

INGV



DPC-INGV 2007-09: Progetto S4

La Banca Dati

Accelerometrica Italiana

Coordinatori

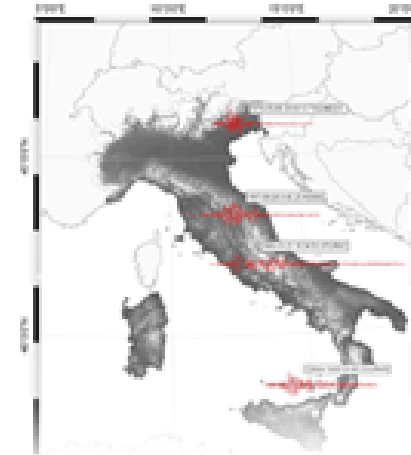
Francesca Pacor (INGV – Milano Pavia)

Roberto Paolucci (Politecnico Milano)

Referenti DPC

Antonella Gorini

Adriano De Sortis



Itaca
Italian Accelerometric Archive

ENTER



Background – Progetto S6 (convenzione 2004-2006)

<http://esse6.mi.ingv.it>

S6: Database dei dati accelerometrici italiani nel periodo 1972-2004

Coordinatori

L. Luzi (INGV) e F. Sabetta (DPC-SAPE)



Italian ACcelerometric Archive

- [Interactive Database](#)
- [User Manual](#)
- [Disclaimer](#)
- [Send Comments](#)

In the framework of the agreement between INGV and DPC:

- Project S6 (2004-2006)
 - Data base of the Italian Strong Motion Data (1972-2004) - Coordinated by [Lucia Luzi](#) and [Fabio Sabetta](#).
- Project S4 (2007-2009)
 - Italian Strong Motion User-Base - Coordinated by [Francesca Pazar](#) and [Roberto Paolucci](#).

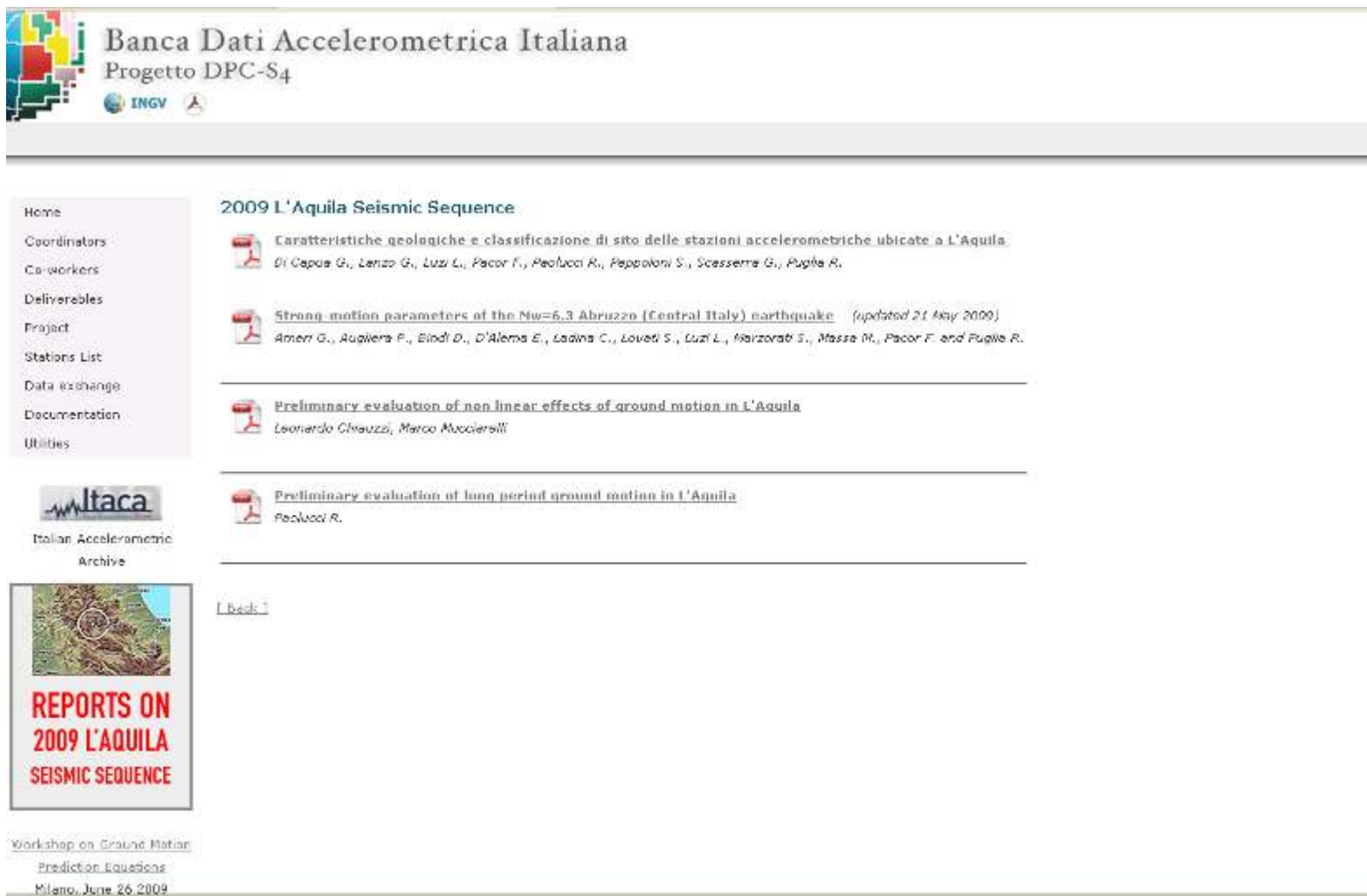
Reference
If you use any record of parameter released by this site in a publication or report, please reference:
Working Group (1972-2004) - Data base of the Italian strong motion data: <http://esse6.mi.ingv.it>

Attività del progetto S6

1. Creazione della struttura del database
2. Raccolta e processamento delle forme d'onda
3. Revisione dei metadati degli eventi sismici e delle stazioni di registrazione
4. Popolamento del database e disseminazione del dato

Progetto S4 (2007-2009) – Obiettivi

- Aggiornamento del database (inserimento di eventi recenti e dati di reti locali)
 - Integrazione di ITACA con i databases mondiali esistenti
 - Indagini geofisiche a basso costo (attive o passive) per accrescere il numero delle stazioni con profilo di Vs.
 - Riduzione del ritardo tra l'occorrenza dell'evento sismico e la disponibilità dei records
-
- Classificazione geotecnica delle stazioni e identificazione di stazioni con marcata amplificazione
 - Inclusione dei parametri di sito (e.g. f_0 , H, V_{sH}), per migliorare la classificazione geotecnica
 - Miglioramento della classificazione dei siti su roccia
-








Banca Dati Accelerometrica Italiana
Progetto DPC-S4


INGV

- Home
- Coordinators
- Co-workers
- Deliverables
- Project
- Stations List
- Data exchange
- Documentation
- Utilities

2009 L'Aquila Seismic Sequence

-  [Caratteristiche geologiche e classificazione di sito delle stazioni accelerometriche ubicate a L'Aquila](#)
Di Capua G., Lenzo G., Luzi L., Pacor F., Peolucci R., Peppoloni S., Scascerre G., Puglia R.
-  [Strong motion parameters of the Mw=6.3 Abruzzo \(Central Italy\) earthquake](#) *(updated 21 May 2009)*
Ameri G., Augliera F., Bindi D., D'Alema E., Ladina C., Lovati S., Luzi L., Maiorati S., Massa M., Pacor F. and Puglia R.
-  [Preliminary evaluation of non linear effects of ground motion in L'Aquila](#)
Leonardo Civolani, Marco Muccierilli
-  [Preliminary evaluation of long period ground motion in L'Aquila](#)
Peolucci R.


Italian Accelerometric
Archive



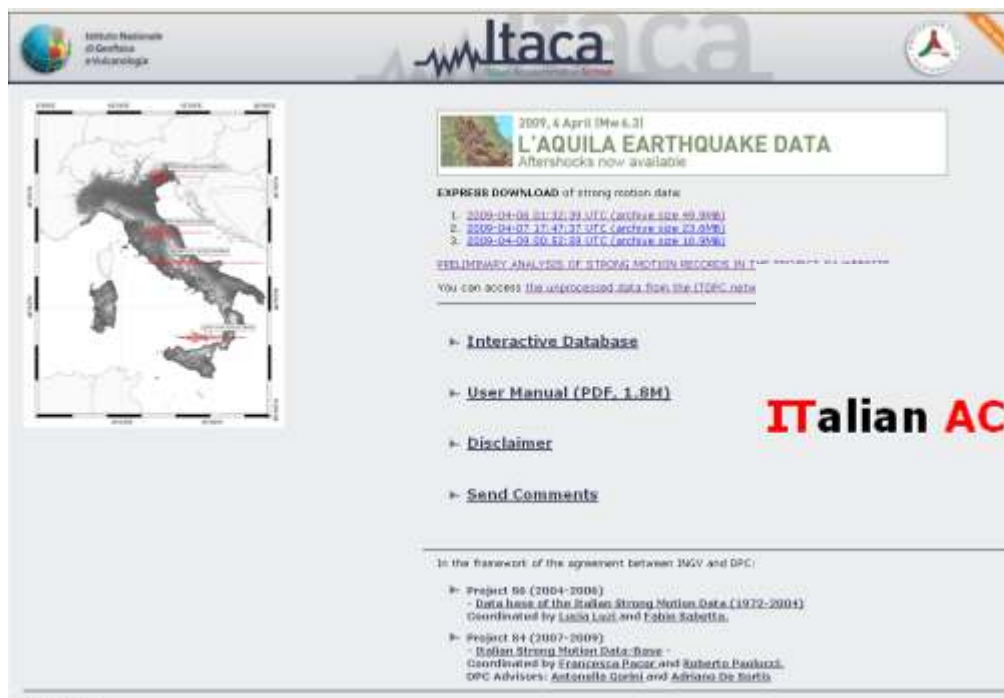
[\[back \]](#)

[Workshop on Ground Motion Prediction Equations](#)
Milano, June 26, 2009

ITACA – versione beta

La versione beta di ITACA è stata pubblicata a metà novembre 2008 e aggiornata a maggio 2009

<http://itaca.mi.ingv.it/>



The screenshot shows the ITACA website interface. At the top left, there is a logo for the Istituto Nazionale di Geofisica e Vulcanologia. The main header features the 'Itaca' logo with a stylized waveform. On the left side, there is a map of Italy with several red dots indicating earthquake locations. The central content area has a news banner for 'L'AQUILA EARTHQUAKE DATA' dated '2009, 4 Aprile (Mw 6.3)' with the subtext 'Aftershocks now available'. Below this, there is a section for 'EXPRESS DOWNLOAD of strong motion data' with three numbered links: 1. 2009-04-04 01:32:39 UTC (archive size: 49.9MB), 2. 2009-04-07 11:47:37 UTC (archive size: 23.0MB), and 3. 2009-04-03 20:51:39 UTC (archive size: 10.9MB). Further down, there is a section titled 'PRELIMINARY ANALYSIS OF STRONG MOTION RECORDS IN THE AREA OF THE L'AQUILA EARTHQUAKE' with a link to 'You can access the unprocessed data from the ITDCB.net'. A navigation menu includes links for 'Interactive Database', 'User Manual (PDF, 1.8M)', 'Disclaimer', and 'Send Comments'. At the bottom, there is a section titled 'In the framework of the agreement between INGV and DPC' with two project entries: Project 56 (2004-2006) for 'Data base of the Italian Strong Motion Data (1972-2004)' and Project 84 (2007-2009) for 'Italian Strong Motion Data Base'.

