



Il Direttore

**Selection for the awarding of a Grant for research activities under the project  
TREASURE Marie Skłodowska-Curie Innovative Training Network - ESR1**

Call n. 1/2017

**THE DIRECTOR**

- Having regard to the Legislative Decree 29.9.1999, n. 381;
- Having regard to the Legislative Decree 31.12.2009, n. 213 on the "Riordino degli enti di ricerca in attuazione dell'Art. I della legge 27 settembre 2007 n. 165";
- Having regard to the D.P.R. 28/12/2000 n. 445 and following integrations and modifications "T.U. delle disposizioni legislative e regolamenti in materia di documentazione amministrativa";
- Having regard to the D.Lgs. 30.06.2003, n. 196, on the "Codice in materia di protezione dei dati personali";
- Having regard to the Minister Decree n. 102 of 09/03/2011, on the definition of the minimum salary for Research Grants;
- Having regard to the directive of the Public Administration and Simplification Ministry n. 14/2011 for the application of the new rules on the equivalent certificates and declarations of Art. 15 of the law 12.11.2011, n. 183;
- Having regard to the INGV Rules for the provision of Research Grants issued with Resolution n.17/2012 of 4.04.2012;
- Given the request for the activation of a selection for the provision of a research grant in the frame of the H2020 Marie Skłodowska-Curie Innovative Training Network (ITN) European Training Network G.A. n.722023 "TREASURE *Training REsearch and Applications network to Support the Ultimate Real time high accuracy EGNSS solution*", by Dott.ssa Giorgiana De Franceschi, INGV Scientific Responsible of the Project, approved by the General Director (29/12/2016 prot. 2745);
- Given the agreement between the University of Salento and the INGV (INGV Protocol No. 230 of 01.10.2017) for the activation of two PhDs within the TREASURE project;
- Given the funding available for such Project

**DECREES**

A public selection based on qualifications and interview is issued, for the provision of n. 1 research grant ("*Grant*" typology), duration of 36 months, at the Istituto Nazionale di Geofisica e Vulcanologia (INGV) - Sezione ROMA2, in the frame of the H2020 Marie Skłodowska-Curie Innovative Training Network (ITN) European Training Network - G.A.

n.722023 "TREASURE" (cost expenditure number 0835.010).

This English notice is a translation from the official Italian notice, which should be considered the notice of legal reference. The application form can be issued in Italian or English. The interview will be held in Italian or English.

### **Art. 1** **Subject of the research**

The research title is the following: "*TEC and scintillation forecasting models*" and will be developed under the scientific responsibility of Dr. Giorgiana De Franceschi.

The goal of the project is the study, the development, the implementation of forecasting models for TEC (Total Electron Content) and ionospheric scintillation parameters ( $S_4$ ,  $\sigma\phi$  and proxy indices) on global and regional scale and on different time scales (seconds-minutes), also as function of perturbative phenomena coming from the outer space. Data from GNSS receivers, both from standard network (IGS) and high sampling rate frequency (50 Hz) networks will be mainly used for the development of such models and for the testing phase in order to build performance statistics of these models in different geospatial conditions. Efforts will be addressed to the development of techniques for TEC calibration as well as to the accuracy definition of the models developed in providing the forecasted parameters in accordance with the needs of the algorithms developed within TREASURE to mitigate the ionosphere impact on high precision positioning. The models developed will have to be implemented for operation in real-time.

Supervisor of the research project: Giorgiana De Franceschi, Istituto Nazionale di Geofisica e Vulcanologia, Rome, Italy.

Co-supervisor of the research project: Claudio Cesaroni, Istituto Nazionale di Geofisica e Vulcanologia, Rome, Italy.

Academic supervisor as part of the project associated with the PhD: Massimo Cafaro, University of Salento, Department of Innovation Engineering, Lecce, Italy.

The research activities will take place primarily at the INGV in Rome, as part of the TREASURE project. This includes: i) participation to the PhD training at the University of Salento, ii) attendance at schools and workshops organized in the scope of the project, iii) secondments at other centers, industries and research institutes in Italy and / or abroad, for a minimum period of 1 month and a maximum of two months, iv) any other obligations laid down in the framework of the Actions Marie Skłodowska-Curie Innovative Training Network (ITN), of the European Community.

