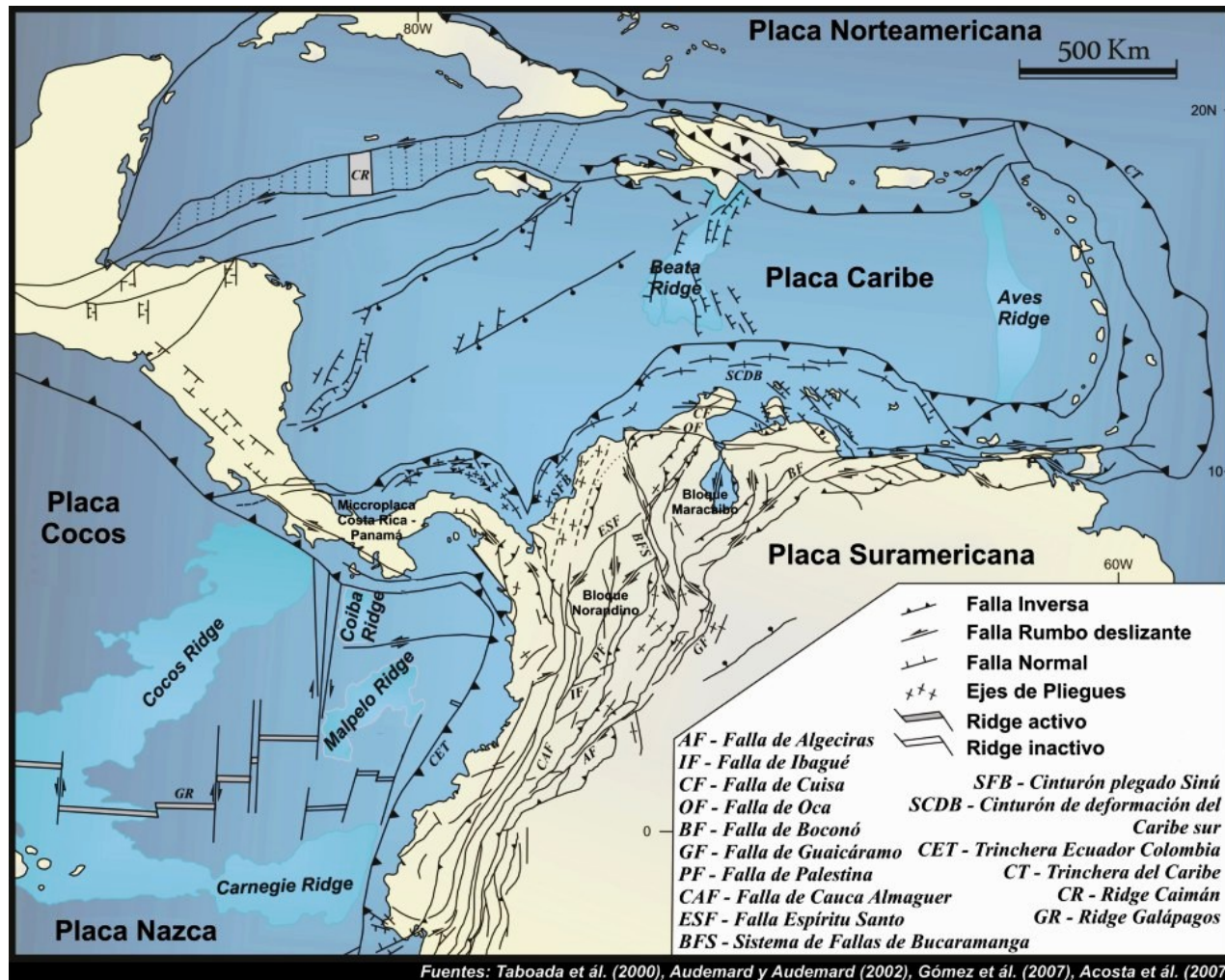


SEISMIC MONITORING NETWORK AND THE GPS/GNSS NETWORK

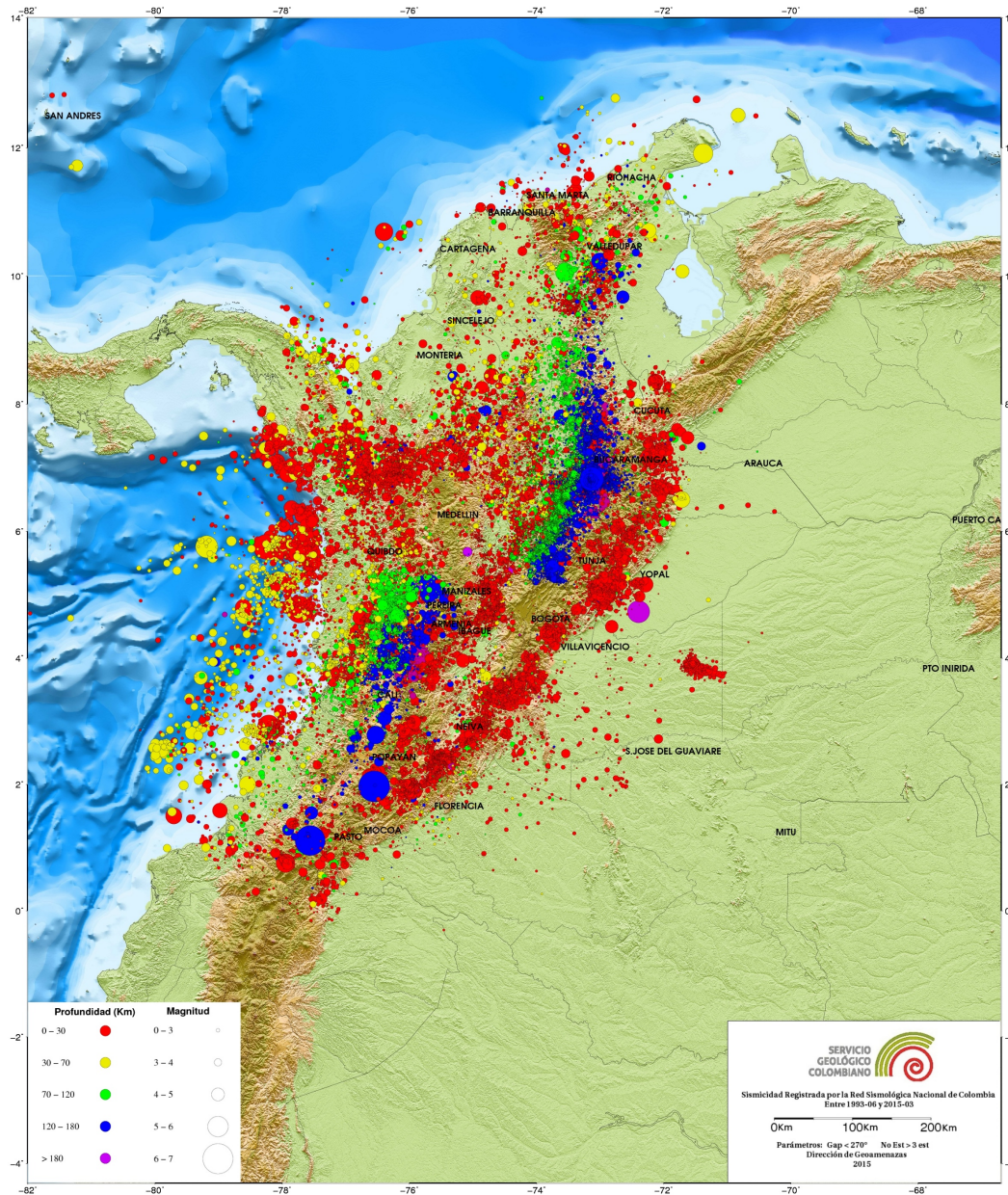
DIRECCION DE GEOAMENAZAS

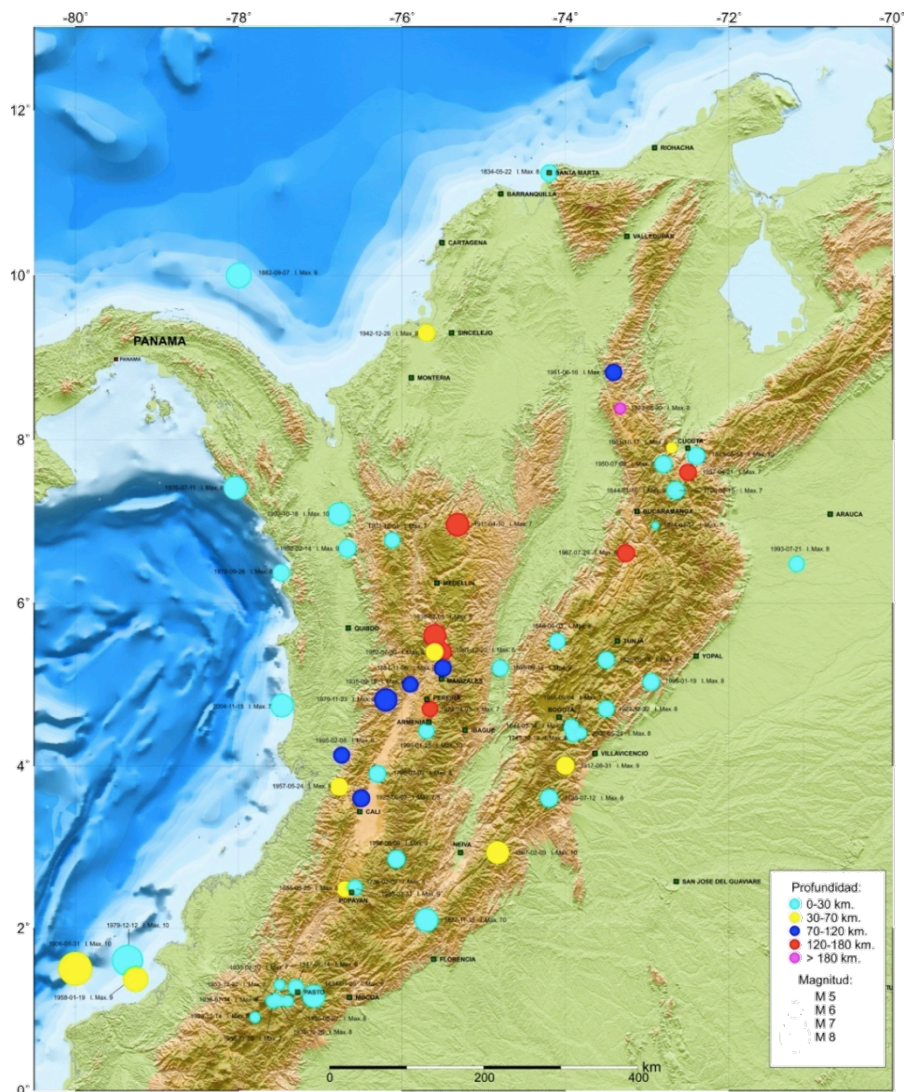


TECTONIC SETTING AND MAIN STRUCTURAL ELEMENTS

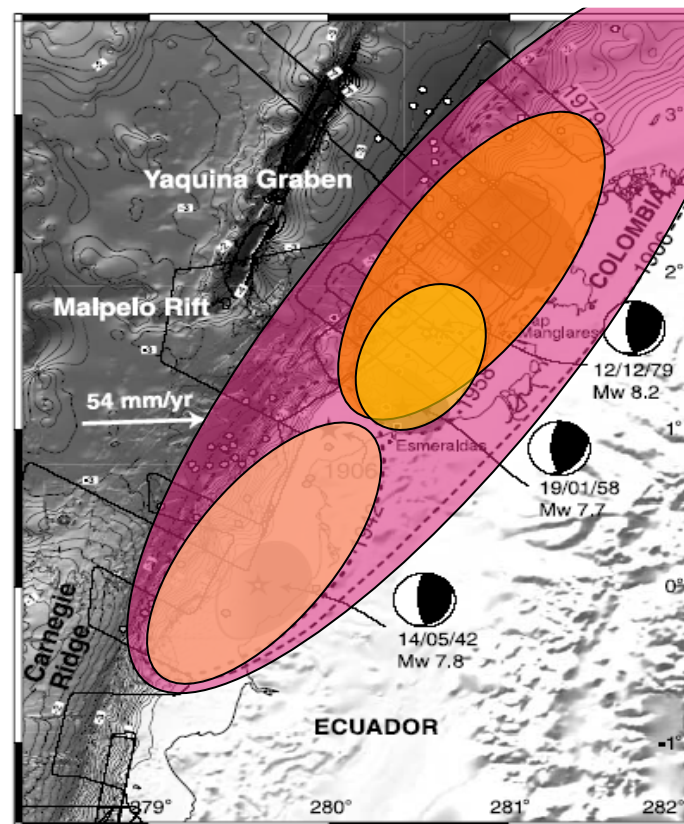


SEISMICITY MAP 1993 - 2014





