

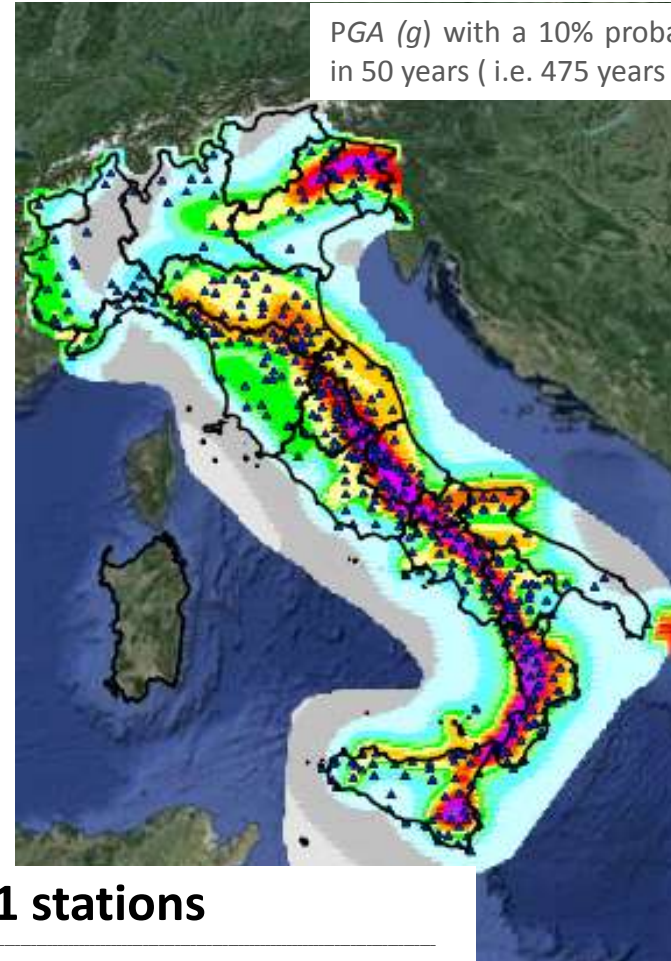
# RAN – ITALIAN STRONG MOTION NETWORK

*Antelope Users Group meeting Rome, 18-20 May 2016*



# RAN – Italian strong motion network (FDSN code «IT»)

## RAN vs Italian seismic hazard map



PGA (g) with a 10% probability of exceedance in 50 years ( i.e. 475 years return time ).

- 0 to 0.025
- 0.025 to 0.050
- 0.050 to 0.075
- 0.075 to 0.100
- 0.100 to 0.125
- 0.125 to 0.150
- 0.150 to 0.175
- 0.175 to 0.200
- 0.200 to 0.225
- 0.225 to 0.250
- 0.250 to 0.275
- 0.275 to 0.300

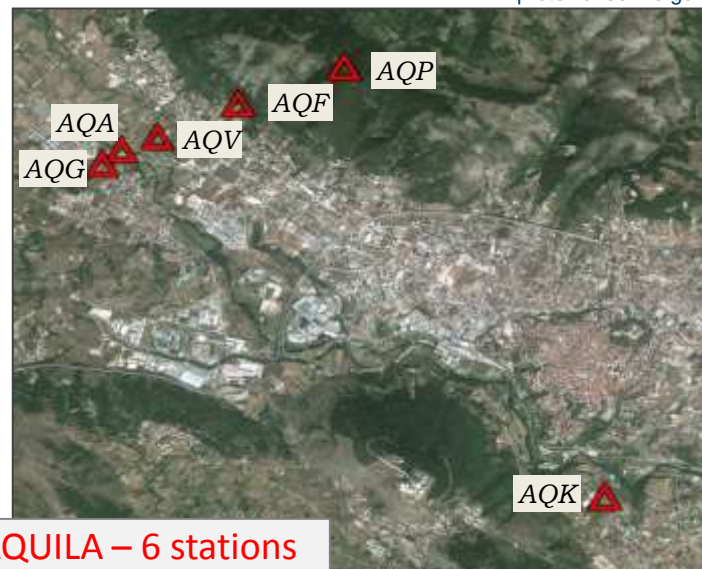
Calculated for stiff type soil or rock (class A soil)

