



ISTITUTO NAZIONALE DI GEOFISICA E VULCANOLOGIA

il Direttore

**Istituto Nazionale di Geofisica  
e Vulcanologia  
AOO INGV**

**Protocollo Generale - U**

N. 0013771

del 27/09/2019



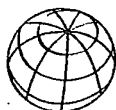
Gestione WEB

Ai Direttori di Dipartimento  
Ai Direttori di Sezione  
Al Direttore delle Direzioni Centrali  
Al Dott. Francesco VISINI  
Al Responsabile del Centro Servizi per il coordinamento delle attività  
a supporto della Ricerca  
Al Centro Servizi Contabilità e Bilancio  
Alla Segreteria della Presidenza

Oggetto: Pubblicità atti

Si notifica in copia l'allegata Delibera n. 182/2019 del 09/09/2019 – Allegato J al Verbale n. 07/2019 concernente: Research Implementing Agreement in the field of probabilistic seismic hazard methodologies between Institut de Radioprotection ed de Surete Nucleaire (IRSN) and Istituto Nazionale di Geofisica e Vulcanologia (INGV).

Dott. Giovanni FORRE



Delibera n. 182/2019

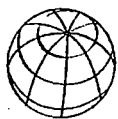
Allegato J al Verbale n. 07/2019

Oggetto: Research Implementing Agreement in the field of probabilistic seismic hazard methodologies between Institut de Radioprotection et de Surete Nucleaire (IRSN) and Istituto Nazionale di Geofisica e Vulcanologia (INGV).

### IL CONSIGLIO DI AMMINISTRAZIONE

- VISTO il Decreto legislativo 29 settembre 1999, n. 381, concernente la costituzione dell'Istituto Nazionale di Geofisica e Vulcanologia (INGV);
- VISTO il Decreto Leg.vo 25/11/2016, n. 218, concernente "Semplificazione delle attività degli Enti Pubblici di Ricerca ai sensi dell'art. 13 della Legge 7/08/2015, n. 124";
- VISTO lo Statuto dell'INGV, approvato con Delibera del Consiglio di Amministrazione n. 372/2017 del 9 giugno 2017, come modificato con Delibere del Consiglio di Amministrazione n. 424/2017 del 15 settembre 2017 e n. 501/2017 del 21 dicembre 2017, pubblicato sul Sito WEB istituzionale (Avviso di emanazione pubblicato sulla Gazzetta Ufficiale della Repubblica Italiana - Serie generale - n. 27 del 2 febbraio 2018), in particolare, l'art. 8, comma 6, lettera f), il quale prevede che il CdA "*omissis....delibera la partecipazione a società, fondazione e consorzi, nonché la stipulazione di accordi con organismi nazionali, europei e internazionali*";
- VISTO il Regolamento di Organizzazione e Funzionamento dell'INGV, emanato con Decreto del Presidente n. 45/2018 del 21/2/2018, pubblicato sul Sito WEB istituzionale e in particolare, l'art. 39 il quale disciplina le *Collaborazioni con soggetti esterni*, stabilendo al primo comma che: "*I rapporti di collaborazione nell'attività di ricerca tra l'Ente e soggetti pubblici e privati, italiani e stranieri sono regolati attraverso contratti aventi come riferimento di massima la seguente tipologia: protocolli d'intesa, accordi di programma quadro, convenzioni operative*";
- VISTO il Regolamento del Personale emanato con Decreto del Presidente n. 118/2018 del 14/5/2018, pubblicato sul Sito WEB istituzionale;
- VISTO il Regolamento di Amministrazione, Contabilità e Finanza, emanato con Decreto del Presidente n. 119/2018 del 14/5/2018, pubblicato sul Sito WEB istituzionale;
- VISTO l'Agreement between Institut de Radioprotection et de Surete Nucleaire (IRSN) and Istituto Nazionale di Geofisica e Vulcanologia (INGV), sottoscritto in data 16/05/2019, INGV prot. n. 0007219;
- VALUTATA l'opportunità di procedere alla sottoscrizione Research Implementing Agrèement in the field of probabilistic seismic hazard methodologies between Institut de Radioprotection et de Surete Nucleaire (IRSN) and Istituto Nazionale di Geofisica e Vulcanologia (INGV);
- CONSIDERATO che le Parti, con il presente Bilateral Agreement, istituiscono una cooperazione a livello internazionale, finalizzata alla propagazione delle