### **Art. 2** **Salary and duration**

The contract has duration of 3 (three) years. The annual gross salary is composed of the followings:

1. Living allowance: Euro 39,820.44;
2. Mobility allowance: Euro 7,200.00;
3. Family allowance:
  - a) Euro 0 for a researcher without family obligations;
  - b) Euro 6,000.00 for a researcher with family obligation (married, or with a relationship recognized by the Italian law or by the law of the country of provenance of the researcher, or with dependent children).

Allowances apply, in tax matters, the provisions of Art. 4 of the Law 13 August 1984, n. 476 and successive modifications and integrations; in social security matters, the provisions of Art. 2, par. 26 and followings, of Law 8 August 1995, n. 335 and successive modifications; in maternity leave, the provisions of the Decree of Ministry of Labour and Social Security 12 July 2007; in occupational disease matters, Art. 1, par. 788, of the Law 27 December 2006, n. 296 and successive modifications.

### **Art. 3** **Requirements for eligibility**

To be admitted to the selection, candidates should possess the following requisites, besides all the requirements by law to access the Public employment and besides all the eligibility requirements by Marie Skłodowska-Curie Actions

([http://ec.europa.eu/research/participants/data/ref/h2020/wp/2016\\_2017/main/h2020-wp1617-msca\\_en.pdf](http://ec.europa.eu/research/participants/data/ref/h2020/wp/2016_2017/main/h2020-wp1617-msca_en.pdf)):

- a) must have a Master of Science degree or an equivalent 2° level degree entitling access to a Ph.D. course in Italy;
- b) must be within the first four years (full-time equivalent) of their research career before the start date of the Grant contract (indicatively foreseen on June 1st 2017);
- c) must not have a PhD at the starting date of the contract;
- d) must not have resided or pursued their main studies/research/work activity in Italy for more than 12 months during the three years preceding the start date of the contract;
- e) must have documented study/research experience in one or more of the following disciplines: physics, geophysics, mathematics, engineering;
- f) must have a very good knowledge of English, at least sufficient to carry out the activities foreseen in the contract and guarantee effective daily interaction in the work context;
- g) must not have prior criminal convictions of a serious nature.

Omission of even only one of the above requirements implies exclusion from the selection. Qualifications obtained abroad that are not previously and officially recognized in Italy will be considered by the Selection Board only for the aims of this selection. Qualifications should be obtained by the deadline for the presentation of the application.

The INGV guarantees equal gender opportunities for the provision of grants, as well as the protection of confidentiality of personal data according to current laws.

### **Art. 4** **Incompatibility**

Exclusion from the selection procedure occurs in the following cases:

- the candidate has a permanent position at a public University, Institute, or Research Centre, at ENEA, at the Italian Space Agency, or at an institution providing diplomas that are regarded as being equivalent to a doctoral degree according to Art. 74, par. 4, of the D.P.R. n. 382 of 11.07.1980;
- the candidate holds a research grant in a public administration different from those listed at the previous point, or is employed by a private company, and such research grant or employment is not interrupted or suspended through unpaid leave for the entire duration of the present contract;
- this grant provides for the inclusion in the 33<sup>th</sup> cycle of doctoral studies at the University of Salento. Under Article 22, paragraph 3, of Law 240/2010, the grant cannot be compatible with

participation in other PhD courses, in Italy and abroad. Those enrolled in other PhD courses in Italy or abroad are eligible for selection but, in case, the winners will have to withdraw from these courses;

- the candidate is an employee at INGV, with either a permanent or temporary position or the candidate belongs to permanent personnel of institutions regulated by Art. 22, clause 1, law 240/2010.

The present research grant cannot be combined with other grants provided by INGV or by other research institutions.

### **Art. 5 Application for Admission**

The application to the selection, made on plain paper according to the attached application form (Annex A) and signed by the person under penalty of exclusion, should be addressed to: **INGV, Sezione Roma2, Via di Vigna Murata n. 605, 00143 Rome, Italy**, and will be submitted **directly** or sent by **registered mail** with return receipt in a sealed envelope, or sent by **e-mail as PDF signed file**, to the e-mail address: [aoo.roma@pec.ingv.it](mailto:aoo.roma@pec.ingv.it), within a deadline of 40 days from the day following the publication of this notice on the web site of INGV, in the manner and within the terms provided by the selection. If the deadline coincides with a public holiday in Italy, the deadline is postponed to the first following working day.

**The application should be marked: "PARTICIPATION TO THE SELECTION FOR A RESEARCH GRANT / ESR1, PROJECT TREASURE - NOTICE 1/2017".**

The application form must contain **the email address** to which the candidate asks to receive all the documents and information related to the selection. The mobile telephone number is also requested in case of urgent communications.