**531 stations**

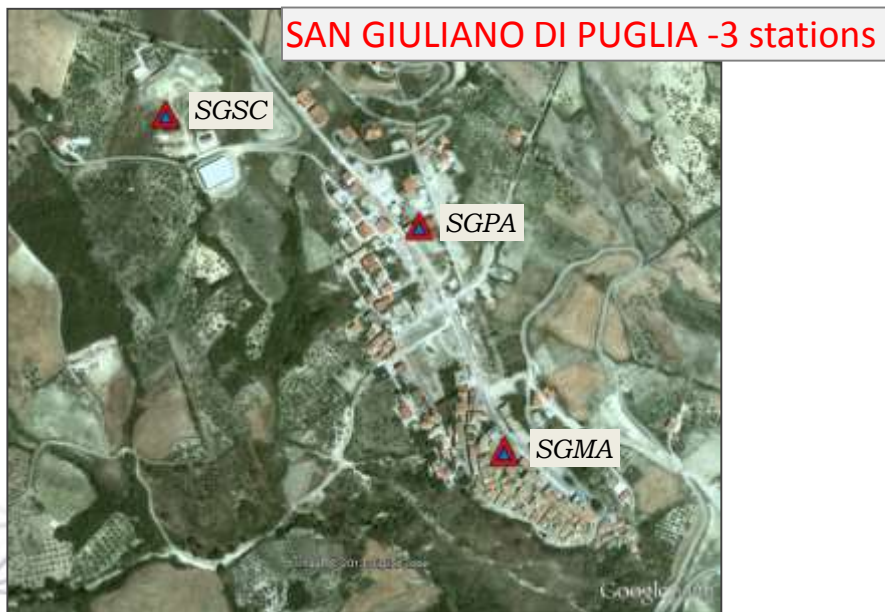
**529** 3-components stations

**2** 6-components stations

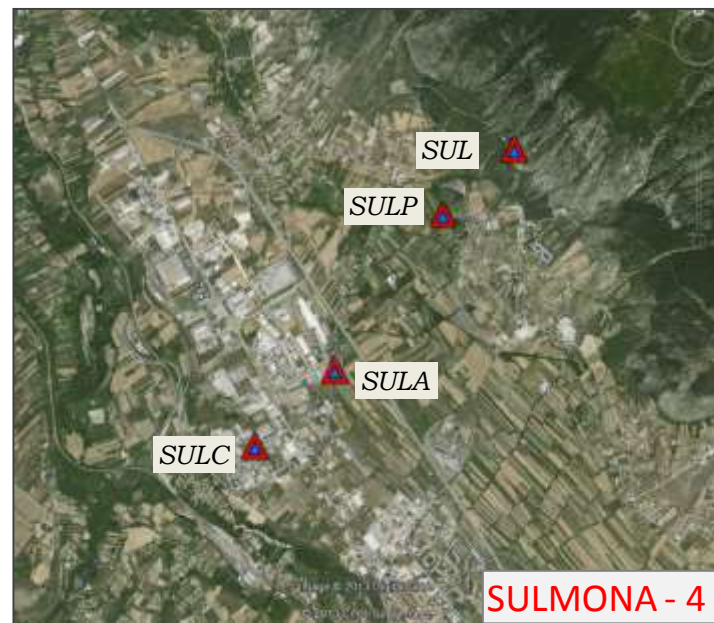
## RAN – Urban arrays



L'AQUILA – 6 stations



SAN GIULIANO DI PUGLIA -3 stations



SULMONA - 4 stations

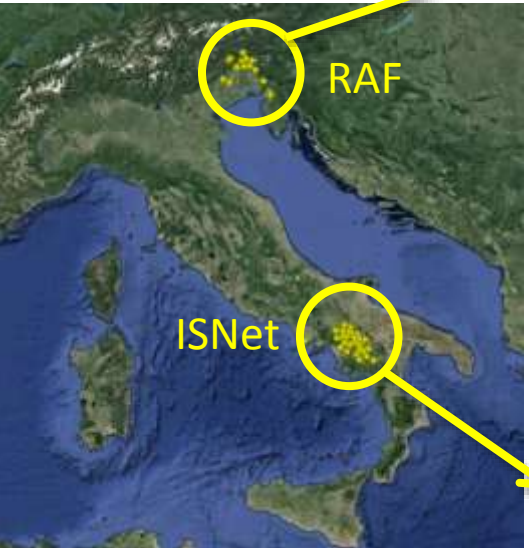


# RAN – data center

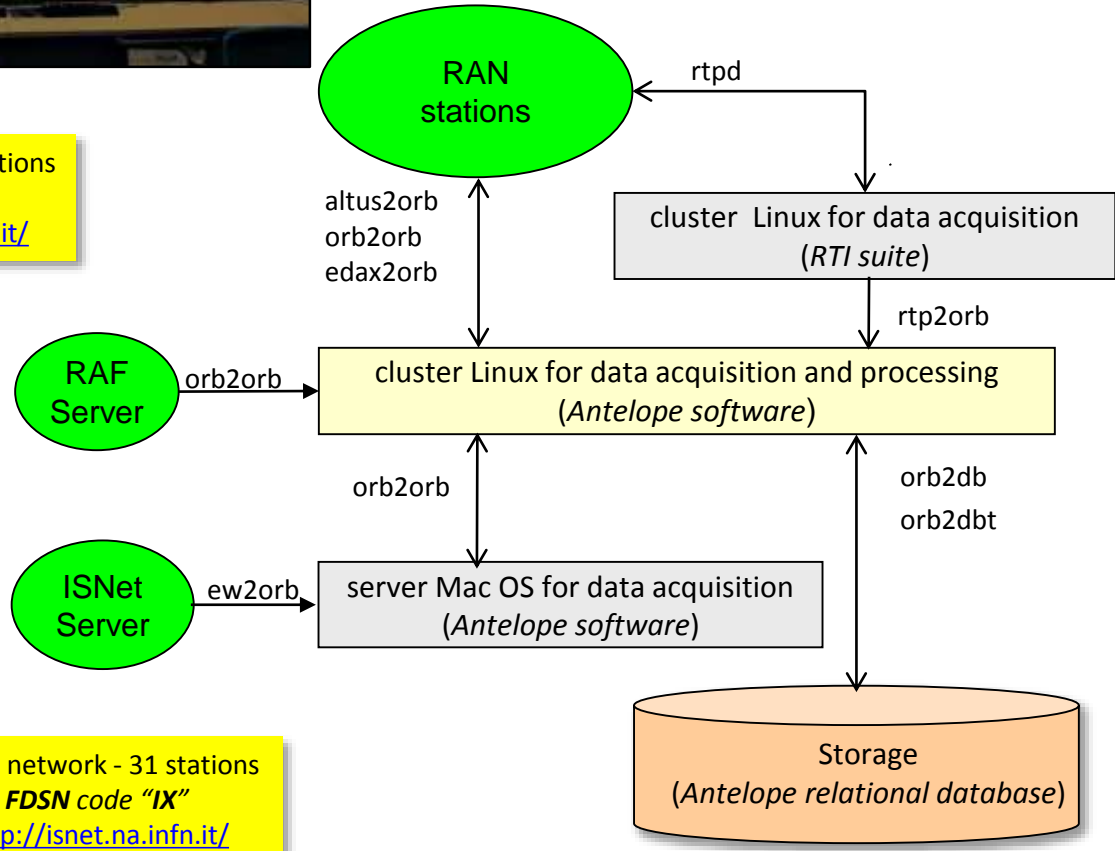
- ❑ Antelope 5.5 is running
- ❑ receives data from RAN stations and from RAF and ISNet networks



RAF network - 14 stations  
**FDSN code "RF"**  
<http://rtweb.units.it/>



ISNet network - 31 stations  
**FDSN code "IX"**  
<http://isnet.na.infn.it/>



### FASE 1. INDIVIDUAZIONE DELLA PERICOLOSITÀ DEL SITO

Ricerca per coordinate  
 LONGITUDINE: 7.768    LATITUDINE: 45.368

Ricerca per comune  
 REGIONE: Piemonte    PROVINCIA: Torino    COMUNE: Agliè

Elaborazioni grafiche:  
 Grafico spettro di risposta  
 Variabilità dei parametri

Elaborazioni numeriche:  
 Tabella parametri

Nodi del reticolo intorno al sito



Le "Ricerca per comune" utilizza le coordinate ISTAT del comune per identificare il sito. Si sottolinea che gli errori del sistema comunale le azioni sismiche possono essere significativamente diverse da quelle così individuate e si consiglia, quindi, la "Ricerca per coordinate".

INTRO    **FASE 1**    FASE 2    FASE 3

## □ Technical Regulations for Buildings

The response spectrum for building design is **"site specific"**, calculated according to

- Seismic hazard at the site
- Site effects evaluation



Consiglio Superiore dei Lavori Pubblici

(<http://www.cslp.it>)

### FASE 2. SCELTA DELLA STRATEGIA DI PROGETTAZIONE

Vita normale della costruzione (in anni) -  $V_n$     50    anni  
 Coefficiente d'uso della costruzione -  $C_u$     1    anni

Valori di progetto:  
 Periodo di riferimento per la costruzione (in anni) -  $V_n$     50    anni  
 Periodi di ritorno per la definizione dell'azione sismica (in anni) -  $T_n$     anni

Stati limite di esercizio - SLE	SLO - $P_{10} = 81\%$	30
	SLD - $P_{10} = 63\%$	50
Stati limite ultimi - SLU	SLV - $P_{10} = 10\%$	475
	SLC - $P_{10} = 5\%$	875

Strategie di progettazione



LEGENDA GRAFICO  
 ○ Strategie per costruzioni ordinarie  
 ■ Strategie scelte

INTRO    FASE 1    **FASE 2**    FASE 3

### FASE 3. DETERMINAZIONE DELL'AZIONE DI PROGETTO

Stato Limite  
 Stato Limite considerato: SLV    anni

Ricordo sismico locale  
 Categoria di astoscuoli: C    anni     $S_{a+}$  = 1.500     $C_u$  = 1.000    anni  
 Categoria orografica: TL    anni     $S_{a-}$  = 0.000     $S_{a-}$  = 1.000    anni

Componenti orizzontali  
 Spettro di progetto elastico (SLE)    Decremento  $\zeta$  (%)    5     $\eta_1$  = 1.000    anni  
 Spettro di progetto inelastico (SLI)    Fattore  $\alpha$     3    Regoli in altezza: no    anni

Componenti verticali  
 Spettro di progetto    Fattore  $\alpha$     1.5     $\eta_1$  = 0.067    anni