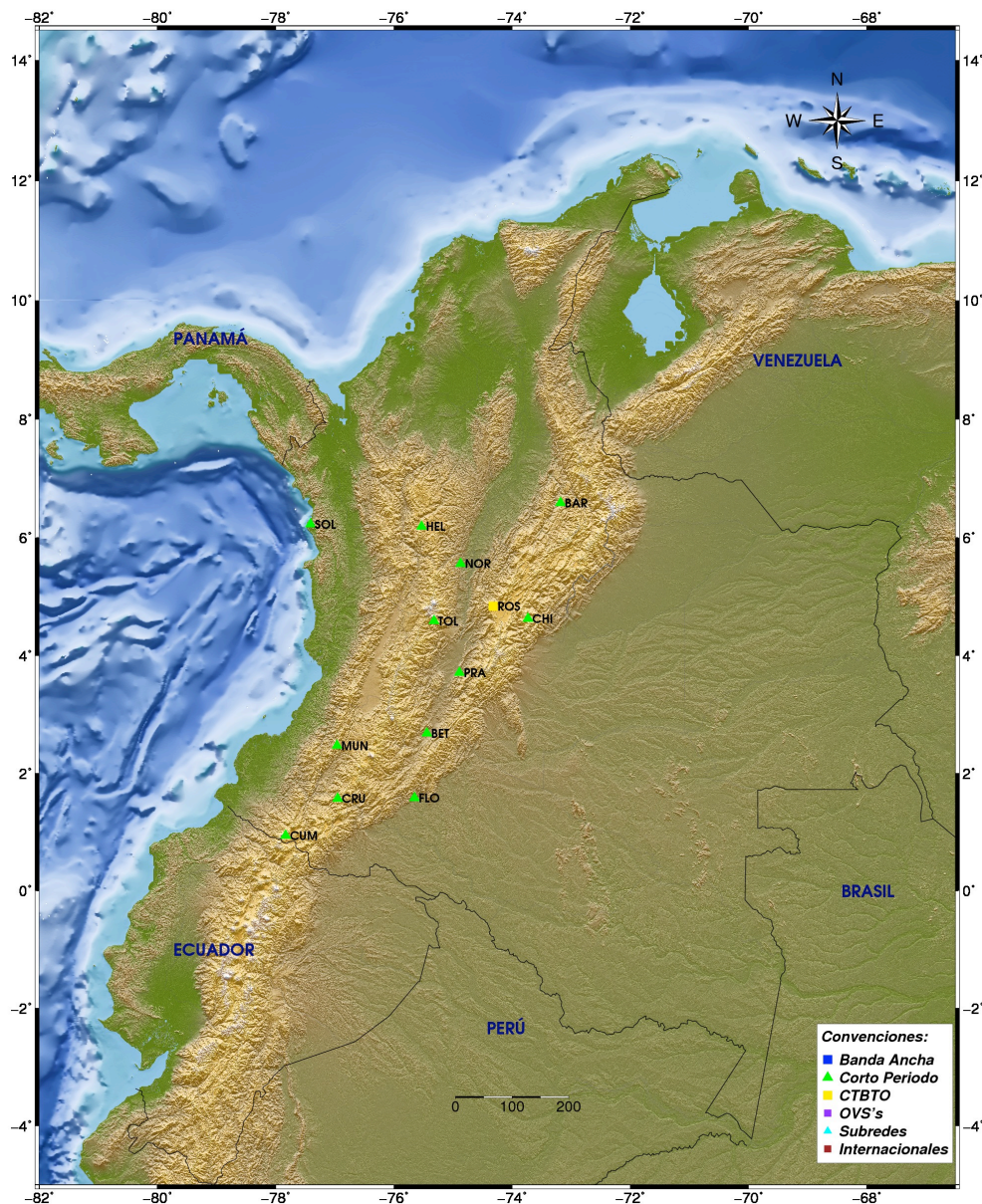
Historical Earthquakes (I_{máx} ≥ 7)



Collot, J.-Y., B. Marcaillou, F. Sage, F. Michaud, W. Agudelo, P. Charvis, D. Graindorge, M.-A. Gutscher, and G. Spence (2004)



SEISMIC NETWORK - 1993



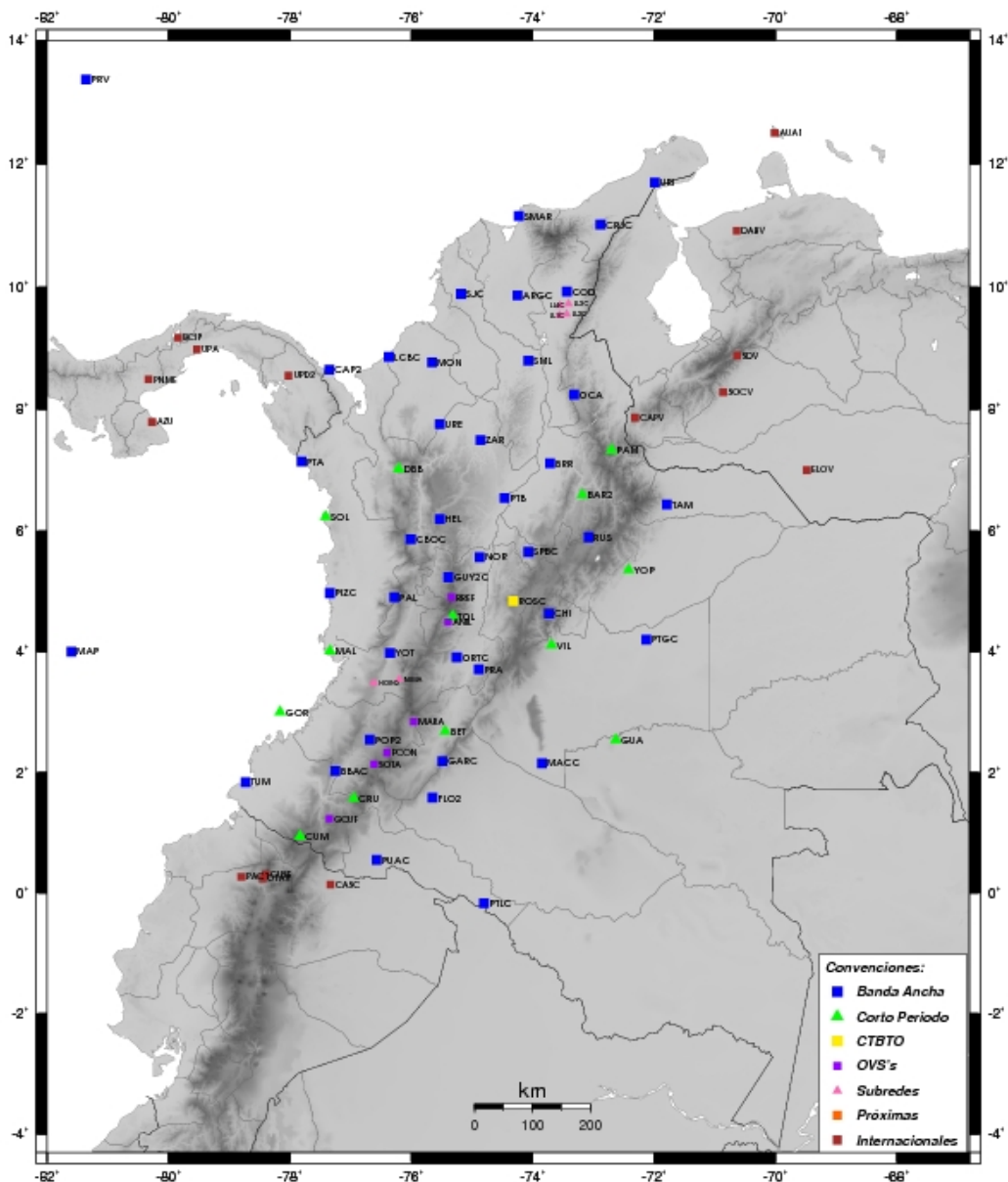
The seismic network of the Colombian Geological Survey – SGC created in 1993 as part of the National System for Disaster Risk Management, has the main purpose to provide quick and accurate information on the seismicity occurred in the Colombian territory, as to study the seismic activity of the country and its associated hazard focusing on prevention, in order to mitigate the damage to people and their property.



