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Direzione centrale
Affari amministrativi
e del Personale

ISTITUTO NAZIONALE
DI GEOFISICA E VULCANOLOGIA

**Istituto Nazionale di Geofisica
e Vulcanologia**
AOO INGV
Protocollo Generale - U
N. 0010194
del 07/08/2017



Gestione WEB

Ai Direttori di Struttura
Ai Direttori di Sezione
Al Responsabile Centro Servizi – Ufficio per il
Coordinamento delle Attività a Supporto della Ricerca
Al Dott. Stefano SOLARINO
Alla Segreteria della Presidenza

Oggetto: Pubblicità atti

Si notifica in copia l'allegata Delibera n. 413/2017 del 17/07/2017 – Allegato S al Verbale n. 08/2017 concernente: Progetto CIFALPS2: China-Italy-France Alps Seismic Survey II.

IL DIRETTORE
Tullio PEPE





Istituto Nazionale di Geofisica e Vulcanologia

Delibera n. 413/2017

Allegato S al Verbale n. 08/2017

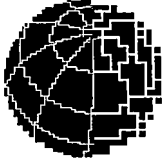
Oggetto: Progetto CIFALPS2: China-Italy-France Alps Seismic Survey II.

IL CONSIGLIO DI AMMINISTRAZIONE

- **VISTO** il Decreto legislativo 29 settembre 1999, n. 381, concernente la costituzione dell'Istituto Nazionale di Geofisica e Vulcanologia (INGV);
- **VISTA** la Legge 27 settembre 2007, n. 165, concernente la "Delega al Governo in materia di riordino degli Enti di Ricerca";
- **VISTO** il Decreto legislativo 31 dicembre 2009, n. 213, concernente il "Riordino degli Enti di Ricerca in attuazione dell'art. 1 della Legge 27 settembre 2007, n. 165";
- **VISTO** il Decreto legislativo 25 Novembre 2016, n. 218, recante *"Semplificazione delle attività degli Enti Pubblici di Ricerca ai sensi dell'art. 13 della Legge n. 124/2015"*;
- **VISTO** lo Statuto dell'Istituto Nazionale di Geofisica e Vulcanologia approvato con delibera del Consiglio di Amministrazione, in data 11 novembre 2010 - pubblicato sulla Gazzetta Ufficiale della Repubblica Italiana - Serie Generale n. 90 del 19 aprile 2011 in particolare l'art. 6, comma 8, lettera s), il quale prevede che il CdA*approva le convenzioni e gli accordi quadro con le Università e con gli altri enti e organismi pubblici e privati, nazionali e internazionali*;
- **VISTO** il Regolamento di organizzazione e funzionamento dell'Istituto Nazionale di Geofisica e Vulcanologia emanato con Decreto del Presidente n. 503 del 14/10/2016 e pubblicato sul sito istituzionale;
- **VISTO** il Regolamento di Amministrazione, Contabilità e Finanza pubblicato sulla Gazzetta Ufficiale della Repubblica Italiana - Serie Generale n. 113 del 18 maggio 2009;
- **VALUTATA** l'opportunità di sottoscrivere il Progetto CIFALPS2: China-Italy-France Alps Seismic Survey II per la collaborazione scientifica tra Institute of Geology and Geophysics, Chinese Academy of Sciences (Repubblica Popolare Cinese), Institut des Sciences de la Terre, CNRS e Istituto Nazionale di Geofisica e Vulcanologia;
- **CONSIDERATO CHE** l'attività da espletare rientra tra i compiti scientifici e istituzionali dell'INGV;
- **TENUTO CONTO** dei pareri scientifici prodotti dai competenti Direttori di struttura e di sezione dell'INGV,

DELIBERA

L'approvazione dello schema di Progetto CIFALPS2: China-Italy-France Alps Seismic Survey II, allegato alla presente quale parte integrante e sostanziale (allegato 1).



Istituto Nazionale di Geofisica e Vulcanologia

Viene dato mandato al Presidente alla sottoscrizione definitiva dell'atto in questione.

