



EUROPEAN COMMISSION
JOINT RESEARCH CENTRE

Institute for Environment and Sustainability
Land Resource Management Unit

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ANNEX I TO CONTRACT

FRAMEWORK SERVICE CONTRACT
for
GROUND BASED OBSERVATION COLLECTION (GBOC) for
COPERNICUS GLOBAL LAND PRODUCTS VALIDATION

Technical Specification

Procedure N JRC/IPR/2015/H.5/0027/OC

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1. INTRODUCTION

1.1 Objectives

The Copernicus European Earth monitoring program (formerly known as GMES, Global Monitoring for Environment and Security) has entered in an operational phase following the adoption of the Copernicus Regulation 377/2014. The Global Land component, further defined in short as “Global Land” or through the acronym GIO-GL was already earmarked as a component of the Land Monitoring Service, one of the two Services identified for operational implementation in the initial phase of GMES (2011-2013).

The purpose of this contract is to set up and operate the systematic collection and distribution of ground-based observation for validating the Earth Observation land products generated in the framework of the Global Land Component.

The services will be procured following an open procedure aimed at establishing a framework contract of four years duration (two years renewable once).

1.2 The Joint Research Centre

The Joint Research Centre (JRC) is a Directorate General (DG) of the European Commission (EC), providing independent scientific and technological support for European Union (EU) policy-making. As a European centre of scientific and technical reference covering the entire range of environmental sciences, the JRC's Institute for Environment and Sustainability (IES), one of the seven JRC scientific institutes, is given the mission of providing research-based scientific and technical support for the development and implementation of EU policies for the protection of the European and global environment. IES is a key player in delivering results of cutting-edge basic and applied environmental research to society. Due to the very nature of the environment, the IES uses its expertise and state-of-the-art research facilities to act globally in co-operation with major international organisations.

1.3 The Land Resource Management Unit

The Land Resource Management Unit (LRM) is an IES research unit. LRM deals with the development of strategies for sustainable land management. The Unit's mission is to provide information at global scale to help balance land-use options between competing demands, whilst securing long-term access to natural resources and maintaining ecosystem services requires knowledge of the human-environment system components including soil, what is on and in it, trends in land condition and management, what happens at the coastal margins and how all of these respond to changing environmental, societal and economic conditions. The services delivered by LRM to its partners, particularly to other DGs of the European Commission, are generally based on scientific commitments arising from EC legislation and involvement in international affairs (i.e. the environmental treaties). Specific tools and training services provided in this framework by LRM are linked to the conception, development and implementation of EC legislation and priorities.

2. SERVICE DESCRIPTION

2.1. Background

Environmental information is of crucial importance. It helps to understand how our planet and its climate are changing, the role played by human activities in these changes and how these will influence our daily lives. The well-being and security of future generations are more than ever dependent on everyone's actions and on the decisions being made today on environmental policies. To take the right actions, decision makers, businesses and citizens must be provided with reliable and up-to-date information on how our planet and its climate are changing.

The Copernicus European Earth monitoring program provides this information. Policy-makers and public authorities, the major users of Copernicus, use this information to prepare environmental legislation and policies with a particular focus on Climate Change, monitor their implementation and assess their effects. Copernicus also supports critical decisions that need to be made quickly during emergencies, such as when natural or man-made catastrophes and humanitarian crises occur.

Users will be provided with information through services dedicated to a systematic monitoring and forecasting of the state of the Earth's subsystems. Six thematic areas are developed: marine, land, atmosphere, emergency, security and climate change. The land monitoring service, the marine monitoring service and the atmosphere monitoring service are “vertical” services. They may also contribute to the monitoring of climate change, a horizontal service, and to the assessment of mitigation and adaptation policies. Two additional Copernicus services address respectively emergency response (e.g. floods, fires, technological accidents, humanitarian aid) and security-related aspects (e.g. maritime surveillance, border control). Copernicus services are all designed to meet common data and information requirements and have potentially a global dimension.