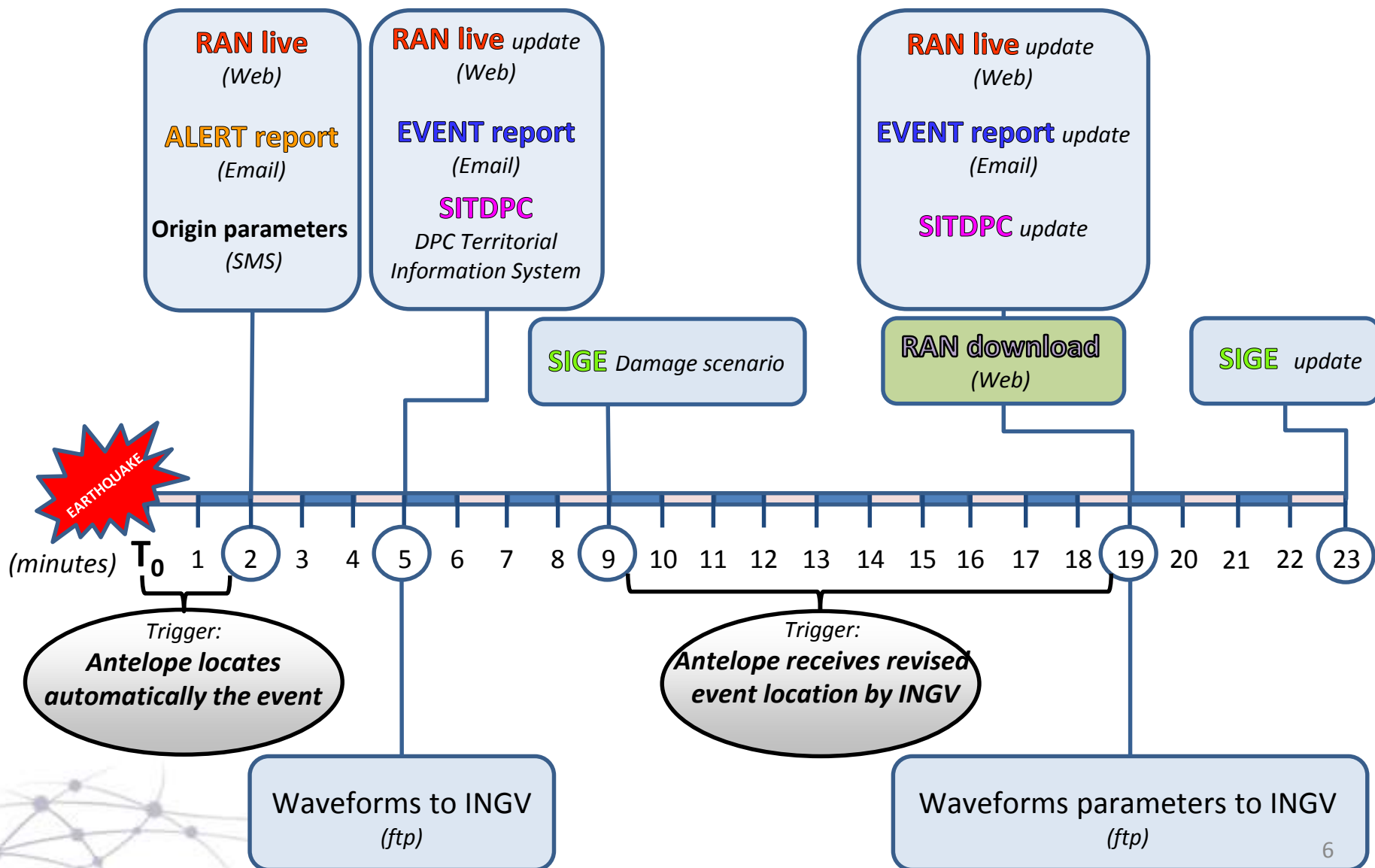
Elaborazioni:  
 Grafico spettro di risposta  
 Parametri e punti spettro di risposta



Spettri di risposta  
 $S_{a+}$  0.20  
 $S_{a-}$  0.15  
 $S_{a-}$  0.10  
 $S_{a-}$  0.05  
 $S_{a-}$  0.00

Spettro di progetto - componente orizzontale  
 Spettro di progetto - componente verticale  
 Spettro elastico d'intimità (Cal A-T1, L=5%)

INTRO    FASE 1    FASE 2    **FASE 3**



DPC-RAN: OriginTime=2016/04/25  
07:47:52 MI=3.4 Place=Prato lat=[44.0502](#)  
lon=[11.3149](#) depth=10.0 nrec=9  
[maps.google.com/maps?q=44.0502,11.3149](#)

Origin parameters  
(SMS)

25 apr

25/04/2016 09:55:18

ORID: 340212 EVID: 340212



PROTEZIONE CIVILE  
Presidenza del Consiglio dei Ministri  
Dipartimento della Protezione Civile

## Earthquake AUTOMATIC REPORT

Dipartimento della Protezione Civile - Rome - Italy  
Rete Accelerometrica Nazionale  
RAN

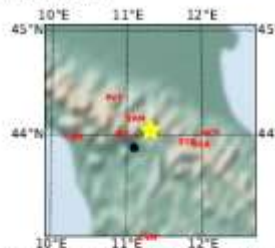
**WARNING:**  
These information are preliminary  
and may be revised when more data are available.

ALERT report  
(Email)

Event: NORTHERN ITALY

Origin time: 2016/04/25 07:47:52  
Latitude: 44.050 Longitude: 11.315  
Depth: 10 km  
Magnitude MI: 3.4  
Hostname: aspendpc5  
name: 10

**Nearest cities:**  
Prato 25 km  
Firenze 32 km  
Pistoia 34 km  
Bologna 50 km



**PGA max:** 3 cm/s\*s channel: HGZ  
**Min distance:** 9 km station: BRM

sta	net	styp	dist	EvAz	Phase	Time	TRes	SNR	ML	pga (cm/s*s)	ch	pgv (cm/s)	ch
BRM	IT	A	9	139	P	07:47:54.999	-0.9	111.5	3.0	2.9 (E)		3.6e-02 (N)	
PTT	IT	A	16	73	P	07:47:58.068	0.2	53.3	3.7	n/a		n/a	
STP	IT	A	21	200	P	07:47:58.000	-0.7	88.2	3.4	< 1.0 (E)		4.7e-03 (N)	
PVF	IT	A	36	129	P	07:48:00.900	1.8	37.3	3.3	< 1.0 (E)		1.6e-03 (N)	
9GR	IT	A	39	289	P	07:48:00.918	-0.3	53.7	3.6	< 1.0 (E)		3.6e-03 (E)	
MCS	IT	A	33	236	P	07:48:04.000	0.5	37.8	3.4	< 1.0 (E)		3.7e-03 (N)	
CRC	IT	A	42	80	P	07:48:07.105	0.6	35.1	3.7	< 1.0 (N)		1.7e-03 (E)	
CVN	IT	A	61	1	P	07:48:13.828	0.4	17.3	3.4	= 1.0 (E)		5.9e-04 (N)	
LSP	IT	A	62	90	P	07:48:14.019	0.8	25.6	3.3	= 1.0 (E)		5.8e-04 (E)	
PBS	IT	A	147	260	P	07:48:33.225	-0.6	5.8	3.0	< 1.0 (N)		1.2e-04 (E)	

25/04/2016 09:56:19

ORID: 340212 EVID: 340212



PROTEZIONE CIVILE  
Presidenza del Consiglio dei Ministri  
Dipartimento della Protezione Civile

EVENT report  
(Email)

## Earthquake AUTOMATIC REPORT

Dipartimento della Protezione Civile - Rome - Italy  
Rete Accelerometrica Nazionale  
RAN

**WARNING:**  
These information are preliminary  
and may be revised when more data are available.

Event: NORTHERN ITALY  
Origin time: 2016/04/25 07:47:52  
Latitude: 44.050 Longitude: 11.315  
Magnitude MI: 3.4  
AGENCY: DPC