**Attached to the application, a readable copy of passport or of a Europe-recognized ID with photo, must be provided.**

The INGV does not assume any liability for failure or delay in notifying change of address in the application, nor for any communication delays attributable to third parties, unforeseen circumstances or beyond one's control.

Changes in the communicated email address should be immediately notified to the following address: [loredana.proto@ingv.it](mailto:loredana.proto@ingv.it).

Disabled candidates should indicate the requested support in the application for admission.

In the application, the applicants must declare, under their own responsibility, and subject to exclusion from the selection in case of failure:

1. full name, date and place of birth, residence and citizenship;
2. educational qualifications, including evaluation - GPA, date, and University at which they were obtained;
3. to have no criminal convictions and no pending criminal proceedings (otherwise, indicate the ongoing proceedings and the sentences passed, the dates of judgments and judicial authority which issued);
4. to possess the requirements stated at point 3), letters from a) to g);
5. to possess the political rights (only for citizens of the European Union);
6. not to be employed by a public institution or private company, and in any case, not to receive a grant in Italy or abroad; in case a grant is instead received, to engage to produce

documentation attesting the suspension of the grant before the date of start of the research Grant contract and for its entire duration.

7. to engage registration to the 33th cycle of doctoral studies at the University of Salento, of next calling for the year 2017, by the date set by the procedures of the 33th cycle of doctoral studies at the University of Salento.

**The following documents must be attached to the application form:**

- 1) Signed curriculum vitae et studiorum;
- 2) The list of titles enclosed to the curriculum if any;
- 3) Documents certifying the course of study completed (with relative exams and grades obtained);
- 4) Letter of scientific reference in Italian or English;
- 5) Motivation letter to the selection;
- 6) A brief description (max 5000 characters) of the research project that the candidate intends to pursue, by considering the objectives and the expected results (see also Annex C).

For further information contact [giorgiana.defranceschi@ingv.it](mailto:giorgiana.defranceschi@ingv.it).

#### **Art. 6 Titles for Evaluation**

The Selection Board will evaluate the Curriculum vitae et studiorum, in Italian or English, that should specify any facts and qualities including level of knowledge of English. The CV must include the followings:

- studies undertaken and qualifications obtained with relative dates and evaluation;
- the duties, functions performed, the positions held and their duration;
- any other technical, scientific, didactic or professional activity and experience;
- the scientific publications, technical reports, monographs, books, book chapters, patents, etc.
- any other supporting documents that the applicant considers may be relevant for evaluation. EU Member State citizens must declare by compiling the form in Annex B, that the information included in their CV is true and accurate, according to art. 46 and 47 D.P.R. 445/2000.

The titles declared in the CV should be documented according to the following:

- publications, technical reports, monographs, books, book chapters, patents, etc. should not be attached to the application form if they are available on the web or they are identified through a d.o.i. number; in such a case, the exact web address or the d.o.i. number should be provided. Publications, technical reports, monographs, books, book chapters, patents, etc., including degree thesis that are sufficiently described in the CV and that are in a language different from Italian or English will be evaluated based on that description without the need to be attached;
- for any other document:

for European citizens: documents and titles provided by public

administrations of a Member State of the European Union should not be attached, rather, they should be listed in the declaration form provided as Annex B, according to art. 46 and 47 D.P.R. 445/2000. Documents and titles provided by public administrations of a non-Member State, as well as documents and titles provided by private companies, should be attached as original or copy. Documents and titles in copy should be listed in the declaration form provided as Annex B, according to art. 46 and 47 D.P.R. 445/2000. Documents and titles provided in a language different from Italian or English should be supported by an English translation;

for non-European citizens regularly residing in Italy: documents and titles provided by Italian public administrations may not be attached, but listed in the declaration form provided as Annex B, according to arts. 46 and 47 D.P.R. 445/2000. Copies of documents and titles provided by public administrations of a non-Member State, as well as documents and titles provided by private companies, should be attached. Documents and titles provided in a language different from Italian or English should be supported by an English translation;

for all other non-European citizens: copies of documents and titles should be attached. Documents and titles provided in a language different from Italian or English should be supported by an English translation.

False declarations shall be punished under the Penal Code and corresponding special laws according to the Art. 76 of D.P.R. 445/2000. INGV, according to Art. 71 and following art. 75 and 76 of D.P.R. 445/2000 and following integrations and modifications, verifies the correctness of the declarations provided.