ITACA

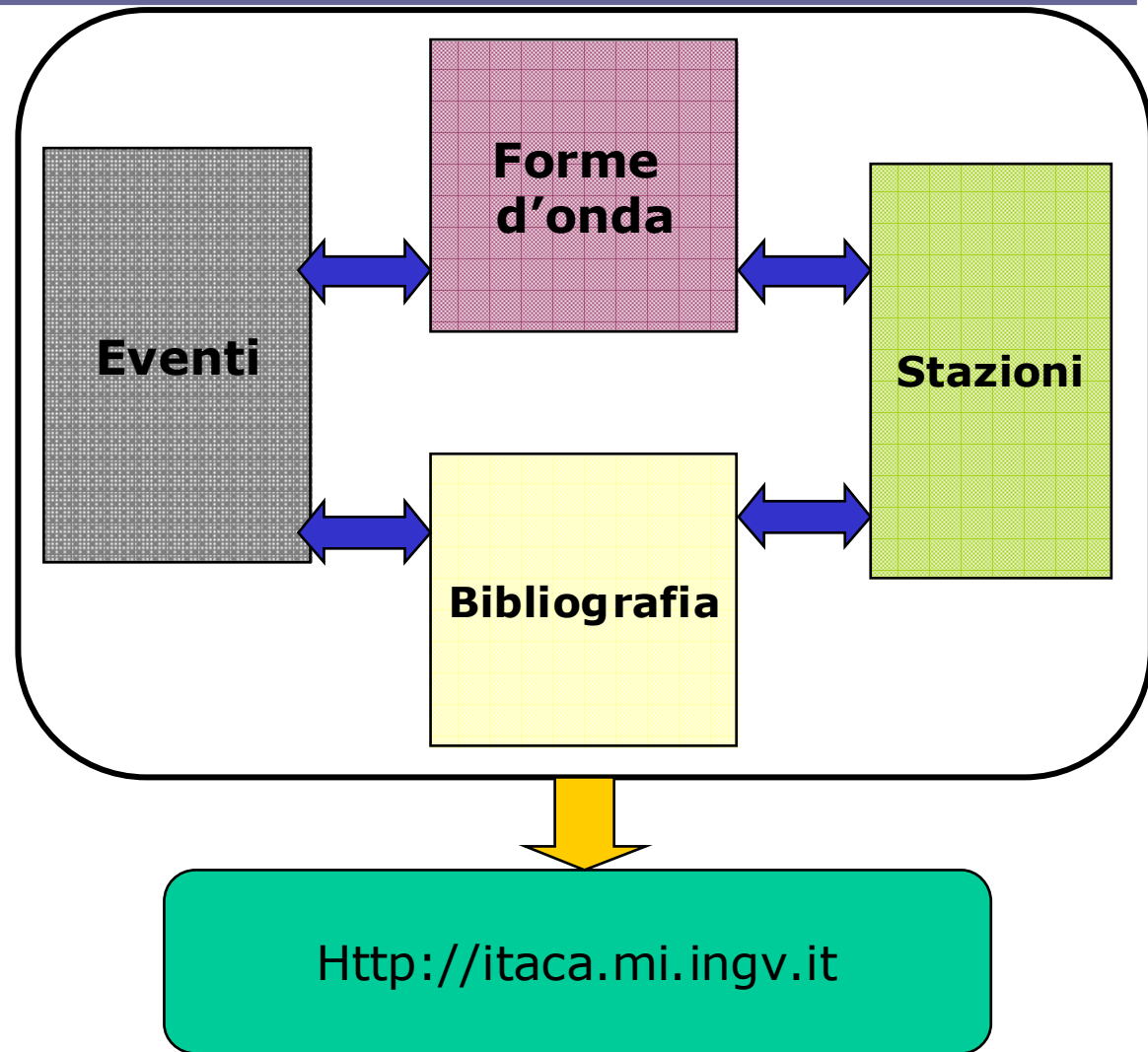
Italian ACcelerometric Archive

[beta release]

La struttura

La struttura del database non è cambiata rispetto alla versione alfa

La versione beta di ITACA è residente in un server INGV presso la sezione di Milano-Pavia



La struttura

La struttura del database non è cambiata rispetto alla versione alfa

La versione beta di ITACA è residente in un server INGV presso la sezione di Milano-Pavia

- Database relazionale: Ms Access® per la distribuzione su CD-ROM e Mysql® per la distribuzione web
 - Un'interfaccia per l'immissione dei dati
 - Standard per la codifica dei dati
- Query predefinite

ITACA – versione beta - contenuti

1002 terremoti dal 1972 to 2004.

2 eventi relativi alla sequenza sismica di Parma

13 eventi ($M > 4$) relativi alla sequenza dell'Aquila del 2009

2550 forma d'onde a 3 componenti non corrette

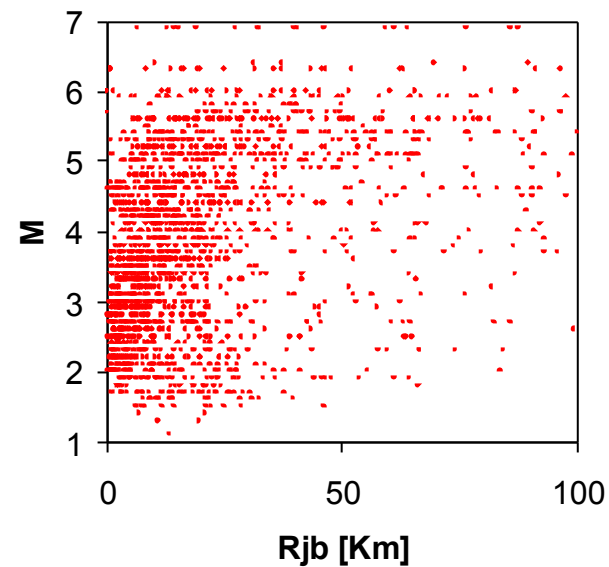
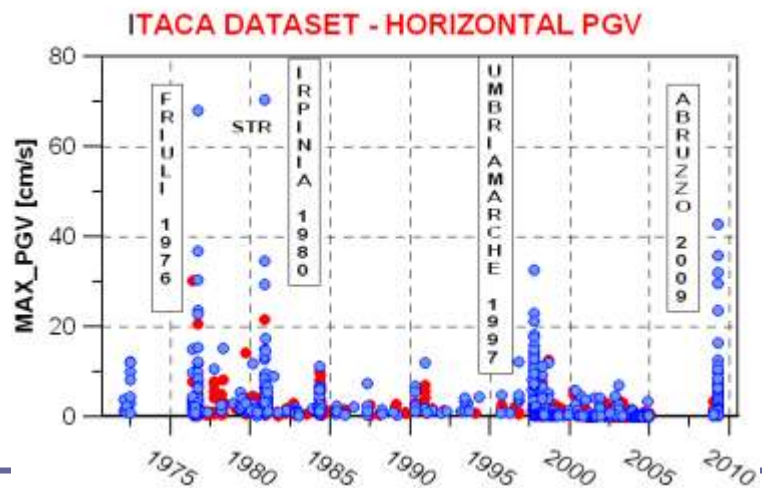
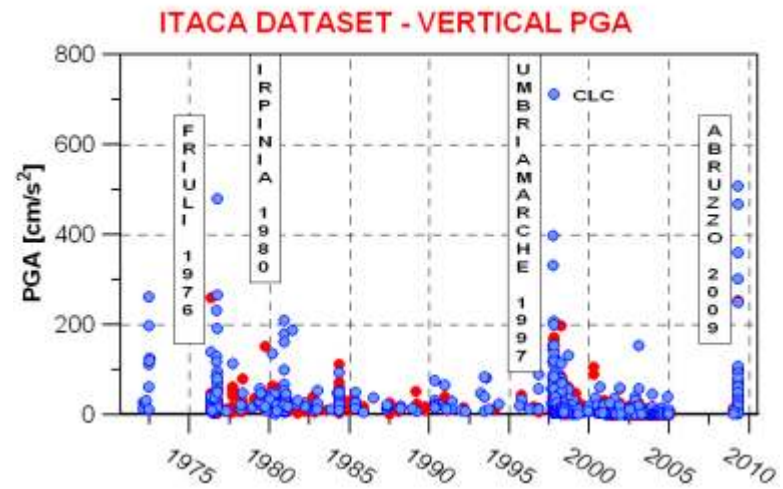
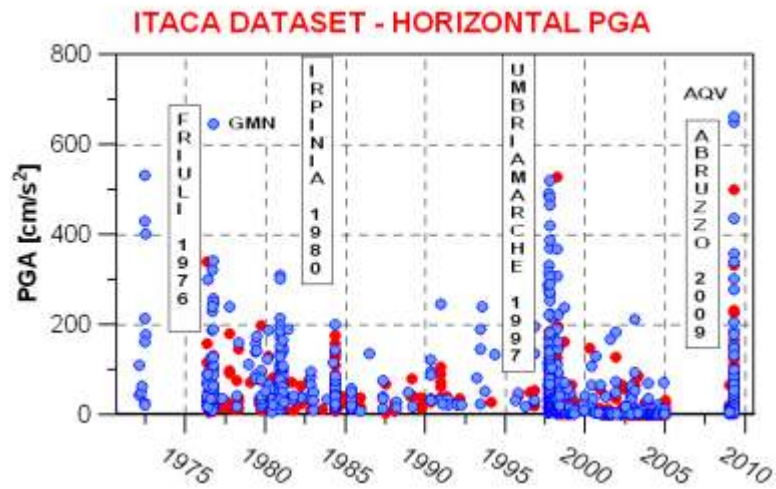
2401 forma d'onde a 3 componenti nella versione corretta, rappresentate dalle tracce di accelerazione, velocità, spostamento e spettri di risposta in accelerazione calcolati a 23 periodi tra 0.03 e 10s (5% smorzamento)

Ogni stazione è caratterizzata da: nome, codice, indirizzo, coordinate, localizzazione su mappa topografica, tipo di installazione, ecc.