Seismic Moment: 1.11e+15 Nm  
Mw: 3.8  
AGENCY: DPC

Records analyzed by procedure: 101  
Selected limits: max distance=100. km min PGA=1.0 cm/s\*s  
min PGA to show response spectra=1.0 cm/s\*s  
Records inside the selected limits: 8 response spectra inside the limits: 8

Nearest station: BRM distance: 18.13 km  
HGE - PGA=2.71 cm/s\*s, PGV=0.04 cm/s  
Max recorded PGA: 3.22 cm/s\*s Station: MRR Marradi  
HGN - distance=23.16 km, PGV=0.05 cm/s



## An automatic procedure

- runs in Antelope environment
- is triggered by a new event (new record in table “origin”) in Antelope database
- generates and transmits

Event parameters  
*(SMS)*

**ALERT report**  
*(Email)*

**EVENT report**  
*(Email)*

**Antelope database schema** was modified.

New tables

- for the management of the procedure
- for storing waveform parameters ( as Mw and response spectra )



The screenshot shows a window titled 'dpc' with a table of database tables. The table has 12 columns and 4 rows of data. The first row contains: DSTalert, DSTalev, DSTcity, DSTproc, Geosite, Histopar, Polsite, Spetpar, affiliation, alertmeas, arrival. The second row contains: assoc, calibration, changed, detection, event, gap, instrument, lastid, netmag, netmw, network. The third row contains: origerr, origin, predarr, ratechange, schanloc, sensor, sensormodel, site, sitechan, snetsta, stage. The fourth row contains: stamag, stamw, wfdamage, wfdisc, wfmeas, wfparam. The 'DSTalert', 'DSTalev', and 'DSTproc' cells are highlighted with a red border. The 'Spetpar', 'alertmeas', 'netmw', and 'wfparam' cells are highlighted with a green border. A 'Quit' button is visible in the bottom right corner.

File Options											Help
DSTalert	DSTalev	DSTcity	DSTproc	Geosite	Histopar	Polosite	Spetpar	affiliation	alertmeas	arrival	
assoc	calibration	changed	detection	event	gap	instrument	lastid	netmag	netmw	network	
origerr	origin	predarr	ratechange	schanloc	sensor	sensormodel	site	sitechan	snetsta	stage	
stamag	stamw	wfdamage	wfdisc	wfmeas	wfparam						

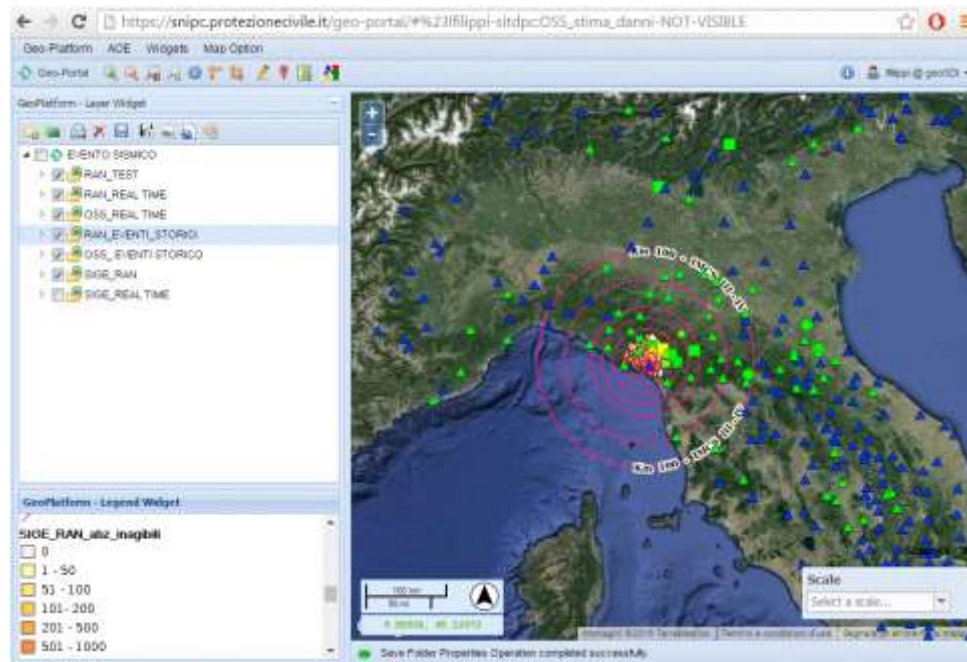




## SITDPC

### DPC Territorial Information System

- ✓ SITDPC is a DPC tool of analysis and decision-making
- ✓ SITDPC integrates data from different databases or Standard Web Services available from **SNIPC Components** and **Operative Structures**.



**SNIPC** (*National Service of Civil Protection*) is coordinated by **DPC**

#### Components:

National and local administrations, Public boards and professional associations, Institutes and scientific research groups with civil protection purposes, associated groups of volunteers, ...

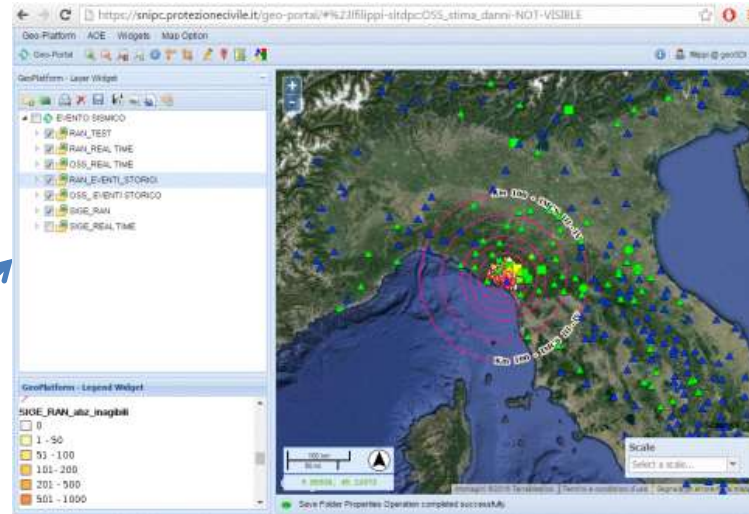
#### Operative Structures:

Fire Department and Forestry corps, Armed Forces and Police Forces, National groups of scientific research, Italian Red Cross and National Health Service, Voluntary service, ...

# RAN – data center



SITDPC

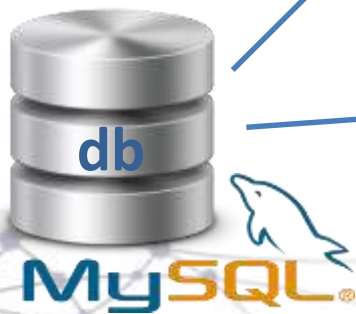


SyncMySQL  
(data synchronization)

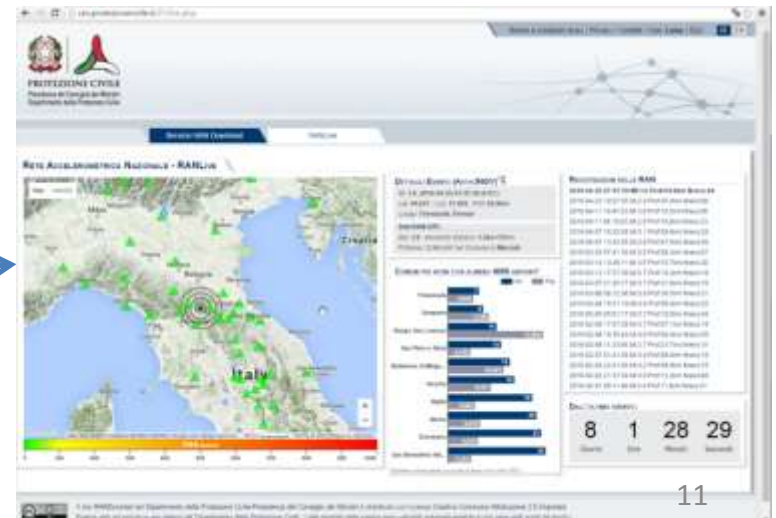
exportData

dedicated Views  
(Layers)

