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ConnectinGEO

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Coordinating an Observation Network of Networks EnCompassing saTellite and IN-situ
to fill the Gaps in European Observations

Deliverable D1.1

Project Advisory Board composition and communication channels

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0.3	09-05-2015	IS_CREAF	Reviewing the final content

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1. Introduction

The management structure has 4 different boards: **Project Management Board (PMB)** that is composed by the project core team and the coordinator, the **Project Technical Board (PTB)** that includes all partners, a **Project Advisory Board (PAB)** that is a panel composed by several external that have interests in the project goals and advises on the interpretation and following the evolutions of the SDGs and the scientific discussion around the planetary boundaries (chaired by two project participants), and the **European Network of Earth Observation Networks (ENEON)** open to contributors and users of different actors listed in the Section **European Network of Earth Observation Networks (ENEON)**. The ENEON ensures that ConnectinGEO internal work and debate on future observational needs is extended to a broader audience.

The Project Advisory Board consists is composed by experts on the GEOSS Strategic Targets, the SDGs, and the planetary boundaries and SBA Task representatives from a range of public and private bodies. The PAB was set up by the PTB to provide it with input and advice. The PTB, assisted by the PMB, will have the responsibility for communicating with the PAB, sending regular email updates on progress. Funding has been requested to support the attendance of a subset of PAB members to develop the WP2 of the project. To save costs the PTB will plan the days close to relevant organization meetings (GEO plenaries and workshops, OGC, ISO, EGU, etc). Also remote meetings with a forum in which PAB members can provide their comments to the project team and with personal ad-hoc advice can be set up if required.

This deliverable exposes the current status of the PAB and possible collaborations with three relevant projects: ENVRI PLUS, BACI and GAIA-CLIM concreted in some MoU requests.

2. Current composition

Table 10 of the DoA contains the first draft of what was planed as the PAB composition. After further consultation with them and other candidates, the PAB is finally formed by:

1. IRENA Global Atlas for Renewable Energy. International Renewable Energy Agency. Nicolas Fichaux (NFichaux@irena.org)

The Global Atlas for Renewable Energy is an initiative coordinated by IRENA, aimed at closing the gap between nations having access to the necessary datasets, expertise and financial support to evaluate their national renewable energy potential, and those countries lacking such elements.

<http://globalatlas.irena.org/default.aspx>

2. Krotto Research Institute - SoilTrEC FP7 (involved in GEO/GEOSS-related activities and in the international network of Critical Zone Observatories). Steve A Banwart (s.a.banwart@sheffield.ac.uk)

The crucial challenge for the SoilTrEC project is to understand the rates of processes that dictate soil mass stocks and their function within Earth's Critical Zone (CZ). The CZ is the

environment that extends from the top of the tree canopy to the bottom of our drinking water aquifers; where terrestrial life flourishes and feeds most of humanity. The heart of the CZ is where soils are formed, degrade and provide their essential eco-services. Whilst our understanding of the CZ has increased over the last 100 years, further advance requires scientists to cross disciplines and scales to integrate understanding of processes in the CZ, ranging from the nano to the global-scale.

<http://www.soiltrec.eu/index.html>

3. Red Nacional de Observación de la Tierra (RNOT). Spanish Association of Remote Sensing. José Sobrino (Jose.Sobrino@uv.es)

The Spanish National Network for Earth Observation (RNOT) aims to create a link and expand communication between national public research centers working in the area of remote sensing and national companies active in the aerospace sector Observer earth, in order to promote the Science-Technology-society (STS) through conciliation between results of basic research (own research centers) and real applications in different sectors of society (own companies belonging to sector).

In particular, this network intends to:

- Promote the development of remote sensing applied to real problems in various sectors of society.
- Establishing fluid communication between researchers and business sector, so that both groups benefit and complementarity.
- Promote the employment of young researchers who wish to develop a career in the business sector.

<http://rnot.org.es>

4. IFREMER. Patrick FARCY (Patrick.Farcy@ifremer.fr)

Ifremer works in a network with the French scientific community, but also in collaboration with partner organisations in numerous other countries. This cooperation is centred on large international programmes, on French overseas regions and targeted countries (United States, Canada, Japan, China, Australia, Russia), and on Mediterranean policy-forming partnerships between Europe and countries of the southern Mediterranean coast.