#### **Art. 7**

#### **Exclusion from selection**

Candidates are admitted conditionally to the selection. The Director of the INGV Sezione Roma2 can exclude from the selection a candidate on the basis of motivated arguments at any time. The exclusion will be communicated to the candidate.

#### **Art. 8**

#### **Selection Board**

The Selection Board is appointed by the Director of the INGV Sezione Roma2, and is composed of three members chosen among researchers, technologists and experts from INGV or from outside it, one with the role of Selection Board President, and one with the role of Recording Secretary. The Recording Secretary may be selected among the members of the Selection Board.

#### **Art. 9**

#### **Selection modalities**

The Selection Board establishes in its first meeting the criteria and the procedures of evaluation of candidates, qualifications and interviews, the latter aimed at evaluating the candidates background and the knowledge of the research themes stated at Art. 1, of the presented titles, and knowledge of English.

Candidates must bring a valid identity document in order to be interviewed, and will be excluded from the selection procedure in case they do not show up in the day and at the time

previously communicated by the Selection Board.

Remote interview through videoconference (SKYPE with WEBCAM) can be requested by candidates in the application form, in which case a valid Skype account must be indicated. The candidate requesting a remote interview is committed to be contacted at the indicated Skype account, in the day and time that will be communicated by the Selection Board, after performing a connection test. The interview will be preceded by the official identification of the candidate, who will need to display the same passport/ID provided with the application form.

In the same day of the interviews, the Selection Board prepares a ranked list based on the results of the interview of each candidate organized in decreasing order starting with the candidate with highest result.

The Selection Board concludes the selection procedure within 45 days from the deadline for application.

#### **Art. 10**

##### **Total Ranking and Assignment of the research grant**

The Selection Board prepares a merit ranking by summing the ranks from the titles and from the interview for each candidate; this is presented in a decreasing order, starting with the candidate with highest result.

The merit ranking is approved with a specific act of the Director of the Sezione Roma2, published on the website of INGV.

Within 15 days from the publication of the final results, INGV General Director communicates to the successful candidate, the assignment of the research grant. The successful candidate must deliver within 15 days from notice of grant assignment, and under penalty of forfeiture, a declaration of acceptance in Italian or English, in plain paper, in which it is stated that none of the incompatibilities stated at Art. 4 hold.

A successful candidate who fails to communicate acceptance of the job within the requested deadline, or who is not present on the day of start of the grant, is revoked from office. Delays in the date of start of the job can only be accepted in case of duly certified medical reasons, maternity leave, or in other cases involving circumstances beyond one's control and duly certified.

The appointment is conferred by a private contract, which does not represent an employment relationship and does not give rise to any rights regarding access to employment positions at INGV.

#### **Art. 11**

##### **Rights and responsibilities**

The appointed researcher should comply to the rules and regulations approved by INGV for this kind of research grants. A copy of such regulations is available at:

[http://istituto.ingv.it/portale\\_ingv/portale\\_ingv/l-ingv/norme-regolamenti-e-adempimenti/altri-regolamenti](http://istituto.ingv.it/portale_ingv/portale_ingv/l-ingv/norme-regolamenti-e-adempimenti/altri-regolamenti).

Research activities will be developed in the frame of H2020 Marie Skłodowska-Curie Innovative Training Network (ITN) G.A. n.722023 "TREASURE Training REsearch and Applications network to Support the Ultimate Real time high accuracy EGNSS solution" project.

The appointed researcher agrees to comply with any rule, regulation, etc established by the European Community under the actions H2020-Marie Skłodowska-Curie Innovative Training Network (ITN) (<http://ec.europa.eu/research/mariecurieactions>), and in particular to compliance with the provisions in GA n.722023 "TREASURE" under which the contract is carried out and which will be further attached to the contract.

To the aims and objectives of the foreseen activities, the appointed researcher has full access to the infrastructure, instruments and services at his/her appointment structure, according to the applicable rules and regulations approved by INGV.

In case of mission in the frame of the planned research activities, and subject to written authorization by the scientific responsible and of the Section Director, the related costs will be reimbursed according to the criteria and procedures established by the current regulations.

**Art. 12**  
**Forfeiture and termination**

Procedures for termination of contract can be started at any moment during the appointment in case the granted researcher fails to regularly and continuously prosecute his/her activities without justification, or if the granted researcher is responsible of serious and repeated failures or shortcomings. Those termination procedures require duly motivated request by the scientific responsible, approved by the General Director.