Letto, approvato e sottoscritto seduta stante.

Roma, 17/07/2017

La segretaria verbalizzante
(Sig.ra Silvana TUCCI)

Silvana Tucci

IL PRESIDENTE
(Prof. Carlo DOGLIONI)

[Handwritten signature of Prof. Carlo Doglioni]

RESEARCH PROJECT AGREEMENT
BETWEEN
INSTITUTE OF GEOLOGY AND GEOPHYSICS, CHINESE ACADEMY OF
SCIENCES (PEOPLE'S REPUBLIC OF CHINA)
AND
ISTITUTO NAZIONALE DI GEOFISICA E VULCANOLOGIA (ITALY)

By and between:

Institute of Geology and Geophysics, Chinese Academy of Sciences, established in Beijing 100029, Beitucheng Xilu Road, 19
represented by its Director, **Mr Fuyuan Wu**

Hereinafter referred to as

"IGGCAS"

and

Istituto Nazionale di Geofisica e Vulcanologia,
Public Research Institution, having its registered office at 605 Via di Vigna Murata, 00143,
Rome, Italy,
represented by its President, **Prof. Carlo Doglioni**

Hereinafter referred to as

"INGV"

The IGGCAS and INGV are hereinafter individually referred to as the "Party", and collectively as the "Parties".

have agreed as follows:

SUMMARY

Considering the mutual interest in the scientific study of the lithospheric and asthenospheric structures beneath the Western Alps, the institutions listed above intend to have a three year collaboration under a project called **CIFALPS-2: China-Italy-France Alps Seismic Survey II** on high-resolution probing of the crustal and upper mantle structure of the Western Alps by mean of a passive seismic transect. The parties will associate their efforts with INSTITUT des SCIENCES de la TERRE and CNRS (FRANCE) in this common scientific project.

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CIFALPS-2 follows on from the former project CIFALPS (2012-2015) that brought the same parties together with similar scientific objectives.

The collaboration aims at designing and performing a seismological survey, exchanging, processing and interpreting related data and information, writing common publications of scientific results, participating in the education of their students, and organizing common conferences.

ARTICLE 1

The parties will install a 400-km-long dense (station spacing of 5 to 10 km) seismic profile across the Northwestern Alps from the eastern Massif Central (Mâcon, France) to the Ligurian region (Genoa, Italy) across the Aosta valley (Italy). The experiment will include 56 broadband seismic stations installed in France and Italy for eighteen months from November 2017 to May 2019. Eighteen (18) stations will be installed in France, under the responsibility of CNRS. Thirty-eight (38) instruments will be installed in Italy, under the responsibility of INGV. All seismic instruments will be provided by IGGCAS. The details of the network installation are described in the attached Appendix 1.

ARTICLE 2

In order to realize the present agreement, the parties will do their best to obtain the necessary resources for the realization of the project. Notice concerning the methods of funding will be given to the parent organisation, which has to approve it.

A preliminary budget for the field work part of the experiment is attached in Appendix 3. The total budget of field work, training and salary of technician hired for the experiment is 209,000 €.

IGGCAS will transfer the part of the funding corresponding to field work for the experiment and travel expenses for learning good practice on modem setup to INGV for the Italian party (114000 €).

The money transfers will be achieved in five payments:

- first payment before August 1st, 2017 (start of field work): 25000 € to INGV
- second payment before September 1st, 2017: 25000 € to INGV
- third payment before November 1st, 2017: 25000 € to INGV
- fourth payment before January 1st, 2018: 25000 € to INGV
- fifth payment before April 1st, 2018: 14000 € to INGV

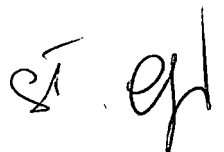
ARTICLE 3

The present agreement shall enter into force following its signature by all parties. Its duration shall be 36 months, starting August 1st, 2017.

At the end of the period, it may be renewed by means of a written amendment specifying the object of the extension and its financing provisions.