<http://wwz.ifremer.fr/>

5. German Federal Institute of Hydrology (BfG). Head, Global Runoff Data Centre (GRDC). Ulrich Looser (Looser@bafg.de)

Within the federal system of Germany, responsibilities for waters are divided between national authorities and those of the federal states, the Länder. As a scientific institution ranking as a supreme federal agency, the BfG is responsible for the German waterways in federal ownership. In this position it has a central mediating and integrating function.

GRDC operates specialised databases assembled for projects both on regional and global scale like the European Water Archive (EWA) of the Northern European FRIEND initiative of UNESCO-IHP, or the Arctic Runoff Database to support the ACSYS/ClIC project of

WMO-HWRP. Through its contribution to the Global Terrestrial Network of Hydrology (GTN-H), GRDC is linked to GEOSS, the Global Earth Observation System of Systems.

<http://www.bafg.de/GRDC>

6. JRC. GEOGLAM. DGAGRI. Guido LEMOINE (guido.lemoine@jrc.ec.europa.eu) and Olivier Leo (olivier.leo@jrc.ec.europa.eu)

GEOGLAM is the Group on Earth Observations Global Agricultural Monitoring Initiative. It was initially launched by the Group of Twenty (G20) Agriculture Ministers in June 2011, in Paris. The G20 Ministerial Declaration states that GEOGLAM "will strengthen global agricultural monitoring by improving the use of remote sensing tools for crop production projections and weather forecasting". By providing coordinated Earth observations from satellites and integrating them with ground-based and other in-situ measurements, the initiative will contribute to generating reliable, accurate, timely and sustained crop monitoring information and yield forecasts.

The main objective of GEOGLAM is to reinforce the international community's capacity to produce and disseminate relevant, timely and accurate forecasts of agricultural production at national, regional, and global scales by using Earth Observation data.

<https://www.earthobservations.org/geoglam.php>

7. CINERGI | EarthCube. Ilya Zaslavsky (zaslavsk@sdsc.edu)

The goal of CINERGI is to compile a single inventory of available information across domains, developing mechanisms to ensure that different resources have consistent and easy-to-interpret descriptions, traceable origins, and documentation that is as complete as possible. The scope includes datasets commonly catalogued by many organizations, as well as documentation for catalogs, vocabularies, data services, process models, repositories, etc. This inventory will help researchers answer both relatively simple and complex queries - in the latter case possibly requiring several iterations and a link to a domain data catalog for additional search options.

<http://earthcube.org/group/cinergi>

8. ICOS. Marjut T Kaukolehto (marjut.kaukolehto@helsinki.fi)

ICOS RI is a pan-European research infrastructure which provides harmonized and high precision scientific data on carbon cycle and greenhouse gas budget and perturbations. ICOS data is openly available at the carbon portal.

The backbones of ICOS RI are the national networks consisting of atmospheric and ecosystem stations across Europe and marine stations covering North Atlantic and European marginal seas. Initially there will be more than 90 ICOS RI stations. The ICOS National Networks will gradually extend as more stations are integrated into ICOS RI.

<https://www.icos-ri.eu>

9. AEMET (Spanish Meteorological Agency and GEO Spain representative). José María Marcos Espinosa (jmarcose@aemet.es)

10.Center for International Earth Science Information Network (CIESIN). Greg Yetman (gyetman@ciesin.columbia.edu) and Robert S. Chen (bchen@ciesin.columbia.edu)

The Center for International Earth Science Information Network (CIESIN) is a center within the Earth Institute at Columbia University. CIESIN works at the intersection of the social, natural, and information sciences, and specializes in on-line data and information management, spatial data integration and training, and interdisciplinary research related to human interactions in the environment.

CIESIN's mission is to provide access to and enhance the use of information worldwide, advancing understanding of human interactions in the environment and serving the needs of science and public and private decision making.