RAN live / RAN download



dedicated tables





**Tables**

- ant\_affiliation
- ant\_assoc
- ant\_eventi
- ant\_geosite
- ant\_instrument
- ant\_netmw
- ant\_network
- ant\_origini
- ant\_polsite
- ant\_sensor
- ant\_site
- ant\_sitechan
- ant\_stage
- ant\_wfparam
- colori
- distanze
- distanze\_temp
- downloads
- permessi
- places
- sync
- utenti
- wffiles

**Views**

- sitdpc\_last\_event
- sitdpc\_PGA\_last\_event
- sitdpc\_site
- sitdpc\_site\_full

*views for SITDPC*

<b>ant_instrument</b> inid: int insname: char(50) instype: char(6) band: char(1) samprate: decimal... ncalib: decimal(10,...) dir: char(64) dfile: char(32) rsptype: char(6) lddate: datetime	<b>ant_netmw</b> orid: int evid: int netmw: decimal(7,...) sigmamw: decima... netm0: float netf0: decimal(7, 2) neteqR: decimal(7,...) usta: int rjsta: int 3 more columns...	<b>ant_stage</b> sta: char(6) chan: char(8) time: datetime endtime: datetime stageid: int ssid: char(16) gnom: decimal(20,...) iunits: char(16) ounits: char(16) 6 more columns...	<b>ant_site</b> sta: char(6) ondate: char(50) offdate: char(50) location: geometry lat: decimal(9, 4) lon: decimal(9, 4) elev: decimal(9, 4) staname: char(50) lddate: datetime	<b>ant_wfparam</b> orid: int sta: char(6) chan: char(8) filter: char(30) time: decimal(17, 5) endtime: decimal(...) ml: decimal(7, 2) dista: decimal(7, 2) PGA: decimal(15, 6) 7 more columns...	<b>ant_polsite</b> sta: char(6) country: char(50) region: char(50) province: char(50) municipality: char(...) maintenance: char(...) lddate: datetime
<b>ant_origini</b> evid: int orid: int location: geometry lat: decimal(9, 4) lon: decimal(9, 4) time: datetime ml: decimal(7, 2) nass: int depth: decimal(9, 4) 3 more columns...	<b>ant_sitechan</b> sta: char(6) chan: char(8) ondate: char(8) offdate: char(8) ctype: char(4) edepth: decimal(9,...) hang: decimal(6, 1) vang: decimal(6, 1) descrip: char(50) 2 more columns...	<b>ant_sensor</b> sta: char(6) chan: char(8) time: datetime endtime: datetime inid: int chanid: int jdate: char(7) lddate: datetime	<b>ant_assoc</b> arid: int orid: int sta: char(6) phase: char(8) delta: decimal(8, 3) lddate: datetime	<b>ant_geosite</b> sta: char(6) time: datetime ec8: char(3) quality: char(3) auth: char(15) lddate: datetime	<b>ant_eventi</b> evid: int prefor: int auth: char(15) place: varchar(255) parameters: enum lddate: datetime

Datascope tables  
 «ad hoc» tables

<b>places</b> idlayer: tinyint place: char(70) province: char(30) region: char(45) state: char(35) cod_istat: int cod_cat: char(4) population: int surface: decimal(9,...) 4 more columns...	<b>utenti</b> id: int UNSIGNED nome: varchar(50) cognome: varchar(...) username: varchar(...) password: varchar(...) email: varchar(80) istituto: varchar(80) data_registrazione: d... ultima_modifica: d... 3 more columns...	<b>wffiles</b> id: int UNSIGNED evid: int orid: int nomefile: char(50) extasci: char(4) extsac: char(4) extplot: char(4) sta: char(4) chan: char(3) 4 more columns...	<b>downloads</b> id: int UNSIGNED id_utente: int evid: int nome_file: varchar... tipo_file: varchar(10) data_download: da...	<b>distanze</b> orid: int place: char(70) cod_istat: int distance: double population: int	<b>distanze_temp</b> orid: int place: char(70) cod_istat: int distance: double population: int
<b>sync</b> nome_tabella: text last_upd: datetime freq_upd: tinyint inizio_upd: tinyint	<b>colori</b> param: char(10) valore: smallint R: smallint G: smallint B: smallint				



## SIGE Damage scenario

Elaborated on the basis of :

- origin parameters of the event (lat lon depth magnitude)
- empirical relationships ( $M_L$  vs  $M_W$ ) & ( $M_W$  vs  $I_{MCS}$ )
- territorial data
- ....

No instrumental data .

### (Damage scenario Summary)

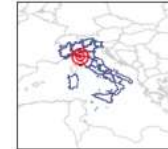


PROTEZIONE CIVILE  
PRESIDENZA DEL CONSIGLIO DEI MINISTRI  
Dipartimento della Protezione Civile  
Ufficio III - Rischio sismico e vulcanico

## RAPPORTO SUL TERREMOTO

### Evento sismico:

Data evento = 21/06/2013  
Ora evento = 10:33:56  
Magnitudo evento:  $M_w = 5.38$  ;  $M_l = 5.2$   
Intensita' epicentrale = 7.3  
Posizione epicentro:  
Longitudine = 10.133  
Latitudine = 44.154  
Profondita' = 9.98



### Comune epicentrale:

Comune epicentrale: Fivizzano  
Capoluogo di comune più vicino all'epicentro: Minucciano

### Dati sintetici di esposizione nell' area colpita ( $I_{mcs} \geq VI$ ):<sup>1</sup>

Totale comuni	5
Totale abitanti comuni	25144
Totale abitazioni comuni	14827

### Impatto complessivo su abitazioni e popolazione:<sup>1</sup>

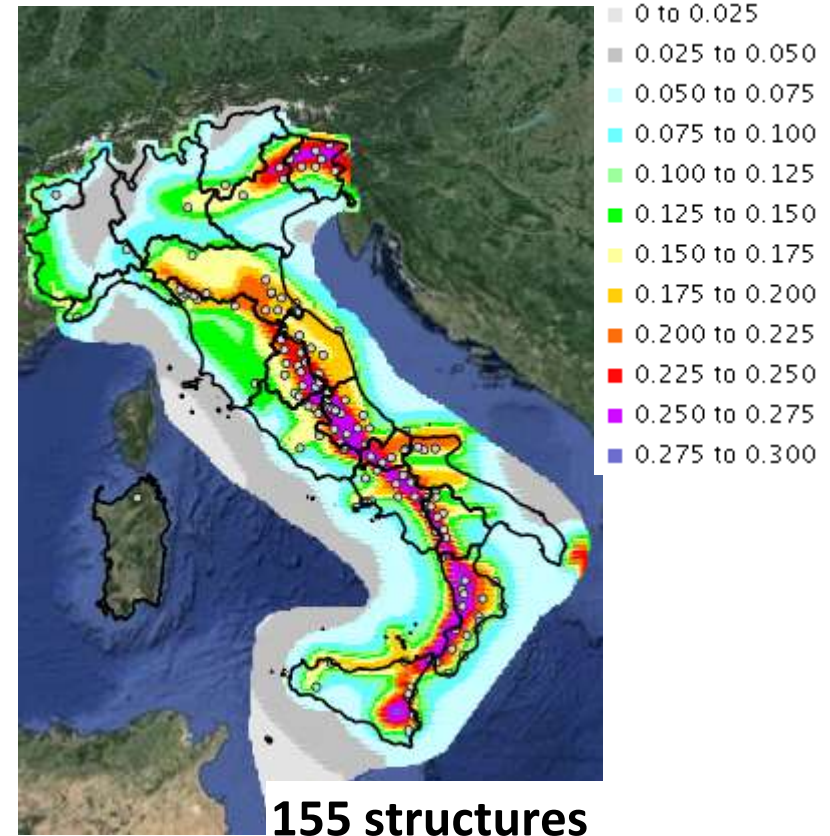
	Val.16%	Val. med	Val. 84%
Abitazioni con danno D1	912	4646	16087
Abitazioni con danno D2	430	2378	7864
Abitazioni con danno D3	116	752	2741
Abitazioni con danno D4	16	127	554
Abitazioni con danno D5	0	7	43
.			
Totale abitazioni crollate (D5)	0	7	43
Totale abitazioni inagibili (D5+D4+D3)	132	886	3338
Totale residenti in abitazioni crollate	0	8	74
Totale residenti in abitazioni inagibili	126	1162	6398
.			
Somma prodotti superf.x liv. di danno (mq)	32088	186869	642735

