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Deliverable 2.5

Revised list of stakeholders

December 2011



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1 Introduction

1.1. Background on GMES.

The Global Monitoring for Environment and Security programme (GMES) is an EU-led earth monitoring programme. GMES aims at using space observations in combination with in-situ data to address environmental and climate issues through better understanding and management of the Earth's subsystems (land, oceans, and atmosphere).

GMES has been developed with research funding from the EU's research programmes as well as a number of optional programmes of the European Space Agency. In September 2010 GMES achieved legal status as an EU (pre-) operational programme by way of the EU Council and Parliament adopting a Regulation on GMES Initial Operations (the GIO Regulation)¹. The Regulation covers the period 2011 – 2013, after which GMES will be ready to enter into a steady-state operational setting.

As defined in the GIO Regulation, GMES consists of three components: A space component, an in-situ component and a service component.

A. The service component ensures access to information for the following areas:

- Land monitoring
- Marine environment monitoring
- Emergency management
- Atmosphere monitoring
- Climate change monitoring in support of adaptation and mitigation policies
- Security (civil)

B. The space component ensures sustainable space borne observations for the services.

C. The in-situ component ensures observations through airborne, seaborne and ground-based installations for the services.

Whereas the space component of GMES is managed and developed by the European Space Agency, the GMES in-situ component is based on observation infrastructures owned and operated by a large number of national, European and international stakeholders. In some cases, these are coordinated within the framework of networks.

¹ Regulation (EU) No 911/2010 of the European Parliament and of the Council of 22 September 2010 on the European earth monitoring programme (GMES) and its initial operations (2011 to 2013).

1.2. GMES In-Situ Coordination – GISC.

The management of the GMES in-situ data component is entrusted the European Environment Agency (EEA) in close coordination with the Commission. Through the FP7² funded Coordination Action “GMES In-Situ Coordination – GISC”, EEA is developing an operational initial framework for access to in-situ data for the services. The scope of the GISC project is limited to embracing in-situ data for the four most mature services on Land, Marine, Atmosphere monitoring and Emergency management.

This objective will be obtained by delivering four interrelated work packages:

- WP1: Engaging and involving in-situ data providers.
- WP2: Evaluating the in-situ requirements of the services.
- WP3: Designing approached to long-term sustainable solutions.
- WP4: Demonstrating in-situ coordination in practice through quick-wins.

The action is focused on bridging the gap between the research-led status and the operational status of the GMES services with a view to demonstrating methods to sustainably provide the in-situ component of the programme.

The GISC project is not about creating new centralised structures for processing and distributing in-situ data but rather to act between data providers or networks of data providers to stimulate an open access to relevant in-situ data in a cost effective and sustainable way.

1.3. The purpose of the report (deliverable 2.5).

The present report is a follow-up to an earlier deliverable of the GISC project: “Initial stakeholders list with selection analysis and linked to in-situ data requirements” (D1.2) dated October 2010. As articulated in this deliverable, the initial dialogues with the GMES services, networks, member countries, organisations etc. that took place from the beginning of the project until October 2010, as well as the analyses of the outcomes of these dialogues, were to be strengthened during 2011 and further expanded.

The purpose of the present report is thus to capture the past year’s developments of the GISC project vis-à-vis the extended experience and understanding of the scope of the GMES services as directed by the Commission and as developed by the GMES service consortia³.

² FP7 is the 7th research programme of the European Commission which runs from 2007 – 2013.

³ The Land monitoring service represented through **G.I.O. Land**, the Emergency management service represented through **SAFER**, the Atmosphere monitoring service represented through **MACC**, the Marine monitoring service represented through **MyOcean**.

Following on to that, the report captures the derived in-situ data requirements and the ensuing identification of stakeholders which can meet these requirements.

Thus the report takes into account the information which has been gathered since October 2010 through the follow-up meetings with the GMES services, outcomes of the EIONET⁴ Working Group on GMES, review by the European Topic Centres⁵, meetings with a wider range of EEA member countries and European organisations, participation in numerous workshops conducted by EEA as well as other entities.

The report offers a global overview of stakeholders which have been identified as potential providers that could contribute to a long term in-situ data provision. The report accordingly represents a tool to identify with which stakeholders dialogue is needed. In the course of the remaining part of the GISC project, more stakeholders could be identified.

The report is a contribution to the forthcoming elaboration of the in-situ data implementation roadmap as proof of concept of an initial framework for accessing in-situ data, which will be delivered in the final year of the project.

⁴ EIONET is EEA's partnership network.

⁵ European Topic Centres are international consortia working with the European Environment Agency through framework agreements to assist the Agency in its reporting on Europe's environment. There are eight Topic Centres.

2 Selection Approach

2.1. Methodology.

According to the Description of Work of the GISC project⁶, the requirements of the four GMES services targeted by the project are to be taken as the basis for determining the in-situ data needs, and building on that, the initial framework of stakeholders. The logic of the present report follows exactly this affirmation: The in-situ data requirements of the services are the starting point of the revised stakeholders list. Or to be more precise: It is the understanding and analyses of the in-situ data requirements of the services, which guides the identification of stakeholders.

Much effort has therefore been put in to understanding the in-situ data requirements of the GMES services. The outcome of this process is captured in the “Report on in-situ data requirements” dated September 2011 (Deliverable 2.1. of the GISC project), which constitutes the main source of the present report.

The in-situ data requirements of course evolve as the GMES services develop and mature, hence the requirements will have to be periodically reviewed and updated. The list of stakeholders is therefore also a “living document”.

Over and above being based on the GMES services’ needs, the selection approach for the stakeholders in this report centres around including those which have been assessed in terms of their capability to deliver in-situ data in the required quantity, quality, coverage and timeliness.

The list presented in this report is the sum of our knowledge to date on how the GMES services’ requirements for in-situ data can be met. The analysis behind this builds both on direct contacts and desk studies. It is not part of this report, however, to prioritise among the identified stakeholders or indicate the preferred ones. Two parameters have not yet been elaborated in Deliverable D2.1, and are therefore also not included in the selection approach of this report: Accessibility to data and intellectual property rights (data policy).

Hence, the analysis of the requirements and stakeholders in terms of critical constraints such as gaps, overlaps, costs, sustainability and IPR/data policy as well as definition of criteria to identify the priority in-situ data sources will be part of a forthcoming deliverable on priorities and gaps analysis.

⁶ GMES In-Situ Coordination Description of Work <http://gisc.ew.eea.europa.eu/documents/user-area/gisc-grant>)

2.2. A wide-ranging process.

The approach to compiling the revised list of stakeholders is extensive – and non-linear – and builds on the following actions:

- a) Incorporation of feedback on the Initial list of stakeholders, which were obtained through the consultation process on the GISC web-discussion forum and via the European Topic Centres.
- b) Broadened dialogue with the GMES services. The services have evolved in the past year, not least the Land and Emergency response services due to their expansion and inclusion in the GMES Initial Operations frame. This has resulted in a clarification and re-organisation of their service product portfolios. Analyses of the revised portfolios have led to revised requirements and the need for matching with new stakeholders.
- c) Further gathering of knowledge and information on international organisations, coordinating networks and projects that hold in-situ data in order to develop an understanding of whether they can and/or are interested in contributing to the GMES programme. As stated in section 1.2, a fundamental principle guiding the GISC project is to devise a framework for provision of in-situ data which – to the extent possible – is sustainable and not dependent on GMES funding. Reliance on specific GMES-funding does not create good conditions for sustainability. Following this, the GISC project pursues an approach where the stakeholders are neither paid for their data nor for data delivery and access mechanisms. By the end of the project it will be determined which results can be achieved along this line. For some stakeholders, this approach is not in line with their immediate strategy and interests and therefore requires internal discussion and decision as to whether they can be part of the GMES in-situ data framework. The contacts with organisations and projects have improved the GISC understanding of the in-situ data landscape both regionally and globally.
- d) Continuation of the visits to EEA member countries with the purpose of identifying the national in-situ data capacities which are of relevance to GMES and secure commitment for the sustainable in-situ data provision. As mentioned, the ultimate aim of the GISC project is to build a framework for free access to relevant data. These visits are deemed extremely valuable on part of the member countries because it helps clarifying the expectations from a 'GMES partnership' perspective as well the benefits which such partnership could provide.
- e) Enhanced knowledge of user needs from participation in GMES workshops organised by the Commission and EEA. This has led to better understanding of users' expectations to defining specifications for the in situ data requirements as well as

enhanced capacity to decipher requirements in a way which can point to relevant stakeholders.