ARTICLE 4

The scientific principal investigator of the project for IGGCAS is Professor Liang ZHAO. The scientific principal investigator of the project for INGV is Senior Scientist Stefano SOLARINO.



ARTICLE 5

The funds shall be deposited on the following Bank account:

Bank Monte dei Paschi di Siena, agenzia 15

Bank Address: Viale della Musica, 2 – Roma - Italy

Bank number: 01030

Counter number: 03215

Account number: 000001273391

Swift Code: PASCITM1R15

IBAN: IT03R0103003215000001273391

The funds transferred from IGGCAS should only be used for the CIFALPS-2 project. INGV shall use this amount until all funds have been used up, neither subject to a specific deadline nor to the obligation of having to provide cost statements.

ARTICLE 6

Each party undertakes to each other party to use reasonable endeavours to perform and fulfil, promptly, actively and on time, all of its obligations under the Agreement.

The responsibility for the performance and realization of the work of this agreement is borne jointly by the two parties. The work will be performed according to the terms pertaining to confidentiality, license, major force and dispute.

Part of the instruments necessary for the installation of the network will be provided by IGGCAS and part by ISTerre, as described in Appendix 1. INGV has no responsibility for accidental damage or loss of the equipment from the installation sites or during transportation from and to the sites.

ARTICLE 7

As regards the validity, the application or any interpretation of this agreement, the law of China and the Court of Justice of Beijing shall have sole jurisdiction for appeals of IGGCAS and the law of Italy and the Court of Justice of Rome shall have sole jurisdiction for appeals of INGV.

ARTICLE 8

The seismological data will not be released out of the research group for a three-year retention period after the end of the project, therefore until July 1st, 2022, without a written agreement of all participating institutions. After the retention period, the data will be released to the public from the IGGCAS and ISTerre (RESIF) datacenters.

The data should not be used for commercial purposes.

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Data and results from this project will be equally shared by the three groups. The first publication of the project will be based on comprehensive discussions jointly by the three groups, and a Chinese scientist will lead the authorships in the first publication. Afterwards, the joint group will discuss to publish more papers individually or collectively.

ARTICLE 9

All institutions are responsible of their own staff.

Executed in Beijing and Rome, on

2017, in two originals.

For INGV
the President, Prof. Carlo DOGLIONI

For Institute of Geology and Geophysics
the Director, Mr Fuyuan WU

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APPENDIX 1

CIFALPS-2 PROJECT **CHINA-ITALY-FRANCE ALPS SEISMIC SURVEY II**

Institute of Geology and Geophysics, Chinese Academy of Sciences (IGGCAS),

and

Istituto Nazionale di Geofisica e Vulcanologia (INGV)

have agreed to associate their efforts with Institut des Sciences de la Terre, Université Grenoble Alpes & CNRS (ISTerre) in order to build a common scientific project on high-resolution probing of the crustal and upper mantle structure of the Northwestern Alps by mean of a passive seismic transect.


This agreement is made on the base of the Cooperation Agreement signed on March 1, 2011, and the conclusions of the China-Italy-France Alps Seismic Survey II (CIFALPS-2) workshop of October 13-15, 2016 in Genoa (Italy). Two separate official agreements by IGGCAS-ISTerre and IGGCAS-INGV should be signed in order to carry out the China-Italy-France Alps Seismic Survey II (CIFALPS-2) program.

1. Scientific goals

The Alps are an open geology textbook where geology was born and many important concepts such as décollement nappes, continental subduction and exhumation of UHP metamorphic rocks have been developed. Before the start of the IGGCAS-ISTerre-INGV collaboration in CIFALPS (2012-2015), our main goal was a better understanding of the part played by mantle dynamics in the past and present evolution of the mountain range and the geomorphology of the (significant) part of Western Europe affected by the Alpine orogeny. This step required high-resolution probing of the crustal and mantle structures beneath the range. We partly achieved this goal with our first CIFALPS experiment in the Southwestern Alps that provided a high-quality dataset and fundamental results on the geometry of the continental subduction (Zhao et al., 2015), the continuity of the subducted slabs beneath the range (Zhao et al., 2016), the relations between structure and seismicity beneath the Western Po plain (Malusá et al., 2016), the anisotropy (Salimbeni et al., in revision) and the structure of the mantle (Lyu et al., 2017).