<sup>1</sup> Primo scenario di danno prodotto da DPC-SIV con ScMCS (vers. 07/2013) utilizzando come dati di ingresso i soli parametri Magnitudo e coordinate epicentrali (Fonte INGV) e usando:  
conversioni Magnitudo locale (Ml) - Magnitudo Momento (Mw) - Intensità macroseismica (Imcs\_ipo):  
 $M_w = 1.066 * M_l - 0.164$  (Gasperini 2013)  
 $Imcs\_ipo = (2.1258 * M_w) - 4.1135$  (cp11) per epicentri in aree vulcaniche:  $Imcs\_ipo = (2.2251 * M_w) - 2.2617$   
conversione del valore dell'intensità epicentrale per profondità ipocentrali (Prof\_ipo) superiori a 20 km:  $Imcs\_0 = Imcs\_ipo - 0.0259 * (Prof\_ipo - 20)$   
Atenuazione I\_mcs:  
per Mw<5.5 Gomez Capera 2006:  $Iris = Imcs\_0 - (-1.3096 + 1.1833 * [DIST ** (1.0/3.0)])$  in aree vulcaniche:  $Iris = Imcs\_0 - (-0.486 + 1.4066 * [DIST ** (1.0/3.0)])$   
per Mw<5.5 Paulini 2008:  $Iris = Imcs\_0 - [(0.0086 * (D - 3.91)) - 1.037 * (math.log(D) - math.log(3.91))]$  dove  $D = math.sqrt((DIST - D0) ** 2.0 + (3.91 * 3.91))$  e  $D0 = 2.0 * M_l - 13.0$  [km] e il plateau DFM versione 1999  
Soglia selezione comuni coinvolte:  $Imcs \geq 6.0$  Gestione incertezze: varianza DFM e  $\pm 0.25$  su l'intensità [per l>5.5]

- ❑ The RAN and OSS projects were designed and implemented separately for several reasons.  
RAN and OSS data centers are different
- ❑ The “near field” (NF) sensor of OSS monitoring systems is installed in site condition of many RAN stations

### ***OSS vs Italian seismic hazard map***

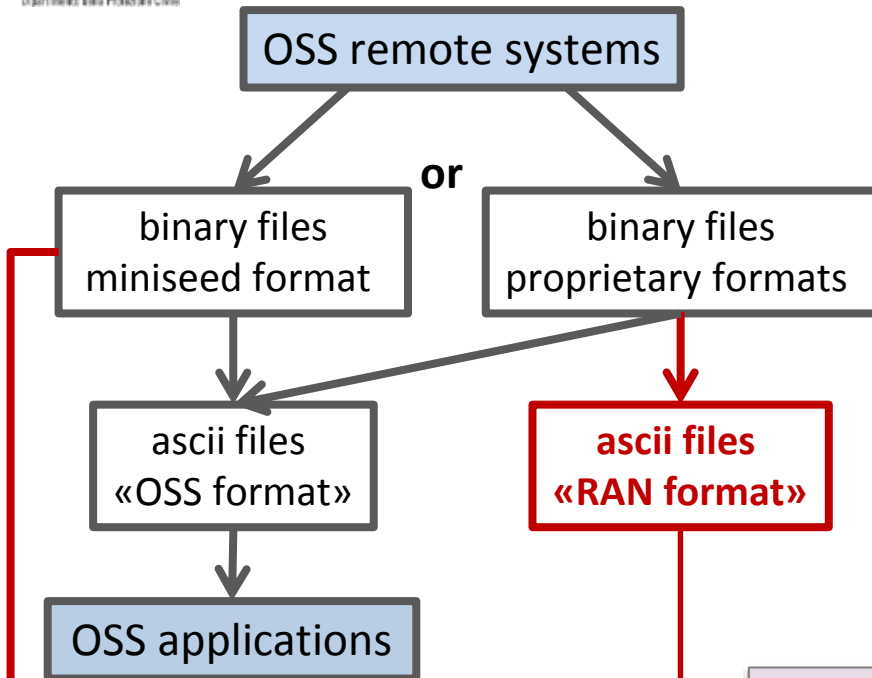
Peak Ground Acceleration (PGA in g) with a 10% chance of exceedance in 50 years.



**3049** accelerometric sensors  
**65** displacement sensors

# RAN – integration of OSS data (test phase)

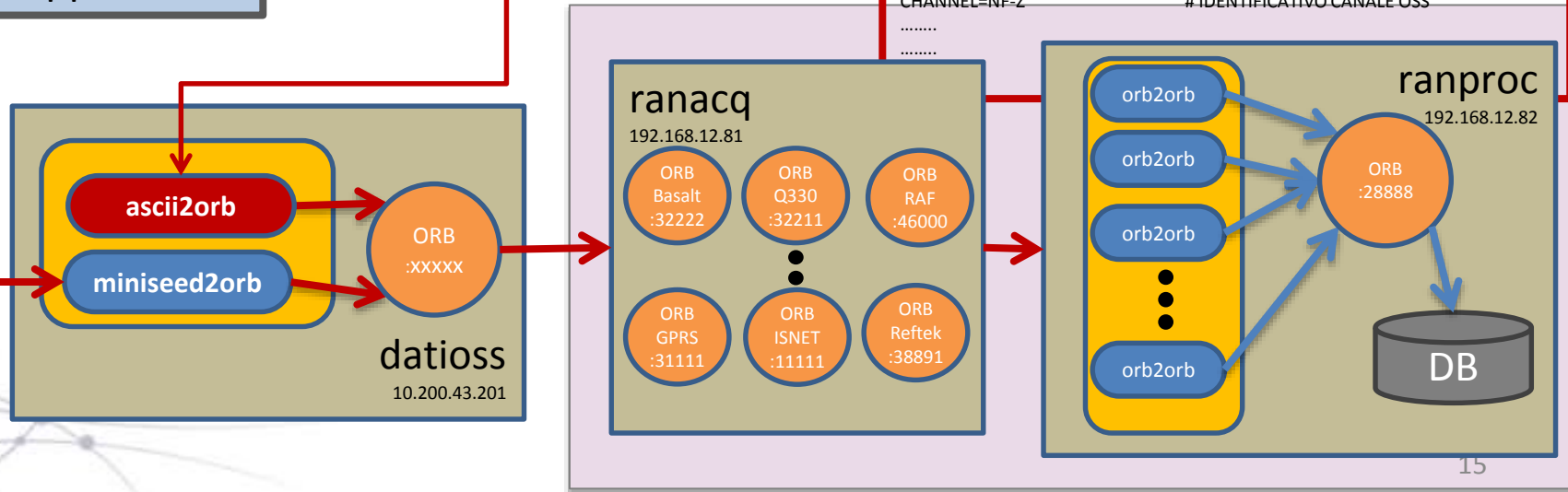
## ascii file «RAN format»