SEISMIC NETWORK - 2015

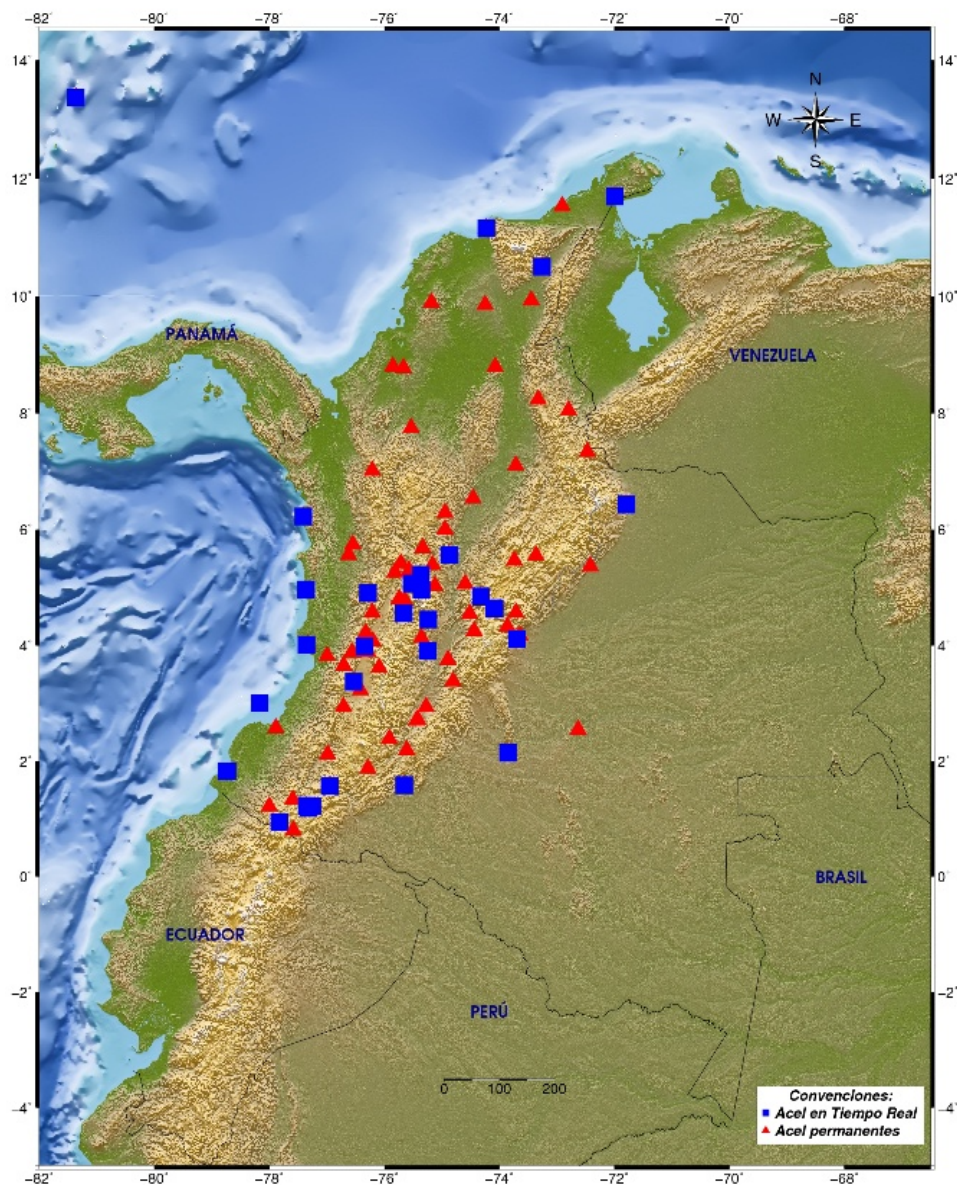
54 real time seismic stations
40 BB and 14 SP

We also share data with international networks, as Panama, Ecuador, Venezuela and Puerto Rico.





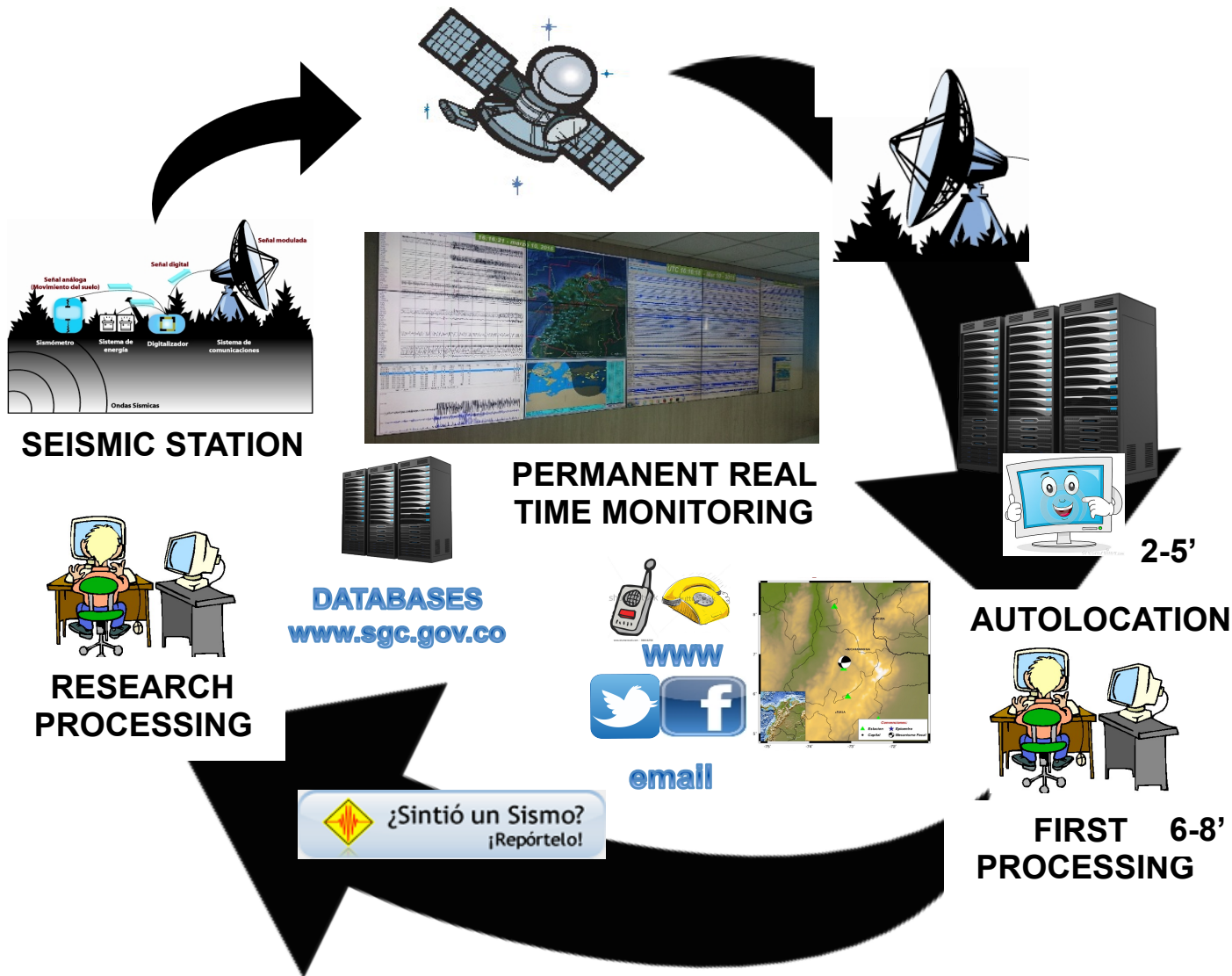
STRONG MOTION NETWORK - 2015



108 strong motion permanent stations.

