Chilean Seismological Network

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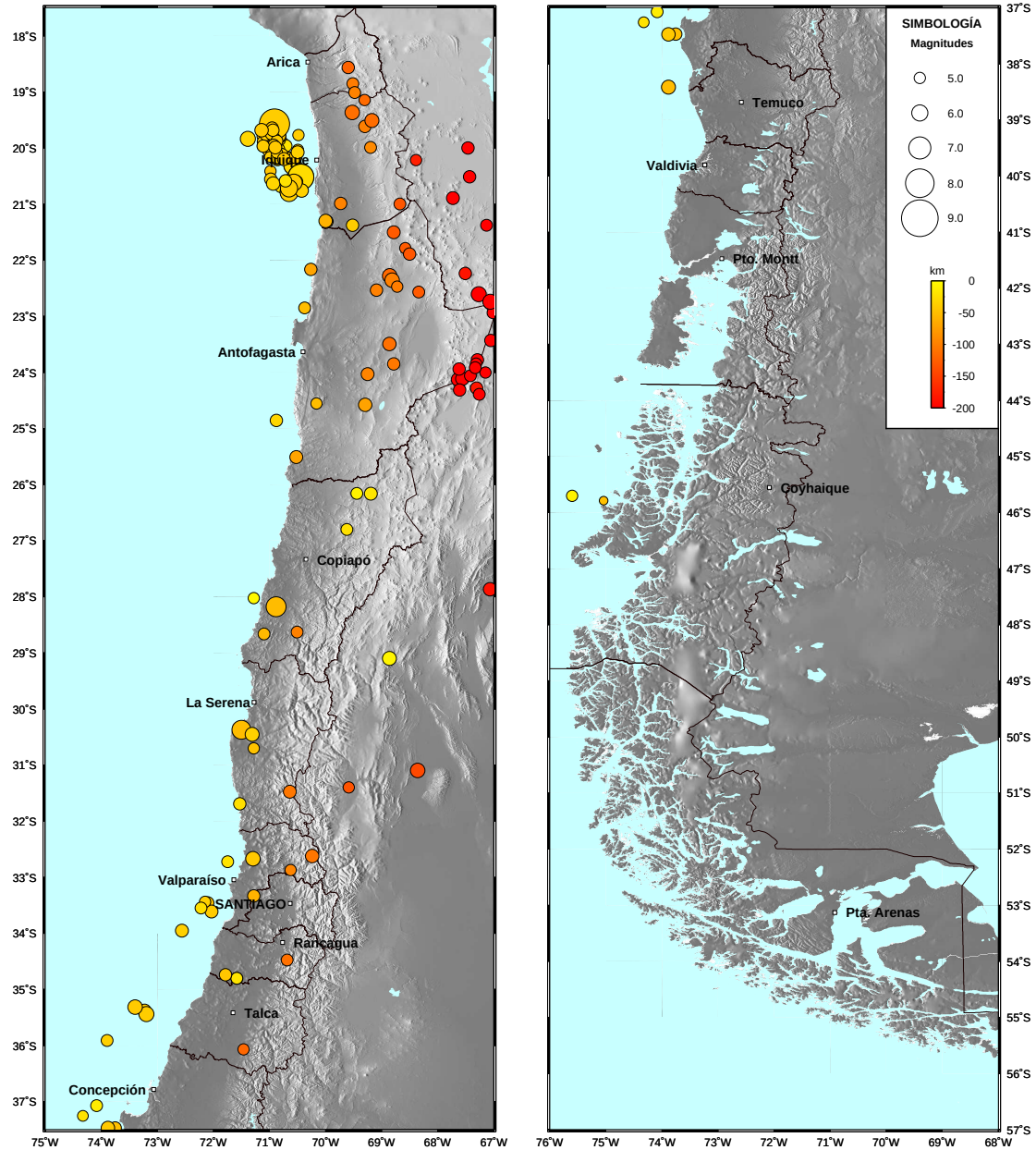
Centro Sismológico Nacional (CSN)