<http://www.ciesin.org/aboutus.html>

3. Some recommendations from the current PAB

On February 19th, 2015 a ENEON & PAB Workshop took place. The agenda of this event was:

<u>When</u>	<u>Who</u>	<u>What</u>	<u>Presentations</u>
09:00_9:30	Introduction		
	Coordinator (Ivette Serral & Joan Masó)	ENEON	What is ENEON
09:30_11:30	PAB presentations and ENEON	Questions to share with the others: 1/Brief introduction about you and the network you are representing 2/How is your network managed? 3/How do you think your network can better contribute to ENEON? 4/Any suggestion or recommendation regarding EO networks 5/ Any other topic you may consider relevant in ENEON	
	Steve A Banwart	Kroto Research Institute - SoilTrEC FP7	Critical Zone Observatories Network
	Guido Lemoine	JRC, GEOGLAM	GEOGLAM Network
	Ilya Zaslavsky	CINERGI EarthCube	CINERGI EarthCube
	Ulrich Looser	Federal Institute of Hydrology (BfG). Head. Global Runoff Data Centre (GRDC). IN-01-C1 GEO task. DE	Global Runoff Data Centre

	Greg Yetman	Associate director for geospatial applications at Center for International Earth Science Information Network (CIESIN), GEO Data Sharing Group. USA	CIESIN
	Marjut Kaukolehto	ICOS. Finland	ICOS
	Jose Antonio Sobrino	Spanish Association of Remote Sensing (RNOT). Links the project with the National Remote Sensing Network	RNOT
	José María Marcos Espinosa	Spanish Meteorological Agency (AEMET). Links the project with Spain's GEO Group and the meteorological community	GEO Spain
	All	Discussion	
11:30_12:00	Coffee break		
12:00_13:30	Next workshops preparations		
	TIWAH	WS1 Sustainable Development Goals (M02), USA	
	CREAF	WS2 ENEON Plenary workshop (M04), Barcelona	
	CMCC	WS3 Co-located Essential Variables (M07), Italy	
13:30_13:45	Conclusions and final remarks		

3.1. Recommendations from the current PAB to the ConnectinGEO

Some PAB gave first recommendations to ConnectinGEO and ENEON during the Kick-off meeting in Barcelona (19th February 2015).

3.1.1. Spatial Information Systems Lab San Diego Supercomputer Center University of California San Diego (Ilya Zaslavsky)

- Potential contributions:
 - CINERGI metadata pipeline, and assembled inventories
 - Catalogs of environmental models
 - Interfacing with CZO and water data observation networks
 - Online survey analysis (dissemination?)
- Suggestions
 - Make explicit information models for each participating observation network
 - Map them to a common framework (O&M)
 - Examine mapping results and gaps

- EVs (WP2) is very interesting. What are applicability limits?
 - Develop precise semantics for EVs, formal descriptions, write existing ontologies in each SBA
 - A system of EV monitoring and feedback (information feedback is critical)
- WP4: observations inventory
 - Metadata schemas, information models, semantic frameworks used by EONs
 - Extending observation metadata collaboratively: use case-driven
 - Look at ODM2 as an example of an observations database (also, EDM?)
 - Dealing with sensor data, samples, etc; observation IDs
 - Composable and flexible observation systems: need to figure out functional components of EONs, and define composability rules and patterns
 - URR: schema? API? Curation? Integration with other components?
 - Curation approaches to observations inventory
- WP5
 - How would you approach patterns of alignment or conflict among stakeholders within several themes
 - List of stakeholders, their interests, strategies, collaboration history
 - Document different approaches and semantics
 - Sensitivity of DAB to metadata quality, under different SBA scenarios
- WP6: detecting gaps in:
 - Information needed to make informed decisions; capability/technology/tools; observations
 - But also – in processes and composability gaps (i.e. integrate with key statements from other WPs such as WP4)
 - Related to EC work

3.2. Recommendations from the current PAB to the ENEON

Some PAB gave first recommendations to ConnectinGEO and ENEON during the Kick-off meeting in Barcelona (19th February 2015).