To image the along-strike changes of the Alpine structures, get a high-resolution image of the UHP and Ivrea bodies of the subduction complex beneath the Gran Paradiso massif, get more high-quality data on the deep structure of the Western Po plain and the Ligurian Alps in the area of the Voltri UHP massif, the CIFALPS group now proposes to install a 400 km-long dense (station spacing of 5 to 10 km) seismic profile across the Northwestern Alps and the Western Po plain, from the eastern Massif Central (Mâcon region, France) to the Ligurian coast (Genoa region, Italy) across the Mont-Blanc and Gran Paradiso massifs, in order to:

- image the crustal structure of the Northwestern Alps with a high-resolution, and address the following issues: 1) structure of the Mont-Blanc massif, 2) geometry of UHP volumes of the Gran Paradiso Massif, 3) geometry and nature of the Ivrea body, 4) Moho geometry beneath the western Po plain, 5) structure of the Ligurian Alps;
- image the mantle structure of the Northwestern Alps, and address the following questions: 1) mantle structure at the transition from the Massif Central to the Northwestern Alps, 2) geometry of the transition between the Alpine and Apenninic

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subductions beneath the Western Po plain and Ligurian Alps, 2) mantle flow pattern beneath the Alpine orogeny and Po plain.

The experiment should have an 18-month duration to ensure a sufficient number of earthquake records that is from November-December 2017 to April-May 2019.

2. Locations of seismic array and instrument pool

The estimated length of the profile is 400 km, and the estimated total number of stations along the profile is 56, with 18 sites in France and 38 sites in Italy. An improvement of the 2-D coverage of the area will be provided by the permanent broadband (BB) networks (open-access data on the EIDA European archive), and by the restricted-access data of the AlpArray temporary experiment (funded by ANR for the French part, and by INGV and ETH-Zürich for the Italian part). The updated locations of the designed sites are attached in the Appendix 2.

IGGCAS will provide 56 sets of broadband instruments, plus 4 spare ones (1 in France, 3 in Italy). For the first months of the experiment (September 2017 to May 2018), ISTerre will provide 5 sets of broadband instruments that will be installed in the 5 high-elevation sites of the Gran Paradiso massif that will be unreachable in November and December because of winter conditions. These 5 stations will be substituted by equipment belonging to IGGCAS in the late spring of 2018. ISTerre may also provide additional spare stations in case of necessity.

The quality and the safety of the sites selected as CIfALPS-2 stations are important requirements to guarantee the quality and continuity of seismic data, which are keys to the success of the project. All partners will do their best to ensure the best and most protected location for the instruments.

3. Schedule of array deployment

The seismic array deployment (including site surveys, site constructions and station installations) will start from July 2017, and finish possibly between the end of December, 2017 and March 2018.

The deployment details are listed in Table 1.

Tasks	Sub-tasks	Schedule and participants
Preparation	Instrument shipping	Before November 2017, organized by IGGCAS and ISTerre groups
Site surveys		July to October 2017: site survey by ISTerre and INGV groups, possibly with participants from IGGCAS
	France part	September to November 2017 by ISTerre team, possibly with IGGCAS participants
Site constructions and installation	Italy part	September to November 2017-March 2018 by INGV team and possibly IGGCAS participants; Equipment from the French national pool Sismob will be installed in a first step in September at the 5 stations with highest elevations in the Aosta valley area.
Station servicing		Most stations will have GPRS modems. Their state-of-health will be monitored on a daily basis from ISTerre and INGV and data will be retrieved on a daily basis from ISTerre. If GPRS connection is lacking, or if its quality is insufficient at a few stations they will be visited a few days after installation (for mass centering) and periodically. The period between 2 visits should not be longer than 4 months.
Station removal		In April-May, 2019

