





# iGOSP

# **Integrated Global Observing Systems**

# for Persistent Pollutants

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#### **1. Introduction to iGOSP**

The purpose of the iGOSP risk management plan is to describe how risk management will be structured and performed along the project lifetime. This document outlines policies and procedures for identifying and handling uncommon cause of project risks and it is based on ERA-PLANET risk management plan.

The overarching goal of iGOSP is the development of a Transnational Environmental Observation System in Support of European & International Policies through the Integration of real-time monitoring data from various platforms, modelling tools and advanced global cyber-infrastructure for data sharing and interoperability.

iGOSP will support the goals and objectives achievement of the Strand-3 of ERA-PLANET. This project has a strong foundation on **GOS<sup>4</sup>M** and **GOS<sup>4</sup>POPs** activities, which would allow the development and provision of the GEO Work Programme (2017-2019) priorities and objectives.

Specific objectives to achieve the overall goals are:

- To integrate in-situ and satellite observations aiming for better understanding of the global cycle of mercury (Hg) and Persistent Organic Pollutants (POPs) at continental and global scales;
- To identify Hg hot-spots deposition areas as consequence of biomass burning, artisanal and small-scale gold mining, e-waste recycling through in-situ wet-deposition measurements and satellite observations;
- To monitor newly listed POPs in core matrices that need to be implemented into existing monitoring programmes;
- To develop new equipment/sensors for monitoring target pollutants in core media (including wet and dry deposition) in contaminated sites as well as in rural/background locations (i.e., high Arctic, Antarctica, off-shore sites, forests), where particular removal processes take place;
- To test the operation of the sensors in different geographical settings, to increase geographical coverage;
- To develop a strategy on a global scale to develop QA/QC for observations and enhance data comparability/reproducibility;
- To develop new Standard Operating Procedures for new sensor technologies;
- To harmonize metadata production, archiving and sharing;
- To validate regional and global scale models based on in-situ and space observations assimilation;
- To develop current data infrastructures on Hg and POPs (by including new POPs, core matrices, or programmes);



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- To create advanced web services for data discovery and exploitation, and make accessible information on environmental and human exposure to allow for joint interpretation and assessment of human risks;
- To push toward a full interoperability (e.g. discoverability, accessibility, and re-usability) with GEOSS and Copernicus infrastructures.
- To support policy makers and stakeholders in the implementation of major international conventions (e.g. Minamata Convention, Stockholm Convention) and programmes (UNECE-LRTAP TF HTAP) and EU Research Infrastructures.



# 2. General aspects of iGOSP Risk Management Plan

This iGOSP Risk Management Plan provides the project a consistent method to manage risks to ensure success. Risk management is the processes for identification, assessment, mitigation, tracking, control and management of the project's risks. It drives decisions that affect the development and the management of the project.

Transparency and a good communication flow within the coordinator, supported by the management team, the WP leaders and ERA-PLANET Coordinator are keys to avoid problems and conflicts. A good communication strategy promotes the cohesion among the participants, while giving a positive image of the project to outside.

The iGOSP project started in September 2017 (KO meeting held in October 2017 at Rome) and thanks to a continue interaction among the coordinator, the WP leaders, the ERA-PLANET staff has been possible to build a very complex proposal and an efficient governance of the consortium has been ensuring.

The iGOSP project will implement a Communication Action Plan that covers both internal and external communication purposes.

The internal communication strategy is intended to ensure a constant and effective exchange and sharing of information between the partners (frequent exchange of emails and the setting up of the project website) as well as an effective and shared management of the knowledge generated throughout the project's activities. Therefore, the final objective of the project internal communication is to develop appropriate communication activities and mechanisms for a smooth and effective communication exchange within the project partnership.

The Project Risk Manager is the iGOSP Coordinator, Dr. Nicola Pirrone, who is responsible for the Risk Management Plan and its effective implementation throughout the project and informing project personnel on risk management.

The Risk Manager has overall facilitative responsibility for the risk management process. Specific responsibilities may include the following activities.

- Maintain the Risk Management Plan in line with configuration management procedures.
- Monitor the status of risk mitigation.
- Escalate communication if expected mitigation action deadlines are not met.
- Execute the risk closure process.



#### 2.1 Consortium Structure

To ensure an efficient governance of its activity iGOSP has been structured in nine WPs, which are reported in Figure 1 and briefly described below. A careful definition of each WP role helped the reduction of risks.