ST CJ



incertezze nei cataloghi sismici; allo studio di fattibilità per lo sviluppo di modelli di sismicità basati su dati geodetici; alla selezione di accelerogrammi hazard-consistenti per analisi di rischio;

- CONSIDERATO che l'attività da espletare rientra tra i compiti scientifici e istituzionali dell'INGV;
- VISTI i pareri favorevoli del Direttore di Sezione e del Direttore di Dipartimento,

DELIBERA

L'approvazione dello schema del Research Implementing Agreement in the field of probabilistic seismic hazard methodologies between Institut de Radioprotection et de Surete Nucleaire (IRSN) and Istituto Nazionale di Geofisica e Vulcanologia (INGV), allegato alla presente quale parte integrante e sostanziale (all.1).

Letto, approvato e sottoscritto seduta stante.

Roma, 09/09/2019

La segretaria verbalizzante  
(Sig.ra Silvana TUCCI)

*Silvana Tucci*

IL PRESIDENTE  
(Prof. Carlo DOGLIONI)

*Carlo Doglioni*

RESEARCH IMPLEMENTING AGREEMENT  
IN THE FIELD OF PROBABILISTIC SEISMIC HAZARD METHODOLOGIES  
BETWEEN IRSN AND INGV  
IN THE FRAMEWORK OF THE EXISTING COOPERATION AGREEMENT

BETWEEN

INSTITUT DE RADIOPROTECTION ET DE SURETE NUCLEAIRE, a public establishment, whose registered office is at 31 avenue de la Division Leclerc, 92260 Fontenay-aux-Roses, France, and identified under RCS Nanterre n<sup>o</sup>440 546 018

REPRESENTED BY Mr. Jean-Christophe Niel, Director General of IRSN

HEREAFTER REFERRED TO AS "IRSN",

ON THE ONE HAND, AND

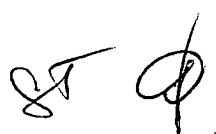
ISTITUTO NAZIONALE DI GEOFISICA E VULCANOLOGIA, public establishment, whose registered office is at Via di Vigna Murata 605, 00143 Roma, Italy and identified with CF n. 06838821004

REPRESENTED BY Prof. Carlo Doglioni, President of INGV

HEREAFTER REFERRED TO AS "INGV"

ON THE OTHER HAND

HEREAFTER REFERRED TO INDIVIDUALLY AS "THE PARTY" AND COLLECTIVELY AS "THE PARTIES"



### **Framework:**

- In 2018 IRSN and INGV signed a Cooperation Agreement (INGV prot. 0007219 16/05/2019, IRSN/DAFCJ/JS:LS 20643) to favor common research in the the field of seismology and earthquake geology (hereafter "Cooperation Agreement");
- Common actions operating in the framework of the existing Cooperation Agreement have been carried out during the last years, such as within the Fault2SHA working group, in the development of the SURE Database of earthquake surface ruptures, and in the organization of international meetings on PSHA.
- WHEREAS the Cooperation Agreement stipulates in Article 2.2.2 that implementation of Action except those contemplated in article 2.2.1 (i.e other than action stipulated in 2.1 a) and b) of the Cooperation Agreement ) shall be subject to a an Implementing Agreement, written in English, signed and agreed upon the Parties.
- INGV and IRSN have been discussing to cooperate to implement an action according to article 2.2.2 of the Cooperation Agreement: "Development of probabilistic seismic hazard methodologies" (hereafter "the Action") and wish to submit to the provisions of the Cooperation Agreement the present Implementing Agreement.
- In the framework of the Cooperation Agreement, a further joint planned action by INGV and IRSN is the scientific project here described which will be carried out by both IRSN and INGV researchers.
- Scientific motivations are detailed in appendix 1 of this agreement.
- For anything not specifically mentioned in this agreement, the provisions of the ongoing Cooperation Agreement (INGV prot. 0007219 16/05/2019, IRSN/DAFCJ/JS:LS 20643) are applicable.



## Article 1. PURPOSE

The purpose of this agreement, which is hereafter referred to as "the Agreement", is to define the terms and conditions whereby IRSN and INGV will cooperate in the framework of the ongoing Cooperation Agreement in the field of Seismology and earthquake geology for the implementation of the following Action "Development of probabilistic seismic hazard methodologies".

The scientific and technical content of the present agreement is set out in the Appendix 1.

The studies of this Agreement are for the purpose of scientific research. Considering the experimental research nature of the works performed under the present Agreement, results will not contribute to the operational decisions taken by INGV.