July 2014

Mission

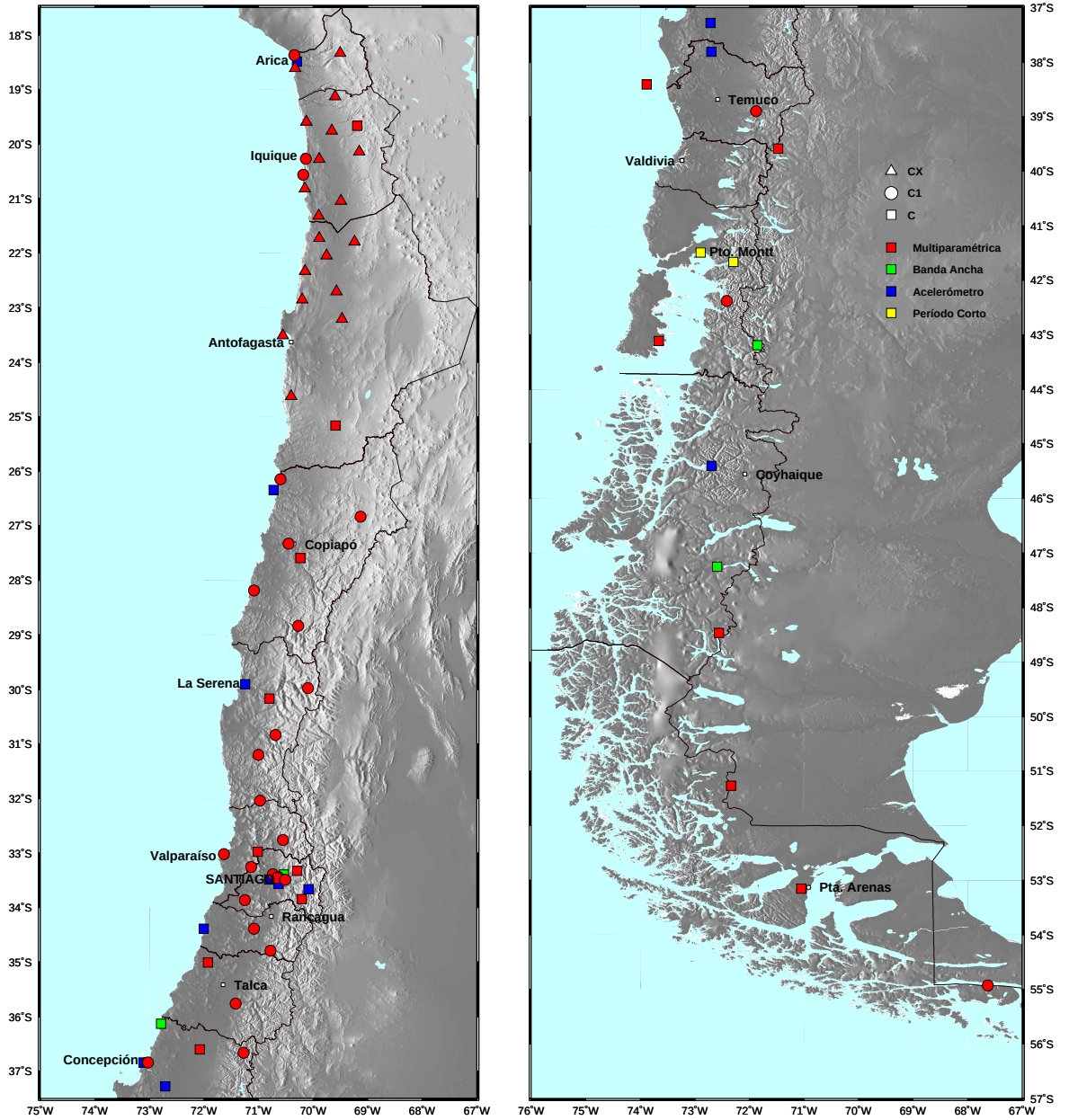
Our mission is monitoring and keep a complete registry of all the earthquakes that occurs in Chile to deliver, at any time and at any moment, the most complete information to the goverment agencies, authorities and to the people that design and improve seismic norms that guide the construction of buildings and structures in our land.
To accomplish our mission we must maintain a large, robust and reliable network of seismological stations in the whole country.