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4. Data and publications

For online stations, miniseed data will be retrieved automatically every day from ISTERre. ISTERre has the experience of this process since the AlpArray experiment. In case of communication breaks, gaps will be filled by manual requests to the DAS on a monthly basis. Data of offline stations will be copied to RESIF datacentre after each service, as we did for CIFALPS. Miniseed data will be archived in and distributed from the RESIF datacentre in Grenoble. For online stations, data will be available after a validation period of 3 days. They will be available for copy (synchronization by rsync) to IGGCAS datacentre after these 3 days, and to INGV. The RESIF datacentre will also provide PQLX power spectral density plots to monitor data quality on a regular basis.

Information on instrument responses required for building the dataless files will be provided by IGGCAS to ISTERre for their own instruments. ISTERre will provide access to a wiki web page where all information pertaining to stations installation and maintenance will be stored by the ISTERre and INGV groups (ex.: station coordinates, S/N of instruments, description of power supply, pictures of the sites, dates of services, operations done in the field, ..). This information will be used by ISTERre to build the dataless file, and to monitor the array operation much more efficiently than with field sheets.

Data and results from this project will be equally shared by the three groups (IGGCAS, ISTERre and INGV). A password-protected access to the miniseed records and dataless files will be provided by the RESIF data center (in ISTERre) to all project members on request. The first publication of the project will be based on comprehensive discussions jointly by the IGGCAS, ISTERre and INGV groups, and a Chinese scientist will lead the authorships in the first publication. Afterwards, the joint group will discuss to publish more papers individually or collectively.

A FDSN network code for temporary experiment will be requested by ISTERre, as for CIFALPS. A DOI (digital object identifier) will be constructed by the RESIF datacenter that will be used in publications to refer to the CIFALPS-2 dataset.

The retention period for data should be no more than 3 years after the end of the experiment. After the retention period, the data will be released to the public from the RESIF and IGGCAS datacenters.

The database collected during the field experiment will be complemented, if necessary, by the data of the permanent stations operating in the Alps and vicinity and run by the national networks of France and Italy. These data are open-access and available on the EIDA European archive of seismic data.

5. Budget of the experiment

A preliminary budget for the field work part of the experiment (not including the cost of shipping the equipment from China to France and Italy and back, the cost of travels between China and France or Italy, and the costs of personnel on permanent positions) has been proposed and is attached in Appendix 3.

The total budget of fieldwork, travels from Italy to Grenoble for training of technicians and salaries of a technician hired for the experiment is 209000 €. IGGCAS will contribute 100%. ISTERre and INGV will contribute with the salaries of scientists and technicians/engineers on permanent positions. ISTERre will also contribute by giving access to the facilities of the RESIF datacentre (data and dataless preparation, archive and distribution following international standards, quality check with PQLX). In case of additional, unpredictable costs, ISTERre and INGV will obtain additional funding from local or national funding sources.

IGGCAS will transfer the part of the funding corresponding to field work and salary of technician hired for the experiment to ISTERre-CNRS for the French part (95000€), and to INGV for the Italian part (114000€).

The money transfers will be achieved in five payments:

- first payment before August 1st, 2017 (start of field work): 25000 € to INGV
- second payment before September 1st, 2017: 25000 € to INGV
- third payment before November 1st, 2017: 25000 € to INGV
- fourth payment before January 1st, 2018: 25000 € to INGV
- fifth payment before April 1st, 2018: 14000 € to INGV

Date and place

Date and place:

Signature:

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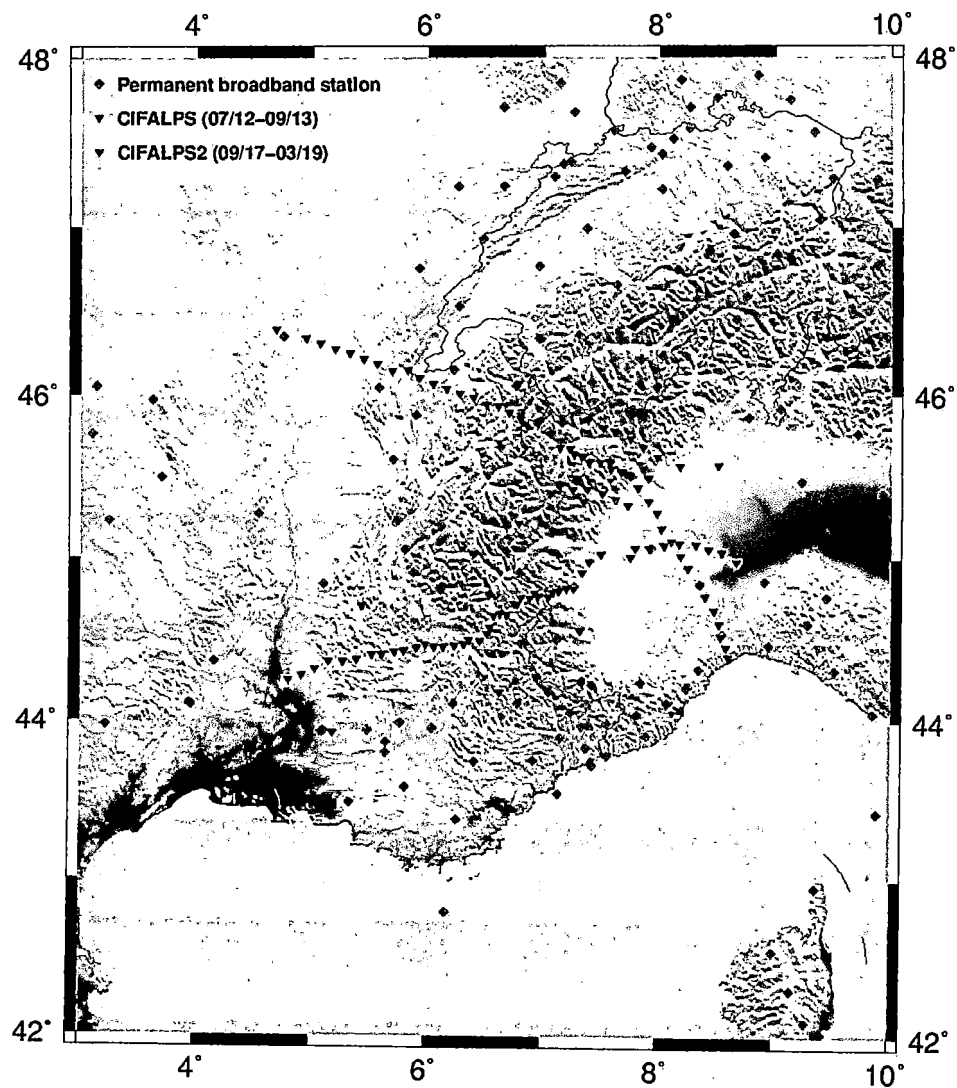
Fuyuan Wu
Director
Institute of Geology and Geophysics
Chinese Academy of Sciences

Carlo Doglioni
President
Istituto Nazionale di Geofisica e
Vulcanologia

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APPENDIX 2

CIFALPS-2 project: map of designed sites



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APPENDIX 3 : BUDGET

1- Field work

Perdiem (accomodation + lunch and dinner)	91 €
Car rental+gasoline+tolls per day	150 €

		France	Italy
Total Nb of sites	56	18	38
Duration (yr)	1,5		

1-1 Perdiems

Perdiems	Nb sites	Nb days/site	Nb Cars x days	Nb people in car	Nb people x days	Cost perdiems	Observations
Site survey	56	1	56	2	112	10 136 €	
Construction+installation		1	56	2	112	10 136 €	
Maintenance+removal		1	56	2	112	10 136 €	Maintenance on months 6, 12 + removal on month 18 = 3 times at each site, 3 sites/day = 1 day spent on each site for maintenance