The “Global Land component of the GMES Land service” (GIO-GL) of the Copernicus (formerly defined as GMES) led by DG GROW of the European Commission, entered its initial operation (GIO) phase following the entry into application of Regulation (EU) N° 911/2010 of 22 September 2010 of the European Parliament and the Council on the European Earth monitoring programme (GMES) and its initial operations (2011 to 2013).

The fully operational program (2014-2020) started under the Copernicus Regulation. The Copernicus Regulation 377/2014 of the European Parliament and of the Council was published on the 3rd of April 2014 for establishing the Copernicus Programme, and repealing the 911/2010 Regulation.

The objective of Copernicus is to provide accurate and reliable information in the field of the environment and security, tailored to the needs of users and supporting other Union policies, in particular relating to the internal market, transport, environment, energy, civil protection and civil security, cooperation with third countries and humanitarian aid.

Since Copernicus is user driven, it requires the continuous, effective involvement of users, particularly regarding the definition and validation of service requirements. In order to increase the value of users, their input should be actively sought through regular consultation with end-users from the public and private sectors. For that purpose, a working group (the ‘User Forum’) has been set up to assist the Copernicus Committee with the identification of user requirements, the verification of service compliance and the coordination of public sector users.

Under the 377/2014 Regulation, a specific reference is done in Article 6.2 to the ground-based data for validating EO products:

(ii) *provision of in situ data for calibration and validation of dedicated mission observations;*
 (iii) *provision, archiving and dissemination of contributing mission data complementing dedicated mission data;*

The GBOC-GL tasks can be part of one step, among others, to facilitate users in judging the fitness-for-purpose of the GIO and Copernicus land record.

2.2. Services Requested

The scope of the present tender for the GBOC-GL service is:

- (i) the collection of existing multiple years ground-based measurements and the acquisition of future ground-based measurements, according to well-defined and accepted protocols;
- (ii) the implementation and maintenance of a database containing the observations and ancillary data, and a web-based platform for enabling the Users to access the above defined datasets and related metadata.

2.3. Collection and distribution of ground-based measurements

The service is organized in three components:

- 1) collection of multiple years' ground-based measurements, including historical time series, from existing sites;
- 2) acquisition of multiple years ground-based measurements for additional sites and;
- 3) data distribution to users in the framework of land products validation activities.

2.3.1. Ground-based measurements from existing sites.

Quality control of the main land products, such as, and between others, surface albedo, FAPAR, LAI, top of canopy spectral reflectance, fractional cover, land surface temperature and soil moisture, requests first the collection of multiple years of existing ground-based measurements which can be used for a systematic and seasonal quality control.

These multiple years of existing ground-based measurements are organized through international research networks (such as Fluxnet, TERN, ICOS, Aeronet, ROSAS, ASRVN, SCAN, BSRN, SUFRAD among others) and dedicated EO validation sites (e.g. 'BigFoot', Safari, KIT's stations, among others).

The contractor shall implement a methodology for selecting and ranking existing measurements over multiple sites, by considering:

- Statistical representativeness of the sites taking into account different climate and surface covers (including various degrees of heterogeneity);
- Minimum compliance with QA4EO standards or equivalent;
- Level of site description knowledge;
- Number and type of ground-based variables;
- Measurement(s) protocol (for each variable): instrument name, sampling scheme, etc;
- Spatial and temporal sampling and period;
- Detailed of transfer function's description or/and model from point to pixel and ancillary data such as high resolution images used for the point-to-pixel conversion (when applicable);

- Distinct uncertainties associated to raw measurement, sampling scheme and transfer function and/or model;

Following the ranking results and in agreement with contracting authority, the contractor shall undertake the collection of ground-based measurements for validation of at least five of the following variables as part of multiple years' collection: surface albedo, FAPAR, LAI, fractional cover, top of canopy (multi-)spectral reflectance, land surface temperature, soil moisture over several sites covering different climatic regions and land cover types. More details about the definition and expected properties are provided in the appendix 3.1 (Product and Service Detailed Technical Requirements).