3.2.1. Spatial Information Systems Lab San Diego Supercomputer Center University of California San Diego (Ilya Zaslavsky)

- Earlier attempts (eg FEON); NEON, OOI; EarthCube CDF – may want to see what worked
- Assessment: schema and principles? data gaps with respect to “true availability” – but it would be also interesting to assess them write interoperability (What is “interoperability ROI”? cp “EC interoperability readiness”, other maturity models

3.2.2. ICOS (Marjut Kaukolehto, ICOS RI Head Office)

- Work together with the ICOS RI Carbon Portal
 - Elaborated data products
 - Work together to find models that translate the observations into practice-relevant knowledge
- Data policy issues important → start early
 - Everything is boiling down to the data policies
 - Especial role of industry

- ENVRIPLUS –project (keep an eye, common benefits)
 - funded by the EC with 15Meur for four years
 - cluster of research infrastructures for Environmental and Earth System sciences
 - 37 beneficiaries representing 21 environmental research infrastructures.
 - Coordination team: Werner Kutsch, Director General of ICOS RI
- Comprehensive measurement sites, co-location, CZEN (keep an eye, common benefits, work together)
- ICOS RI – ConnectinGEO (keep an eye, common benefits, work together)

3.2.3. GEOSpain (José María Marcos, AEMET)

- Don't forget in situ EO systems!
- National GEO Groups & Strategies might be relevant ENEON building blocks
- Not only R&D issues: Governance & Policy issues

3.2.4. JRC and the GEOCLAM network (Guido Lemoine)

- Interaction with the Copernicus programme [both infrastructure and services] is required (overlapping scope, future needs for observation, etc)
- Relevant expertise is already with external actors (e.g. Copernicus services). How will ENEON entice their inputs?
- ENEON needs to keep track of/integrate innovative EO use based on “free and open” data-driven initiatives outside the network of networks... [long term sustainability]
- ENEON must address implementation issues as well (e.g. academia vs. industry, centralized vs. collaborative, capacity building)

4. New contacts

4.1. ENVRI PLUS

One of the recommendations of the PAB was to be in contact with the ENVRI PLUS project as some common objectives were shared. During the EGU General Assembly 2015, connections were established and ConnectinGEO was participating in the ENVRI PLUS kick-off meeting in Helsinki (11-13 May 2015). There were identified some points of collaboration. A MoU between ConnectinGEO and ENVRI PLUS will be established in order to better state this collaboration.

The extensive work on in-situ networking in ENVRI PLUS is in the scope of ConnectinGEO so we are proposing to sign a MoU with ENVRI PLUS.

The proposal draft in Annex I has been send to ENVRI PLUS and also some indications on the concrete content in section 1.3. The proposed text for this section will contain aspects related to:

- Coordinate participation in GEO events and GEO in-situ working groups
- ENVRI PLUS will collaborate in the creation of ENEON
- ENVRI PLUS will provide its member contributions to the gap analysis and priorities in ConnectinGEO

- ConnectinGEO will help ENVRI PLUS in a better integration of in-situ data in GEOSS.

We are waiting for a response from the ENVRI PLUS consortium. In the meantime some of the ENVRI PLUS in-situ networks will be invited to the ENEON plenary workshop to be held in Paris (21-22 September) to strengthen the collaboration between the two projects.

4.2. BACI

The BACI project (Towards a Biosphere Atmosphere Change Index) (<http://baci-h2020.eu/index.php>) has the goals of:

- Supporting latest efforts towards generating “Essential Ecosystem Variables” (EEVs: exploring the intersection of Essential Climate Variables and Essential Biodiversity Variables) by developing novel downstream data products that are not directly observable from space. We rely on the integration of ground observations using machine learning methods only.
- Detection of hotspots of change of the terrestrial biosphere and attribution to fundamental environmental and societal transformations
- Assessing the impacts of terrestrial transformations on biodiversity patterns.

The work on ECV, EBV and EEV in BACI is in the scope of ConnectinGEO so we are proposing to sign a MoU with BACI.