## Article 2. PERFORMANCE OF THE ACTION

### 2.1 Scientific Committee

The Parties shall establish a Scientific Committee with the authority to manage the scientific and technical cooperation pertaining to the Action between the Parties.

The Scientific Committee shall convene meetings at the beginning of the Action and every three months. When necessary, additional meetings will be organized as the Parties may agree.

The Scientific Committee shall be comprised of one (1) Technical Correspondent of each Party contributing to the Action.

Each Party's representatives may be assisted by additional technical/scientific advisor when necessary. If advisors are not Parties' Staff, advisors shall be committed by all confidentiality requirements of this Agreement. Parties requiring participation of external advisors commits themselves to make sign non-disclosure agreements to each external advisor they mandate to participate to the Scientific Committee.

The Scientific Committee shall take decision on the orientation of the Action and validation of Results by unanimous vote only. Advisors shall have no voting right.

The Scientific Committee shall only decide on topics related to the Action.

Any decision implying modification of the Agreement shall be definitively agreed by signature of an addendum to this Agreement by authorized representatives of the Parties.

Minutes of each meeting shall be drafted alternatively by each Party and are deemed to be validated one month after being sent by the drafting Party to the other Party if no modifications are required.

The Parties appoint the following Technical Correspondents:

For IRSN:

SCOTTI Oona- Senior Expert

31 avenue de la Division Leclerc

BP 17

92260 FONTENAY AUX ROSES

France

Email : oona.scotti@irsn.fr

Phone : 0033(0)1.58.35.86.47

For INGV

VISINI Francesco - Researcher

43/47 Via Francesco Crispi,

67100 L'Aquila,

ITALIA

Email : francesco.visini@ingv.it

Phone : 0039 (0) 862709121

Each Party may change its Technical Correspondent during the Action by giving prior written notice to the other Parties.

## 2.2 Place of performance of the Action

The Action will be carried out by each Party in its own premises:

- For IRSN the premises of Fontenay-aux-Roses;
- For INGV the premises of Rome.

However, INGV's staff will be hosted at IRSN's premises during a maximum of nine (9) months in the course of the year 2019 and 2020 for the realisation of the Project.



In this case article 8 (STAFF) of the Cooperation Agreement shall apply.

### 2.3 Material obligations of the Parties under the Action

The Parties undertake to make their best efforts in performing the work of the Action within the limits of the expected duration and resources made available in the framework of the present Agreement with no material obligation pertaining to the achievement of a specific result taking into account the experimental and research nature of the works performed under the present Agreement.

However, each Party undertakes to transmit to the other Party the deliverables within the time limits provided in Appendix 1.

### Article 3. SECONDMENT OF PERSONNEL

3.1 - In the Cooperation Agreement between IRSN and INGV, article 2 defines the "Forms of Cooperation", including visits of Parties' staff. During the term of this Agreement, IRSN will be the Hosting Party and INGV will be the Assigning Party.

As stated in article 2.2, INGV's staff will be hosted at IRSN's premises during a maximum of nine (9) months in the course of the year 2019 and 2020 for the realization of the Project.

Article 8 of the Cooperation Agreement shall apply *mutatis mutandis* to the exchange of staff in the course of the Action.

3.2 - Each Party ensures that personnel seconded for the activities to be carried out under this Agreement shall be qualified for such activities. The Assigning Party shall notify the Hosting Party of the names of such employees and shall provide the Hosting Party with relevant information regarding such employees as required. The Hosting Party may accept or reject any employee so proposed and may at any time revoke any acceptance previously given, without any reasons.

3.3 Each Party shall warrant compliance by its staff (employee, officer, employee, trainee, interim, a doctoral or post-doctoral candidate, subcontractor) with any obligation pertaining to this Agreement including any assignment of rights necessary for the full effect of the Agreement.

### Article 4. FINANCIAL CONDITIONS

Appendix 2 (Financial Appendix) details allocation of charges between the Parties or costs of the Action for each Party.

Due to the action carried out by INGV, IRSN will pay, as support for the costs of the cooperation set up under the present Implementing Agreement, a contribution of EURO 25,000 **inclusive of taxes**.

- 50% of the contribution will be paid when the Agreement is signed, and





- 50% paid at mid-duration in 2020 once the activity report due at T0+6months mentioned in the paragraph 2 of the Appendix 1 has been validated by IRSN.