Circa **500** siti sono mappati su carta topografica, foto aeree o su carta geologica, per **43 siti** sono disponibili i profili di Vs

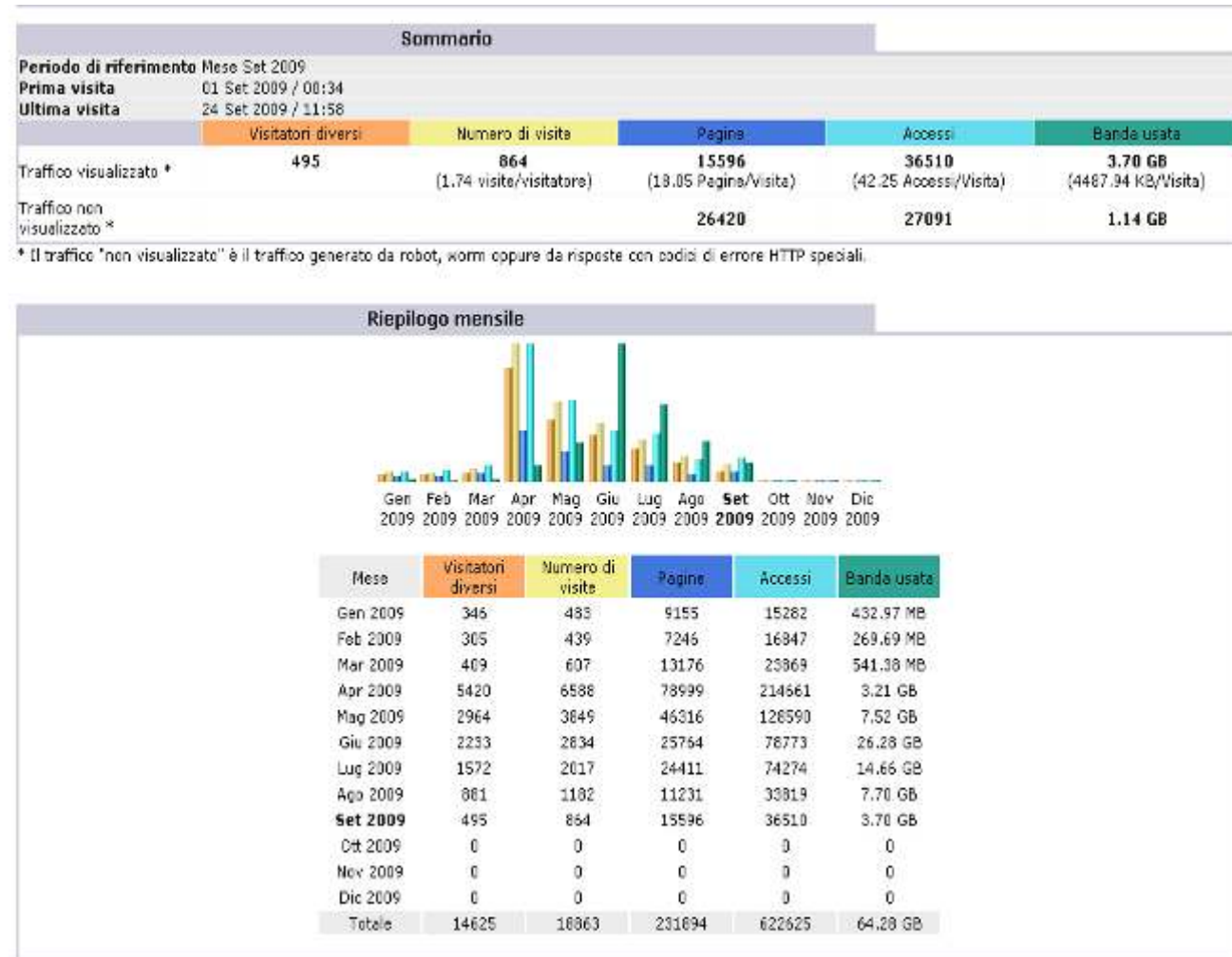
Circa **100** siti saranno caratterizzati da parametri geofisici o geotecnici, quali: stratigrafia, NSPT logs, profili Vs/Vp, curve di dispersione, frequenze fondamentali, funzioni di trasferimento, etc.

ITACA data SET

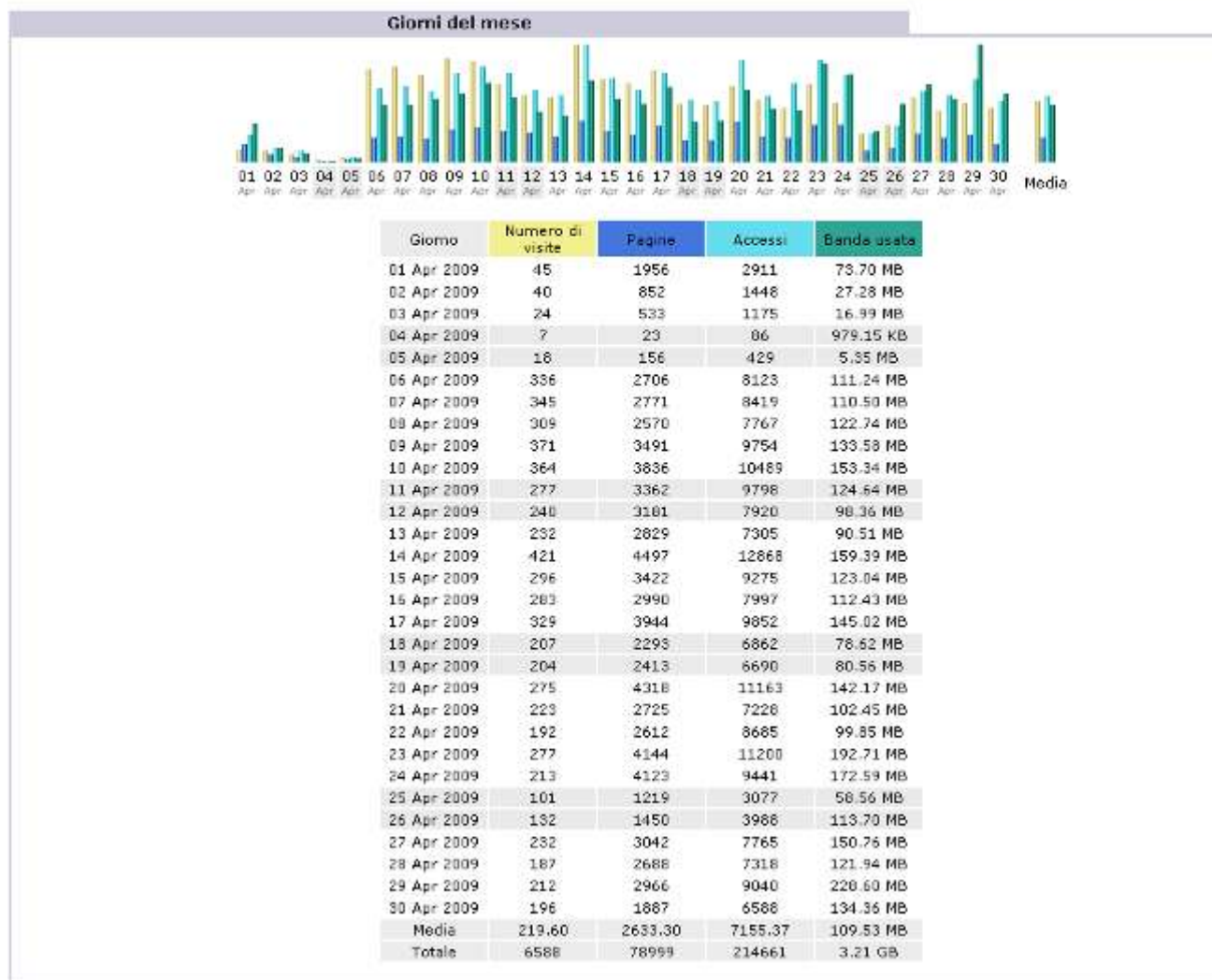


ITACA (beta) - STATISTICHE

- ✓ statistica mensile, settimanale, giornaliera
- ✓ identificazione del dominio/paesi
- ✓ sistemi operativi dei visitatori,
- ✓ parole chiave utilizzate per la ricerca



ITACA (beta) - Aprile 2009



ITACA beta VERSION: alcune statistiche

Novembre 2008

Domini o nazioni dei visitatori (Prime 10) - Elenco completo

Domini/Nazioni			Pagine	Accessi	Banda usata	
	Italy	it	5517	7591	128.07 MB	
	Sconosciuti	ip	876	1611	33.93 MB	
	Network	net	162	237	2.46 MB	
	United Kingdom	uk	161	178	2.51 MB	
	Germany	de	87	209	3.26 MB	
	Greece	gr	73	106	1.37 MB	
	Commercial	com	38	38	889.66 KB	
	Switzerland	ch	1	1	46.07 KB	
	Altri		0	0	0	

Giugno 2009

Domini o nazioni dei visitatori (Prime 10) - Elenco completo

Domini/Nazioni			Pagine	Accessi	Banda usata	
	Italy	it	15475	48688	17.80 GB	
	Sconosciuti	ip	6389	19589	6.40 GB	
	USA Educational	edu	736	2016	98.70 MB	
	Network	net	609	1813	497.95 MB	
	France	fr	565	2176	356.12 MB	
	Germany	de	481	769	24.10 MB	
	Commercial	com	389	876	136.01 MB	
	Switzerland	ch	191	361	12.15 MB	
	Japan	jp	187	502	289.45 MB	
	USA Government	gov	152	368	20.17 MB	

ITACA versione beta: alcune statistiche

Mese di novembre

Frasi cercate (Prime 10) Elenco completo		
24 frasi chiave diverse	Ricerche	Percentuale
itaca ingv	7	20 %
itaca nocera biscontini	3	8.5 %
coordinate geografiche sellano	2	5.7 %
ingv itaca	2	5.7 %
inquadramento geografico di cortina d'ampezzo	2	5.7 %
itaca.ingv.mi.it	1	2.8 %
itaca app. umbro-marchigiano	1	2.8 %
itaca colfiorito	1	2.8 %
coordinate gauss boaga bardis	1	2.8 %
roberto paolucci itaca	1	2.8 %
Altre frasi	14	40 %