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							and removal in total
Total perdiems			168		336	30 408 €	
Perdiems Italy							
Site survey	38	1	38	2	76	6 878 €	
Construction+installation		1	38	2	76	6 878 €	
Maintenance+removal		1	38	2	76	6 878 €	
Total perdiems Italy			114		228	20 634 €	
Perdiems France							
Site survey	18	1	18	2	36	3 258 €	
Construction+installation		1	18	2	36	3 258 €	
Maintenance+removal		1	18	2	36	3 258 €	
Total perdiems France			54		108	9 774 €	

1-2 Cars

Cost of cars	Nb Cars x days	Cost
Site survey	56	8 400 €
Construction+installation	56	8 400 €
Maintenance+removal	56	8 400 €
Total cars	168	25 200 €
Cost of cars Italy		

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Site survey	38	5 700 €
Construction+installation	38	5 700 €
Maintenance+removal	38	5 700 €
Total cars Italy	114	17 100 €
Cost of cars France		
Site survey	18	2 700 €
Construction+installation	18	2 700 €
Maintenance+removal	18	2 700 €
Total cars France	54	8 100 €

1-3 Site construction and monitoring

Site construction & monitoring	Nb of sites	Charge per site	Total	Comments
Solar panels 2X100W/station	28	320 €	8 960 €	2x100W solar panels/site for outdoor sites (half of total)
Battery chargers	56	70 €	5 880 €	2 chargers/station with solar panel and 1 charger/station with mains power
Site construction	56	660 €	36 960 €	Concrete+pipe+box for DAS + pole for solar panels+lid+insulation+electric cables(+tools)+box
Batteries		500 €	28 000 €	Sites on mains power: 1x65 Ah (200€) ; Sites on solar panels: 4x65Ah (4*200€)=800€; Average 500€

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Monitoring & data transmission with GSRM modems		360 €	20 160 €	15 €/month/station (GPRS)= 270 €/station for 18 months (10 Gb data).
Antennas for gsmr data transmission		110 €	6 160 €	40 sites with weak 3G reception: directive antenna 80€ + extra cable 50€ + 16 sites with good 3G reception: antenna 30€ + extra cable 30€; Average per station=110€
Total site construction & monitoring		1 715 €	106 120 €	
Site construction & monitoring in Italy				
Solar panels 2X100W/station	19	320 €	6 080 €	
Battery chargers	38	70 €	3 990 €	
Site construction	38	660 €	25 080 €	
Batteries		500 €	19 000 €	
Monitoring & data transmission with GSRM modems		360 €	13 680 €	
Antennas for gsmr data transmission		110 €	4 180 €	
Total site construction & monitoring in Italy		1 825 €	72 010 €	
Site construction & monitoring in France				
Solar panels 2X100W/station	9	320 €	2 880 €	
Battery chargers	18	70 €	1 890 €	
Site construction	18	660 €	11 880 €	
Batteries		500 €	9 000 €	

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Monitoring & data transmission with GSRM modems		360 €	6 480 €
Antennas for gsm data transmission		110 €	1 980 €
Total site construction & monitoring in France		1 825 €	34 110 €

Total cost of fieldwork	Total	Total Italy	Total France
Perdiems	30 408 €	20 634 €	9 774 €
Cars	25 200 €	17 100 €	8 100 €
Site construction and monitoring	106 120 €	72 010 €	34 110 €
Total	161 728 €	109 744 €	51 984 €

2- Data transmission: training of technicians (Italy)

	Cost/month	Nr of travels	Total
Travel costs of 2 INGV technicians to ISTERre for learning good practice on modem setup and checking	532 €	8	4 256 €
Total training			4 256 €

3- Salary of technician (France)

	Cost/month	Nr of months	Total
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AI CNRS Grenoble	3 585 €	12	43 016 €
Total salaries			43 016 €

3- Grand total

	CNRS	INGV	Total
1- Array	51 984 €	109 744 €	161 728 €
2- Training		4 256 €	4 256 €
3- Salaries	43 016 €		43 016 €
Grand total	95 000 €	114 000 €	209 000 €

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