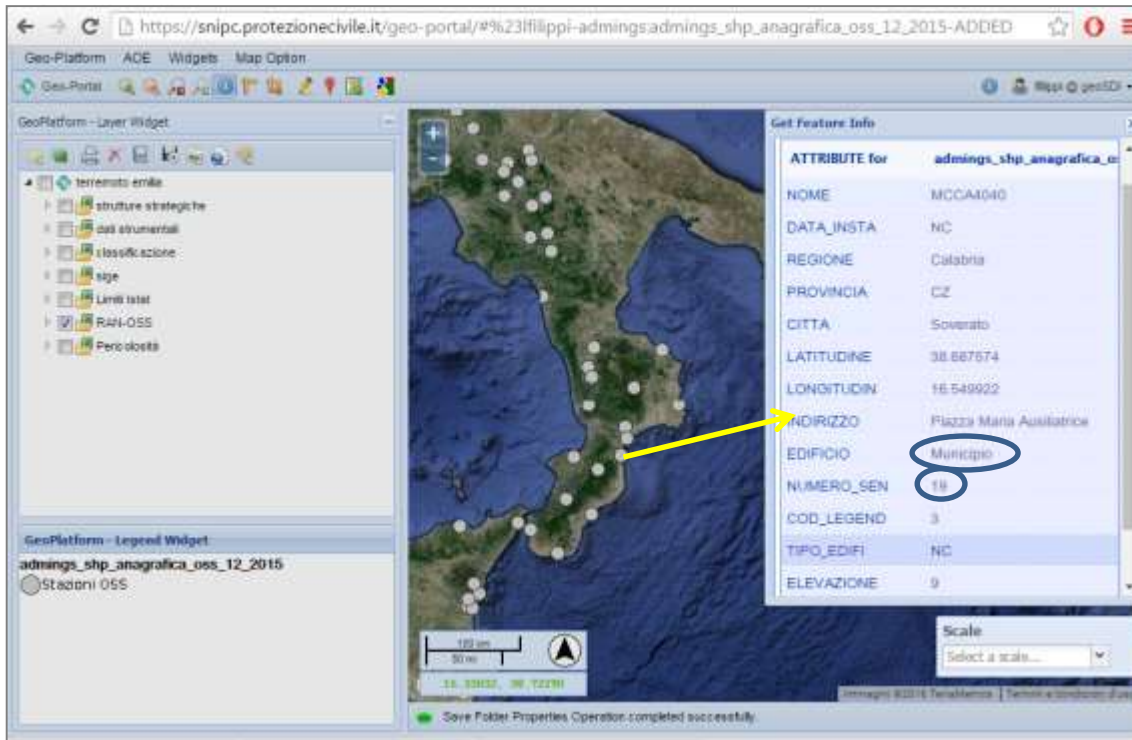
```

SERIAL=4010          # IDENTIFICATIVO DI SERIE DATALOGGER
CHANNEL=NF-Y        # IDENTIFICATIVO CANALE OSS
TIME=2015/11/17 7:13:09.735 # TEMPO PRIMO CAMPIONE
NSAMPLE=18000      # NUMERO DI CAMPIONI
SAMPLING= 200      # FREQUENZA DI CAMPIONAMENTO
DYNAMIC=24         # DINAMICA 16,18,24,..
SEGTYPE=A          # TIPO SENSORE: A=ACC. V=VELOC.
VPP=10             # FONDO SCALA PICCO PICCO. +/-5v = 10v
SENSIBILITY=1.015  # COSTANTE DI TRASDUZIONE V/g
GAIN=1             # GUADAGNO
USER1=              # COMMENTI 64 CARATTERI X ANTELOPE
USER2=              # COMMENTI 64 CARATTERI X ANTELOPE
INFO1=              # ULTERIORI INFORMAZIONI
INFO2=

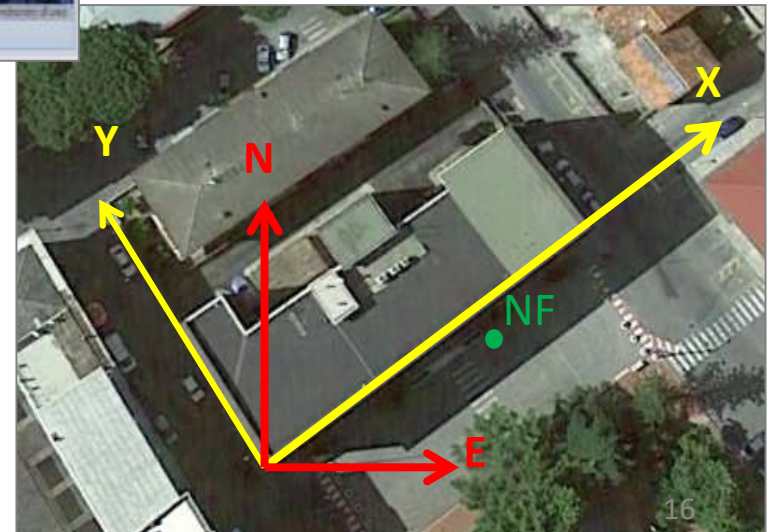
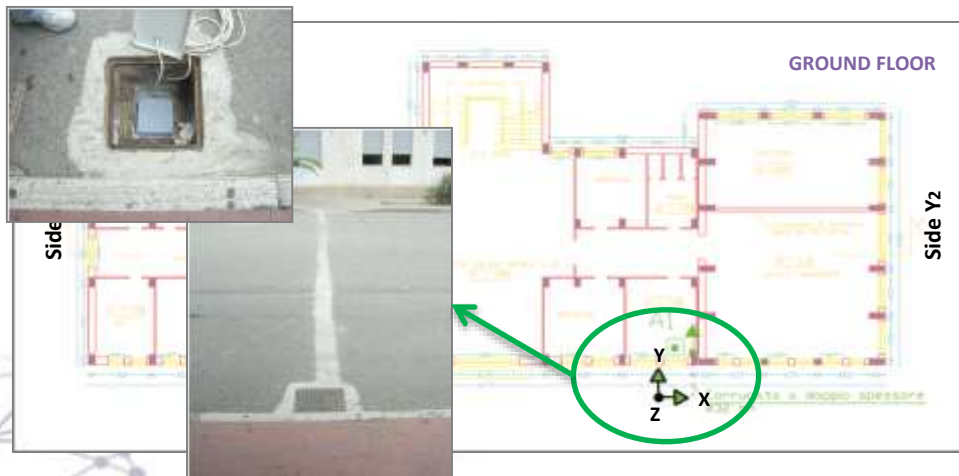
-1532               # DATI IN COUNT
-1538
.....
.....
SERIAL=4010          # IDENTIFICATIVO DI SERIE DATALOGGER
CHANNEL=NF-X        # IDENTIFICATIVO CANALE OSS
.....
.....
SERIAL=4010          # IDENTIFICATIVO DI SERIE DATALOGGER
CHANNEL=NF-Z        # IDENTIFICATIVO CANALE OSS
.....
.....
  