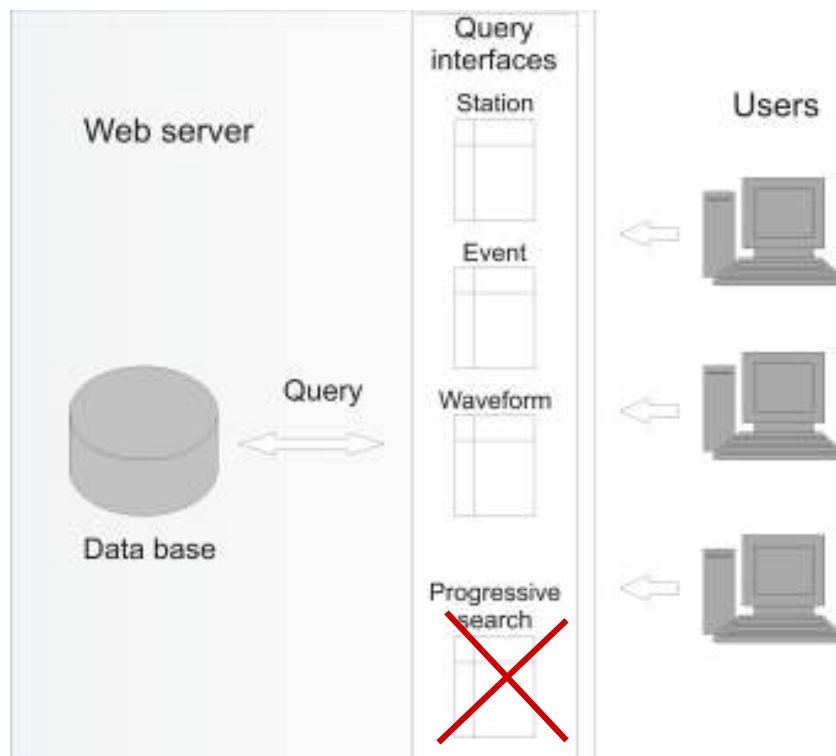
Accessi da pagina esterna (altri siti eccetto i motori di ricerca) - Elenco completo			
- http://portale.ingv.it/primo-piano/archivio-primo-piano/notizie-...	1496	1496	
- http://www.reluis.it/doc/home.htm	242	242	
- http://www.protezionecivile.it/minisite/index.php	100	100	
- http://www.reluis.it/doc/software.htm	65	65	
- http://portale.ingv.it/primo-piano/archivio-primo-piano/notizie-...	51	51	
- http://www.unibg.it/struttura/struttura.asp	36	36	
- http://portale.ingv.it/servizi-e-risorse/banche-dati	33	33	
- http://portale.ingv.it/servizi-e-risorse/banche-dati/	31	31	
- http://esseri.mi.ingv.it/index.php	28	28	
- http://www.ingegneri.info/forum/viewtopic.php	19	19	
- Altri	193	212	
		2294	62.6 %
		2010	42.7 %

Frasi cercate (Prime 10) Elenco completo			Parole cercate (Prime 10) Elenco completo		
49 frasi chiave diverse	Ricerche	Percentuale	63 parole chiave diverse	Ricerche	Percentuale
itaca ingv	55	34.0 %	itaca	117	37.5 %
itaca	20	12.6 %	ingv	70	22.4 %
itaca database	11	6.9 %	database	16	5.1 %
ingv itaca	5	3.1 %	motion	8	2.5 %
ithaca ingv	4	2.5 %	strong	7	2.2 %
italian accelerometric archive	3	1.8 %	accelerometric	6	1.9 %
itaca strong motion	3	1.8 %	italian	5	1.6 %
itaca.ingv	3	1.8 %	archive	4	1.2 %
progetto itaca	3	1.8 %	ithaca	4	1.2 %
itaca.mi.ingv.it	3	1.8 %	progetto	3	0.9 %
Altre frasi	48	30.3 %	Altre parole	72	23 %

Mese di giugno

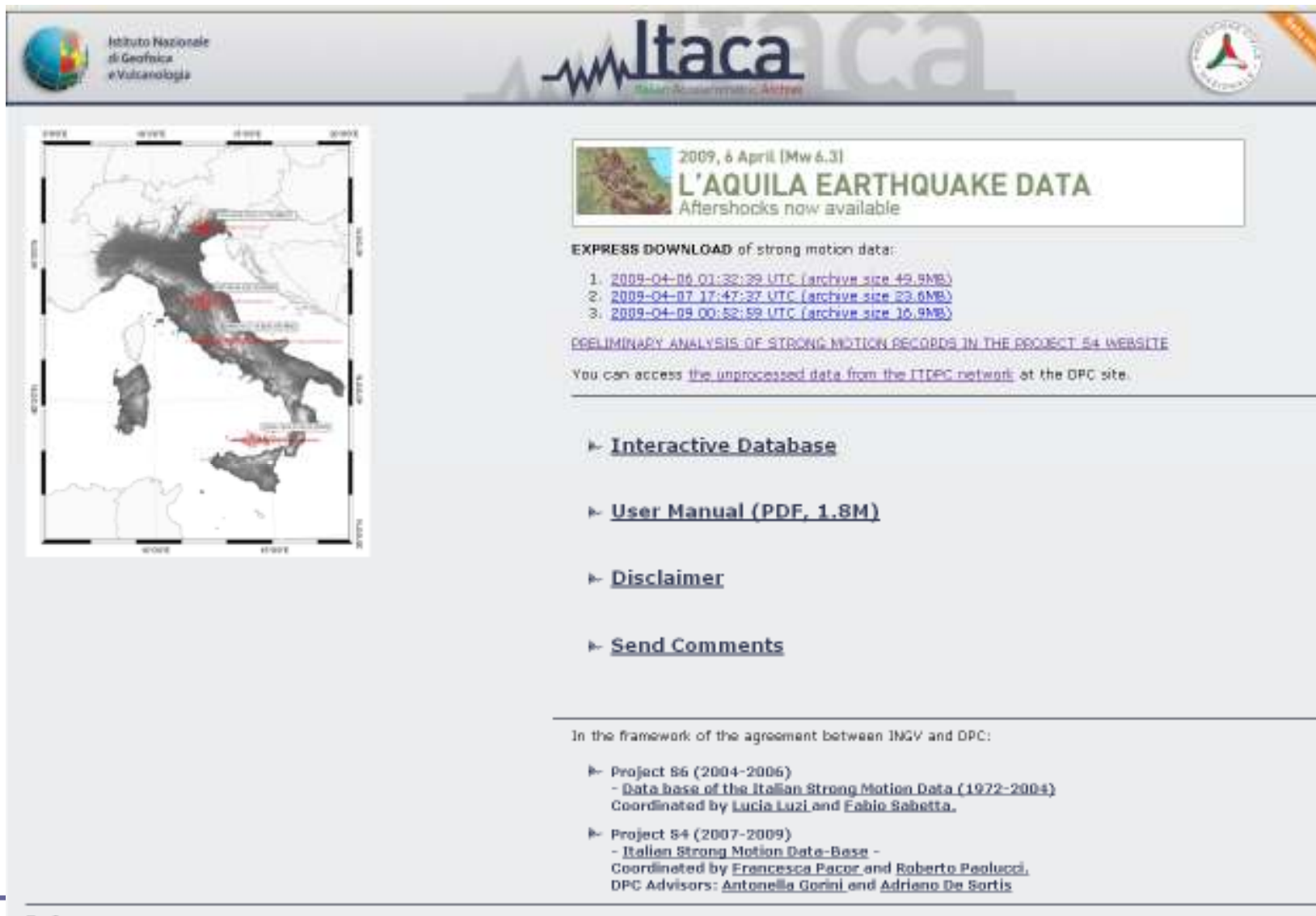
ITACA versione beta

Web database: <http://itaca.mi.ingv.it>



Il database può essere esplorato attraverso **29** campi chiave: **9** per le stazioni, **10** per gli eventi sismici e **10** per le forme d'onda

ITACA – come funziona



The screenshot displays the ITACA website interface. At the top left is the logo of the Istituto Nazionale di Geofisica e Vulcanologia. The main header features the 'Itaca' logo with the tagline 'Italian Accelerometric Archive'. On the right is the logo of the Dipartimento di Geofisica e Vulcanologia. The main content area is divided into two columns. The left column contains a map of Italy with several red dots indicating seismic stations. The right column features a prominent banner for the '2009, 6 April (Mw 6.3) L'AQUILA EARTHQUAKE DATA' with the subtext 'Aftershocks now available'. Below this banner, there is a section for 'EXPRESS DOWNLOAD of strong motion data:' followed by a list of three download links with their respective archive sizes. Further down, there is a link for 'PRELIMINARY ANALYSIS OF STRONG MOTION RECORDS IN THE PROJECT S4 WEBSITE' and a note about accessing unprocessed data from the ITDPC network. A list of navigation links includes 'Interactive Database', 'User Manual (PDF, 1.8M)', 'Disclaimer', and 'Send Comments'. At the bottom, there is a section titled 'In the framework of the agreement between INGV and DPC:' which lists two projects: Project S6 (2004-2006) and Project S4 (2007-2009), each with details on data bases and coordinators.

Itaca
Italian Accelerometric Archive

2009, 6 April (Mw 6.3)
L'AQUILA EARTHQUAKE DATA
Aftershocks now available

EXPRESS DOWNLOAD of strong motion data:

1. [2009-04-06 01:32:39 UTC \(archive size 49.9MB\)](#)
2. [2009-04-07 17:47:37 UTC \(archive size 23.6MB\)](#)
3. [2009-04-09 00:52:59 UTC \(archive size 10.9MB\)](#)

[PRELIMINARY ANALYSIS OF STRONG MOTION RECORDS IN THE PROJECT S4 WEBSITE](#)

You can access [the unprocessed data from the ITDPC network](#) at the DPC site.