2.3.2. Ground-based measurements from additional sites

In addition to the sites identified in the first component above, the contractor shall propose, and implement following contracting authority agreement, a number of additional sites to be installed or adapted to meet the QA4EO standards for ground-based measurements. The identification of these sites will be motivated by the need of filling gaps in the geographic coverage, the representativeness of landscape heterogeneity and climate as well as the number and type of variables collected. It should therefore derive from the analysis conducted in the Component 1. The contractor shall detail in the offer the technical specifications (i.e. accuracy, spectral resolution, angular resolution, ...) of the proposed instrumentation for equipping additional sites.

2.3.3 Data access and distribution

The contractor shall organize a coherent and unique **database** for storing and making available the ground based measurements defined and collected within Component 1 and 2. For the observations collected during the project, they have to be made available within 3 months from the measurement dates.

For each site the following information are required:

1. Name;
2. Location;
3. Description of site;
3. Responsible;
4. List of PIs;
5. Available variable and instrumentation;

For each ground-based measurement when applicable:

- 1 Ground-based measurement;
- 2 Instrument type;
- 3 Date and time in UTC format;
- 4 Measurement protocol;
- 5 Measured raw variables for each node, when applicable;
- 6 Associated uncertainties;
- 7 Transfer function and/or model from point measurements to pixel level;
- 8 Ancillary data such as high resolution images used for the point-to-pixel conversion;

The database shall be made accessible¹ for land validation through a **website** that will include:

1. A home page with a general introduction to the Copernicus initiative in general, the Global Land Component in particular, including all relevant links;
2. A global map showing the geographic location of all validation sites²;
3. A page for describing the properties of each site (as above), with a direct link to the collected measurements;
4. A query page for searching measurements in the database, and corresponding results display;
5. A clear and user-friendly description of the data organization and search/download tools
6. The result of the query on the ground-based measurements shall generate a table available in, at least, the following formats: csv, xls and xml for tabular data (measurements) and tiff for images (for upscaling).

The website shall offer INSPIRE-compliant datasets, a user registration mechanism compliant with Copernicus rules, and should demonstrate its operability under the most used browser (Chrome, Firefox, Internet Explorer). A backup of database content and a mirror website shall be delivered at contracting authority to ensure the continuity of the service.

2.4. Audit and reviews

The contractor will be asked to participate to the audit and review process applicable to the above-described activities. The contractor shall in this event ensure as appropriate the preparation and provision of the required documentation for audit and reviews. They shall participate to the audit and review meetings.

As part of the “Existing” and “Future ground-based measurement collection activities”, the contractor shall in this event and upon request of the contracting authority implement the recommendations that are identified. The contractor shall in this event report to the contracting authority on all actions taken.

2.4.1. Data and service quality monitoring

If the contractor is asked to carry out any of the activities described here above, they shall implement as part of these activities a data and service quality monitoring function that will generate regular reports on output data generated, output data distribution and anomalies.

3. ORDERING PROCESSES

Framework contracts involve no direct commitment and, in particular, do not constitute an obligation to order *per se*. Instead, they lay down the legal, financial, technical and administrative provisions governing the relationship between the contracting authority and the contractor during their period of validity.

¹ The data shall be made accessible for validation activities within Copernicus, taking into account acknowledge of data source.

² See e.g. http://aeronet.gsfc.nasa.gov/cgi-bin/type_piece_of_map_opera_v2_new?long1=-180&long2=180&lat1=-90&lat2=90&multiplier=2&what_map=4&nachal=1&formatter=0&level=3&place_code=10&place_limit=0

Ordering will be done under the framework contract that the contracting authority will sign with the winning tenderer. Actual orders are to be placed after the framework contract is signed and in force, through “specific contracts” concluded in performance of the framework contract. Contract execution is governed by the conditions of the framework contract and of the specific contracts. The specific contract form is annexed to the Contract (Annex III).

Services will be provided on the basis of specific contracts where the contracting authority (hereafter referred to as the “Specific Contracting Unit”), specifies the different tasks to be executed.

In each case the Specific Contracting process is initiated by the Specific Contracting Unit via a technical specification request sent to the contractor describing the required service split into tasks and the days required to achieve the task.