Figure 1 - Flowchart of iGOSP project showing the relationship among Work Packages

# WP1. Coordination and Management

# Coordinator: Nicola Pirrone (CNR)

WP1 is oriented to Coordination and Management of iGOSP. Project Management includes the overall management, communication and coordination between the different partners, as well as the monitoring of the scientific and technical progress of the entire project, by means of the supervision of the achieved milestones, gender equity, and other non-technical aspects.

# WP2. Conveying GMP to GOS<sup>4</sup>POPs

# Coordinator: Jana Klánová (MU)

The overall objective of WP-2 is to increase the availability and quality of information needed to track persistent organic pollutants (POPs) and anticipate changes in the global environment through harmonizing metadata production, archiving and sharing for POPs networks, and to develop advanced



web services that Parties may use to support the effectiveness evaluation policy mandate of the Stockholm Convention on Persistent Organic Pollutants and LRTAP Convention.

# WP3. Conveying GMOS to GOS<sup>4</sup>M

# Coordinator: Francesca Sprovieri (CNR)

The activity of WP3 is related to integration of the Global Mercury Observation System (GMOS) into the GEOSS Common Infrastructure (GCI). WP3 builds on the outcomes of the GMOS global network. In detail, the overall objective of WP3 consists in the conveying of GMOS network to GOS4M in order to increase the availability and quality of in situ Hg information. To achieve this goal, the integration and harmonization of ongoing observations across the GMOS ground-based monitoring sites with already existing regional network as well as new in situ measurements in areas of scarce coverage and in contaminated sites will be developed and established.

# WP4. Fostering integration of in-situ measurements and satellite data

# Coordinator: Ralf Ebinghaus (HZG)

The main objective of WP-4 is the integration of in-situ and satellite observations of atmospheric composition aiming for a better understanding of the biogeochemical cycling of mercury (Hg) and Persistent Organic Pollutants (POPs) at continental and global scales. To achieve this goal, correlations and relationships between data sets of in-situ measurements and space-based observations for parameters with potential to influence the global Hg cycle, its impact on natural ecosystems and human health, as well as the fate of POPs in the environment will be investigated.

# WP5. Fostering integration of marine measurements with smart buoys and satellite data

# Coordinator: *Milena Horvat (IJS)*

The main objective of WP-5 is the integration of in-situ and satellite observations of marine measurements aiming for a better understanding of the biogeochemical cycling of mercury (Hg) and Persistent Organic Pollutants (POPs).

# WP6. From atmospheric modelling to services and tools

# Coordinator: Henrik Skov (AU)

The scope of WP-6 is to assure that the outcome from IGOSP is applied to provide the best achievable service and tools in order to support and extent the model activities in CAMS84 and other networks



and programs. This will be done by examining what is the state of the art of atmospheric modelling of Hg and POPs.

# WP7. Up-stream services and data publication/sharing

#### Coordinator: Sergio Cinnirella (CNR)

In the context of **IGOSP** the interaction between the technologies that collect information and a data infrastructure is of extreme importance. In computer networking the term "up-stream" refers to the direction in which data can be transferred from the client to the server (uploading). An up-stream service cannot only be intended as a data gathering operation but also includes a validation process, cataloguing of information and finally its publication. All information should be collected, checked, archived, classified and published. This WP foresees the architecture design aiming to make automatic the process from data production to data publication.

# WP8. Interoperability, mid-stream and down-stream services

#### Coordinator: Stefano Nativi (CNR)

The fast progress in digital information technologies and development of high resolution sensors and tools put new exploitation and computational challenges to the Environmental Monitoring domain, especially in the context of "*IoT*", "*Big Data*" as to source and structure heterogeneity in particular, and "*Open Science*". These challenges require the development of a set of advanced mid-stream and down-stream services. Mid-stream (or middleware) services are requested to connect the diverse data systems and harmonize the shared data and information content to serve a common and unique entry point for the application developers. The mid-stream service layer exposes a set of standard and open APIs (Application Program Interfaces) to be utilized by the application developers to advance the down-stream services and provide the end users with effective and usable applications – including, but not limited to, mobile Apps. The same APIs will be used to achieve a full interoperability with the most relevant European and international infrastructures, and in particular Copernicus services and GEOSS Common Infrastructure (GCI).

