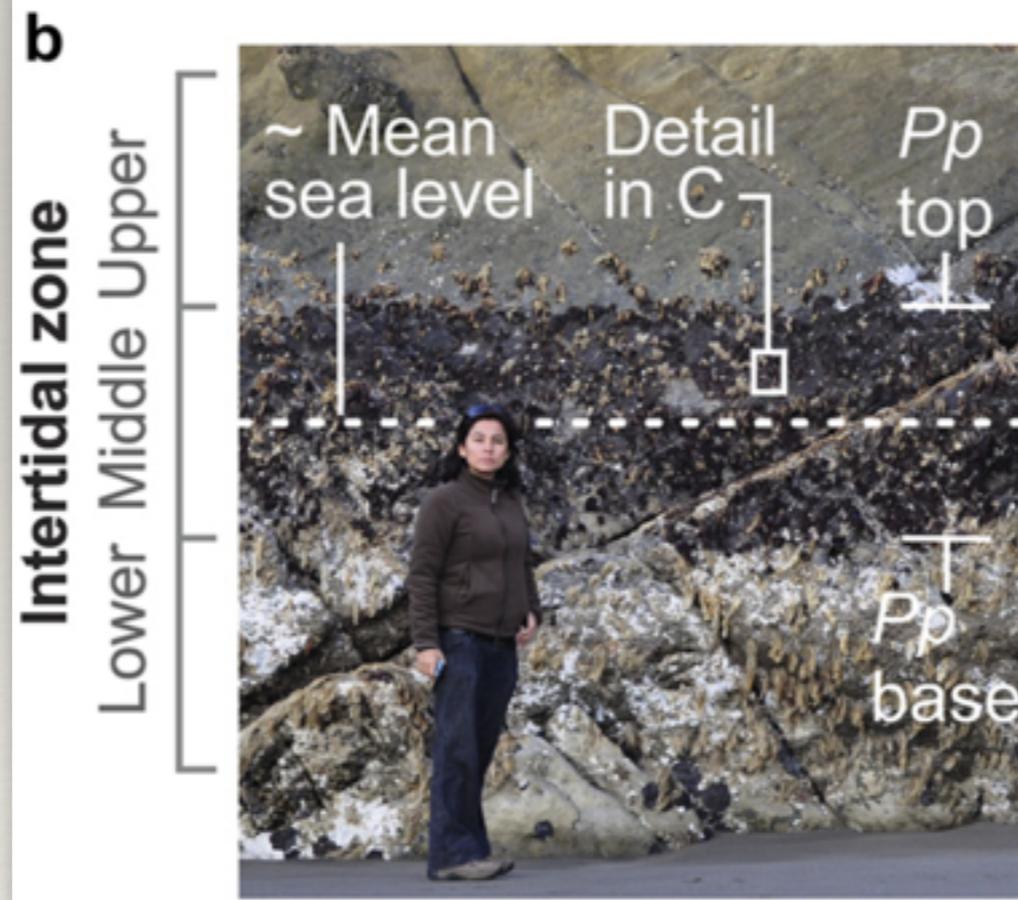
- 1835 Charles Darwin y Robert FitzRoy



Melnick et al. (2012)