All payment will be done within the following procedures

The transfer will be made by IRSN, by bank transfer to the following current account:

Istituto Nazionale di Geofisica e Vulcanologia

Via di Vigna Murata, 605, 00143 Roma (Italy)

Monte dei Paschi di Siena - Agenzia 15, Viale della Musica, 2 – 00144 Roma – Italy

IBAN: IT03R0103003215000001273391

Code BIC / SWIFT: PASCITM1R15

For the IRSN, invoices shall bear the references CA 35001147 and LS 21173 and shall be sent to IRSN to the following address:

IRSN

Agence comptable – Service facturier

Boite Postale n° 17

92262 - FONTENAY-AUX-ROSES CEDEX

Sums shall be paid by IRSN within sixty (60) days from receipt of the invoice, subject to the following conditions:

Any incomplete invoice and/or invoices not mentioning the above-mentioned references and/or any invoice provided not within the specified time frame, shall be considered as non-compliant and shall be sent back to INGV. Payment delay shall be suspended until reception of the appropriate invoice duly corrected and in conformity with the mentions above.

Applicable VAT if any, shall be the VAT rate applicable at the time of the invoice.

#### **Article 5. CONFIDENTIALITY**

Article 5 of the Cooperation Agreement shall apply mutatis mutandis to information exchanged in the course of the Action.

#### **Article 6. INTELLECTUAL PROPERTY AND ACCESS RIGHTS**

Article 6 of the Cooperation Agreement shall apply mutatis mutandis to the Action under this Agreement.

A list of Prior Knowledge used in the course of the Action is provided in Appendix 3.

#### **Article 7. DISSEMINATION ACTIVITIES**

Article 7 of the Cooperation Agreement shall apply mutatis mutandis to the Action under this Agreement.

#### **Article 8. DURATION**

8.1 This Agreement shall be effective the 15<sup>th</sup> September 2019 subject to its signature by the Parties and shall be in effect until the 15<sup>th</sup> June 2020. Any tacit renewal is strictly excluded. It can be renewed by written submission of a new agreement signed by the Parties.

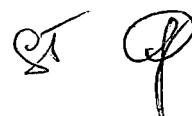
8.2 The Agreement may be terminated by common mutual written agreement

8.3 In the event of a breach or of total or partial breach by one of the Parties of one its obligations laid down in Articles 1 (PURPOSE) to 9 (EXPORT CONTROL) and 14 (LIABILITY- DISPUTES RESOLUTION- FORCE MAJEURE) and 15 (MISCELLANEOUS) of this Agreement, the Party which invokes a violation or a breach of the other party may give it notice to comply with its obligations within a (2) two-month period following the date of receipt of the notice sent by mail with acknowledgment of receipt. The notice must specify the obligations for which the Party must comply with under penalty of automatic termination of this Agreement against the defaulting Party. After this deadline, if the Party has not complied with its obligations, the termination of the Agreement will be automatic on the day following the end of the abovementioned period.

#### **Article 9. EXPORT CONTROL**

Article 13.6 of the Cooperation Agreement shall apply mutatis mutandis to export of any information exchanged in the frame of the activities pertaining to the Action.

#### **Article 10. PROTECTION OF PERSONAL DATA**

Two handwritten signatures in black ink, one on the left and one on the right, positioned below the page number.

In the event of personal data processing, within the framework of this agreement, the Parties undertake to fulfil their obligations in accordance with applicable regulations and, especially, the regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 applicable since 25 May 2018.

#### **Article 11. MODIFICATION**

Any modification or waiver of any of the provisions of this Agreement may only take effect after it has been agreed in writing, by an amendment duly signed by the Parties.

#### **Article 12. ENTIRETY**

The provisions of the Agreement express the entire Agreement concluded between the Parties. They shall prevail over any proposal, exchange of letters prior to its signature, as well as any provisions appearing in the documents, which are exchanged between the Parties concerning the subject of the Agreement.

#### **Article 13. INDIVISIBILITY**

Should any of the provisions of this Agreement be void, it will not affect the other provisions. The Partners undertake to negotiate in good faith the modification of the affected provisions in order to obtain a result as close as possible to these provisions.

#### **Article 14. LIABILITY - DISPUTES RESOLUTION – FORCE MAJEURE**

Article 9 to 11 of the Cooperation Agreement shall apply mutatis mutandis to the Action under this Agreement.



**Article 15. MISCELLANEOUS**

Article 13 of the Cooperation Agreement shall apply mutatis mutandis to the Action under this Agreement.