- ▶ [Interactive Database](#)
- ▶ [User Manual \(PDF, 1.8M\)](#)
- ▶ [Disclaimer](#)
- ▶ [Send Comments](#)

In the framework of the agreement between INGV and DPC:

- ▶ Project S6 (2004-2006)
 - [Data base of the Italian Strong Motion Data \(1972-2004\)](#)
 - Coordinated by [Lucia Luzi](#) and [Fabio Sabetta](#).
- ▶ Project S4 (2007-2009)
 - [Italian Strong Motion Data-Base](#) -
 - Coordinated by [Francesca Pacor](#) and [Roberto Paolucci](#).
 - DPC Advisors: [Antonella Gorini](#) and [Adriano De Sotis](#)

Ricerca per forme d'onda

Waveforms Search

Waveform click to show-hide

Magnitude (M_L) from [≥]: 4.5 to [<]: 7.0

Epicentral distance [Km] from [≥]: to [<]:

Fault distance [km] from [≥]: to [<]:

PGA [cm/s²] from [≥]: to [<]:

Uncorrected PGA [cm/s²] from [≥]: to [<]:

PGV [cm/s] from [≥]: to [<]:

PGD [cm] from [≥]: to [<]:

Duration [s] from [≥]: to [<]:

Arias intensity [cm/s] from [≥]: to [<]:

Late triggered event? — Any value —

Instrument type — Any value —

Search
Criteria

Events click to show-hide

Stations click to show-hide

Network contains Any value

Station Code contains GMN

Station Name contains

Latitude (e.g. 45.27) from [≥]: to [<]:

Longitude (e.g. 12.7) from [≥]: to [<]:

Region contains

Province contains

Municipality contains

ECB contains

Housing contains — Any value —

```
{ ( ( mag_value >= 4.5 ) AND ( mag_value < 7.0 ) ) AND ( EXISTS ( SELECT 'x' FROM station WHERE ( ( ( UIE ) AND ( station.net_code = ) AND ( v_waveform_magnitude.net_code = station.net_code ) ) AND ( v_waveform_magnitude.station_code = station.station_code ) ) ) ) }
```

Query visualization

Link to event
and station

Search New Search

Waveform detail

Date	M _L	Stat. Code	R epi. [km]	PGA [cm/s ²]	PGV [cm/s]	Detail
1976-09-15 03:15:18	6.1	GMN	5.229	479.614	21.144	
1976-09-15 09:21:18	6.0	GMN	4.699	250.360	13.497	
1976-09-11 16:35:01	5.8	GMN	14.964	231.298	13.315	


WAVEFORM DETAIL

Network	ING	Station code	GMN	Type	Analog	Station recordings	
Event time	1976-06-08 12:14:38	M _L	4.5	R epi. [km]	8.283	R _F [km]	Back azimuth 83.8°
Late triggered event?		Instrument type	Analog				

Waveform Plots **PLOT**

UNCORRECTED	time step [sec]	0.00244		
CORRECTED	time step [sec]	0.0050	filter type	BUTTERWORTH
units	cm/s ²			
	NS	UP	WE	
UNCORRECTED				
points	3715	3710	3701	
peak acceleration [cm/s ²]	35.8065	20.5029	62.1954	
peak at [s]	2.0520	2.0325	2.0398	
CORRECTED				
points	1806	1806	1806	
peak acceleration [cm/s ²]	34.8417	19.2945	60.0942	
peak at [s]	2.0550	2.0300	2.0400	
Housner Int. [cm]	2.4742	1.7395	3.4945	
peak velocity [cm/s]	1.2993	0.9820	2.2704	
peak displacement [cm]	0.0962	0.0646	0.1130	
Arias intensity [cm/s]	0.4362	0.2570	1.0186	
T90 [s]	2.8300	4.2600	2.6100	
low pass 2 [Hz]	25.0000	25.0000	25.0000	

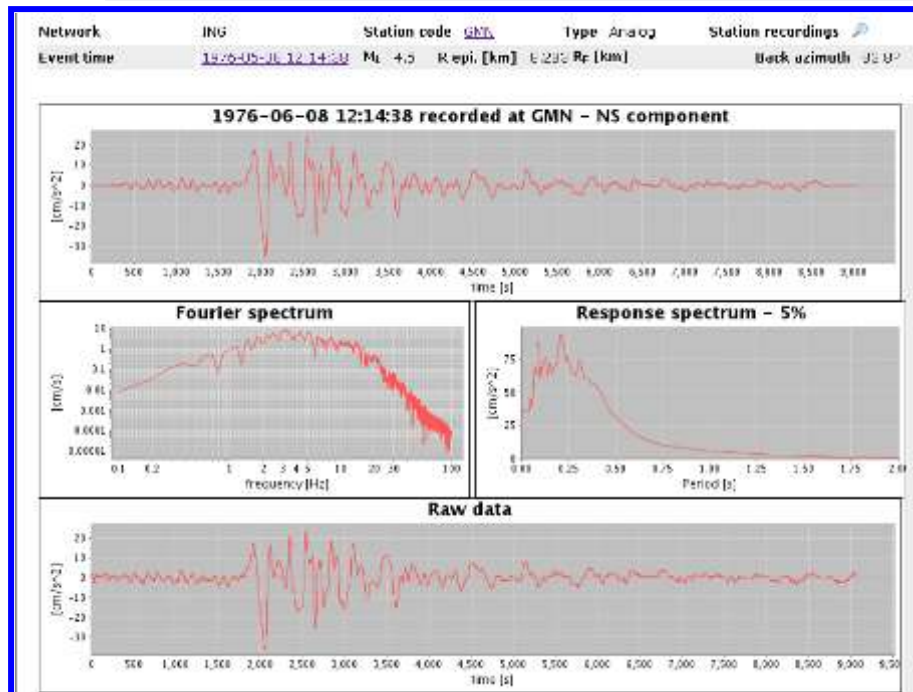
Export in Zip file

-  Corrected records (only corrected time histories and response spectra) - ascii format
- Uncorrected records (only acceleration time histories) - ascii and sac format
- Both corrected and uncorrected records - ascii format

Download

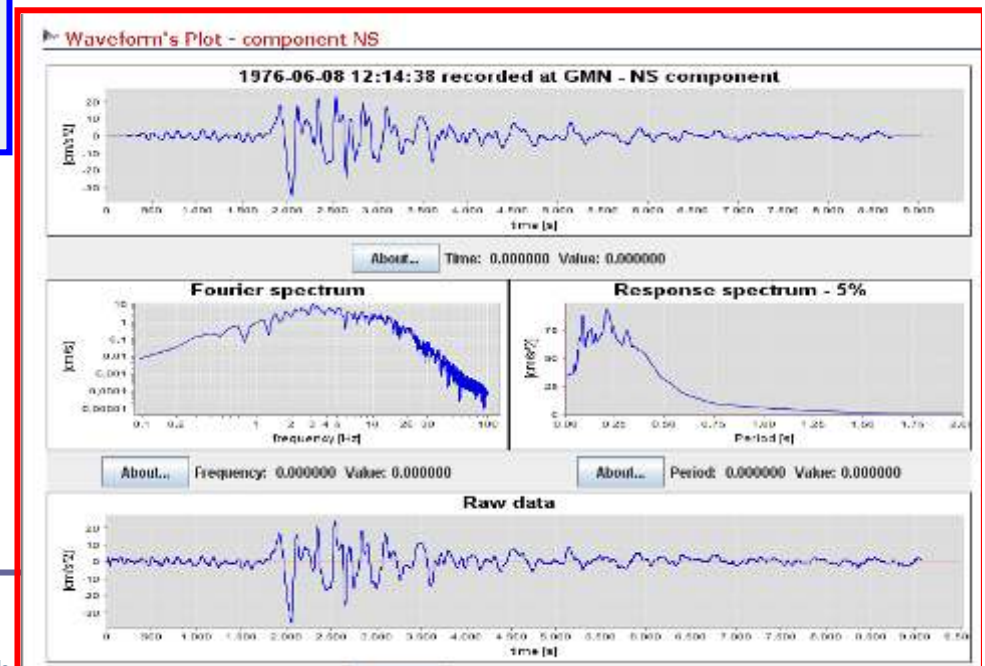
[Recordings](#) [Search Again](#)

WAVEFORM PLOT





**STATIC
PLOT**


**JAVA
APPLET**



RICERCA PER STAZIONE

 Istituto Nazionale di Geofisica e Vulcanologia

 Itaca
Italian Accelerometric Archive

 Società Nazionale di Geofisica e Sismologia

Homepage Waveforms **Stations** Events Reference REXEUTO

Stations search

Network:

Station Code:

Station Name:

Latitude (e.g. 45.27):

Longitude (e.g. 12.7):

Region:


Province:

EC8:

Housing:

Morphology:

Number of Recordings:

Network	Stat. Code	Station Name	Latitude	Longitude	Municipality	EC8	Instr. type	Housing	# of records	Station recordings
ING	GMN	GEMONA	46.291960	13.123130	GEMONA DEL FRIULI		Analog		13	

Station Detail

Waveforms Detail

RICERCA PER STAZIONE

Homepage Waveforms **Stations** Events Reference REXELite

Station detail

Network	ITDPC	Station Code	CLF
Station Name	COLFIORITO		
Instr. Type	Analog		
Lat	43.035898	Long	12.920538
Elev [m.a.s.l.]	753	ECB Code	D
		Projection	GEOWGS84
		Estimate	DH

Meppa Satellite Ibrida **Terreno**

Install. Date	1991-05-16 00:00:00	Removal date	2007-11-25
Address	CASONE Cabina di trasformazione MC-52-E-07		
Municipality	SERRAVALLE DI CHIENTI		
Proximity	No information		
Permanent	Permanent	Housing	ENEL Box
Installation	Pillar		
IGM sheet	123	Sector	II
Morphology	PI	Orientation	SE

Station report

GEOTECHNICAL LOGS	Code	Reference	Latitude	Longitude	Nspt profile	Vs/Vp profile	Cu profile
1		Di Giulio et al. (2006)	43.020944	11.932786			

[Download station monography...](#)

Soil profile

Station Recordings Search Again **All records**

FORME D'ONDA DELLA STAZIONE














Station recordings

Network: ING
Station Code: [GMN](#)
Municipality: GEMONA DEL FRIULI
Station Name: GEMONA
Instr. Type: Analog
Latitude: 46.291960
Longitude: 13.123130

Instrument Detail

INSTRUMENTS	Installed	Removed	Detail
Instrument	1976-06-08 00:00:00	1977-12-20 00:00:00	

RECORDINGS

Date	Event name	Latitude	Longitude	M _L	Depth [km]	I ₀	Detail
1976-06-08 12:14:38	FRIULI	46.300000	13.230000	4.5	19.0	7.0	
1976-06-17 14:28:47	FRIULI	46.177000	12.798000	4.5	15.0	7.0	
1976-06-26 11:13:49	FRIULI	46.250000	13.110000	4.1	26.0	6.0	
1976-09-07 11:08:16	FRIULI	46.300000	12.983000	4.1	5.0	6.0	
1976-09-11 16:31:10	FRIULI	46.290000	13.180000	5.5	10.0	9.0	
1976-09-11 16:35:01	FRIULI EARTHQUAKE 2ND SHOCK	46.300000	13.317000	5.8	9.0	9.0	
1976-09-13 18:54:45	FRIULI	46.283000	13.200000	4.3	14.0	6.0	
1976-09-15 03:15:18	FRIULI EARTHQUAKE 3RD SHOCK	46.300000	13.190000	6.1	2.0	10.0	
1976-09-15 04:38:53	FRIULI	46.267000	13.167000	4.8	21.0	7.0	
1976-09-15 04:58:42	FRIULI	46.300000	13.150000	4.6	19.0	7.0	
1976-09-15 09:21:18	FRIULI EARTHQUAKE 4TH SHOCK	46.300000	13.183000	6.0	21.0	8.5	
1976-09-15 09:45:56	FRIULI	46.250000	13.150000	4.3	27.0	6.0	
1976-09-15 19:31:09	FRIULI	46.317000	13.250000	4.3	9.0	6.0	