33 in real time connection





SEISMIC STATION

PERMANENT REAL TIME MONITORING

RESEARCH PROCESSING

DATABASES
www.sgc.gov.co

WWW
email

AUTOLOCATION

2-5'

FIRST PROCESSING

6-8'

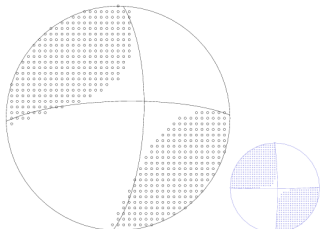
**¿Sintió un Sismo?
¡Repórtelo!**

Seismic moment tensor



W Phase

20150107_Oceano_Pacifico



WCMT, Mw = 6.45

RCMT, Mw = 6.46
ratio = 1.03; epsilon = 0.311

Moment Tensor [dyn-cm x 1e26]: -0.1832 0.1068 0.0764 0.1412 -0.0545 0.5605

Scalar moment [dyn-cm]: 5.91e+25

Best Nodal planes (strike/dip/rake): WCMT: 2.6/ 71.3/-167.1 268.4/ 77.8/ -19.1

RCMT: 359.5/ 85.3/ 178.4 89.6/ 88.4/ 4.7

Eigenvalues [dyn-cm x 1e26]: 0.6571 -0.1321 -0.5250 (Mw = 6.45)

Fit Quality: WCMT - RMS: 0.01987 mm (0.525), Gap: 103.0', C# 9

RCMT - RMS: 0.02096 mm (0.524)

Used stations (39, 87 channels):

HAP (HRH) HON (HRH,HRZ) SCIP (HRZ) TPA (HRH,HRZ) JTC (HRZ) PTA (HRH) STS (HRH,HRH,HRZ) PTIC (HRH,HRZ) T
 ORE (HRH,HRH,HRZ) PAL (HRH,HRZ) TCC (HRH,HRH,HRZ) BRAC (HRH,HRH,HRZ) PACI (HRH,HRH,HRZ) SCS (HRH,HRH,HRZ) P
 MARA (HRH,HRZ) USE (HRH,HRH,HRZ) DREF (HRH,HRZ) ANTL (HRH,HRH) NCH (HRH,HRH,HRZ) ORTC (HRH,HRZ) BEI (HRH,HR
 DAN (HRH,HRH,HRZ) GARC (HRH,HRH,HRZ) STOC (HRH,HRZ) PTA (HRH,HRH) RICC (HRZ) DUCT (HRH,HRH,HRZ) SERC (HRH)
 BR (HRH,HRZ) SNG (HRH,HRH,HRZ) ARGC (HRH,HRH,HRZ) MCCC (HRH,HRH,HRZ) PTIC (HRH,HRH,HRZ) PAXY (HRZ) PTSC (C
 CLC (HRH,HRH,HRZ)

WPHN1 0.00 15.00 12.00 180.00
 DMIN 1 2.09 Dmax 130.95
 WH 1 1.00 WE 13.00 WD 11.00

Isola

MOMENT TENSOR SOLUTION

HYPOCENTER LOCATION (SGC)

Origin time 20141105 05:25:49.90
 Lat 6.325 Lon -77.719 Depth 14.6

CENTROID

Trial source number : 5 (Fixed Epicenter inversion)
 Centroid Lat (N) 6.325 Lon (E) -77.719
 Centroid Depth (km) : 22
 Centroid time : +4 (sec) relative to origin time

Moment (Nm) : 1.449e+15

M_r : 4

VOLA : 0

DCI : 90.7

CLVDs : 9.3

Var. red. : (for stations used in inversion): 0.45 SNR CN FMVAR STVAR

Var. red. (for all stations) : 0.45 NaN 3.4 13e10 0.41

Strike Dip Rake | Frequency band used in inversion (Hz)