On receipt of the form the contractor must make a proposal within 10 working days to the Specific Contracting Unit for the execution of the request.

The methodology and workload proposed by the contractor may be subject to negotiation with the Specific Contracting Unit, before the final offer is agreed. Once a final offer is agreed the Specific Contracting Unit may place a Specific Contract with the contractor for all or part of the tasks described in the request for proposal.

3.1. Conditions related to Specific Contracts

The following conditions related to Specific Contracts apply:

The contracting authority issues a technical specification that sets:

- The overall purpose and structure/process/tasks of the services required;
- The specific description/requirements of each task, including where appropriate the following (non-exhaustive) items:
 - Task(s):
 - objective,
 - content or process,
 - actors involved,
 - required communication, interactions and meetings,
 - other modalities,
 - Input necessary to execute the task(s), in particular if from JRC or third parties:
 - reference,
 - specific description/ features,
 - origin/ ownership,
 - format and quantity,
 - timing,
 - dependencies,
 - Output of task(s):
 - reference and title of deliverables,
 - specific description/ features,
 - quality references,
 - format and quantity,
 - timing,
 - acceptance criteria;

- Where appropriate: what is explicitly not part of the services required;
- The specific progress reporting requirements, in particular where linked to payments.

Within 10 working days of receipt of the contracting authority technical specification the Contractor submits to the contracting authority a technical and financial offer that:

- Addresses all points of the technical specifications;
- Includes a summarising list of milestones, a timed table of deliverables and a Gantt chart;
- Describes the category and competencies of the person(s) who will manage and execute the tasks;
- Provides a workload breakdown in terms of number of person/days of work per task, split by the personnel categories set in the framework contract; the contractor will gauge the person-days carefully;
- Provides a total price, further split in the following two components:
 - Personnel: price breakdown detailed on the basis of the above workload breakdown and the personnel prices set in the framework contract;
 - Other: price breakdown on the basis of other items deemed necessary for the performance of the work.

The contracting authority will review the offer and if considered necessary negotiate the technical offer, the proposed number of person-days or the quantity/quality/price of the other items, to arrive at a final agreed offer, which the contractor will then formally submit within one calendar week.

Upon receipt of the final offer the contracting authority will send to the contractor two copies of the specific contract based on the model annexed to the framework contract. Within one week the contractor will return the two signed specific contracts to the contracting authority.

Execution of the specific contract may start upon its signature by both contracting parties. The following requirements also apply:

- Meetings on-site as a matter of principle technical meetings should be held at contractor's premises, administrative/management meetings should be held at contracting authority with members of the team will be detailed in the technical specifications. However, where it is accepted that remedial work is required to ensure acceptance of a deliverable such meetings can be requested at no additional cost to the Specific Contracting Unit. The option of having meetings via video-conference can also be considered.
- The contractor is obliged to identify the staff proposed and ensure that they have the required competencies in order to successfully fulfil the tasks set out in the technical specification. These staff must be the same as those in the original tender unless agreed to beforehand and in writing by the Commission. In the event of delays due to non-availability of staff and the lack of a suitable replacement identified and accepted within one month liquidated damages may be applied:
- The contractor shall provide all necessary infrastructures on his premises for the successful execution of the work.

- When agreement has been reached, a Specific Contract is signed by both parties. Only agreed costs for the specified tasks will be chargeable.
- A guarantee (see section 8) applies to the results of all tasks accepted by the Specific Contracting Unit.
- Additional specific conditions and details are given in section 6.

4. DELIVERY FOR SPECIFIC CONTRACTS

4.1. Language

The quality of all deliverables shall be equivalent to the standard of peer-reviewed publications.

All reports, documents, minutes and general communication shall be in the English language unless otherwise agreed mutually by the contracting authority and the contractor.

Unless otherwise specified in the specific contract deliverables shall be made available to the contracting authority in electronic format.

4.2. Meetings

4.2.1. Kick-off meeting

The framework contract kick-off meeting shall be held within 3 weeks of contract signature and is to secure from the outset a fully shared understanding of the framework contract and expectations and to clarify any doubt/issue between contractor and the contracting authority staff. At the same time, specifications and procedural issues are discussed to render the project workflow and communication as clear and efficient as possible.