- f) Enhanced in-house dialogue within EEA and through the European Environment Information and Observation Network (EIONET).

3 A dual approach to engaging stakeholders

Together with the relevant EU Commission services and with the EIONET, EEA invites the GMES services, users, data and service providers to take part in the process of assessing the policy and technical demands of the delivery of the in-situ data. A key element in the GISC approach to engaging stakeholders is to focus on the potential re-use of existing capacities both in countries and at international level. This is line with the principles of subsidiarity and proportionality of the EU as well as with the fundamental principle of the GIO Regulation of pursuing synergies between national, Union and international initiatives. In short: Duplication should be avoided.

EEA is pursuing a dual approach to gaining commitment to a sustainable framework for in-situ data provision: 1) Dialogues with EEA member countries to identify their existing capacities and to ensure commitment to taking part in the GMES partnership; 2) Dialogues with international organisations, coordinating networks, European bodies and projects to explore their potential contribution to providing the in-situ data component.

3.1. EEA member countries.

EEA member countries are part of various international data coordination and distribution networks, some of which are linked to reporting obligations under international conventions and protocols. A basic intent of the GISC project is that where international data coordination structures are in place, EEA should examine the potential for re-using these capacities for access to in-situ data. In order to avoid duplication and to promote the interaction in relation to GMES in member countries, the GISC approach is to engage countries through the interface of the international commitments they have already made to existing organisations/networks as far as this is possible and can meet the in-situ data requirements⁷.

A significant number of EEA member countries have expressed their consent with this approach. There is a strong support to making already available data more multipurpose as well as to not creating new infrastructures, where capacities already exist. In this regard the GISC project aims at signing agreements with member countries to access in-situ data needed for the services⁸.

⁷ The engagement with member countries is also undertaken with reference to the Infrastructure for Spatial Information in Europe (INSPIRE) and the Share Environmental Information System for Europe (SEIS).

⁸ The GISC project produces an update of the status of dialogues with stakeholders every 6 months, incl. an overview of the agreements on in-situ data provision that has been signed. The latest update is from July 2011, and the next is scheduled for January 2012.

Member countries are evidently a main source of in-situ data. However, the internal organisation and division of roles between authorities differ a lot among different countries, and it is not practical to describe separately the responsible entity of each member country for each required in-situ data set in this report. The bodies that handle data in member countries can also be organisations, private companies or semi-private foundations etc. *Consequently, in the actual listing of stakeholders in chapters 4: Land and 5: Emergency, member countries are grouped together as one stakeholder without any detailed information about what kind of authorities/entities are handling the data.*

3.2. European and international stakeholders.

EEA member country data can however not accommodate all the needs for in-situ data for the GMES service products, especially those which go beyond the continental outlook and have a global outlook⁹. This is the case for all the services. One example is the global component of the Land service. But even at the pan-European level, there are in-situ data measurements which are only achieved under the auspices of European or international organisations, coordinating networks, infrastructure projects and programmes etc. Unlike the member countries, it is possible to be specific about the available in-situ products and/or observations of the identified international and European stakeholders which can be relevant for the in-situ data component of GMES. *Hence, in the actual listing of stakeholders in chapters 4: Land, 5: Emergency, 6: Marine and 7: Atmosphere, European and international stakeholders are listed one by one.*

3.3. Private stakeholders.

Private companies are also a potential source of in-situ data although, other things being equal, free access is more complicated. Investigation about the possibility of them providing access to their data in line with the GIO Regulation has to be carried out if they are to be included in the initial framework for accessing in-situ data. As for the European and international stakeholders, it is possible to be specific about the available in-situ products and/or observations of the identified private stakeholders which can be relevant for the in-situ data component of GMES. *Hence, in the actual listing of stakeholders in chapters 4, 5, 6 and 7, private stakeholders are listed one by one.*

An overview of the different types of stakeholders is given in [Annex 2](#).

⁹ GISC report D2.1. "Report on in-situ data requirements" (September 2011) gives a comprehensive overview of the GMES service products.

3.4. How to read the list of stakeholders.

The listing of the stakeholders is done *service by service*, i.e. there are separate chapters for each of the GMES services: Land, Emergency, Marine, and Atmosphere.

With respect to chapters 4 and 5: Member countries are important providers of in-situ data for the Land and Emergency services, hence these chapters are divided in two sections: One covering European, international and private organisations and another one covering member countries.

With respect to chapters 6 and 7: Member countries are providing in-situ data for the Marine and Atmosphere services through for instance coordinating networks and mandated European bodies. In chapter 6 and 7, member countries are therefore not reflected in a separate section.

Within the service-chapters, the stakeholders are listed in alphabetical order.

The listing of the public and private entity stakeholders in all chapters includes:

- Name of stakeholder
- Name of available in-situ product
- In-situ data set required
- Criticality of required in-situ data
- GMES product for which the in-situ data is needed
- Type of stakeholder
- Link to webpage of stakeholder

The listing is done in tables and looks like this:

Name of stakeholder	
Name of available in-situ product of stakeholder	The name of an existing product is given. The term “in situ product” covers both single products, product groups, observations, networks and data sets. In cases where a stakeholder is in possession of more than one relevant in-situ product, the stakeholder is listed twice (or more), each table focusing only on one product at a time.
In-situ data required which can be met by stakeholder.	A short description of the required in-situ data set(s).

	<p>The description is followed by a notice of the criticality of the in-situ data set needed, indicated in three categories “essential”, “desirable”, “useful”:¹⁰</p> <ul style="list-style-type: none"> - “essential”: A given GMES product will not meet the product specification if essential data is unavailable. Data is used for product generation, validation or calibration. - “desirable”: Data may be used for product generation, validation or calibration, but only as a secondary source. Data could improve the product. Data is included for redundancy purposes. - “useful”: Additional in-situ data not directly linked to product generation, validation or calibration. Data is primarily used to support the product generation. <p>The in-situ data requirements are not specified in the stakeholders list. Detailed information on the specifications of the requirements incl. coverage, attributes, timeliness, target & threshold accuracy and resolution can be found in the GISC report D2.1: “Report on in-situ data requirements” dated September 2011.</p> <p>There can be several providers for each required in-situ data set.</p>
GMES product(s) for which the in-situ data is needed	The GMES Services provide different products. A designation of the product in question is given ¹¹ .
Type of stakeholder	<p>The stakeholder ‘category’ as they define themselves on their homepages. For instance association, agency, programme, institute etc.</p> <p>See Annex 2 for a complete list of stakeholder types.</p>
Webpage of stakeholder	A URL is given if available.

¹⁰ The method of categorising the criticality of the required in-situ data in the categories “essential”, “desirable” and “useful” was developed by the GMES Land Monitoring Core Service In-Situ Component Working Group. Working paper of GMES-LMCS dated 05/03/2008. More details about the meaning and application of the criticality levels can be found in GISC report D2.1.

¹¹ Same as 9.

The listing of the member countries includes:

- GMES product for which the in-situ data is needed
- In-situ data set required
- Criticality of in-situ data

The listing is done in tables and looks like this:

GMES product for which the in-situ data is needed	
In-situ data required	<p>A short description of the required in-situ data set(s).</p> <p>The description is followed by a notice of the criticality of the in-situ data set needed, indicated in three categories “essential”, “desirable”, “useful”:¹²</p> <ul style="list-style-type: none">- “essential”: A given GMES product will not meet the product specification if essential data is unavailable. Data is used for product generation, validation or calibration.- “desirable”: Data may be used for product generation, validation or calibration, but only as a secondary source. Data could improve the product. Data is included for redundancy purposes.- “useful”: Additional in-situ data not directly linked to product generation, validation or calibration. Data is primarily used to support the product generation. <p>The in-situ data requirements are not specified in the stakeholders list. Detailed information on the specifications of the requirements incl. coverage, attributes, timeliness, target & threshold accuracy and resolution can be found in the GISC report D2.5: “Report on in-situ data requirements” dated September 2011.</p>

¹² Same as 10.