183 58 147 | 0.04 - 0.05 -- 0.08 - 0.09

Strike Dip Rake |

292 60 37 | Stations-Components Used-Distance

D-axis Azimuth Plunge | PTA + + + 91

57 3 | CBOC - + + 196

T-axis Azimuth Plunge | HEL - + + 243

149 45 | CAP2 + + + 260

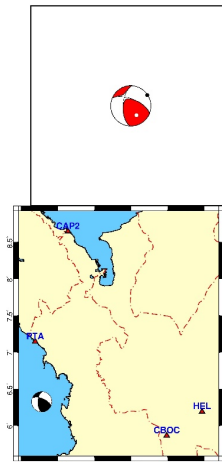
M_{rr} M_{tt} M_{pp}

7.026 1.015 -8.040

M_{re} M_{rp} M_{rp}

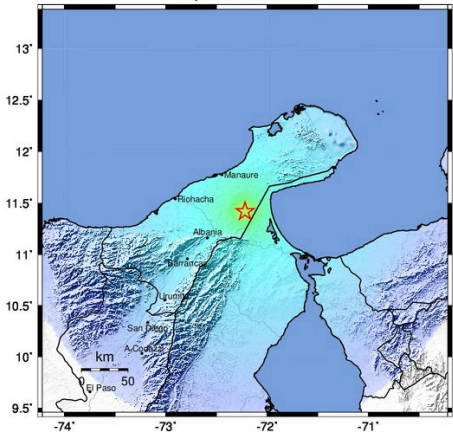
-7.056 -3.376 9.556

Exponent (Nm) : 14



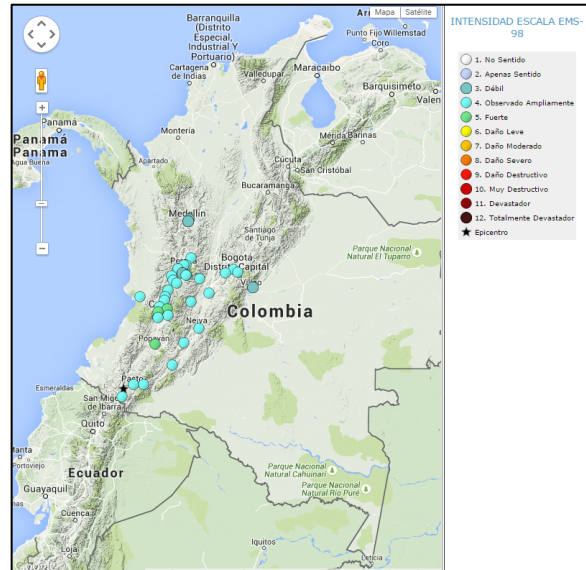
Intensity maps

SGC - MAPA DE INTENSIDADES INSTRUMENTALES
 May 9, 2015 09:31:44 AM



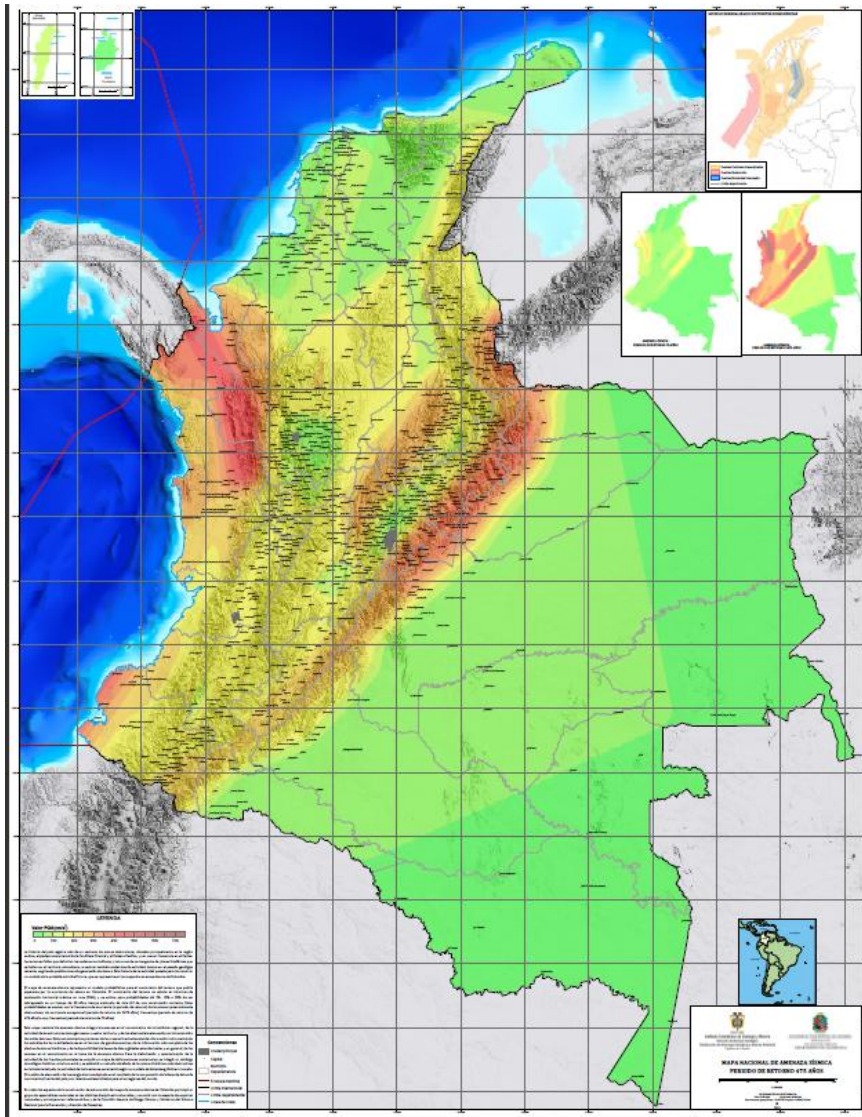
PROPORCIÓN DEL MOVIMIENTO	No Sentido	Debil	Leve	Moderado	Fuerte	Muy Fuerte	Severo	Violento	Extremo
SILO POTENCIAL	ninguno	ninguno	ninguno	Muy Leve	Leve	Moderado	Mod./Crítico	Crítico	Devastador
MAX ACF (mag)	<0.03	0.3	2.8	6.2	12	22	40	75	>139
MAX VEL (mm)	<0.01	0.1	1.4	4.7	9.6	20	41	80	>178
INTENSIDAD INSTRUMENTAL	I	II-III	IV	V	VI	VII	VIII	IX	X+

Escala Basada en Walden et al. (2011)