```



# RAN – integration of OSS data (test phase)



## SOV - Soverato Town hall building





# RAN – integration of OSS data (test phase)

oss

File Options Help

calibration	changed	gap	instrument	lastid	network	schanloc	sensor	sensormodel	site	sitechan
snetsta	stage	wfdisc								

Quit

oss sitechan

File Edit View Options Graphics Help

0	sta	chan	ondate	edepth	hang	vang	descrip
	SOV	HGZ	2005299	0.0000	0.0	0.0	cfx_4041 4041
	SOV	HGY	2005299	0.0000	325.0	90.0	cfx_4041 4041
	SOV	HGX	2005299	0.0000	55.0	90.0	cfx_4041 4041
	ATP	HGZ	2005298	0.0000	0.0	0.0	cfx_4031 4031
	ATP	HGY	2005298	0.0000	278.0	90.0	cfx_4031 4031
	ATP	HGX	2005298	0.0000	8.0	90.0	cfx_4031 4031
	CZR	HGZ	2005299	0.0000	0.0	0.0	sara_4021 4021
	CZR	HGY	2005299	0.0000	47.0	90.0	sara_4021 4021
	CZR	HGX	2005299	0.0000	137.0	90.0	sara_4021 4021
	KRO	HGZ	2005300	0.0000	0.0	0.0	sara_4011 4011
	KRO	HGY	2005300	0.0000	338.0	90.0	sara_4011 4011
	KRO	HGX	2005300	0.0000	68.0	90.0	sara_4011 4011
	BOV	HGZ	2005298	0.0000	0.0	0.0	cfx_4001 4001
	BOV	HGY	2005298	0.0000	215.0	90.0	cfx_4001 4001
	BOV	HGX	2005298	0.0000	305.0	90.0	cfx_4001 4001

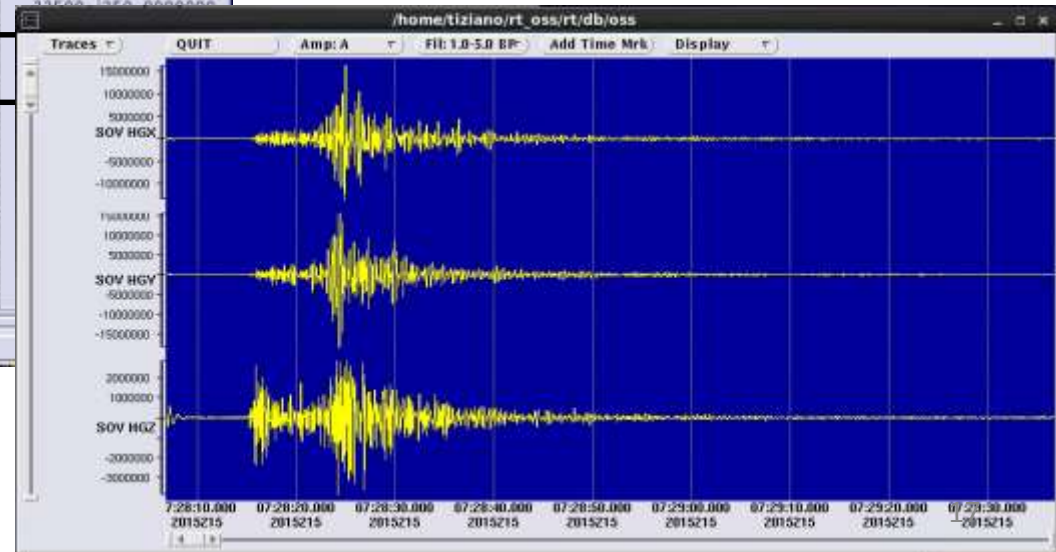
Dismiss

oss wfdisc

File Edit View Options Graphics Process

0	sta	chan	time	endtime	nsamp	samprate		
	CZR	HGX	3/02/2016 (062)	0:00:00.00000	3/02/2016 (062)	23:59:59.99600	21600000	250.000000
	CZR	HGY	3/02/2016 (062)	0:00:00.00000	3/02/2016 (062)	23:59:59.99600	21600000	250.000000
	CZR	HGZ	3/02/2016 (062)	0:00:00.00000	3/02/2016 (062)	23:59:59.99600	21600000	250.000000
	CZR	HGZ	12/28/2014 (362)	21:43:49.01370	12/28/2014 (362)	21:45:19.00970	22500	250.000000
	CZR	HGX	12/28/2014 (362)	21:43:49.01370	12/28/2014 (362)	21:45:19.00970	22500	250.000000
	CZR	HGY	12/28/2014 (362)	21:43:49.01370	12/28/2014 (362)	21:45:19.00970	22500	250.000000
	CZR	HGZ	3/02/2016 (062)	10:02:28.35460	3/02/2016 (062)	10:03:58.35060	22500	250.000000
	CZR	HGY	3/02/2016 (062)	10:02:28.35460	3/02/2016 (062)	10:03:58.35060	22500	250.000000
	CZR	HGX	3/02/2016 (062)	10:02:28.35460	3/02/2016 (062)	10:03:58.35060	22500	250.000000
	CZR	HGZ	8/03/2015 (215)	7:27:57.12340	8/03/2015 (215)	7:29:27.11940	22500	250.000000
	CZR	HGX	8/03/2015 (215)	7:27:57.12340	8/03/2015 (215)	7:29:27.11940	22500	250.000000
	CZR	HGY	8/03/2015 (215)	7:27:57.12340	8/03/2015 (215)	7:29:27.11940	22500	250.000000
	SOV	HGZ	8/03/2015 (215)	7:28:06.86380	8/03/2015 (215)	7:29:36.85980		
	SOV	HGY	8/03/2015 (215)	7:28:06.86380	8/03/2015 (215)	7:29:36.85980		
	SOV	HGX	8/03/2015 (215)	7:28:06.86380	8/03/2015 (215)	7:29:36.85980		
	KRO	HGZ	8/03/2015 (215)	7:28:11.81930	8/03/2015 (215)	7:29:41.81530		
	KRO	HGX	8/03/2015 (215)	7:28:11.81930	8/03/2015 (215)	7:29:41.81530		
	KRO	HGY	8/03/2015 (215)	7:28:11.81930	8/03/2015 (215)	7:29:41.81530		
	SOV	HGZ	12/28/2014 (362)	21:44:01.22820	12/28/2014 (362)	21:45:01.22420		
	SOV	HGX	12/28/2014 (362)	21:44:01.22820	12/28/2014 (362)	21:45:01.22420		
	SOV	HGY	12/28/2014 (362)	21:44:01.22820	12/28/2014 (362)	21:45:01.22420		
	KRO	HGZ	12/28/2014 (362)	21:44:04.64360	12/28/2014 (362)	21:45:34.63960		
	KRO	HGX	12/28/2014 (362)	21:44:04.64360	12/28/2014 (362)	21:45:34.63960		
	KRO	HGY	12/28/2014 (362)	21:44:04.64360	12/28/2014 (362)	21:45:34.63960		
	ATP	HGZ	12/28/2014 (362)	21:44:24.45750	12/28/2014 (362)	21:46:04.45350		

Dismiss



- ❑ Streaming data sharing and metadata sharing
  - Seedlink server
  - a web service for metadata download
  
- ❑ Integration of OSS data
  - to modify the automatic procedure in order to rotate OSS data before elaboration with RAN data
  
- ❑ Improve data security and data center operational continuity

The RAN data center will be upgraded in order to accomplish the Operational Continuity Plan that DPC has designed, by law.

- As first step, the servers at RAN data center will be virtualized and moved into IT infrastructures installed at the basement of the DPC's building.
  
- As second step, the Antelope database will be replicated and synchronized in the “disaster&recovery” site o DPC.