The framework contract kick-off will take place at the Ispra site in Italy. The language of the meeting shall be English. The contractor is responsible for their own travel and participation costs and for providing the draft minutes within two weeks of the meeting for contracting authority approval.

Where there is a need kick-off meetings may be required for specific contracts and if so shall be detailed in the technical specifications. As above travel and subsistence costs shall be borne by the contractor.

4.2.2. Other meetings

Other meetings if required will be specified in the specific contracts (e. g. audit and review meetings).

Where needed, the contracting authority retains the right to request a meeting at a venue and date that will be mutually agreed at any time during the contract. The contracting authority and the contractor shall pay their own travel and subsistence costs respectively.

In case issues between contractor and data provider cannot be solved through phone or video conference, short visits at the contractor's premises may be required.

4.2.3. Meeting modalities

Unless otherwise specified in the specific contracts the Contractor shall be responsible for providing, for prior contracting authority's approval:

- The draft agenda four weeks before the meeting;
- The draft minutes two weeks after the meeting.
- Unless otherwise specified the language of the meeting, agenda and minutes shall be English.

4.3. Place of Work

The execution of the contract will normally be performed at the Contractor's premises. Project meetings are typically held on the Ispra site and formal delivery of deliverables is also to be made at Ispra. Travel costs to Ispra are not reimbursed and must be included in the offered prices. The contractor shall provide all deliverables in the form and format specified in the technical specifications and shall guarantee their integration into the target computer systems. In the exceptional case of *intra-muros* work on a task, the work will be executed on the Ispra site.

4.4. Acceptance of Work

Acceptance of work carried out under a specific contract will take place at milestones during and at the end of the execution of each specific contract.

The minimum requirements for acceptance of a deliverable resulting from the completion of a task or sub-task shall be defined in the agreed technical specifications and the subsequent Specific Contract.

5. ROADMAP FOR SPECIFIC CONTRACTS

5.1. Step 1: Preparation and sending of the technical specification

What	<p>Specific Contracting Unit prepares the requirements/specifications.</p> <p>Specific Contracting Unit specifies a date for receiving a proposal from the contractor. This is normally 10 working days from the date that the specification is sent to the contractor: the “Proposal date”, unless the contractor explicitly asks for an extension when acknowledging receipt of the technical specifications.</p> <p>Specific Contracting Unit completes the technical specification specifying the requirements, task and sub-tasks to be undertaken, and a “Proposal date”</p> <p>Specific Contracting Unit sends the specifications to the contractor via email. The date on which the Specific Contracting Unit sends the specifications form is referred to as the “Technical Specification Date”.</p>
Parties involved	Specific Contracting Unit
Result	Requirements including task & sub-tasks

	<p>“Proposal date” is fixed</p> <p>Technical specification form is sent</p>
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5.2. Step 2: Confirmation of request and sending of the proposal

What	<p>The contractor receives the specification and acknowledges reception via email, within 2 working days of the “Request date”.</p> <p>In the event of the contractor requesting an extension to the “Proposal Date”, the new date must be agreed by both parties via email.</p> <p>If the contractor is unable to complete a proposal by the agreed proposal date they may also request a single extension to the Proposal Date by email at any time before the proposal date.</p> <p>The contractor prepares and sends a proposal to Specific Contracting Unit via email, by the agreed “Proposal Date”.</p>
Parties involved	<p>Contractor</p> <p>Specific Contracting Unit</p>
Result	<p>Request form is acknowledged</p> <p>Proposal is submitted to Specific Contracting Unit by the “Proposal date”</p>