4 Stakeholders list: Land monitoring

4.1. European, international and private stakeholders.

Astrium Geo-Information Services	
Available in-situ product	SPOT DEM
In-situ data required	Digital elevation model (essential –desirable - useful) ¹³
GMES products for which in-situ data is needed	Corine Landcover 2012 update High resolution layer on tree cover density and forest type High resolution layer on wetlands Image preprocessing
Type of stakeholder	Private company
Webpage	www.spotimage.com

Automotive Navigation Data (AND)	
Available in-situ product	Global Road Data - Vector Data
In-situ data required	Road network (desirable)
GMES product for which in-situ data is needed	High resolution layer on tree cover density and forest type
Type of stakeholder	Private company
Webpage	www.and.com

BirdLife International	
Available in-situ product	Birdlife Species Database
In-situ data required	Bird life species (useful)
GMES product for which in-situ data is needed	High resolution layer on wetlands
Type of stakeholder	Partnership of conservation organizations

¹³ For a lot of the stakeholders, the criticality of the Digital Elevation Model (DEM) is referred to as essential, desirable and useful. The reason being that this data set is used for various GMES products, which are not possible to specify in detail here. Specific information about the criticality of DEM for the GMES products can be found in GISC report D.2.1 mentioned earlier.

Webpage	www.birdlife.org
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Carinthian Institute for Climate Protection (KIKS)	
Available in-situ product	Köppen-Geiger climate classification
In-situ data required	Climate classification (essential)
GMES products for which in-situ data is needed	Soil moisture products
Type of stakeholder	Institute supported by the provincial government of Carinthia (Austria)
Webpage	www.kiks.ktn.gv.at

Consultative Group on International Agricultural Research (CGIAR)	
Available in-situ product	Shuttle Radar Topography Mission (SRTM)
In-situ data required	Digital elevation model - high, medium and low resolution (essential – desirable - useful)
GMES products for which in-situ data is needed	Corine Landcover 2012 update High resolution layer on tree cover density and forest type High resolution layer on wetlands High resolution layer on permanent water bodies Image preprocessing
Type of stakeholder	Partnership of research organizations
Webpage	www.cgiar.org

European Commission, Directorate-General for Enterprise and Industry	
Available in-situ product	EU-DEM (Digital elevation model)
In-situ data required	Digital elevation model (essential) Hydrographic information –water bodies (essential)
GMES products for which in-situ data is needed	High resolution layer on wetlands Image preprocessing
Type of stakeholder	Directorate-general of the European Commission
Webpage	EU-DEM www.ec.europa.eu/enterprise

EuroGeographics	
Available in-situ product	EuroRegionalMap
In-situ data required	Digital elevation model (essential – desirable - useful) Topographic data (essential)
GMES products for which in-situ data is needed	Corine Landcover 2012 update High resolution layer on tree cover density and forest type High resolution layer on imperviousness Image preprocessing
Type of stakeholder	Association of European national mapping, land registry and cadastral agencies
Webpage	www.eurogeographics.org
EuroGeographics (2)	
Available in-situ product	EuroBoundaryMap
In-situ data required	Administrative and geographical regions (desirable)
GMES product for which in-situ data is needed	High resolution layer on tree cover density and forest type
Type of stakeholder	Association of European national mapping, land registry and cadastral agencies
Webpage	www.eurogeographics.org

Euromap	
Available in-situ product	Euro-maps 3D
In-situ data required	Digital elevation model (essential - desirable - useful)
GMES products for which in-situ data is needed	Corine Landcover 2012 update High resolution layer on tree cover density and forest type High resolution layer on wetlands Image preprocessing
Type of stakeholder	Private company
Webpage	www.euomap.de

European Centre for Medium-Range Weather Forecasts (ECMWF)	
Available in-situ product	2T, 2D, TCWV, SKT

In-situ data required	Atmospheric conditions (essential)
GMES product for which in-situ data is needed	Land surface radiation products
Type of stakeholder	Intergovernmental organization
Webpage	www.ecmwf.int

European Centre for Medium-Range Weather Forecasts (2)

Available in-situ product	ERA-Interim
In-situ data required	Atmospheric conditions – air temperature (essential)
GMES products for which in-situ data is needed	Soil moisture products
Type of stakeholder	Intergovernmental organization
Webpage	www.ecmwf.int

European Environment Agency (EEA)

Available in-situ product	Corine Land Cover 2006 v14
In-situ data required	Corine land cover (essential - useful)
GMES products for which in-situ data is needed	High resolution layer on imperviousness High resolution layer on permanent grasslands High resolution layer on wetlands
Type of stakeholder	Agency of the European Union
Webpage	www.eea.europa.eu

European Environment Agency (2)

Available in-situ product	Natura 2000
In-situ data required	Natura 2000 (useful)
GMES product for which in-situ data is needed	High resolution layer on wetlands
Type of stakeholder	Agency of the European Union
Webpage	www.eea.europa.eu

European Environment Agency (3)	
Available in-situ product	European Catchments and Rivers Network System (ECRINS)
In-situ data required	Hydrographical information – water bodies (essential)
GMES product for which in-situ data is needed	High resolution layer on permanent water bodies High resolution layer on wetlands
Type of stakeholder	Agency of the European Union
Webpage	www.eea.europa.eu

European Environment Agency (4)	
Available in-situ product	Urban Atlas
In-situ data required	Imperviousness surface layer (essential)
GMES product for which in-situ data is needed	Urban Atlas
Type of stakeholder	Agency of the European Union
Webpage	www.eea.europa.eu

European Environment Agency – GIO LAND	
Available in-situ product	Forest area / forest layer
In-situ data required	Imperviousness layer (useful) Sealed area mask (useful) Forest area / forest layer (desirable)
GMES product for which in-situ data is needed	High resolution layer on permanent grasslands
Type of stakeholder	Agency of the European Union
Webpage	www.eea.europa.eu

European Space Agency (ESA)	
Available in-situ product	ESA Earth Observation Campaign data
In-situ data required	Vegetation variables (essential)
GMES products for which in-	Vegetation products

situ data is needed	
Type of stakeholder	Intergovernmental organization
Webpage	www.esa.int

Eurostat	
Available in-situ product	Land use/cover area frame survey (LUCAS)
In-situ data required	Spatial forest inventory data (essential) National grasslands inventories (essential) Field information from on the spot visits (desirable) Field data (desirable – useful)
GMES products for which in-situ data is needed	Corine Landcover 2012 update High resolution layer on tree cover density and forest type High resolution layer on permanent grasslands Urban Atlas
Type of stakeholder	Directorate-General of the European Commission
Webpage	www.epp.eurostat.ec.europa.eu

Fluxnet	
Available in-situ product	Single fluxnet station measurements
In-situ data required	Land surface temperature (essential) Up-welling global solar radiation divided down-welling thermal infrared radiation - albedo (essential) Down-welling global solar radiation & down-welling thermal infrared radiation (essential) Surface fluxes – water, energy, carbon (essential) Biomass (dry)
GMES products for which in-situ data is needed	Land surface radiation products Land surface radiation products (albedo) Surface fluxes – water, energy, carbon Vegetation biomass – dry (essential)
Type of stakeholder	Project supported by the Distributed Active Archive Center for Biogeochemical Dynamics of Oak Ridge National Laboratory
Webpage	www.daac.ornl.gov/FLUXNET.fluxnet.shtml

Food and Agriculture Organisation (FAO)	
Available in-situ product	Global Administrative Unit Layer (GAUL)
In-situ data required	Administrative boundaries (essential)
GMES product for which in-situ data is needed	Data pre-processing and product packaging
Type of stakeholder	United Nations agency
Webpage	www.fao.org