Note

Export in Zip file



Corrected records (only corrected time histories and response spectra) - ascii format

Uncorrected records (only acceleration time histories) - ascii and sac format

Both corrected and uncorrected records - ascii format


Search Again

Download

RICERCA PER EVENTO



Istituto Nazionale
di Geofisica
e Vulcanologia




Homepage
Waveforms
Stations
Events
Reference
REPERTE

Events Search

Date (YYYY-MM-DD)

Event name

Latitude (e.g. 45.27) from [≥]: to [<]:

Longitude (e.g. 12.7) from [≥]: to [<]:

Epicentral intensity from [≥]: to [<]:

Hypocentral depth [km] from [≥]: to [<]:

Focal mechanism

Region

Province

Magnitude (any type)

Search

Search criterium

Event Details

Event (click for details)	Event name	Latitude	Longitude	M _L	Depth [km]	I ₀
2009-04-06 01:32:39	L'Aquila Mainshock	42.334	13.334	5.8	8.8	
2009-04-06 02:37:04	AQUILA	42.366	13.340	4.6	10.1	
2009-04-06 03:25:02	AQUILA	42.362	13.333	4.0	10.2	
2009-04-06 23:15:37	Gran Sasso	42.451	13.364	4.8	8.6	
2009-04-07 09:26:28	L'Aquila Earthquake	42.342	13.338	4.7	10.2	
2009-04-07 17:47:37	L'Aquila Earthquake	42.275	13.464	5.3	15.1	
2009-04-07 21:34:29	AQUILA	42.380	13.376	4.2	7.4	
2009-04-08 22:56:50	AQUILA	42.507	13.364	4.3	10.2	
2009-04-09 00:52:59	Gran Sasso	42.484	13.343	5.1	15.4	
2009-04-09 03:14:52	AQUILA	42.338	13.437	4.2	18.0	
2009-04-09 04:32:44	AQUILA	42.445	13.420	4.0	8.1	
2009-04-09 19:38:16	AQUILA	42.501	13.356	4.9	17.2	
2009-04-13 21:14:24	AQUILA	42.504	13.363	4.9	7.5	

Developed by @IMteam for INGV

DETTAGLIO DELL'EVENTO

Event Detail

Date	2009-04-06 01:32:39	Event name	L'Aquila Mainshock
Lat	42.33 ± 0.79km	Long	13.33 ± 0.79km
Depth [km]	8.8 ± 1.49		
Hypocenter reference	INGV-CNT Seismic Bulletin	Other hypocenter	

MAGNITUDE Type	Method	Reference	Value	Error
ML	ML from ING catalogue	INGV-CNT Seismic Bulletin	5.8	0.3
Mw	Mw from RCMT	RCMT-INGV	6.3	



Municipality	L'AQUILA	Province	L'Aquila
Focal Mechanism Type	NF	Method	RCMT
Strike	127.0	Dip	50.0
Fault		Surf. Rupt.	
Other faults		Other I₀	
I₀		ref.	RCMT-INGV

Station	Dist. [km]	PGA [cm/s ²]	PGV [cm/s]	Detail
ANT	23.017	11.474	2.468	
AQA	4.634	467.737	9.367	
AQQ	4.392	253.118	10.400	
AQK	5.650	360.004	20.061	
AQV	4.870	649.256	12.444	
ASS	101.740	6.047	0.436	
AVL	198.073	1.269	0.370	

Recording Stations

Download delle forme d'onda

Municipality SERRAVALLE **Province** Macerata
DI CHIANTI

Focal Mechanism

Type	NF	Method	CMT	ref.	Pondrelli et al. (2006)
Strike	148.0	Dip	40.0	Rake	277.0
Fault	Yes	Surf. Rupt.	No	ref.	DISS3.0.2

Other faults

I₀	8.5	Other I₀		ref.	ING Catalogue
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Located Location OK

WAVEFORMS

Station	R epi. [km]	PGA [cm/s ²]	PGV [cm/s]	Detail
AQK	86.1	6.4263	0.80726	
ASS	24.0	152.3222	5.8567	
BIT2	125.8	6.9721	-1.2823	
BVG	24.9	51.7692	4.0625	
CLF	2.8	338.1556	20.875	
CSA	24.5	98.4763	-6.9074	
CSC	35.2	29.0004	1.3109	
FHC	39.0	64.6167	1.8846	
GBP	40.6	34.1167	-3.2613	
LNS	51.5	25.9908	1.2201	
MNF	24.3	24.3966	-0.90334	
MTL	26.9	48.6305	-1.7815	
NCR	13.1	465.7507	-21.0868	
RTI	66.1	25.4814	2.0111	
SPM	35.4	47.9393	-1.625	

Export in Zip file


- Corrected records (only corrected time histories and response spectra) - ascii format
- Uncorrected records (only acceleration time histories) - ascii and sac format
- Both corrected an uncorrected records - ascii format

Area Download

NEL PROSSIMO FUTURO.....

ITACA – beta version 1.0

Un nuovo aggiornamento di ITACA sarà pubblicato entro Dicembre 2009



The screenshot displays the ITACA website interface. At the top, there is a header with the logo of the Istituto Nazionale di Geofisica e Vulcanologia (INGV) on the left, the 'Itaca' logo in the center, and the logo of the Dipartimento di Protezione Civile (DPC) on the right. Below the header, the main content is organized into several sections:

- ITACA - Italian Accelerometric Archive:** A central heading for the archive.
- News:** A section with a sub-heading 'October 12, 2009. A new version of the database will be soon released.'
- Data of latest earthquakes:** A section listing recent seismic events, including '2009, 6 April (Mw=6.3) L'Aquila' and '2008, 23 December (Mw=5.4) Appennino Parmense', with links to data and source information.
- Reference:** A section providing information about the development of ITACA, mentioning the agreement between INGV and DPC, and listing projects like 'Project 86 (2004-2006)' and 'Project 84 (2007-2009)'. It also includes a reference for users: 'Working Group ITACA (2008) - Data Base of the Italian strong motion data: http://itaca.mi.ingv.it'.
- Italian Accelerometric Archive:** A section on the right side of the page, containing a description of the archive's contents and a list of search options: 'Search for data', 'waveforms', 'stations', 'events', 'BEVELite (compatible with code spectra)', 'User manual (pdf, 1.8Mb)', 'Disclaimer', 'Send comments', and 'Links'. Below this text is a graphic of a horse running, with the 'Itaca' logo and a search button labeled 'ENTER'.

At the bottom of the page, a footer indicates: 'Developed by: @WTeam for INGV. Last update: October 2009.'

ITACA (beta) – Principali aggiornamenti

- **Nuova header dei files**, con tutti i campi commentati
- **Spettri di risposta di accelerazione** calcolati a 121 periodi da 0 a 4 s
- **Nuovo processamento dati**, con una procedura uniforme finalizzata a preservare la compatibilità tra accelerazione, velocità e spostamento
- **Classificazione preliminare** di 616 siti sulla base Eurocode 8
- **Nuovo formato** delle monografie di stazione
- **REXELite**, software per la selezione automatica di un set di 7 accelerogrammi presenti in ITACA, compatibili con uno spettro di riferimento

```
EVENT_NAME: FRIULI
EVENT_DATE_YYYYMMDD: 19760608
EVENT_TIME_HHMMSS: 121438
EVENT_LATITUDE_DEGREE: 46.300000
EVENT_LONGITUDE_DEGREE: 13.230000
EVENT_DEPTH_KM: 19.0
MAGNITUDE_L: 4.5
MAGNITUDE_S:
MAGNITUDE_W: 4.6
FOCAL_MECHANISM: NF
STATION_CODE: GMN
STATION_NAME: GEMONA
STATION_LATITUDE_DEGREE: 46.291960
STATION_LONGITUDE_DEGREE: 13.123130
STATION_ELEVATION_M: 222.0
SITE_CLASSIFICATION_ECS:
MORPHOLOGIC_CLASSIFICATION:
EPICENTRAL_DISTANCE_KM: 8.3
EARTHQUAKE_BACKAZIMUTH_DEGREE: 83.0
TIME_FIRST_SAMPLE_S: 0.00000
SAMPLING_INTERVAL_S: 0.005000
NDATA: 1806
DURATION_S: 9.025000
COMPONENT: NS
UNITS: cm/s^2
INSTRUMENT: KINEMATRICS SMA-1
INSTRUMENTAL_FREQUENCY_HZ:
INSTRUMENTAL_DAMPING:
SENSITIVITY_V/G:
FULL_SCALE_G:
N_BIT_DIGITAL_CONVERTER:
PGA_CM/S^2: -34.841671
TIME_PGA_S: 2.055000
OWNER_RECORD:
INSTRUMENT_ANALOG/DIGITAL: A
BASELINE_CORRECTION: BASELINE REMOVED
FILTER_TYPE: BUTTERWORTH
FILTER_ORDER: 2
LOW_CUT_FREQUENCY_HZ: 0.500
HIGH CUT FREQUENCY_HZ: 25.000
LATE/NORMAL_TRIGGERED: NT
DATA_VERSION: ITACA 1.0
```

ITACA: REPORT DI STAZIONE

Synthesis of information		
Information relevant to site classification		
		Notes
V_{200} (m/s)	380	Cross-hole
Average N_{60} to 30m	34	
Average c_u to 30m (kPa)	440	
Site class (EC8 - NTC2008)	B	
Topographic category (EC8 - NTC2008)	T1	
Geological and geomorphological information		
Lithology	Silty sands and sandy silts	
Morphology	Plain	
Other information relevant to seismic site response		
Depth to bedrock (m)	> 100	
Average V_p to bedrock (m/s)	-	
f_0 from H/V microtremors (Hz)	-	
f_0 from H/V earthquakes (Hz)	-	
Observed anomalies of station response	-	