# WP9. Dissemination and stakeholder engagement and training activities

#### Coordinator: Ian M. Hedgecock (CNR)

This WP optimizes the communication and dissemination of the project's results (accordingly to ERA-PLANET strategy) and to seek ways in which they may lead to commercial exploitation. To do this the WP concentrates particularly on awareness building of the outcomes of the WPs, through:

• Development of communication tools



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- Engagement with relevant user and stakeholder communities in the dissemination activities;
- Promote collaboration between science and policy through an extensive outreach activities;
- Coordination of training activities worldwide through summer schools and training workshops, incorporating existing tools like SCRC for capacity building and technology transfer.



#### 3. Methodology for risk analysis in iGOSP

The running phase of iGOSP can include risks concerning the workflow, changes in the workplan, objectives not targeted, etc.

The scoring (grading) of the risks is facilitated by using a **Risk Scoring Matrix**. Risks are analysed and evaluated in terms of **probability** (likelihood) of occurrence and the **impact** (seriousness) if they should occur.

The probability of the risk to occur is assessed by giving likelihood ratings: *Very Low* (VL), *Low* (L), *Medium* (M), *High* (H), or *Very High* (VH). On the other side the impact upon the project is given by assessing seriousness ratings: *Very Low* (VL), *Low* (L), *Medium* (M), *High* (H), or *Very High* (VH). Each risk is therefore categorized against both indicators (Probability and Impact) and graded by means of the following table. As a synthesis such table provides three scores, which classify in different grades all established risks.

	Impact (Seriousness)					
		Very Low	Low	Medium	High	Very High
Probability	Very High					
(Likelihood)	High					
()	Medium					
	Low					
	Very Low					

Score	Definition
High	An event that is extremely or very likely to occur and whose occurrence will impact the project's cost (and/or schedule) so severely that the project will be terminated or will cause significant cost (and/or schedule) increases (e.g., increases of more than 5 percent) on the project; this risk should be escalated (where possible) and reviewed frequently
Medium	An event that has a 50-50 chance of occurring and, if it occurs, will cause noticeable cost (and/or schedule) increases (e.g., increases of not more than 5 percent) on the project; this risk should be reviewed regularly
Low	An event that is unlikely or very unlikely to occur and, if it occurs, will cause small or no cost (and/or schedule) increase that, in most cases, can be absorbed by the project



# 4. Risk analysis in iGOSP

The following table shows major risks and adopted solutions in management of the governance.

RISK	SCORE	TARGET	HOW TO SOLVE		
Risk to personnel/Staff					
Loss/Serious Injury of key person	High	No loss of key person	<ul> <li>Manage critical informations</li> <li>Good information's flow</li> <li>Staff response</li> <li>Access to admin account</li> <li>Following the risks rating document and use the personal protective equipment</li> </ul>		
Loss/Serious Injury of staff person	Medium	No loss of staff person	<ul> <li>Good information's flow</li> <li>Staff response</li> <li>Skill's Overlap</li> <li>Access to administrative account</li> <li>Contracts for temporary staff</li> <li>Following the risks rating document and use the personal protective equipment</li> <li>see the Health and safety Guide</li> </ul>		
Risk to Durable Equipment/Service					
Server/Service out-of- service	Medium	Always-on Service	<ul> <li>Multiple backup and set-up files</li> <li>Nearly real time staff response</li> </ul>		



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Inability to access areas of operation for the staff Equipment's Damage/Loss	Low Medium	Area of operation always accessible for the staff No damage/loss of equipments	<ul> <li>Logistic organization</li> <li>Analysis on weather forecast</li> <li>Suitable equipments</li> <li>Following the maintenance instructions</li> <li>Following the guide reference</li> <li>Backup equipment, if possible</li> </ul>		
Delay in new instrument's Delivery	Low	No delay in measurements program	<ul> <li>Good administrative organization</li> <li>Reliable suppliers</li> </ul>		
Risk to Project					
Deviations in workplan	Low	Complete all the task foreseen by the WPs	The coordinator will contact the WP leaders to clarify the situation and the SC will find the optimal solution		
Milestone/ Deliverable out of date	Low	Achieve the milestones and submit the Deliverables as programmed in Project's tasks	<ul> <li>A reminder system in order to remember the expiration date</li> <li>Manual reminder for project's products out of date</li> </ul>		
Weak flow of communication	Low	Increase internal and external communication	Additional efforts will be made undergone to ensure optimal communication		
Loss of Document/Data	Medium	Preserve the iGOSP documentation	Digital copy of any important document/data and automatic multiple backup of them		
Unexpected expenses	Medium	No budget overrun	<ul><li>Good financial management</li><li>Guaranty fund</li></ul>		