French National Institute for Agricultural Research (INRA)	
Available in-situ product	DIRECT – compilation of existing ground measurement sites
In-situ data required	Vegetation variables (essential)
GMES products for which in-situ data is needed	Vegetation products (LAI, Fcover, fAPAR)
Type of stakeholder	Institute supported by government of France
Webpage	www.international.inra.fr

Global Administrative Areas (GADM)	
Available in-situ product	GADM Database of Global Administrative Areas
In-situ data required	Administrative boundaries (essential)
GMES product for which in-situ data is needed	Data pre-processing and product packaging
Type of stakeholder	
Webpage	www.gadm.org

Global Energy and Water Cycle Experiment (GEWEX)	
Available in-situ product	International Soil Moisture Network (ISMN)
In-situ data required	Soil moisture
GMES products for which in-situ data is needed	Soil moisture products
Type of stakeholder	Project supported by the World Climate Research Programme

Webpage	www.ipf.tuwien.ac.at/insitu
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ICP Forests	
Available in-situ product	ICP Forest Level I
In-situ data required	Spatial forest inventory data (essential)
GMES product for which in-situ data is needed	High resolution layer on tree cover density and forest type
Type of stakeholder	Programme of the United Nations (Economic Committee for Europe)
Webpage	www.icp-forest.net

Intermap	
Available in-situ product	NextMap Europe – Digital Elevation Model
In-situ data required	Digital elevation model (essential – desirable - useful)
GMES products for which in-situ data is needed	Corine Landcover 2012 update High resolution layer on tree cover density and forest type High resolution layer on wetlands Image preprocessing
Type of stakeholder	Private company
Webpage	www.intermap.com

International Soil Reference and Information Centre (ISRIC)	
Available in-situ product	World Soil Information Database
In-situ data required	Soil information (useful)
GMES product for which in-situ data is needed	Corine Landcover 2012 update
Type of stakeholder	Foundation supported by the Netherlands Government
Webpage	www.isric.org

Joint Research Centre (JRC)	
Available in-situ product	Soil Geographic Database of Europe
In-situ data required	Soil information (useful)
GMES product for which in-situ data is needed	Corine Landcover 2012 update
Type of stakeholder	Directorate-General of the European Commission
Webpage	www.ec.europa.eu/dgs/jrc

Joint Research Centre (2)	
Available in-situ product	Catchment Characterisation and Modelling (CCM)
In-situ data required	Hydrographic information – water bodies (essential/useful)
GMES products for which in-situ data is needed	High resolution layer on wetlands High resolution layer on permanent water bodies
Type of stakeholder	Directorate-General of the European Commission
Webpage	www.ec.europa.eu/dgs/jrc

MeteoServices	
Available in-situ product	Water Vapour
In-situ data required	Atmospheric conditions – water vapour
GMES products for which in-situ data is needed	Dry matter productivity product
Type of stakeholder	Company
Webpage	www.meteoservices.be

National Aeronautics and Space Administration (NASA)	
Available in-situ product	Global Change Master Directory
In-situ data required	Atmospheric conditions – water vapour, pressure, ozone (essential)
GMES products for which in-situ data is needed	Vegetation products (LAI, fAPAR, fCover)
Type of stakeholder	Agency supported by US Government
Webpage	www.nasa.gov

National Aeronautics and Space Administration (2)	
Available in-situ product	Global Land Data Assimilation System (GLDAS)
In-situ data required	Simulated atmospheric and land conditions (essential)
GMES products for which in-situ data is needed	Soil moisture products
Type of stakeholder	Agency supported by US Government
Webpage	www.nasa.gov

National Aeronautics and Space Administration (NASA) and Ministry of Economy, Trade and Industry (METI)	
Available in-situ product	ASTER Global Digital Elevation Model (ASTER GDEM)
In-situ data required	Digital elevation model (essential - desirable)
GMES products for which in-situ data is needed	High resolution layer on tree cover density and forest type High resolution layer on wetlands High resolution layer on permanent water bodies Image preprocessing
Type of stakeholder	Project supported by the US and Japan Governments
Webpage	www.gdem.aster.ersdac.or.jp

National Oceanic and Atmospheric Administration (NOAA)	
Available in-situ product	SURFRAD datasets
In-situ data required	Down-welling global solar radiation & down-welling thermal infrared radiation (essential) Up-welling global solar radiation divided down-welling global solar radiation (essential)
GMES products for which in-situ data is needed	Land surface radiation products Land surface radiation products (albedo)
Type of stakeholder	Agency supported by the US Government
Webpage	www.noaa.gov

Oak Ridge National Laboratory – Distributed Active Archive Centre for Biogeochemical Dynamics (ORNL – DAAC)
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Available in-situ product	Atmospheric Radiation Measurement
In-situ data required	Down-welling global solar radiation & down-welling thermal infrared radiation (essential) Up-welling global solar radiation divided down-welling global solar radiation (essential)
GMES product for which in-situ data is needed	Land surface radiation products Land surface radiation products (albedo)
Type of stakeholder	Centre supported by the US Department of Energy
Webpage	www.ornl.gov

Oak Ridge National Laboratory – Distributed Active Archive Centre for Biogeochemical Dynamics (2)

Available in-situ product	SAFARI 2000 (S2K) project
In-situ data required	Vegetation variables (essential)
GMES products for which in-situ data is needed	Vegetation products
Type of stakeholder	Centre supported by the US Department of Energy
Webpage	www.ornl.gov

OpenStreetMap (OSM)

Available in-situ product	OpenStreetMap
In-situ data required	Road network (desirable)
GMES product for which in-situ data is needed	High resolution layer on tree cover density and forest type
Type of stakeholder	Project hosted by the University College of London
Webpage	www.openstreetmap.org

RAMSAR

Available in-situ product	RAMSAR Sites Database
In-situ data required	RAMSAR database (desirable)
GMES product for which in-situ data is needed	High resolution layer on wetlands
Type of stakeholder	Intergovernmental treaty (RAMSAR convention on wetlands)

Webpage	www.ramsar.org
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TomTom	
Available in-situ product	Digital road data
In-situ data required	Road network (desirable)
GMES product for which in-situ data is needed	High resolution layer on tree cover density and forest type
Type of stakeholder	Private company
Webpage	www.tomtom.com

US Geological Survey (USGS)	
Available in-situ products	GTOPO 30 GTOPO 30 Water Bodies
In-situ data required	Digital elevation model – global (essential) Map of water bodies (essential)
GMES products for which in-situ data is needed	Land surface radiation products Burnt area products Vegetation products (LAI, fAPAR, fCOVER) Water bodies products
Type of stakeholder	Agency supported by US Government
Webpage	www.usgs.gov

Various stakeholders	
Available in-situ product	LIDAR
In-situ data required	Lidar (light detection and ranging) (desirable)
GMES product for which in-situ data is needed	High resolution layer on tree cover and forest type
Type of stakeholders	Member states and private stakeholders
Webpage	www.lidar.data.com

Wetlands International	
Available in-situ product	MedWet database
In-situ data required	MedWet database (desirable)
GMES product for which in-situ data is needed	High resolution layer on wetlands
Type of stakeholder	Non-governmental organization
Webpage	www.wetlands.org

World Meteorological Organisation	
Available in-situ product	Soil Moisture products
In-situ data required	Atmospheric conditions – air temperature (essential)
Specified GMES products for which in-situ data is needed	Soil moisture products
Type of stakeholder	United Nations agency
Webpage	www.wmo.org

World Meteorological Organisation (2)	
Available in-situ product	Global Runoff Data Centre
In-situ data required	Discharge (useful)
Specified GMES products for which in-situ data is needed	Water bodies products
Type of stakeholder	United Nations agency. Data centre hosted by the German Federal Institute of Hydrology
Webpage	www.bafg.de/GRDC

World Radiation Monitoring Centre - Baseline Solar Radiation Network	
Available in-situ product	BSRN Datasets
In-situ data required	Down-welling global solar radiation & down-welling thermal infrared radiation (essential) Up-welling global solar radiation divided down-welling global

	solar radiation (essential)
GMES products for which in-situ data is needed	Land surface radiation products Land surface radiation products (albedo)
Type of stakeholder	Network hosted by Alfred Wegener Institute
Webpage	www.bsrn.awi.de