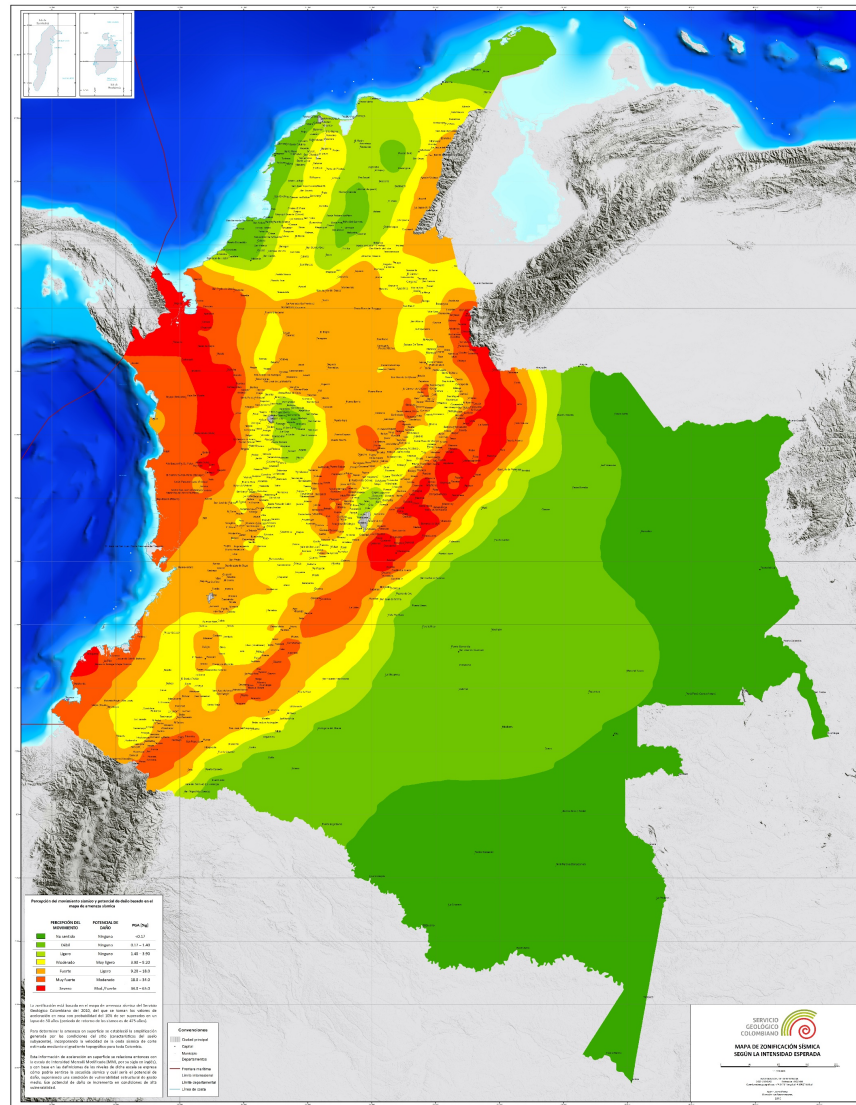




SEISMIC HAZARD MAP



SEISMIC ZONATION MAP



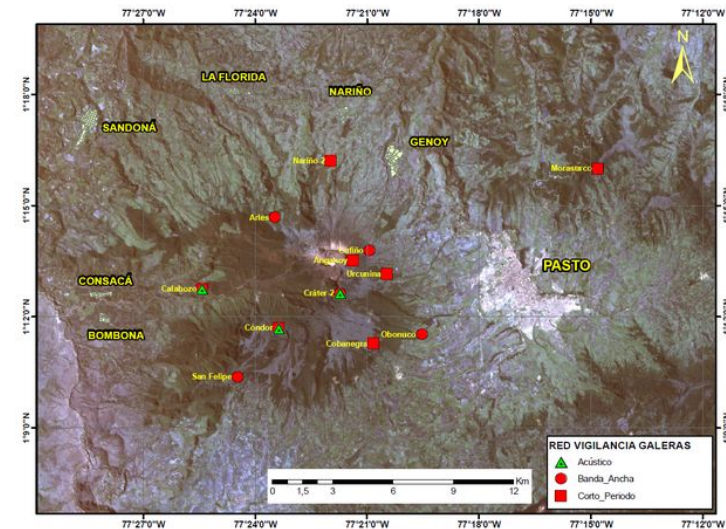
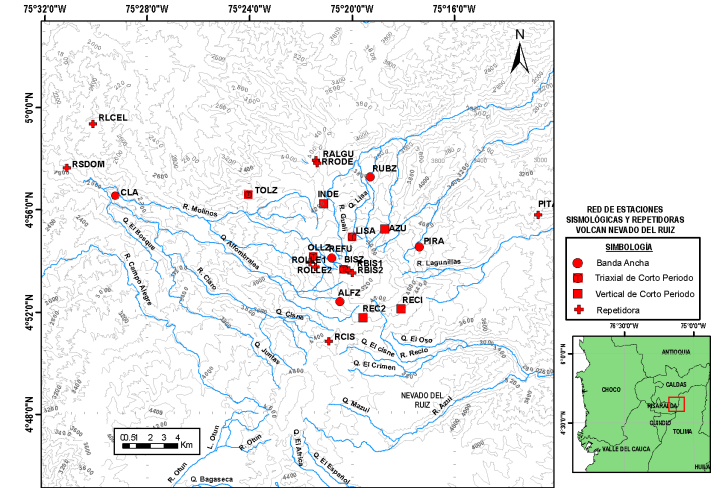
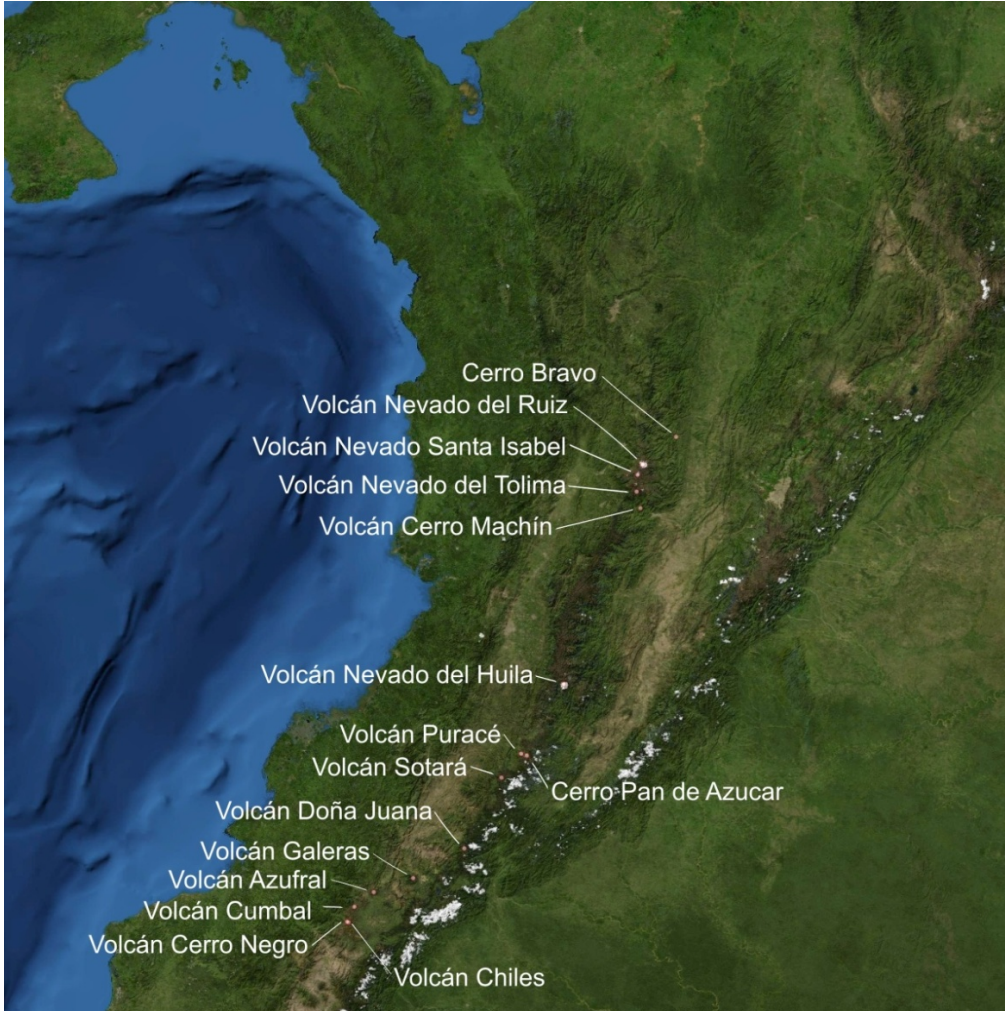
INTERNATIONAL AGREEMENTS



The SGC is committed with the field. In recent years, we have signed agreements with international organizations to improve our knowledge about the **Seismic and Tsunami Hazard**, getting involved in researches as the GEM-SARA, 2014 – 2015 Project (Global Earthquake Model - South America Seismic Risk Assessment) and SATREPS, 2015 – 2020 Project (Science and Technology Research Partnership for Sustainable Development), the last one including a specific topic in **Tsunami monitoring, evaluation and research for risk reduction**.