5.3. Step 3: Negotiation and acceptance of the proposal;

What	<p>Specific Contracting Unit receives the proposal.</p> <p>Specific Contracting Unit informs the contractor within 5 working days that the proposal is acceptable, or requests modifications to the proposal methodology or workload.</p> <p>On receipt of a request for modifications, the contractor has a further 5 working days to propose the modifications.</p> <p>Repeated requests for modifications are possible, each with a 5 working day time limit for Specific Contracting Unit to request them and a further 5 days for the contractor to respond.</p> <p>At the end of the negotiation period Specific Contracting Unit must either accept or reject the offer in writing.</p> <p>Specific Contracting Unit sends the final Request for Service to the contractor via email. This Request for Service will constitute annex B to</p>
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	the specific contract.
Parties involved	Contractor Specific Contracting Unit
Result	Proposal form is rejected Proposal is accepted
Fault	Proposal is rejected and the procedure is ended

5.4. Step 4: Specific Tender

What	Within 10 working days of receiving the Request for Service the contractor sends the Specific Contracting Unit a Specific Tender in conformity with the Request for Service and the final accepted proposal. This Specific Tender will constitute annex C to the Specific Contract.
Parties involved	Contractor Specific Contracting Unit
Result	Specific Tender is accepted
Fault	The contractor does not send the Specific Tender on time Specific Contracting Unit may on request either extend the delay or end the procedure.

5.5. Step 5: Establishment of the Specific Contract

What	<p>The Specific Contract is established based on the technical specification and the Specific Tender.</p> <p>The administrative service of the Specific Contracting Unit sends the Specific Contract to the contractor for signature. Within 10 working days the contractor returns the Specific Contract duly signed and dated.</p> <p>The administrative service of Specific Contracting Unit returns to the contractor one original of the Specific Contract duly signed and dated.</p>
Parties involved	Contractor Administrative Service of the Specific Contracting Unit

Result	Specific Contract is signed
Fault	Specific Contract is not signed, the procedure is ended.

5.6. Step 6: Execution of the Specific Contract

What	The tasks and sub-tasks covered by the Specific Contract are executed by the contractor
Parties involved	Contractor Specific Contracting Unit
Result	Successful completion of the tasks & sub-tasks
Fault	Tasks and sub-tasks are not successfully completed and relevant Articles of contract may apply (Article II.12 etc.)

5.7. Step 7: Acceptance

What	Acceptance of all tasks and sub-tasks is based on their conformity to the acceptance criteria (see section 4.4) in the Specific Contract.
Parties involved	Contractor Specific Contracting Unit
Result	Accepted tasks & sub-tasks are paid by Specific Contracting Unit after receipt of the Contractors invoices.
Fault	Tasks and sub-tasks are delivered that do not conform to the acceptance criteria and relevant articles of contract may apply (Articles II.12, II.16 etc.)

6. REPORTING

For each specific contract under the framework, the following reporting shall be done.

6.1. Progress emails

Progress emails are a brief, monthly summary of working progress under a specific contract to be sent by the contractor to the Specific Contracting Unit. These emails must include: status of the deliverables for each task and sub-task; activities and meetings with dates; involved experts

and stakeholders; administrative issues, current progress in relation to Specific Contract and proposed adjustments to the work plan. They permit the Specific Contracting Unit to stay informed about the status of each task and if necessary direct them towards the requested deliverables.

6.2. Interim technical report

An interim technical report is to be provided at the completion of every task or group of tasks within a Specific Contract that on completion can be invoiced by the contractor.

The interim technical report will document the course of a Specific Contract, including organisational and administrative issues. It will consist of the monthly progress emails which are to be combined into one text providing the chronological course of the project activities and achievements. It shall include a brief description of the completed tasks and sub-tasks against the timetable together with any problems encountered. It shall also cover the delivery and installation of the deliverables, and all information on the acceptance tests necessary to enable the Specific Contracting Unit to accept the tasks and sub-tasks as being completed.

The interim technical report together with foreseen deliverables will serve to decide whether the project's initial objectives have been achieved in line with the Specific Contract, including possible adjustments and amendments made, as well as an outlook on the remainder of the Contract. Together with the foreseen deliverables the interim technical report will form the basis for any interim payment.