World Wildlife Foundation (WWF)	
Available in-situ product	Global Lakes and Wetlands Database
In-situ data required	Lakes and wetlands (useful)
GMES products for which in-situ data is needed	Water bodies products
Type of stakeholder	Network hosted by Alfred Wegener Institute
Webpage	www.worldwildlife.org

4.2. Member countries

Corine Landcover 2012 update	
In-situ data required	<p>Topographic data (essential) Orthophotos (essential) Land parcel identification system (useful) National land cover inventories (useful) Conservation and protected areas (useful)</p> <p>Thematic maps – forest areas, forest species, vegetation maps, snow and ice cover, buildings, city maps, settlements, development plans, agricultural inventories, vineyards, yearly burnt areas, new forest clear-cuts, rangeland maps, mineral extraction, dump sites (useful – depending on theme and country)</p> <p>Soil information (useful) Digital elevation model (useful) Ground control points</p>
High resolution layer on tree cover density and forest type	

In-situ data required	Topographic data (essential) Orthophotos (essential) Spatial forest inventory data (essential) Digital elevation model (desirable) Ground control points Road network (desirable) Administrative and geographical regions (desirable)
High resolution layer on imperviousness	
In-situ data required	Topographic data (essential) Orthophotos (essential)
High resolution layer on permanent grasslands.	
In-situ data required	Land parcel identification system (Desirable) National grassland inventories (Essential)
High resolution layer on wetlands	
In-situ data required	National wetlands databases (Desirable) Topographic data (Essential)
High resolution layer on permanent water bodies	
In-situ data required	Topographic data (Desirable)
Urban atlas requirements	
In-situ data required	City maps (Essential) Orthophotos (Desirable) Cadastral data of land parcels (Desirable)
Burnt area products	
In-situ data required	Fire data (desirable)
Land surface radiation products	
In-situ data required	Down-welling global solar radiation & down-welling thermal infrared radiation (essential)
Land surface radiation products (albedo)	

In-situ data required	Up-welling global solar radiation divided down-welling thermal infrared radiation - albedo (essential)
Soil moisture products	
In-situ data required	Soil moisture (essential)
Vegetation biomass (dry)	
In-situ data required	Biomass - dry (essential)

5 Stakeholders list: Emergency management

5.1. European, international and private stakeholders.

Astrium GEO-Information Services	
Available in-situ product	SPOT DEM
In-situ data required	Digital elevation model - high resolution (desirable)
GMES products for which in-situ data is needed	Rapid mapping and emergency support mapping Image preprocessing
Type of stakeholder	Private company
Webpage	www.spotimage.com

Centre for Intentional Earth Science Network (CIESIN)	
Available in-situ product	Gridded Population of the World (GPW)
In-situ data required	Transport networks – roads (essential) Population data – small scale (essential)
GMES product for which in-situ data is needed	Rapid mapping and emergency support mapping
Type of stakeholder	University (Columbia University)
Webpage	www.ciesin.org

Consultative Group on International Agricultural Research (CGIAR)	
Available in-situ product	Shuttle Radar Topographic Mission (SRTM)
In-situ data required	Digital elevation model – low to medium resolution (essential)
GMES products for which in-situ data is needed	Rapid mapping and emergency support mapping Image preprocessing
Type of stakeholder	Partnership of research organisations
Webpage	www.cgiar.org

EuroGeographics	
Available in-situ product	EuroRegionalMap
In-situ data required	Administrative boundaries (essential)
GMES product for which in-situ data is needed	Rapid mapping and emergency support mapping
Type of stakeholder	Association of European national mapping, land registry and cadastral agencies
Webpage	www.eurogeographics.org

EuroGeoSurveys	
Available in-situ product	Geological map of Europe
In-situ data required	Geological maps (desirable)
GMES product for which in-situ data is needed	Rapid mapping
Type of stakeholder	Association of European geological surveys
Webpage	www.eurogeosurveys.org

Euromap	
Available in-situ product	Euro-maps 3D
In-situ data required	Digital elevation model – high resolution (desirable)
GMES products for which in-situ data is needed	Rapid mapping and emergency support mapping Image preprocessing
Type of stakeholder	Private company
Webpage	www.euromap.de

European Centre for Medium-Range Weather Forecasts (ECMWF)	
Available in-situ product	ECMWF Met Forecast Data
In-situ data required	Precipitation Information (desirable) Wind information (desirable)
GMES product for which in-situ data is needed	Rapid mapping

Type of stakeholder	Intergovernmental organization
Webpage	www.ecmwf.int

European Environment Agency (EEA)	
Available in-situ product	Corine Land cover
In-situ data required	Built-up areas - settlements (essential) Hydrographic information – water bodies (essential) Land use information (desirable) Protected areas (desirable)
GMES product for which in-situ data is needed	Rapid mapping and emergency support mapping
Type of stakeholder	Agency of the European Union
Webpage	www.eea.europa.eu

European Environment Agency (2)	
Available in-situ product	Natura 2000
In-situ data required	Protected areas (desirable)
GMES product for which in-situ data is needed	Rapid mapping and emergency support mapping
Type of stakeholder	Agency of the European Union
Webpage	www.eea.europa.eu

European Environment Agency (3)	
Available in-situ product	Urban Atlas
In-situ data required	Built-up areas (essential)
GMES product for which in-situ data is needed	Emergency support mapping
Type of stakeholder	Agency of the European Union
Webpage	www.eea.europa.eu

European Environment Agency – GIO LAND	
Available in-situ product	Forest area / forest layer
In-situ data required	Imperviousness layer (essential) Forest maps (desirable)
GMES product for which in-situ data is needed	Rapid mapping and emergency support mapping
Type of stakeholder	Agency of the European Union
Webpage	www.eea.europa.eu

European Space Agency (ESA)	
Available in-situ product	Globcover
In-situ data required	Landuse information (desirable)
GMES product for which in-situ data is needed	Rapid mapping and emergency support mapping
Type of stakeholder	Intergovernmental organization
Webpage	www.esa.int

Eurostat	
Available in-situ product	Land use/cover area frame survey (LUCAS)
In-situ data required	Soil information (desirable)
GMES product for which in-situ data is needed	Rapid mapping and emergency support mapping
Type of stakeholder	Directorate General of the European Commission
Webpage	http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home

Food and Agriculture Organisation (FAO)	
Available in-situ product	Global Administrative Unit Layer (GAUL)
In-situ data required	Administrative boundaries (essential)
GMES product for which in-situ data is needed	Rapid mapping and emergency support mapping

Type of stakeholder	United Nations agency
Webpage	www.fao.org

Geonames.org	
Available in-situ product	Geonames.org
In-situ data required	Settlement locations and toponyms (essential)
GMES product for which in-situ data is needed	Rapid mapping and emergency support mapping
Type of stakeholder	Database
Webpage	www.geonames.org

Global Runoff Data Centre (GRDC)	
Available in-situ product	Global Runoff Database
In-situ data required	Hydrographic information – water levels (desirable)
GMES product for which in-situ data is needed	Rapid mapping
Type of stakeholder	Centre supported by the Federal Government of Germany
Webpage	www.gewex.org/grdc

Intermap	
Available in-situ product	NextMap Europe
In-situ data required	Digital elevation model – high resolution (desirable)
GMES product for which in-situ data is needed	Rapid mapping and emergency support mapping Image preprocessing
Type of stakeholder	Private company
Webpage	www.intermap.com

International Civil Aviation Organisation (ICAO)	
Available in-situ product	
In-situ data required	Key infrastructures – airports (essential)

GMES product for which in-situ data is needed	Rapid mapping and emergency support mapping
Type of stakeholder	United Nations agency
Webpage	www.icao.int

International Soil Reference and Information Centre (ISRIC)

Available in-situ product	World Soil Information Database
In-situ data required	Soil information (desirable)
GMES product for which in-situ data is needed	Rapid mapping and emergency support mapping
Type of stakeholder	Foundation supported by the Netherlands Government
Webpage	www.isric.org

Joint Research Centre (JRC)