**Art. 13**  
**Advertisement of the selection process and Final Rules**

The present call is advertised on the INGV official Board and by publication on the website of INGV, MIUR, EU.

For matters not covered in this announcement, reference is made to the applicable laws and regulations.

Dott. Achille Emanuele ZIRIZZOTTI

IST.NAZ. DI GEOFISICA E VULCANOLOGIA

IL DIRETTORE SEZIONE ROMA 2

Dott. Achille Emanuele ZIRIZZOTTI





## APPLICATION FORM

To the Director Sezione Roma2  
 Istituto Nazionale di Geofisica e Vulcanologia  
 Via di Vigna Murata 605, 00143  
 ROMA - ITALY

Subject: Application to participate to a public selection for a research contract, reference:  
**" Selection for a research GRANT / ESR1 - notice 1/2017–Sezione Roma2"**

The undersigned (*name, surname*) \_\_\_\_\_

born in (*county/state*) \_\_\_\_\_

nation \_\_\_\_\_ date (dd/mm/yyyy) \_\_\_\_\_

and resident in (*Street/square, N., postal code*) \_\_\_\_\_

county/state \_\_\_\_\_ nation \_\_\_\_\_

E-mail address entitled for the purposes of this call: \_\_\_\_\_

Tel \_\_\_\_\_

ASKS

to be admitted to participate to a selection for the assignation of a collaborative contract (Grant) regarding: *"TEC and scintillation forecasting models"*, under the Project TREASURE Marie Skłodowska-Curie Innovative Training Network at the INGV Sezione Roma2.

To that end he/she declares under his/her own responsibility, according to art. 46 and 47 of DPR 28.12.2000 n. 445, and aware of criminal penalties in case of false declarations as from art. 76 of DPR 28.12.2000 n. 445, to:

- possess the following citizenship: \_\_\_\_\_

- possess the following degree: \_\_\_\_\_

obtained at: \_\_\_\_\_

on (*dd/mm/YYYY*) \_\_\_\_\_ evaluation \_\_\_\_\_

- possess the requirements stated at art. 3 letters b), c), d) e), f) of the notice 1/2017 of INGV, Sezione Roma2;

- have no prior criminal convictions and no current criminal proceedings (otherwise, please state pending proceedings and/or sentences passed, their dates and the Judicial authority who passed them)
- 
- 

- (*only for European citizens*) to be in possession of political rights;
- not to be permanently or temporarily employed at INGV;
- not to be permanently employed by other institutions referred to in art. 22, par. 1, law n. 240/2010;
- not to be enrolled in graduate courses (either at Bachelor or Master level);
- not to be enrolled in a PhD

or

- to be enrolled in the following PhD course \_\_\_\_\_ at \_\_\_\_\_ and to produce documentation attesting the suspension of the grant before the date of start of the research contract;
- to engage registration to the 33th cycle of doctoral studies at the University of Salento, of next calling for the year 2017, by the date set by the procedures of the 33th cycle of doctoral studies at the University of Salento;
- and commit to timely communication of any change in the above contact details.

I request to undergo a remote interview through videoconference system based on protocol "SKYPE with WEBCAM". To this aim, the following SKYPE address is elected:

\_\_\_\_\_ to which I commit myself to be contacted in the day and time established and communicated by the Evaluation Committee.

I attach the following separate documents:

- 1) Curriculum vitae et studiorum, in English, duly signed, compiled according to art. 6 of this call;
- 2) readable copy of passport or of a Europe-recognised ID with photo.
- 3) (continue listing all attached documents according to art. 6 of this call)

hereby agree to allow processing of my personal data according to the Legislative Decree 30.6.2003, n. 196, for the scopes of the present selection.

Date: \_\_\_\_\_

Signature: (readable) \_\_\_\_\_

NOTE:

**THE E-MAIL MUST REPORT THE FOLLOWING SUBJECT: "Selection for a Research GRANT/ ESR1 - NOTICE 1/2017-Sezione Roma2"**

**STATEMENT MADE UNDER  
ARTICLES. 46 and 47 of the D.P.R. 28 December 2000,  
n. 445**

*(only for citizens of a state member of the European Union, or for non-European citizens regularly residing in Italy and certifying documents provided by Italian public administrations -see Art. 6 of the notice n.512012)*

I the undersigned \_\_\_\_\_  
(surname) (name)  
born at \_\_\_\_\_ on \_\_\_\_\_  
(country) (nation) (dd/mm/yyyy)  
resident at \_\_\_\_\_  
(place) (country) (nation)  
in \_\_\_\_\_  
(address)

aware of the penalties in case of false statements, or using forged documents, referred to in art. 76 of Presidential Decree 445 of December 28, 2000