Signed in two original copies in English, on \_\_\_\_\_. Therefore the English version shall prevail over any translation.

For the IRSN


For INGV

The Director General of IRSN

The President of INGV

Mr. Jean-Christophe Niel

Prof. Carlo Doglioni



## **APPENDIX 1: TECHNICAL/SCIENTIFIC APPENDIX**

The present agreement includes the following topics that will be supervised by the Technical Correspondents and performed in collaboration with different IRSN members:

### ***1. Propagation of earthquake catalogue uncertainties in the estimations of seismic activity rates:***

The development of both instrumental and historical earthquake catalogues is a challenging task involving numerous expert- opinion driven decisions as well as model-driven choices. IRSN is presently developing a new earthquake catalogue homogenized in moment magnitude and newly estimated magnitude, locations and associated uncertainties.

The aim of this task is for IRSN and INGV to develop a common methodology for the propagation of earthquake catalogue uncertainties in the estimate of seismic activity rates based on both seismotectonic zones and smoothed seismicity approaches. The extent to which the propagation of such uncertainties affects seismic hazard estimates will also be quantified.

For this task, the jointly developed methodology will be applied in priority to the IRSN catalogue.

Expected results

- Development of a methodology for the propagation of uncertainties due to parametric earthquake catalogues in the estimate of earthquake rate forecasts used for seismic hazard assessment

Deliverable

- Activity report at T0+4

### ***2. Developing geodetic-based earthquakes models for seismic hazard- a feasibility study***

Francesco Visini is one of the coordinators of the recently updated Italian Seismic Hazard model (MPS19) that includes two geodetic-based seismicity models. A first model is based on the Kostrov assumption that transforms strain rate into earthquake rates. Even if based on a simple assumption, for the Italian case this model passed a series of statistical tests (comparison between expected and past-observed earthquakes), and represents a promising, feasible, base-level approach to obtain expected earthquake rates independently from the historical earthquake catalogue. A second model was also developed based on geodynamics and tectonics considerations.

In this task IRSN aims to appreciate, in collaboration with one of the developers of the MPS19 model, the potential application and testing of geodetic methodologies for the estimate of seismic hazard in France.

The most recent reference GPS velocities provided by RESIF will be used on a test area that will be identified in coordination with IRSN geologists.

#### Expected results

- Application of a methodology using geodetic data to parametrize seismic hazard

#### Deliverable

- Activity report at T0+6

### **3. *Selecting hazard-consistent accelerograms for risk analysis***

IRSN uses two selection strategies: the REXEL (INGV-ReLuis) and an IRSN code developed in the framework of L. Isbilibroglu thesis.

The aim of this action is for INGV Technical Correspondents to learn how to use these tools and for IRSN to test their influence on risk analysis estimates.

The accelerometric database developed at IRSN and risk analysis estimates presently ongoing at IRSN will be used for this task.

#### Expected results

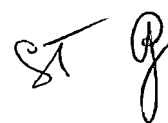
- Know-how exchange on the use of open source softwares on accelerograms generation/selection and fault-specific hazard.
- Application to a French case study

#### Deliverable

- Activity report: T0+9

An activity report summarizing the state of advancement of the project will be provided at T0 + 4.5 months.

Deliverable	Expected date
Beginning	15/09/2019
Activity report 1 : Uncertainty propagation	15/01/2020
Activity report 2 : Progress report for the project	30/01/2020
Activity report 3 : Geodesy and hazard	30/03/2020
Activity report 4 : Uncertainty propagation	15/06/2020



## APPENDIX 2: FINANCIAL APPENDIX

	INGV		
	Costs	IRSN contribution	Balance
	A	B	C=A-B
1. Personnel staff	40	0	40
2. Cost related to facilities	0	0	0
3. Operating costs	0	0	0
4. Mission cost	25	25	0

<b>TOTAL (KEUR)</b>	<b>65</b>	<b>25</b>	<b>40</b>
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	Costs per partner excluding IRSN contribution	IRSN contribution	Real cost
IRSN	50	0	50
INGV	65	25	40

Total (KEUR HT)

90

IRSN		
Costs	IRSN contribution	Balance
D	E	F=D-E
50	50	0
0	0	0
0	0	0
0	0	0

50	50	0
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Financial contribution of each partner

IRSN 55,6%  
INGV 44,4%

TOTAL 100,0%



### APPENDIX 3: LIST OF PRIOR KNOWLEDGE

#### **For IRSN**

Isbiliroglu PhD code

#### **For INGV**

REXEL code