Available in-situ product	Soil Geographic Database of Europe
In-situ data required	Soil information (Desirable)
GMES product for which in-situ data is needed	Rapid mapping and emergency support mapping
Type of stakeholder	Directorate-General of the European Commission
Webpage	www.ec.europa.eu/dgs/jrc

Joint Research Centre (2)

Available in-situ product	European Flood and Alert system (EFAS)
In-situ data required	Early warning and alerting systems (Desirable)
GMES product for which in-situ data is needed	Rapid mapping and emergency support mapping
Type of stakeholder	Directorate-General of the European Commission
Webpage	www.ec.europa.eu/dgs/jrc

Joint Research Centre (3)

Available in-situ product	Global Disaster Alert and Coordination System (GDACS)
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In-situ data required	Early warning and alerting systems (Desirable)
GMES product for which in-situ data is needed	Rapid mapping
Type of stakeholder	Directorate-General of the European Commission
Webpage	www.ec.europa.eu/dgs/jrc

Joint Research Centre (4)	
Available in-situ product	Catchment and Characterisation Model (CCM)
In-situ data required	Hydrographic information – water bodies (Essential)
GMES product for which in-situ data is needed	Rapid mapping
Type of stakeholder	Directorate-General of the European Commission
Webpage	www.ec.europa.eu/dgs/jrc

National Aeronautics and Space Administration (NASA) and Ministry of Economy, Trade and Industry (METI)	
Available in-situ product	ASTER GDEM
In-situ data required	Digital elevation model – low to medium resolution (essential)
GMES product for which in-situ data is needed	Rapid mapping and emergency support mapping Image preprocessing
Type of stakeholder	Project supported by the US and Japan Governments
Webpage	www.gdem.aster.ersdac.or.jp

National Geospatial-Intelligence Agency (NGA)	
Available in-situ product	GEOnet Names Server
In-situ data required	Settlement locations and toponyms (essential)
GMES product for which in-situ data is needed	Rapid mapping and emergency support mapping
Type of stakeholder	Agency of the US Department of Defense
Webpage	www.earth-info.nga.mil/gns

National Geospatial-Intelligence Agency (2)	
Available in-situ product	VMAPO & VMAP1
In-situ data required	Transport networks – railways (essential) Key infrastructures – airports (essential) Key infrastructures – ports (essential) Built-up areas – settlements (essential) Transport roads – railways (essential)
GMES product for which in-situ data is needed	Rapid mapping and emergency support mapping
Type of stakeholder	Agency of the US Department of Defense
Webpage	www.earth-info.nga.mil/gns

National Geospatial-Intelligence Agency (3)	
Available in-situ product	World Port Index
In-situ data required	Key infrastructures – ports
GMES product for which in-situ data is needed	Rapid mapping and emergency support mapping
Criticality of data	Essential
Type of stakeholder	Agency of the US Department of Defense
Webpage	www.earth-info.nga.mil/gns

Oak Ridge National Laboratory	
Available in-situ product	LandScan – global population grid
In-situ data required	Population data – small scale (essential)
GMES product for which in-situ data is needed	Rapid mapping and emergency support mapping
Type of stakeholder	Centre supported by the US Department of Energy
Webpage	www.ornl.gov

OpenStreetMap (OSM)	
Available in-situ product	OpenStreetMap

In-situ data required	Transport networks – roads (essential) Transport networks – railways (essential)
GMES product for which in-situ data is needed	Rapid mapping and emergency support mapping
Type of stakeholder	Project hosted by the University College of London
Webpage	www.openstreetmap.org

Centre for Sustainability and the Global Environment (SAGE)

Available in-situ product	Modis 500m Map of Global Urban Extent
In-situ data required	Built-up areas – settlements (essential)
GMES product for which in-situ data is needed	Emergency support mapping
Type of stakeholder	University (University of Wisconsin-Madison)
Webpage	www.sage.wisc.edu

TomTom

Available in-situ product	Digital road data
In-situ data required	Transport network – roads (essential)
GMES product for which in-situ data is needed	Rapid mapping and emergency support mapping
Type of stakeholder	Private company
Webpage	www.tomtom.com

United Nations Environment Programme (UNEP)

Available in-situ product	World Database on Protected Areas (WDPA)
In-situ data required	Protected areas (desirable)
GMES product for which in-situ data is needed	Rapid mapping and emergency support mapping
Type of stakeholder	United Nations agency
Webpage	www.unep.org

UN Geographic Information Working Group (UNGIWG)	
Available in-situ product	Second Administrative Level Boundaries
In-situ data required	Administrative boundaries (essential)
GMES product for which in-situ data is needed	Rapid mapping and emergency support mapping
Type of stakeholder	Association of cartography and geographic information professionals
Webpage	www.ungiwg.org

United Nations Joint Logistics Centre (UNJLC)	
Available in-situ product	UN Spatial Data Infrastructure – Transport (UNSDI-T)
In-situ data required	Transport networks – roads (essential) Key infrastructures – airports (essential) Key infrastructures – ports (essential) Critical infrastructures – utilities (essential)
GMES product for which in-situ data is needed	Rapid mapping and emergency support mapping
Type of stakeholder	United Nations centre
Webpage	www.unjlc.org

Various stakeholders	
Available in-situ product	
In-situ data required	Field information (field photographs, population statistics, relief actors, deployment activities) (desirable)
GMES product for which in-situ data is needed	Rapid mapping and emergency support mapping
Type of stakeholder	Relief agencies, partner organizations, press agencies
Webpage	

5.2. Member countries

Rapid mapping and emergency support mapping	
In-situ data required	Population data (Essential) Transport networks – roads (Essential) Transport networks – railways (Essential) Key infrastructures – airports (Essential) Key infrastructures – ports (Essential) Population data – large scale (Essential) Population data – small scale (Essential) Digital elevation model – high resolution (Essential) Critical infrastructures – utilities (Essential) Critical infrastructures – public services (Essential) Forest maps (Desirable) Protected areas (Desirable) Geological maps (Desirable) Aerial photography (Desirable)

6 Stakeholders list: Marine monitoring

6.1. European, international and private stakeholders.

Arctic Regional Ocean Observing System (Arctic-ROOS)	
Available in-situ product	Tide gauges Coastal and regional moorings
In-situ data required	Temperature, salinity and biogeochemical profiles – near real time (essential)
GMES product for which in-situ data is needed	Arctic ocean physics and biogeochemical analysis and forecast
Type of stakeholder	Network of ocean observation and modeling institutions
Webpage	www.arctic-roos.org

Baltic Operational Oceanographic System (BOOS)	
Available in-situ product	Tide gauges Coastal and regional moorings
In-situ data required	Temperature, salinity and biogeochemical profiles – real time (essential) Sea level, real time (essential)
GMES product for which in-situ data is needed	Baltic sea physics analysis and forecast
Type of stakeholder	Network of ocean observation and modeling institutions
Webpage	www.boos.org

Black Sea Global Ocean Observing System (Black Sea GOOS)	
Available in-situ product	Tide gauges Coastal and regional moorings
In-situ data required	Temperature and salinity profiles, and biogeochemical – real time (essential) Ocean currents, delayed mode (essential)
GMES products for which in-situ data is needed	Black sea physics and biogeochemical analysis and forecast Black sea physics reanalysis

Type of stakeholder	Network of ocean observation and modeling institutions
Webpage	www.ims.metu.edu.tr/black_sea_goos

Data Buoy Cooperation Panel (DBCP)	
Available in-situ product	DBCP
In-situ data required	Ocean current, real time (essential)
GMES product for which in-situ data is needed	Global ocean physics analysis and forecast
Type of stakeholder	Programme supported by the World Meteorological Organisation
Webpage	www.jcommops.org/dbcp

EuroArgo (European contribution to the Argo programme)	
Available in-situ product	EuroArgo (part of ARGO)
In-situ data required	Temperature and salinity profiles, real time and biogeochemical profiles (essential)
GMES product for which in-situ data is needed	Global ocean physics and biogeochemical analysis, re-analysis and forecast.
Type of stakeholder	EU supported research infrastructure project
Webpage	www.euro-argo.eu