**DECLARE:**

- a) *(only for citizens of a state member of the European Community)* that all the information given in my application form and Curriculum vitae et studiorum are accurate;
- b) *(only if copies of documents are provided, and for the cases stated at art. 6 of the notice n. 512012)* that the copies of the following documents attached to the application form are faithful copies of the original documents:

or *(list the documents for which copies are provided)*

I declare to be informed, in accordance with and for the purposes of Art. 18 of the Legislative Decree No 196/2003, that personal data collected will be treated, even by computer, only in the proceedings for which this statement is made.

\_\_\_\_\_  
(place and date)

**Signature**  
\_\_\_\_\_

## TREASURE SHORT SUMMARY

TREASURE will provide specialist training in the **strategic and emerging area of European GNSS (EGNSS, more details below)** through a unique network of industrial, research and academic beneficiaries, with the aim to form a group of outstanding researchers who would not be able to acquire the equivalent set of skills by training at any individual European institution alone. World-class expertise on EGNSS exists in Europe, however multi-disciplinary research skills need expanding to maximise the enormous potential that there is for promotion and exploitation of this technology. TREASURE addresses that need and responds to the much desired involvement of end-users and businesses, by bringing together four top Universities, one research Institute and **four leading European companies**, with extensive track record and experience in a wide breadth of disciplines to provide coordinated research training on EGNSS for **real time high accuracy satellite navigation and positioning**.

Currently, there are two specific candidate GNSS techniques that can meet this real time demand, namely **PPP** (Precise Point Positioning) and **RTK** (Real Time Kinematic), which today work mainly based on GPS and GLONASS, the only two fully operational systems. These two techniques, corresponding algorithms, error modelling and their implementation are at the core of the research training in TREASURE. **The project will advance the state of art in this area, by improving the accuracy of these techniques (to within a few centimetres) in real time, anywhere in the world, so that they can be introduced as part of a commercial service in the future.**

### **ESR1-Individual Research Project**

**Supervisor - Giorgiana De Franceschi (INGV- Rome)**

**Co-supervisor - Claudio Cesaroni (INGV - Rome)**

**PhD Supervisor - Massimo Cafaro (UNISALENTO - Lecce)**

**Objective:** The objective of the research is to develop new models for TEC and scintillation parameters nowcasting and forecasting based on GNSS data from standard receivers (e.g. IGS network) and from regional network equipped with receivers able to monitor TEC and scintillation indices (e.g. receivers at 50 Hz sampling). TEC calibration techniques adopted and tuned to the scope will be a crucial issue as well as the proxy scintillation indices development when standard receivers will be used on global scale. The real time short term (seconds to minutes) forecasting models output will support the improvement of stochastic modelling for scintillation mitigation in PPP and RTK, enabling real time high accuracy positioning.

Collaborations and secondments are foreseen with SRC-PAS (PL) on the model development, with UNOTT (UK) involved on scintillation mitigation and with UoB (UK) involved in ionospheric tomography. SET (IT) will assist with expertise on ionospheric modelling and forecasting. UNISALENTO (IT) will host the PhD training of ESR1.

### **Expected results:**

- State of the Art on TEC and scintillation parameters forecasting models
- Real Time TEC and scintillation forecasting models development
- Assessment of the models performance in terms of precision and accuracy of the forecasted parameters
- Final version of the Real Time TEC and scintillation forecasting models

## **Deliverables**

*D1.1a Preliminary version of the real-time TEC and scintillation parameters forecasting models (including routines implementation); August 2018*

*D1.1b Final version of the real-time TEC and scintillation parameters forecasting models (including routines implementation); February 2020*

### **Planned secondments**

- *UNISALENTO, supervisor M Cafaro, Years 1-3, periodically for PhD training*
- *SRC-PAS, supervisor M Grzesiak, Year 1, 1 month, Preliminary study on the model development*
- *SET, supervisor L Spogli, Year 1, 1 month, Training on the development of scintillation models*
- *UNOTT, supervisor M Aquino and S Veetil, Year 2, 1 month, Definition of the mitigation algorithms requirements*
- *UoB, supervisor C. Mitchell, Year 2, 1 month, Interaction between the 3D ionosphere imaging by MIDAS with ionospheric forecasting*
- *SRC-PAS, supervisor M. Pozoga, Year 3, 2 months, Final development of the model*