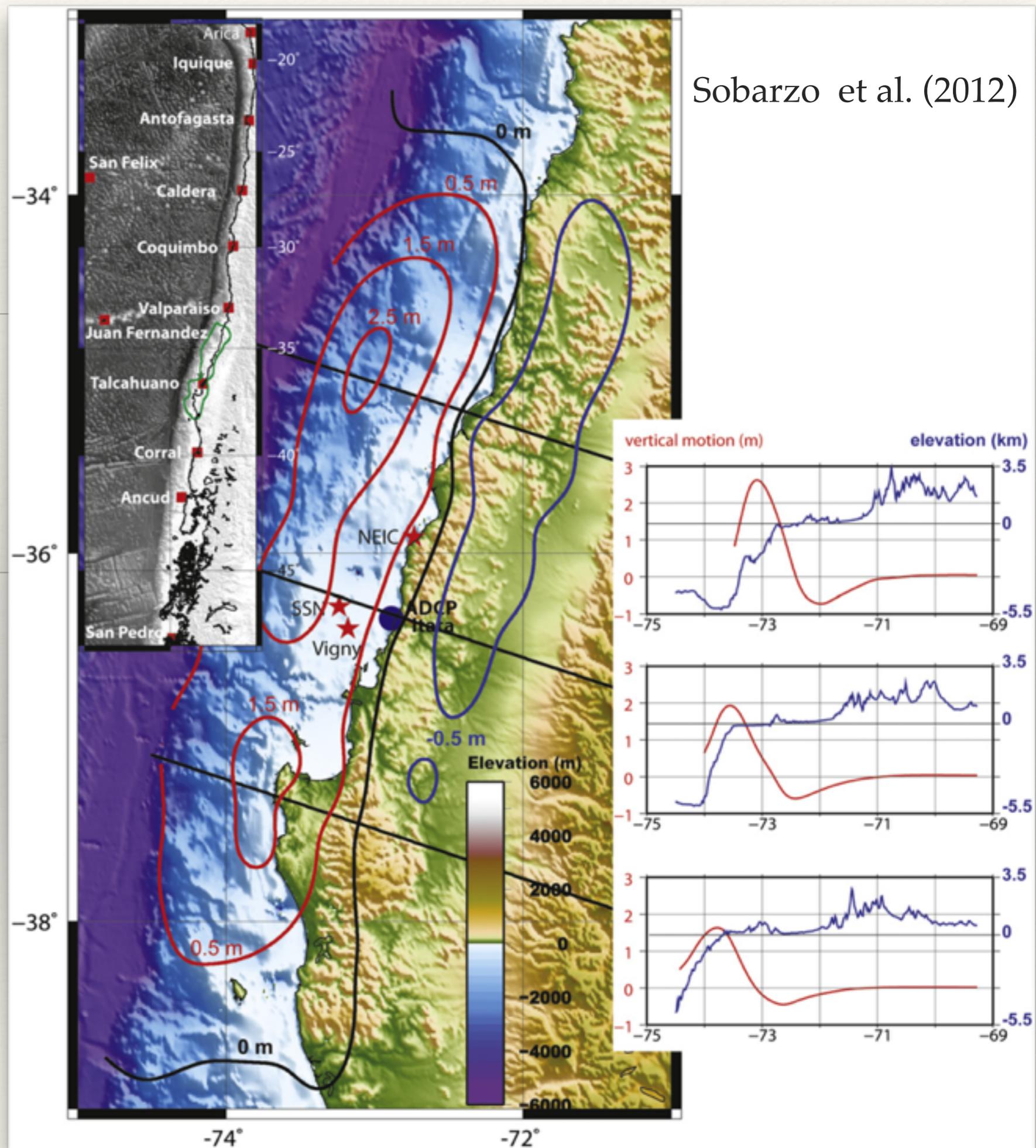
Levantamiento de terrazas

- *Perumytilus Purpuratus*

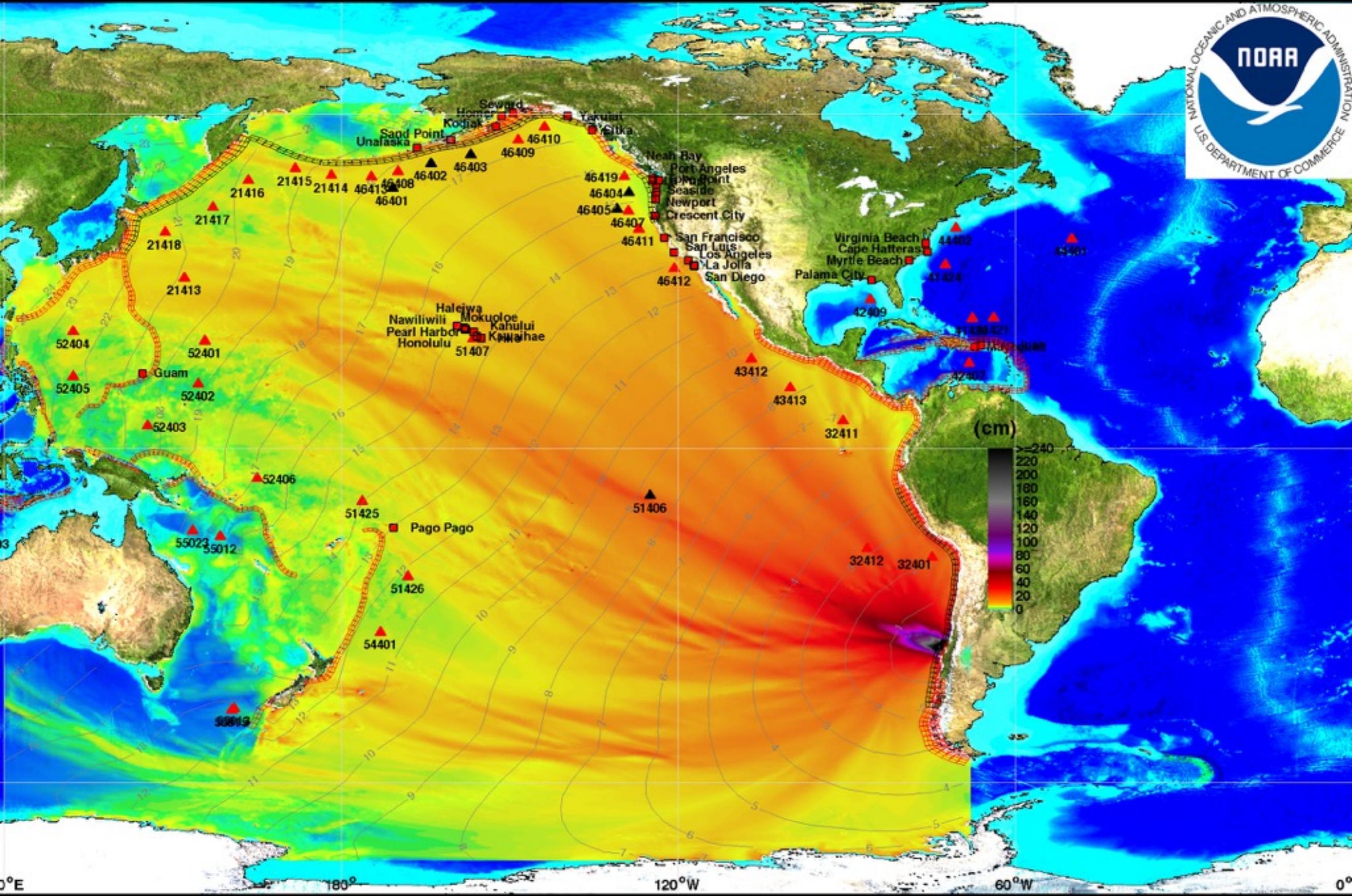


Tsunami

- Columnas de agua de hasta 4000 m
- 1era llegadas a los 20 minutos
- 8 horas
- 8 a 10 olas
- Altura máxima 30 metros
- 125 muertos y 46 desaparecidos







Víctimas

Intensidad IX en regiones VII y VIII













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