6.3. Final technical report

The final technical report documents the entire course of the project, including organisational and administrative issues. It consists of an executive summary using non-technical language, and targeting upper level management, a short summary chapter, an adjusted project work-flow chart of the completed tasks and deliverables of the Specific Contract and final timing together with the interim reports as annexes.

The executive summary is to be written using non-technical language, targeting upper level management. It provides a brief description of the Specific Contract, summarises both the final technical report and the scientific and technical deliverables and includes an assessment of the expected benefits of the work undertaken within the Specific Contract together with future recommendations.

The final technical report is - together with all completed deliverables - the basis for the final payment of the project.

6.4. Specific reporting requirements

Specific reporting requirements for may include:

- Number of sites and number of variables per site
- Time coverage for each measured variable
- Service availability: number of on-time deliveries
- Availability of data distribution service (web-based portal)
- Uptake of the ground-based measurements by users: number of access and downloads, number of contacts – requests received by the user service
- Report on internal quality control procedure and results.

6.5. Mandatory information

All reports shall include the following mandatory information:

- Contractor
- Contract number
- Nature of the report (e.g. 1st interim technical report)
- Subject
- Name of the author, review list authors, acceptance and original signature.

The contracting authority retains the right to ask for evidence of reported progress and/ or for further information.

7. OTHER GENERAL MODALITIES AND RESPONSIBILITIES

The contracting authority will provide a formal technical contact person upon signature of the contract to whom all technical requests in relation to this contract during the implementation phase will be addressed.

Emails with confirmation of receipt are the required form of communication by the contractor for specific questions. Telephone meetings and/or video conferencing are also encouraged.

7.1. Audits and Review Meetings

The contractor shall declare their commitment to participate to audit and review meetings and to provide any relevant information for the completion of these activities.

7.2. Occupational Health and Safety

As a result of Italian law³ the JRC is obliged to take account of safety risks in all its contracts subject to Italian law or to contracts for works or services that are to be carried out on the Ispra site in an explicit manner.

The nature of the contractor's very occasional tasks on the JRC Ispra site is purely intellectual (meetings); no interferential or safety risks are identified.

8. GUARANTEE

8.1. General

All results of a Specific Contract come with a one year guarantee, starting from the day of written acceptance of the result by the contracting authority. The contractor shall repair and/or replace/amend, free of charge, any part of a result that is proven to be defective during the guarantee period. The defect will be repaired according to sections 8.2.2 and 8.3.2 within 1 month of the notification from the contracting authority confirmed by e-mail or fax, unless the

³ DECRETO LEGISLATIVO 9 aprile 2008 n.81 (in Suppl. ordinario n. 108 alla Gazz. Uff., 30 aprile, n. 101).- Attuazione dell'articolo 1 della legge 3 agosto 2007, n. 123, in materia di tutela della salute e della sicurezza nei luoghi di lavoro

contractor and the Specific Contracting Unit agree an alternative time limit. Beyond this limit liquidated damages become payable under II.12 of the contract.

8.2. Specific guarantee concerning web-based portal

8.2.1. Definition of defects (non-exclusive)

Concerning modifications to source codes of web-based interface of the database, the following situations are regarded as a defect (but is not considered as an exclusive list).

1. The system is found to be unable to run a particular platform on which both contracting authority and contractor agree that its proper functioning is implied by the agreed technical specifications.

8.2.2. Repair of defects

Defects as described in section Definition of defects 8.2.1 shall be repaired by contractor by:

1. providing a modification of the code;
2. insertion of the modification to the code's versioning system;
3. updating the code's documentation.

8.3. Specific guarantee concerning data

8.3.1. Definition of defects (non-exclusive)

Concerning data to be produced by the contractor the following situations are regarded as a defect.

1. Data is found to suffer from defects through the internal quality control process of the contractor.
2. Data is found to be provided in a format not following the specifications in the Specific Contract.
3. Data is found to contain unrealistic values on which both contracting authority and contractor agree that these would have been corrected if observed before the release of the data.

8.3.2. Repair of defects

Defects as described in section 8.3.1 shall be repaired by contractor by:

1. providing an update of the data;
2. assigning a unique identification to the new data set;
3. informing users of the data about the update;
4. updating the data's documentation.