Eurofleets	
Available in-situ product	Eurofleets
In-situ data required	Data from commercial and research vessels (desirable)
GMES product for which in-situ data is needed	Global ocean physics and biogeochemical analysis, re-analysis and forecast
Type of stakeholder	EU supported research project
Webpage	www.eurofleets.eu

EuroSites (European Ocean Observatory Network)	
Available in-situ product	EuroSites (part of OCEANSITES)
In-situ data required	Multidisciplinary profiles, real time (essential)
GMES product for which in-situ data is needed	Global ocean physics and biogeochemical analysis, re-analysis and forecast.
Type of stakeholder	EU supported research project
Webpage	www.eurosites.info

Global Ocean Surface Underway Data (GOSUD)	
Available in-situ product	Global Ocean Surface Underway Data (GOSUD)
In-situ data required	Data from commercial and research vessels (desirable)
Specified GMES product for which in-situ data is needed	Global ocean physics and biogeochemical analysis, re-analysis and forecast.
Type of stakeholder	Project supported by UNESCO
Webpage	www.gosud.org

Global sea level observing system (GLOSS)	
Available in-situ product	The global sea level observing system (GLOSS)
In-situ data required	Sea level, real time (essential) Sea level, delayed mode (essential)
Specified GMES products for which in-situ data is needed	Global ocean physics analysis and forecast Global observed ocean physics analysis and reanalysis
Type of stakeholder	Programme supported by WMO and IOC Joint Technical Commission for Oceanography and Marine Meteorology
Webpage	www.gloss-sealevel.org

Iberia Biscay Ireland Regional Oceanographic Operational System (IBI-ROOS)	
Available in-situ product	Tide gauges Coastal and regional moorings
In-situ data required	Temperature and salinity profiles – real time (essential)

	Sea level, real time (essential) Currents, real time (essential)
GMES product for which in-situ data is needed	Atlantic Iberia Biscay Irish Area physics analysis and forecast Sea level, real time
Type of stakeholder	Network of ocean observation and modeling institutions
Webpage	www.ibi-roos.eu

European Global Ocean Observing System (EuroGOOS)	
Available in-situ product	Tide gauges Coastal and regional moorings
In-situ data required	Sea level, real time (essential) Sea level, delayed mode (essential) Temperature, salinity and biogeochemical profiles – near real time (essential) Temperature, salinity and biogeochemical profiles – real time (essential) Currents – real time (essential) Data from commercial and research vessels (desirable) Sea ice parameters (essential) Sea surface temperature (essential)
Specified GMES products for which in-situ data is needed	Global ocean physics and biogeochemical analysis and forecast Global observed ocean physics analysis and forecast Arctic ocean physics and biogeochemical analysis and forecast Baltic sea physics and biogeochemical analysis and forecast Atlantic North-West shelf physics and biogeochemical analysis and forecast Atlantic Iberia Biscay Irish Area physics analysis and forecast Mediterranean sea physics and biogeochemical analysis and forecast Black sea physics and biogeochemical analysis and forecast Black sea physics reanalysis Sea ice and wind Sea surface temperature
Type of stakeholder	Network of ocean observation and modeling institutions
Webpage	www.eurogoos.org

National Oceanic and Atmospheric Administration (NOAA): Atlantic Oceanographic and Meteorological Laboratory	
Available in-situ product	AOML – NOAA
In-situ data required	Ocean surface velocities (essential)
GMES product for which in-situ data is needed	Global observed ocean physics analysis and reanalysis
Type of stakeholder	Agency supported by the US Government
Webpage	www.pmel.noaa.gov/co2/story/NOAA+AOML

North-West European Shelf Operational Oceanographic System (NOOS)	
Available in-situ product	Tide gauges Coastal and regional moorings
In-situ data required	Temperature, salinity and biogeochemical profiles – real time (essential) Sea level, real time (essential)
Specified GMES products for which in-situ data is needed	Atlantic North-West shelf physics and biogeochemical analysis and forecast Sea level, real time (essential)
Type of stakeholder	Network of ocean observation and modeling institutions
Webpage	www.noos.cc

Mediterranean Operational Oceanography Network (MOON)	
Available in-situ product	Tide gauges Coastal and regional moorings
In-situ data required	Temperature and salinity profiles, and biogeochemical – real time (essential)
Specified GMES product for which in-situ data is needed	Mediterranean sea physics and biogeochemical analysis and forecast
Type of stakeholder	Network of ocean observation and modeling institutions
Webpage	www.moon-oceanforecasting.eu

MyOcean INS TAC (In-situ thematic assembly centre)	
Available in-situ products	Various
In-situ data required	Temperature and salinity profiles, delayed mode (essential) In-situ temperature and salinity profiles and biogeochemical, delayed mode (essential)
GMES product for which in-situ data is needed	Global observed ocean physics analysis and reanalysis Arctic ocean physics and biogeochemical reanalysis
Type of stakeholder	GMES Service Consortium for the marine monitoring service Project granted by the European Commission
Webpage	www.myocean.eu.org

SeaDataNet	
Available in-situ product	SeaDataNet
In-situ data required	Temperature and salinity profiles, and biogeochemical data, delayed mode (essential) In-situ temperature and salinity profiles and biogeochemical, delayed mode (essential) Ocean current data (essential)
Specified GMES products for which in-situ data is needed	Global observed ocean physics analysis and reanalysis Arctic ocean physics and biogeochemical reanalysis Baltic sea physics analysis and forecast Atlantic North-West shelf physics and biogeochemical reanalysis Mediterranean sea physics and biogeochemical reanalysis Black sea physics reanalysis
Type of stakeholder	EU supported research project
Webpage	www.seadatanet.org

7 Stakeholders list: Atmosphere monitoring

7.1. European, international and private stakeholders.

European Environment Agency (EEA)	
Available in-situ product	AirBase & AirBase near real time data flow
In-situ data required	Surface air quality validated measurements (essential) Surface air quality near real time measurements (essential)
Specified GMES products for which in-situ data is needed	Global atmospheric composition – reanalysis Global atmospheric composition monitoring European air quality – analysis and forecast European air quality
Type of stakeholder	Agency of the European Union
Webpage	www.eea.europa.eu

European Environment Agency (2)	
Available in-situ product	Corine Land Cover
In-situ data required	Land cover map (essential)
Specified GMES product for which in-situ data is needed	Global atmospheric composition monitoring
Type of stakeholder	Agency of the European Union
Webpage	www.eea.europa.eu

European Aerosol Research Lidar Network (EARLINET)	
Available in-situ product	Earlinet (Since April 2011 part of the FP7 funded Aerosols, Clouds and Trace gases Research Infrastructure Network, ACTRIS)
In-situ data required	Aerosol optical depth (essential) Vertical atmosphere profiles – ground based remote sensing (essential)
Specified GMES products for which in-situ data is needed	Global atmospheric composition Climate forcing
Type of stakeholder	EU supported research project
Webpage	www.earlinet.org

European Monitoring and Evaluation Programme (EMEP)	
Available in-situ product	European Monitoring and Evaluation Programme (EMEP)
In-situ data required	Surface air quality validated measurements (essential) Surface air quality near real time measurements (essential) Emission inventories (European) (essential)
Specified GMES products for which in-situ data is needed	Global atmospheric composition - reanalysis European air quality
Type of stakeholder	Programme originating from the Convention on Long-range trans boundary air pollution hosted by UNECE
Webpage	www.emep.int

European Supersites for Atmospheric Aerosol Research (EUSAAR)	
Available in-situ product	EUSAAR (Since April 2011 part of the FP7 funded Aerosols, Clouds and Trace gases Research Infrastructure Network, ACTRIS)
In-situ data required	Aerosol optical depth (essential) Vertical atmosphere profiles – ground based remote sensing (essential)
Specified GMES products for which in-situ data is needed	Global atmospheric composition Climate forcing Climate forcing (satellite monitoring) Solar radiation (satellite monitoring)
Type of stakeholder	EU supported research project
Webpage	www.eusaar.net

IAGOS (In-service Aircraft for a Global Observing System)	
Available in-situ product	IAGOS-ERI
In-situ data required	Vertical atmosphere profiles – aircrafts (essential)
Specified GMES products for which in-situ data is needed	Global atmospheric composition Climate forcing European air quality
Type of stakeholder	EU supported research infrastructure project
Webpage	www.iagos.org