VOLCANO MONITORING NETWORK - 2015



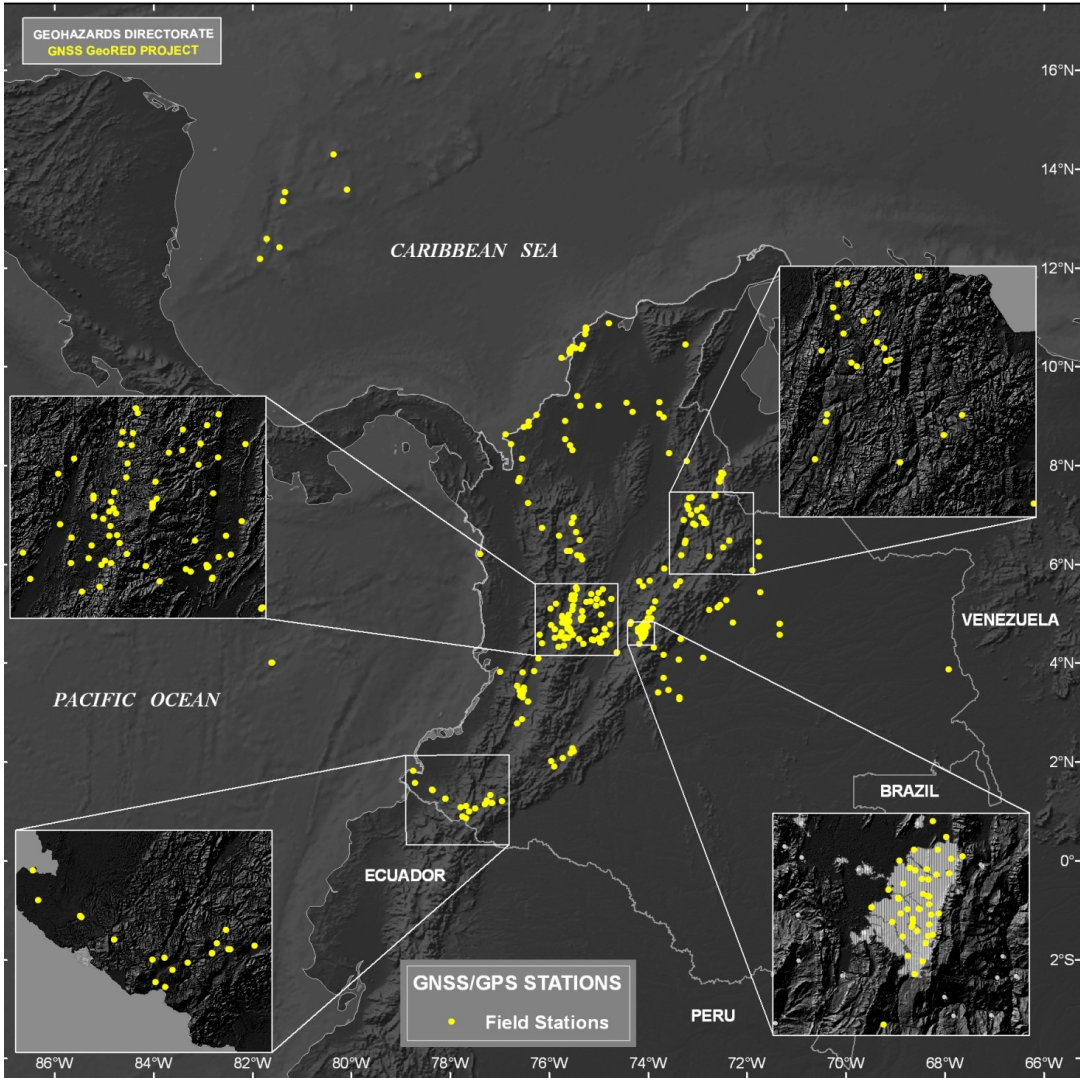
GPS/GNSS PERMANENT STATIONS NETWORK



Currently, the GeoRED Network is managing 68 continuously stations including:

- 59 GeoRED GPS/GNSS continuously operating stations;
- 4 GNSS continuously operating stations provided by the COCONet Project;
- the Bogotá IGS GPS station (BOGT), installed in 1994 under the agreement between JPL-NASA and the CGS;
- the San Andres Island station, installed in 2007 under the MOU between UCAR and the CGS,
- 3 stations installed in partnership con local institutions (Sugar Cane Research Institute, National University and Aburra Valley Metropolitan Office.

GPS/GNSS FIELD STATIONS NETWORK



298
stations

Status
May 2015



Thank you very much for your attention

Muchas gracias por su atención

www.sgc.gov.co



Safari Archivo Edición Visualización Historial Favoritos Desarrollo Ventana Ayuda

Red Sismológica Nacional de Colombia

seisan.sgc.gov.co/RSNC/

SERVICIO GEOLOGICO COLOMBIANO PROSPERIDAD PARA TODOS

Inicio Acerca de RSNC Material Educativo Red de Estaciones Publicaciones Enlaces de Interés Mapa del Sitio

CONSULTAS

- Último sismo
- Sismicidad Preliminar Diaria
- Sismicidad Preliminar Semanal
- Tensor Momento Sísmico
- Sismicidad Histórica
- Boletines de sismicidad
- Pregúntele a un sismólogo
- Consultas de Sismicidad
 - Consulta General
 - Consulta Experta
- Intensidad sísmica
- Amenaza sísmica
 - Microzonificación Bogotá
 - Mapa de Amenaza Sísmica
 - Microzonificación Cali
- Sismos Internacionales
- Informes Preliminares

Ubicanos

VIDEO DE LA HISTORIA DE LA RED SISMOLÓGICA NACIONAL DE COLOMBIA

Home

Red Sismológica Nacional de Colombia

Listado

EPICENTRO	FECHA	* HORA LOCAL	MAGNITUD
SAN DIEGO - CESAR	2015-05-27	03:50:54	2.8 MI
RONCESVALLES - TOLIMA	2015-05-27	03:38:40	2 MI
YONDO - ANTIIOQUIA	2015-05-26	23:33:31	3.2 Mw
LOS SANTOS - SANTANDER	2015-05-26	22:14:45	3.5 Mw
VOLCAN GALERAS	2015-05-26	00:35:17	2.8 MI
LA ESPERANZA - N-SANTANDER	2015-05-26	00:17:05	3.3 MI
PUERTO TRIUNFO - ANTIIOQUIA	2015-05-25	18:12:35	1.9 MI
LOS SANTOS - SANTANDER	2015-05-25	17:34:34	3 MI
CUBARA - BOYACA	2015-05-25	16:55:37	2.4 MI
LOS SANTOS - SANTANDER	2015-05-25	10:43:24	2.8 MI
NUQUI - CHOCO	2015-05-25	03:07:39	3.9 Mw
LA JAGUA DE IBIRICO - CESAR	2015-05-23	20:27:48	3 Mw
SAN ANTONIO - TOLIMA	2015-05-23	19:43:13	2.4 MI
EL CAIRO - VALLE	2015-05-23	15:50:55	3.3 Mw

Encuesta de Satisfacción de la Página Web

Dirección de Geoamena

RED SISMOLÓGICA NACIONAL DE COLOMBIA

Red Nacional de Acelerógrafos de Colombia

OBSERVATORIOS VULCANOLÓGICOS Y SISMOLÓGICOS

MOVIMIENTOS EN MASA

http://seisan.sgc.gov.co/RSNC/