Seismicity



Earthquakes with magnitude greater than 5 in Chile region since June, 2013

Stations in Chile



Network	Stations
C1	30
C	31
CX	19
G	2
UI	1

Map and table of actual seismological stations in Chilean territory

Typical Station

Photos of a typical seismological station of the new network C1

Instruments

Net	Dig	BroadB	Acc	Datalog
C1	Q330	Trillium 120	CMG-5T	Marmot (with Antelope)
C	Q330 ED PS6-24	Trillium 120 Trillium 40	Epi FBA ES-T	Baler
CX	Q330 Q330HR	STS-2	Epi FBA ES-T	Baler

Digitizers used in stations located in Chilean territory

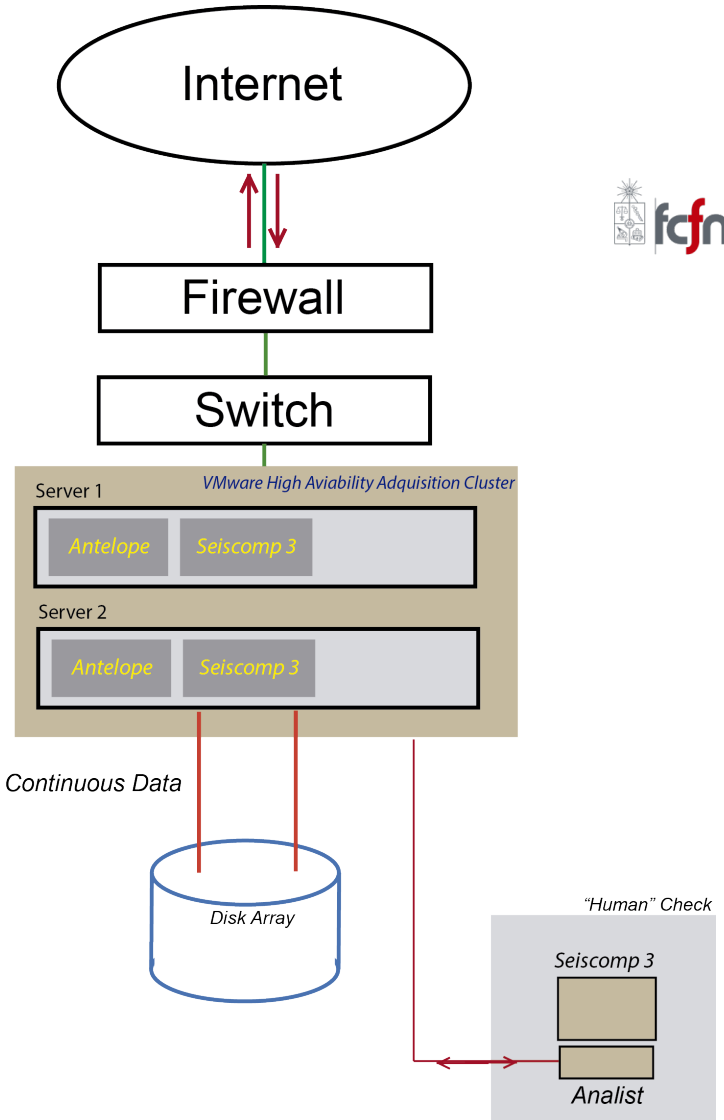
Adquisition and Processing

- Adquisition: Seiscomp 2.6
- Automatic processing: EarlyBird, EarthWorm
- Manual processing: Seisan