The proposal draft in Annex I has been send to BACI and also some indications on the concrete content in section 1.3. The proposed text for this section will contain aspects related to:

- Supporting latest efforts towards generating Essential Ecosystem Variables; (EEVs: exploring the intersection of Essential Climate Variables and Essential Biodiversity Variables) in particular in the definition of the observables from space.
- BACI will provide its member contributions to the gap analysis and priorities in ConnectinGEO in particular in the remote sensing arena.

We are waiting for a response from the BACI consortium

4.3. GAIA-CLIM

GAIA-CLIM project (Gap Analysis for Integrated Atmospheric ECV CLImate Monitoring). One of the objectives of the project is to map in geographical space, and in terms of temporal congruence with EO measurements current and known future ground-based and sub-orbital capabilities into the system of systems framework for several of those atmospheric, oceanic and terrestrial GCOS ECVs that are measured from space.

The work on ECV in GAIA-CLIM is in the scope of ConnectinGEO so we are proposing to sign a MoU with GAIA-CLIM.

The proposal draft in Annex I has been send to GAIA-CLIM and also some indications on the concrete content in section 1.3. The proposed text for this section will contain aspects related to:

- Supporting latest efforts towards generating Essential Climatic Variables in particular in the definition of the observables from space.

- GAIA-CLIM will provide its member contributions to the gap analysis and priorities in ConnectinGEO in particular in the remote sensing arena.

We are waiting for a response from the BACI consortium

[Annex I - Memorandum of Understanding]

1. Introduction

[project acronym], short for [project name], is a [Institution name] coordinated H2020 collaborative project (Grant Agreement no: [project id]) under the [Name of the program]. E.g. Cooperation Work Programme 2012: Environment (including climate change).

Additional information regarding [project acronym] can be found at [project website]

ConnectinGEO stands for "Coordinating an Observation Network of Networks EnCompassing saTellite and IN-situ to fill the Gaps in European Observations" and is a CREA coordinated H2020 coordinate and support action project (Grant Agreement no: 641538) under the Work Programme 2014 – 2015. Societal Challenge 5, Climate action, environment, resource efficiency and raw materials.

Additional information regarding ConnectinGEO can be found at <http://www.connectingeo.net/>

“MoU” is the present Memorandum of Understanding.

1.1 Purpose

This document provides a Memorandum of Understanding (MoU) between the ConnectinGEO and the [project acronym] projects. The main aims of the document are:

- to document the objectives and expected benefits for the [project acronym] and ConnectinGEO projects from establishing a collaboration;
- to identify the key individuals in [project acronym] and in ConnectinGEO who will take responsibility for achieving the benefits described in MoU.

1.2 Main Objectives of the Collaborating Projects

1.2.1 The main objectives of the ConnectinGEO project are as follows:

- Enable a European Network of Earth Observation Networks (ENEON) including space-based, airborne and in-situ observations networks with the goal of enhancing the use of Earth observations for assessments, forecasts, and predictions of GEOSS SBA topics and Copernicus services; the emphasis will be on climate, natural resources and raw materials.
- Provide a methodology to convert the knowledge needs in the GEO SBAs derived from GEOSS Strategic Targets , the analysis of Copernicus services and the emerging SDGs into a coherent observation and measurement compendium for ENEON strategy and development.
- Apply the ConnectinGEO methodology to identify and assess the priority of gaps. The gaps in the information provided by current observation systems as well as the

gaps in the systems themselves will be derived from five different threads. 1: Identification of a collection of observation requirements and specifications, 2: international programs requirements, 3: A consultation process in the current EO networks, 4: A careful analysis of the observations and measurements that are currently in GEOSS Discovery and Access Broker, 5: A series of real industry-driven challenges.

- Open the results of the project and exploit them beyond the project end.

1.2.2 The main objectives of [project acronym] are the following:

- [first objective]
- [second objective]
- [...]

1.3 Specific Benefits to [project acronym] and ConnectinGEO in establishing a collaboration

In general, both projects may benefit from the collaboration by exchanging their experience and knowledge on different aspects, including requirements, technological approaches and results. The direct interface established through this MoU will benefit both projects in this. The collaboration will as well benefit both projects in:

- providing access to each other's projects' results including documentation, data and models for as far as agreed by the relevant partners and in line with the project's consortium agreement;
- the opportunity to follow closely each other's projects' implementation progress and as such being able to react promptly to new project developments.
- Having one participant of a project in the project advisory board of the other project.