9. ANNEX 1: ACRONYMS

AERONET: Aerosol Robotic Network

ASRVN: AERONET-based Surface Reflectance Validation Network

BSRN: Baseline Surface Radiation Network

CEOS: Committee on Earth Observation Satellites

ECSS: European Cooperation for Space Standardization

ECV: Essential Climate Variables

EO: Earth Observation

FAPAR: fraction of absorbed photo-synthetically active radiation.

FIPAR: fraction of intercepted photo-synthetically active radiation.

Fcover: fractional cover.

FP7: 7th Framework Programme of the European Community for research, technological development and demonstration activities

G-BOC: Ground-Based Observations Collection GCOS: Global Climate Observing System

GTOS: Global Terrestrial Observing System

GEO: Group on Earth Observations

Geoland2: a FP7 project to demonstrate in pre-operational mode the GMES land service

GEOSS: Global Earth Observation System of Systems

GIO: GMES Initial Operations

GMES: Global Monitoring for Environment and Security

HW: hardware

ICOS: Integrated Carbon Observation System

KIT: Karlsruhe Institute of Technology

JRC: DG Joint Research Centre, European Commission

LAI: leaf area index

LRM: Land Resource Monitoring Unit, JRC

PROBA-V: a BELSPO-ESA contributing mission aimed at serving as gap-filler between the end of the SPOT-VEGETATION mission and the joint operation of Sentinel 3a and 3b.

QA4EO: A Quality Assurance Framework for Earth Observation (GEO/CEOS)

ROSAS: Robotic Station for Atmosphere and Surface

Sentinel 2: two future ESA satellites (2a and 2b) embarking two high resolution Earth Observation instruments each

Sentinel 3: two future ESA satellites (3a and 3b) embarking two medium resolution Earth Observation instruments each

SCAN: Soil Climate Analysis Network

SURFRAD: Surface Radiation Network

SW: software

TBC: To Be Confirmed

TBD: To Be Defined

TERN: Terrestrial Ecosystem Research Network

Validation: The process of assessing, by independent means, the quality of the data output data derived from the system outputs (CEOS)

VEGETATION: a joint programme of France, Belgium, Sweden, Italy and to European Commission that operates a low resolution Earth Observation instrument on board the satellites SPOT 4 and SPOT5

10. ANNEX 2: QA4EO

The Quality Assurance Framework for Earth Observation (QA4EO; <http://QA4EO.org/>) was established and endorsed by the Committee on Earth Observation Satellites (CEOS; <http://ceos.org/>) as a direct response to a call from the Group on Earth Observations (GEO; (<http://earthobservations.org/>)). GEO had identified the requirement to establish an internationally harmonized Quality Assurance (QA) strategy to enable interoperability and quality assessment “at face value” of EO data. QA4EO encompasses a framework and set of ten key guidelines, derived from best practices and with example templates included to aid implementation. Each GEO stakeholder community is responsible for its own overall governance within the framework. QA4EO provides guidance to enable individual organisations to document, in a consistent manner, the necessary evidence of compliance, thereby allowing those commissioning the work to assess its adequacy and “fitness for purpose”.

11. ANNEX 3: LIST OF RELEVANT DOCUMENTS/LINKS
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ECV 11: LAI: assessment report on available methodological standards and guides, 1 Nov 2009, GTOS-66.
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11. GEO Work Plan 2012-2015 – revision 1, 11 Dec. 2011.
http://www.earthobservations.org/documents/work%20plan/GEO%202012-2015%20Work%20Plan_Rev1.pdf
12. GIO Work Programme 2012 - European Earth monitoring programme (GMES) and its

initial operations (2011 – 2013). European Commission C(2011)8027 of 11 November 2011.

http://ec.europa.eu/enterprise/policies/space/files/gmes/gio_wp2012_final_en.pdf

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14. GMES Space Component Data Access Portfolio: Data Warehouse 2011-2014 (ESA – GMES-PMAN-EOPG-TN-11-0006). http://gmesdata.esa.int/web/gsc/data_access
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