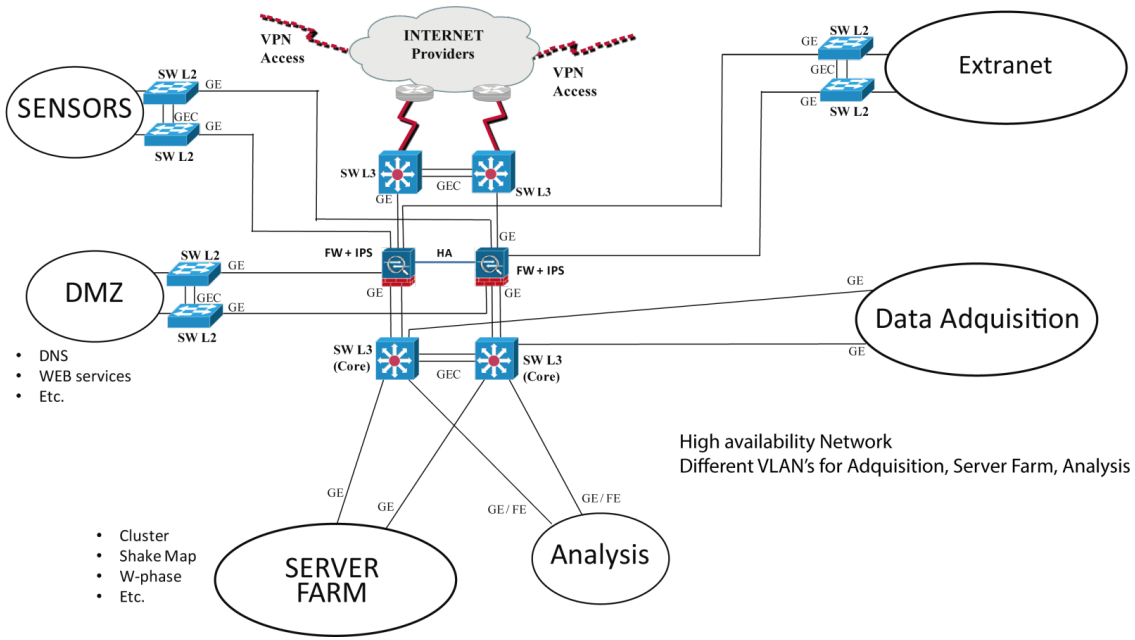
Future plans

- Short term
  - Use of PDL to share specific data with USGS
  - 2nd Datacenter
  - Satellite Hub at CSN
  - Backbone of 20 stations
  - Database of waveform-CSN. Data open to everyone
  - GPS in Real Time
  - Portable Datacenter Hot Stand By
  - Shakecast
- Long term
  - Communicate 297 accelerometers for real time purposes (2 years)
  - 3 contingency sites (northern-center-southern)
  - Network expansion to 900 multiparameter stations (10 years)

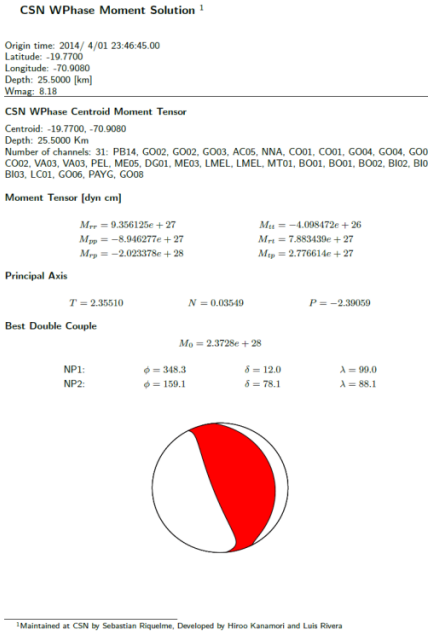
New Datacenter



DATA CENTER NETWORK



Future developments



CSN WPhase Moment Solution [1]

Origin time: 2014/ 4/01 23:46:45.00
Latitude: -19.7700
Longitude: -70.9080
Depth: 25.5000 [km]
Wmag: 8.18

CSN WPhase Centroid Moment Tensor

Centroid: -19.7700, -70.9080
Depth: 25.5000 Km
Number of channels: 31: PB14, GO02, GO02, GO03, AC05, NNA, CO01, CO01, GO04, GO04, GO0
CO02, VA03, VA03, PEL, ME05, DG01, ME03, LMEL, LMEL, MT01, BO01, BO01, BO02, BI02, BI0
BI03, LC01, GO06, PAYG, GO08