Integrated Carbon Observing System (ICOS)	
Available in-situ product	ICOS
In-situ data required	Surface air quality validated measurements (essential) Surface air quality near real time measurements (essential) Total column greenhouse gasses (desirable)
Specified GMES products for which in-situ data is needed	Global atmospheric composition Global atmospheric composition – reanalysis Climate forcing European air quality – analysis and forecast
Type of stakeholder	EU supported research infrastructure project
Webpage	www.icos-infrastructure.eu

Infrastructure for Measurement of European Carbon Cycle (IMECC)	
Available in-situ product	IMECC
In-situ data required	Surface air quality validated measurements (essential) Surface air quality near real time measurements (essential) Total column greenhouse gasses (desirable)
Specified GMES products for which in-situ data is needed	Global atmospheric composition Global atmospheric composition – reanalysis Climate forcing European air quality – analysis and forecast
Type of stakeholder	EU supported research project
Webpage	www.imecc.ipsl.jussieu.fr

MOZAIC	
Available in-situ product	Measurements of ozone, water vapor, carbon monoxide and nitrogen oxides by Airbus (MOZAIC)
In-situ data required	Vertical atmosphere profiles – aircrafts (essential)
Specified GMES products for which in-situ data is needed	Global atmospheric composition Climate forcing European air quality
Type of stakeholder	Project supported by the French Government
Webpage	www.mozaic.aero.obs-mip.fr/web

National Aeronautics and Space Administration (NASA)	
Available in-situ product	Aerosol RObotic NETwork (AERONET)
In-situ data required	Aerosol optical depth (essential)
Specified GMES products for which in-situ data is needed	Global atmospheric composition Climate forcing Climate forcing (satellite monitoring) Solar radiation (satellite monitoring)
Type of stakeholder	Agency supported by the US Government
Webpage	www.aeronet.gsfc.nasa.gov/

National Aeronautics and Space Administration (2)	
Available in-situ product	Total Carbon Column Observing Network (TCCON)
In-situ data required	Total column greenhouse gases
Specified GMES products for which in-situ data is needed	Global atmospheric composition Climate forcing
Type of stakeholder	Agency supported by the US Government
Webpage	www.aeronet.gsfc.nasa.gov/

National Oceanic and Atmospheric Administration (NOAA)	
Available in-situ product	Earth System Research Laboratory (ESRL)
In-situ data required	Vertical atmosphere profiles – aircrafts (essential)
Specified GMES products for which in-situ data is needed	Global atmospheric composition Climate forcing European air quality
Type of stakeholder	Agency supported by the US Government
Webpage	www.noaa.gov

National Oceanic and Atmospheric Administration (2)	
Available in-situ product	AirNow
In-situ data required	Surface air quality validated measurements (essential)

	Surface air quality near real time measurements (essential)
Specified GMES products for which in-situ data is needed	Global atmospheric composition - reanalysis European air quality – analysis and forecast
Type of stakeholder	Agency supported by the US Government
Webpage	www.noaa.gov

Network of European Meteorological Services (EUMETNET)

Available in-situ product	The Network of European Meteorological Services (EUMETNET)
In-situ data required	Meteorological observations (essential)
Specified GMES products for which in-situ data is needed	Global atmospheric composition Global atmospheric composition monitoring Climate forcing Solar radiation (satellite monitoring) European air quality
Type of stakeholder	Association of European national meteorological services
Webpage	www.eumetnet.eu

Norwegian Institute for Air Research (NILU)

Available in-situ product	
In-situ data required	Vertical atmosphere profiles – sondes (essential)
Specified GMES products for which in-situ data is needed	Global atmospheric composition Climate forcing European air quality
Type of stakeholder	Institute supported by the Norwegian Government
Webpage	www.nilu.no

SKYNET

Available in-situ product	SKYNET
In-situ data required	Aerosol optical depth (essential)
Specified GMES products for which in-situ data is needed	Global atmospheric composition Climate forcing Climate forcing (satellite monitoring)

	Solar radiation (satellite monitoring)
Type of stakeholder	Network
Webpage	www.atmos.cr.chiba-u.ac.jp

World Meteorological Organisation (WMO)	
Available in-situ product	Global Atmosphere Watch (GAW) and associated data centers: The World Data Centre for Aerosols (WDCA) The World Ozone and Ultraviolet Radiation Data Centre (WOUDC) The World Data Centre for Greenhouse Gases (WDCGG) The World Data Radiation Data Centre (WRDC)
In-situ data required	Aerosol optical depth (essential) Surface air quality validated measurements (essential) Meteorological observations (essential) UV radiation (essential) Meteorological observations (essential) Surface air quality near real time measurements (essential) Total column greenhouse gases (desirable)
Specified GMES products for which in-situ data is needed	Global atmospheric composition Climate forcing Climate forcing (satellite monitoring) Solar radiation (satellite monitoring) UV Radiation European air quality - analysis and forecast
Type of stakeholder	United Nations agency
Webpage	www.wmo.org

World Meteorological Organisation (2)	
Available in-situ product	GAW Atmosphere Lidar Observation Network (GALION)
In-situ data required	Aerosol optical depth (essential)
Specified GMES products for which in-situ data is needed	Global atmospheric composition Climate forcing Climate forcing (satellite monitoring) Solar radiation (satellite monitoring)
Type of stakeholder	United Nations agency
Webpage	www.wmo.org

8 Conclusions

The evolution of GMES and the services in terms of development of scope and level of operationalisation requires continuous analysis to keep the catalogue of in-situ data requirements up-to-date as well as the ensuing list of stakeholders that can meet the requirements. The GISC project will use this report to steer the dialogue/consultation process with stakeholders.

The nature and characteristics of the in-situ data products and projects and their sources differ between the GMES services. One of the main differences is that the requirements for in-situ data for the Land and Emergency services could to a certain extent be met by commercial stakeholders. Another apparent facet is that observations from research-funded monitoring systems and data from international data processing centres and coordinating networks are more frequent in the Marine and Atmosphere services than in Land and Emergency.

As it is clearly shown in the listing of the stakeholders, the sources of potential in-situ data providers are both publicly and privately financed. It goes without saying that the legislative environment and the data policies belonging to them are linked to the financial character of their sources. This is also the case for the earth observation data sources. This has to be dealt with in the operationalisation of GMES and the devising of a GMES data policy. The report is an input to this endeavour as it exposes the types of stakeholders which are in the in-situ data picture, but – as stated in section 2.1 – not yet prioritised.

The GISC project has identified a number of essential in-situ data sources that are not sustainable due to their research project status. The financing of some of these projects are not secured after 2013, where FP7 ends. This could have implications for the GMES services. Other in-situ data sources could be restricted due to lack of accessibility or data policy issues. The GISC project is developing a specific report on this “gap issue” and will continue to provide advice to the Commission on the financing needs of selected in-situ data sources, for which either the Commission and/or member states could be envisaged to ensure sustainability.

Annex 1: Definitions

GMES Services/Services refer to the following four GMES services: Land monitoring, Marine environment monitoring, Atmosphere monitoring and Emergency management.

In-situ data are all data from sources other than earth observation satellites. Hence all ground-based, air-borne and ship/buoy-based observations and measurements are in-situ data. In-situ data are indispensable as a main source of knowledge and information. They are also assimilated in forecasting models and they provide calibration and validation of both models- and space based information. They contribute to analysis or filling gaps not available from space sources.

In-situ data requirements are the documented needs of in-situ data that are used for the GMES services to deliver their products.

Stakeholders are all international, European, regional and national organisations (both public and private) that collect, hold, coordinate and provide in-situ data.

Annex 2: Stakeholder types

The stakeholders listed in chapters 4 – 7 embrace the following categories. The categories are the stakeholders' own definitions on their homepages.

- Association
- Agency
- Centre
- Company
- Database
- Directorate-General
- Foundation
- Institute
- Intergovernmental organisation
- Network
- Non-governmental organisation
- Observing system
- Partnership
- Project / Research project
- Programme