Site classification (EC8 - NTC2008)		
<i>Lithostratigraphic classification</i>		
<i>Estimated</i>		
Method ¹	Soil class ²	Notes
¹ Legend GEO Geological data EC Empirical correlation HV H/V spectral ratio		
<i>Based on in-situ measurements</i>		
Method ³	V_{s30} (m/s)	Soil class ³
NW	324	C
² Legend A Rock or other rock-like geological formation, including at most 5 m of weaker material at the surface ($V_{s30} > 800$ m/s). B Deposits of very dense sand, gravel, or very stiff clay, at least several tens of m in thickness, characterized by a gradual increase of mechanical properties with depth ($V_{s30} = 360-800$ m/s). C Deep deposits of dense or medium dense sand, gravel or stiff clay with thickness from several tens to many hundreds of m ($V_{s30} = 180-360$ m/s). D Deposits of loose-to-medium cohesionless soil (with or without some soft cohesive layers), or of predominantly soft-to-firm cohesive soil ($V_{s30} < 180$ m/s). E A soil profile consisting of a surface alluvium layer with V_s values of type C or D and thickness varying between about 5 m and 20 m, underlain by stiffer material with $V_s > 800$ m/s.		
³ Legend CH Cross-Hole DH Down-Hole ES ESAC FK FK MW MASW NW NASW SH SH-Refraction SW SASW		
<i>Topography classification</i>		
Topography category ⁴		
T1		
⁴ Legend T1 Flat surface, isolated slopes and cliffs with average slope angle $\leq 15^\circ$. T2 Slopes with average slope angle $> 15^\circ$. T3 Ridges with crest width significantly less than the base width and average slope angle $15^\circ \leq \alpha \leq 30^\circ$. T4 Ridges with crest width significantly less than the base width and average slope angle $> 30^\circ$.		

ITACA: CLASSIFICAZIONE DI SITO

Esempio di classificazione nella monografia della stazione AQA

Site classification (EC8 – NTC2008)

Lithostratigraphic classification

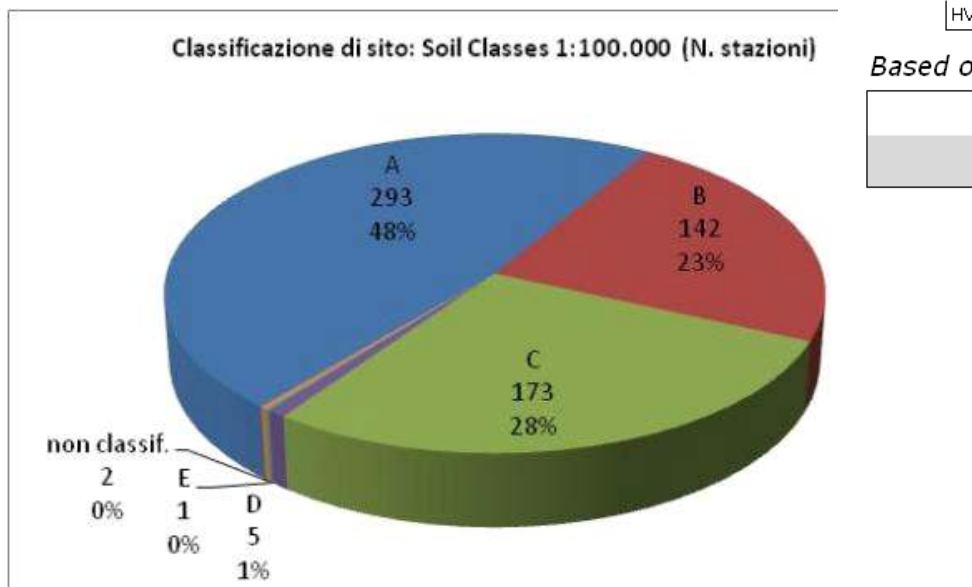
Estimated

Method ¹	Soil class ²	Notes
GEO, HV	B	

Legend	
1	GEO Geological data
EC	Empirical correlation
HV	H/V spectral ratio

Based on in-situ measurements

Method ³	V_{s30} (m/s)	Soil class ²



EC8 seismic classification of all ITACA stations

ITACA (beta) – REXELite

REXELITE

The procedure implemented in REXELite for record selection deploys in four basic steps

↑ Image of the REXEL (v 2.5 beta) GUI - <http://www.reluis.it/>

① Target Spectrum

Definition of the design horizontal or vertical spectra the set of records has to match on average according to EC8 or NIBC.

The screenshot shows the 'REXELite input data' form. Key fields include:

- Session title: UntitledSession
- Latitude (degrees): 45.48, Longitude: 9.23
- Site classification (EC8): A response spectrum, A-site stations
- Topography: T1 - flat surfaces, isolated cliffs and slopes with average slope angle not greater than 15°
- Nominal life (years): 50 years - ordinary structures
- Building functional type: 2 - ordinary structures (Cu=1.0)
- Limit state probability: Damage (P=63%)
- Ground motion components: One horizontal component
- Station site classification: Same site class as target spectrum
- Magnitude (M) min: 5.5, max: 6.5
- Epicentral distance [km] min: 0, max: 50
- Include late trigger events: Yes
- Include analog: Yes
- Spectrum matching parameters and analysis options:
 - Period range [s] from: 0.15 to 2
 - Tolerance [%] from: 10 to 30
 - Non-dimensional:



The entered coordinates are plotted on map when you accept input parameters...

Parameters required by the NIBC to define the return period of the seismic action.

Design earthquake (source) parameters

② Preliminary search

Choosing to search for combination coming from specific moment magnitude and epicentral distance ranges (this choice may be driven by disaggregation of seismic hazard). It is possible to select records from any site class for a given target spectrum or records belonging to the same site class as target spectrum.

③ Analysis options

Assigning the period range where the average spectrum of the set has to be compatible with the target spectrum and specification of tolerances in compatibility.

REXELite also allows to obtain combinations of records compatible with the target spectrum if scaled linearly.

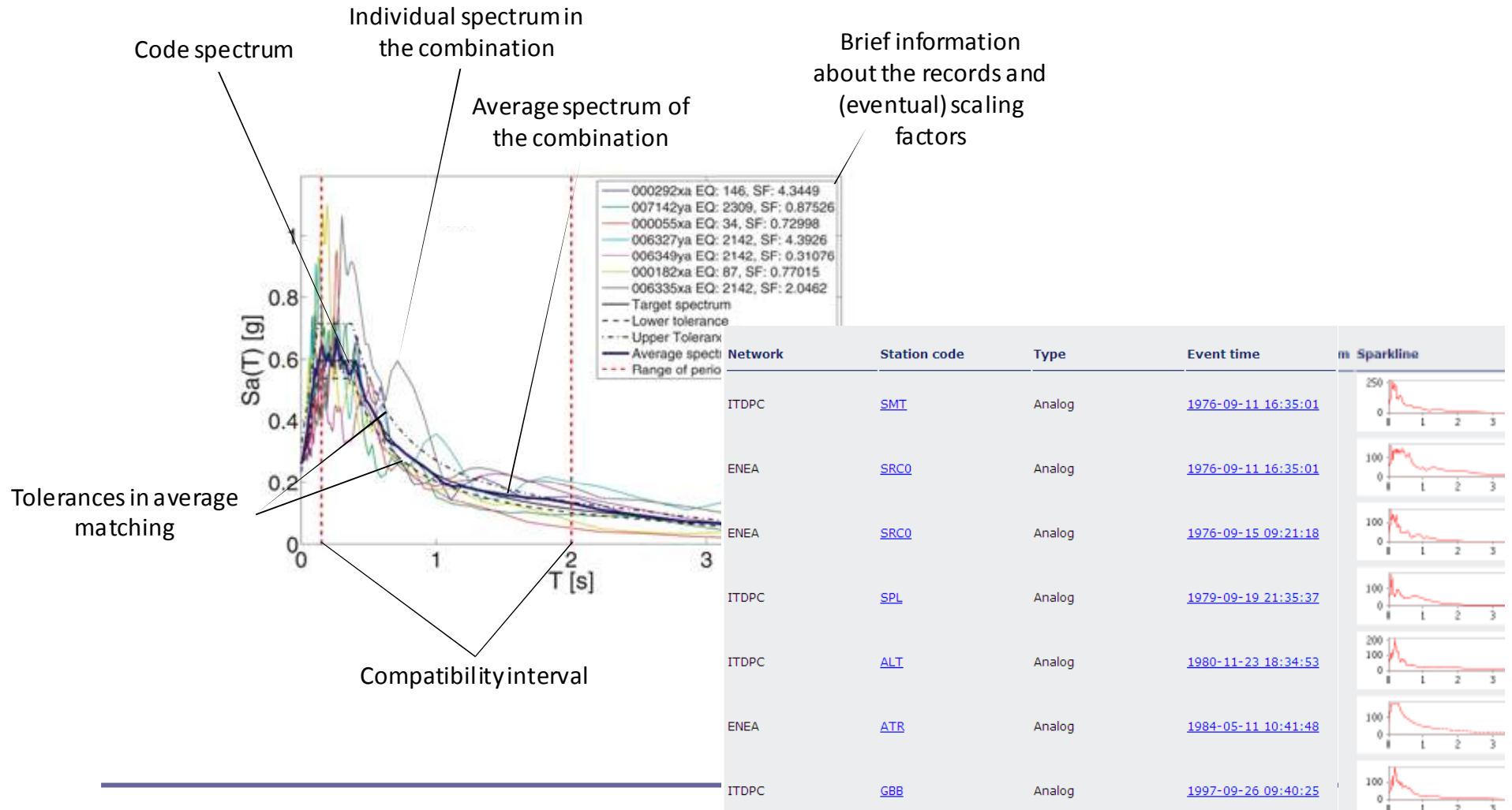
... and ④ Run REXELite ...

↑ Image of the REXELite GUI - <http://itaca.mi.ingv.it/>

Individual spectrum in ...