Moment Tensor [dyn cm]

$$M_{rr} = 9.356125e+27 \qquad M_{tt} = -4.098472e+26$$
$$M_{pp} = -8.946277e+27 \qquad M_{rt} = 7.883439e+27$$
$$M_{rp} = -2.023378e+28 \qquad M_{tp} = 2.776614e+27$$

Principal Axis

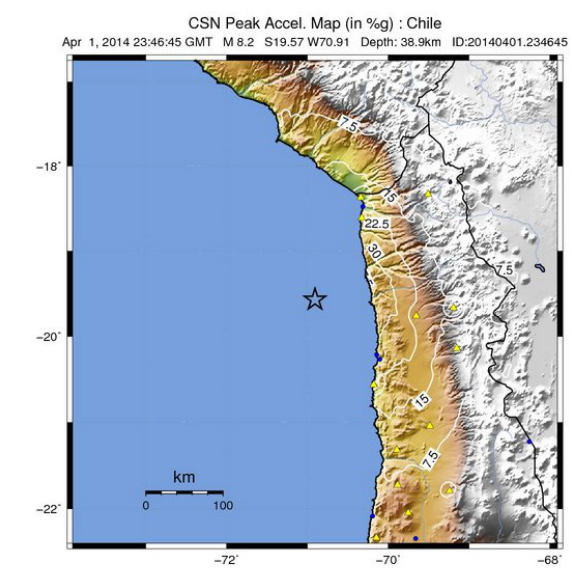
$T = 2.35510$	$N = 0.03549$	$P = -2.39059$

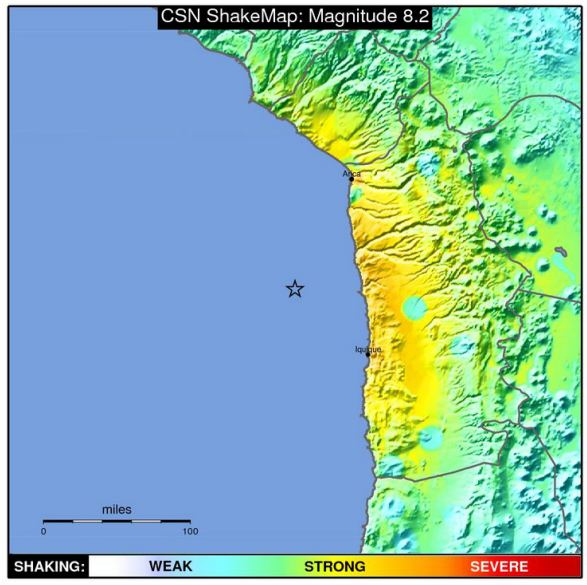
Best Double Couple

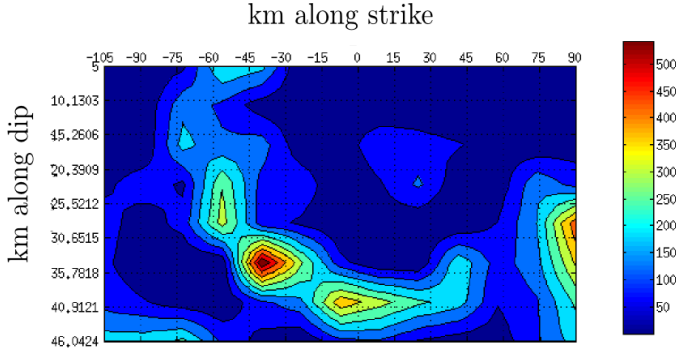
$$M_0 = 2.3728e+28$$

NP1:	$\phi = 348.3$	$\delta = 12.0$	$\lambda = 99.0$
NP2:	$\phi = 159.1$	$\delta = 78.1$	$\lambda = 88.1$

[1] Maintained at CSN by Sebastian Riquelme, Developed by Hiroo Kanamori and Luis Rivera







- Wphase Moment Tensor
- Regional Moment Tensor
- Earthquake Catalog
- Wphase Finite Fault Model
- Teleseismic Finite Fault Model
- Shakemaps