Amongst other, ConnectinGEO will have benefits by:

- [e.g. having access to the network of partners in [project acronym] as part of the ENEON foundational partners.]
- [e.g. having visibility of the achievements of [project acronym] in terms of authentication functionalities in the GEOSS framework. In particular collaborate in the single sign on integration for the User Feedback System that ConnectinGEO is developing.]

Amongst other, [project acronym] will have benefits by:

- [e.g. having access to the expertise developed by the ConnectinGEO team in respect of data quality issues in GEOSS and particularly the Producer Quality Model and the User Feedback Model as well as quality visualization techniques;]
- [e.g. having visibility of the achievements of ConnectinGEO in the design of [project acronym] solutions for handling data quality issues in respect of crowdsourced data and its use;]

2. Key Individuals Concerned from ConnectinGEO and [project acronym]

2.1 Key Individuals from ConnectinGEO

Organisation	Actor	Role	Email
CREAF	Joan Masó	Project Coordinator and Work Package (WP) 1 and 7 leader	Joan.Maso@uab.cat
CNR	Stefano Nativi	WP4 (Observations and Essential Variables) leader	stefano.nativi@cnr.it
IIASA	Ian McCallum	WP3 (European Network of Earth Observation Networks) leader	mccallum@iiasa.ac.at
Tiwah	Hans-Peter Plag	WP2 (Strategic goals metrics and indicators) and WP6 (Gap analysis and priorities) leader	hpplag@tiwah.com
ARMINES	Lionel Ménard	WP5 (Stakeholder and industry challenges) leader	lionel.menard@mines-paristech.fr

2.2 Key Individuals from [project acronym]

Organisation	Actor	Role	Email

3. Roadmap for Collaboration

The roadmap of the collaboration will be defined and agreed at the initial phase of collaboration.

Joint Meetings will be organized possibly back-to-back with other Conferences, Workshops, project meetings, GEOSS meetings and symposia, etc.

Particularly opportunities for collaboration are foreseen in these meetings:

- The GEOSS week booth held in Mexico in November 9th -13th, 2015. <https://www.earthobservations.org/geo12.php>
- Back to back project meetings.

4. General Terms and Conditions

4.1 Conditions

The ConnectinGEO and [project acronym] projects shall not use any information received by each other for any purpose other than in accordance with the terms of this MoU, and shall not disclose any such information to any other except with the Projects prior written consent. Any ConnectinGEO and [project acronym] common action should not violate the rules of their respective Consortium Agreements.

4.2 Termination

The terms of the present MoU are valid until January 2017 (termination date of the ConnectinGEO project) unless differently agreed by the participating Projects. Any such modifications can be made at any time by mutual agreement and shall be the subject of a written communication by the Project coordinator.

The MoU must be explicitly renewed by the Projects by the end of the agreed period.

4.3 General Provisions

The terms of the present MoU can be modified at any time by mutual agreement between the participating Projects. Any modifications shall be the subject of a written communication by the interested part.

Two *Interfaces*, representing ConnectinGEO and [project acronym] will be nominated by ConnectinGEO the project technical board and the [project acronym] project management board to coordinate and organize the development of common activities. They can be changed at any time by the affected Project that will notify the change to the other Project coordinator.

The *Interfaces* identified at the time of signing this document are: Joan Masó for ConnectinGEO and Chris Higgins for [project acronym].

ConnectinGEO

Represented by Joan Masó
(ConnectinGEO Project Coordinator)

Signature:

Date:

[project acronym]

Represented by [name]
([project acronym] Project Coordinator)

Signature:

Date:

The present MoU becomes effective with the signature by both Coordinators.

The present document exists in two originals, one kept at CREAM, Fac. Ciències UAB, 08193 Bellaterra Barcelona, Spain, and the second at the [organization and address], having both signatures been recognized officially as having the necessary powers to formalize this agreement.