ITACA (beta) – REXELite

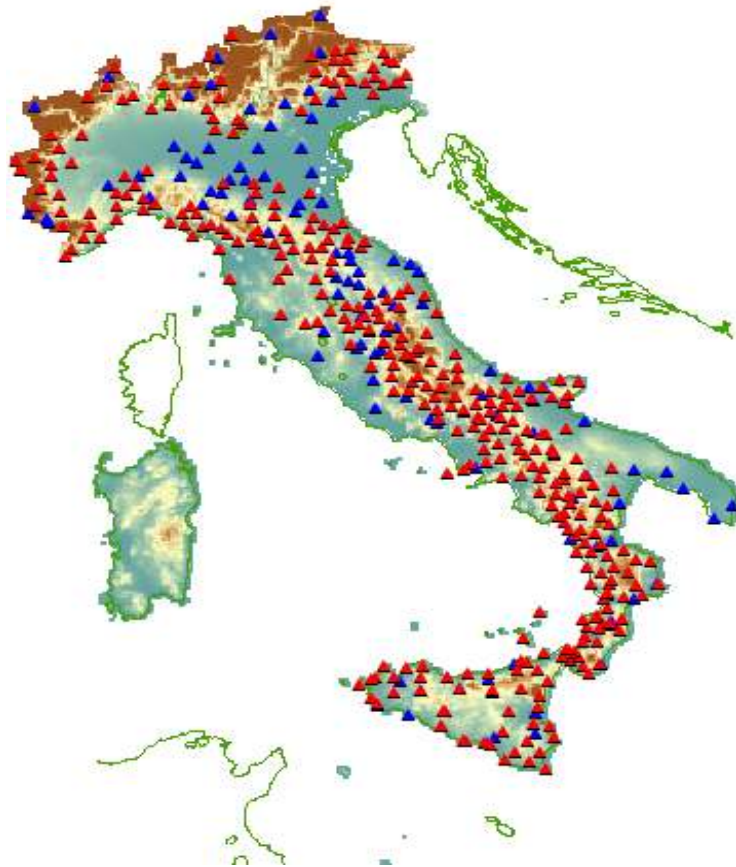
REXELite – example of output



A fine progetto.....

Reti Strong motion in Italia

RAN (National strong motion network)



Blu: stazioni analogiche
Rosso: stazioni digitali

RAN a luglio 2008 includeva 365 stazioni distribuite sul territorio italiano

→ 119 analogiche: ereditate dalla rete ENEL, all'interno di cabine di trasformazione.

→ 246 stazioni digitali: 237 con trasmissione modem GSM
9 stazioni in tempo reale.

Devono essere inclusi 1700 accelerogrammi, registrati nel periodo 2005-2007

Reti Strong motion in Italia

RAIS (INGV-Milano) **20**

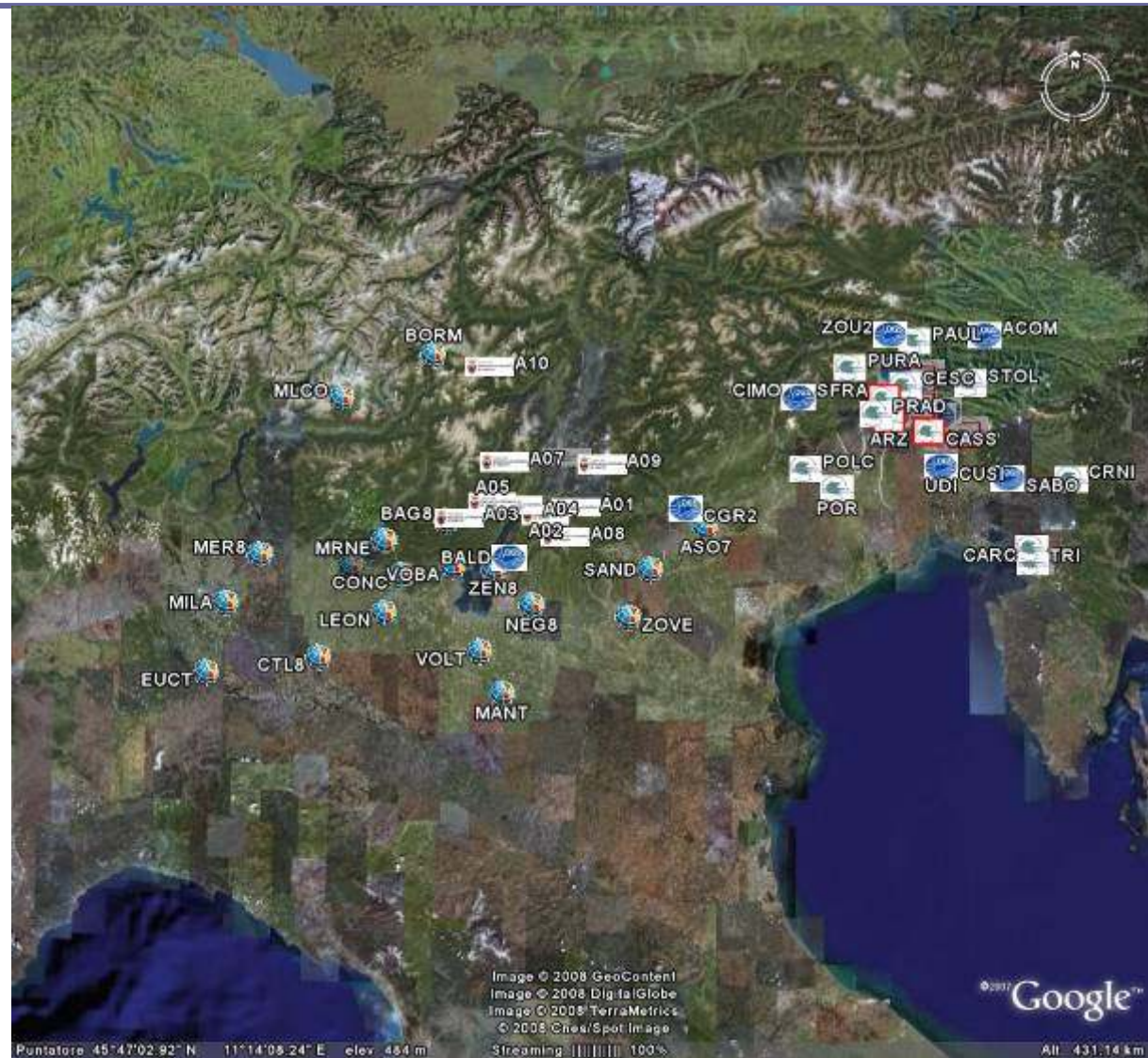
CRS (Udine) **15**

Provincia di Trento **10**

RAF (Univ. Trieste)

Attive **15**

Dismesse **10**



Reti Strong motion in Italia

CNT (INGV)
53

AMRA 25
(Regione Campania)

Università della
Basilicata
e Provincia di
Potenza
19

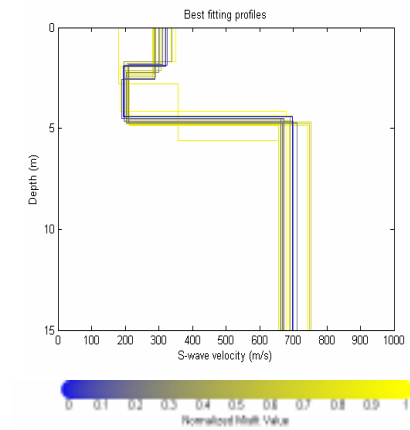
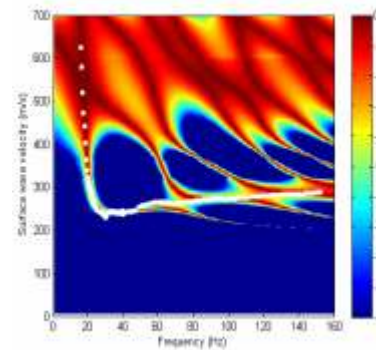


Nuovi dati per la caratterizzazione siti

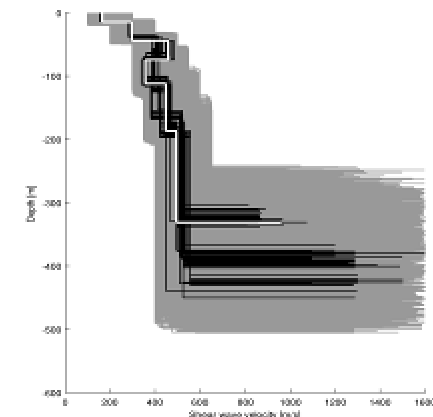


Surface wave methods (60 sites)

Sestri Levante



Modena



Nuovi dati per la caratterizzazione siti

Synthesis of information

Information relevant to site classification

Notes

V_{s30} (m/s)		
Average N_{SPT} to 30m		
Average c_u to 30m (kPa)		
Site class (EC8 – NTC2008)	B	Estimated through geological information (borehole data) and H/V spectral ratio
Topography category (EC8 – NTC2008)	T1	

Geological, geomorphological and geomechanical information

Lithology	Gravel, silts and sands	
Morphology	Valley edge	
Rock mass		

Other information relevant to seismic site response

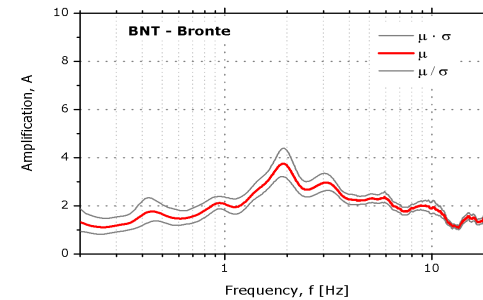
Depth to bedrock (m)	> 36	
Average V_s to bedrock (m/s)		
f_0 from H/V microtremors (Hz)		
f_0 from H/V earthquakes (Hz)		

Distinctive features of site response

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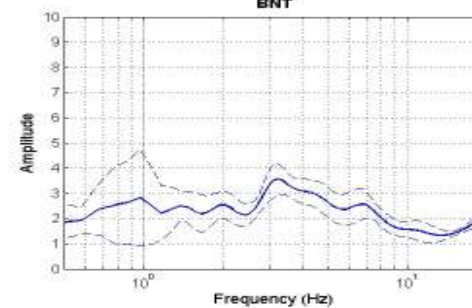


12

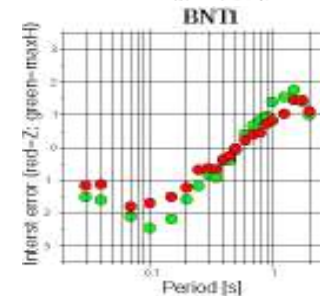


HV Noise

Available for about 200 sites



HV Earthquake



Inter-station error








Bronte station

ITACA NEL MONDO

Integrazione di ITACA con altre banche dati
accelerometriche mondiali:

COSMOS

NERIES

Domini o nazioni dei visitatori (Prime 10) - Elenco completo					
	Domini/Nazioni		Pagine	Accessi	Banda usata
	Italy	it	15475	48688	17.80 GB
	Sconosciuti	ip	6389	19589	6.40 GB
	USA Educational	edu	736	2016	98.70 MB
	Network	net	609	1813	497.95 MB
	France	fr	565	2176	356.12 MB
	Germany	de	481	769	24.10 MB
	Commercial	com	389	876	136.01 MB
	Switzerland	ch	191	361	12.15 MB
	Japan	jp	187	502	289.45 MB
	USA Government	gov	152	368	20.17 MB

Grazie per l'attenzione