



NEWSLETTER

ISSUE No 1, November 2006

DIVERSITY – Supporting the CBD

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Introduction

After the successful Tender process at ESA, the technical team that will carry out the DIVERSITY project would like to introduce itself:

Our consortium consists of the following key companies/organisations:

- GeoVille Information Systems GmbH (GeoVille), Austria,
- Nansen Environmental and Remote Sensing Center (NERSC), Norway,
- Marine Spatial Ecology Lab (MSEL), University of Exeter, United Kingdom,
- Collecte Localisation Satellites (CLS), France.

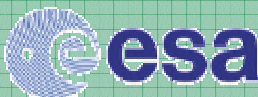
The team will be lead by the company GeoVille, Austria. As a scientific reviewer Dr. Arthur Dahl, a consultant to the United Nations Environment Programme (UNEP) has been selected.

The project will be operated with strong involvement of the organisations selected as champion users by ESA:

- UNESCO,
- The Secretariat of the UN Convention on Biological Diversity (CBD),
- Centro American Commission for Environment and Development (CCAD),
- MarViva.

We are looking forward to the project and a good collaboration between the Agency, users organisations and the project team!

The DIVERSITY Team



Project Summary

The DIVERSITY project aims at studying, defining, demonstrating and validating a number of geoinformation products and services based on Earth Observation (EO)-technology for supporting the user community involved in the implementation of the United Nations Convention on Biological Diversity (CBD) in Central America. ESA has identified several champion users (UNESCO, CCAD, CBD Secretariat, MarViva) strongly engaged within the community of biodiversity. They have formulated initial users requirements for distinct products and services to be elaborated and implemented within the proposed project.

The following approaches are foreseen to generate the products belonging to each of the a.m. product groups.

Dry-Land Biodiversity Indicator Maps

This product will be a status map of worldwide drylands and their changes over the past 13 years (1993 to 2005) to support the CBD 2010 Biodiversity Target. Data sources for the product will be GlobCover, GlobCarbon, Global Land Cover (GLC) and Global Land Cover Characteristics (GLCC). From these global land cover databases the development of seven indicators (2 status, 5 trend) is proposed, which will illustrate the human pressure on dryland ecosystems as well as the impact of land degradation. The derived maps and indicators will be validated using higher resolution national land cover databases for specific parts of the global map.

Mesoamerican Biological Corridor Maps

This service ("Regional Information service to support the planning and monitoring of the Mesoamerican Biological Corridor") will provide regional and – for five selected areas – local information on land cover, land cover changes, and derived indicators. The proposed products will be derived based on satellite imagery from ENVISAT – MERIS and ASAR wide swath - and SPOT, respectively. Up-to-date land cover maps will be derived at the regional and local level, applying hybrid (supervised/unsupervised and object based) image classification techniques and vegetation index based monitoring of spectral changes (MERIS). The latter shall provide regional information on ongoing land cover changes in order to derive areas of changing land cover. Using FRAGSTAT's based indicator calculation tools, spatial biodiversity and forest related indicators will be derived. Besides from stratified random sampling validation an overall map comparison will be performed with GLOBCOVER. The production will be conceived in detail and carried out in close cooperation with the main users, i.e. the CCAD and the UNESCO.

Coral Reef Maps and relevant Environmental Impacts

This product group comprises three different products:

1. ***Coral reef maps and coral reef change maps*** will be produced using the cost-effective large scale coverage of the Envisat Medium Resolution Imaging Spectrometer (MERIS) and SPOT data for detailed targeting of specific hotspot areas. MERIS data will be subjected to traditional 'whole pixel' classification and also new unmixing methods MSEL are developing in-house. Assessment of the capability for detecting coral bleaching will also be carried out (using modelled data in the event that there is no bleaching event in the project time frame). Evaluation will be carried out using existing field and Compact Airborne Spectrographic Imager (CASI) data, which we have for some of the hotspot areas.
2. An integrated ***ocean water quality monitoring service*** will be implemented based on the satellite EO data to be integrated with other information for studies of the Mesoamerican Coral Reef in the Caribbean Sea. These products will be based on experiences from other waters and ocean modelling for the Gulf of Mexico. The service will include information about chlorophyll-a, sediments, dissolved organic compounds (DOC), turbidity, sea surface temperature (SST), and surface current expressions obtained from satellite Synthetic Aperture Radar (SAR) images, as well as algae bloom assessment and modelled ocean currents.
3. ***Land sources of pollution*** will be estimated first by determination of region specific conditions affecting pollution flows. Pollutions sources will then be estimated by using characteristics of the hydrological runoff system. A river classification approach will be done to supply a classification of coast segments (corresponding to the subdivision of the drainage area) with regard to the level of mean non-point pollution intensity.

Mangrove Maps

Mangrove forest maps will be derived for two different areas of interest according the initial user requirements: Golfo de Fonseca and Eastern coast of Belize (Zona SAM). Multiple SAR data of two different time periods (e.g. 1992-1995, 2nd half of 2006) acquired by ERS-1 and ASAR, respectively, will be classified using average texture, average backscattering and temporal backscatter variability in order to obtain reliable results meeting the requested accuracy exceeding 90 %. The resulting mangrove forest maps and derived products, the change maps, will indicate those areas, where the existence of mangroves is heavily endangered.

Investigation on Wildlife Migration

Near-real-time satellite-derived maps of oceanographic conditions (sea surface temperature, water quality, surface current) in the Tropical East Pacific Corridor (TEPC) area will be derived using results from ESA's Medspiration and Oceancolour projects. Oceanic conditions inducing, or at least facilitating, marine migrations from Galpagos to Isla de Cocos will be studied. Services will be based on existing products so that no major technical difficulty is expected.

Project consortium

DIVERSITY incorporates different products, which need different expertise and experience for production. The consortium including the selected scientific advisor fully complements in order to meet this strong requirement.

Figure 1 describes the project set-up and illustrates the complementary partner experiences and responsibilities.

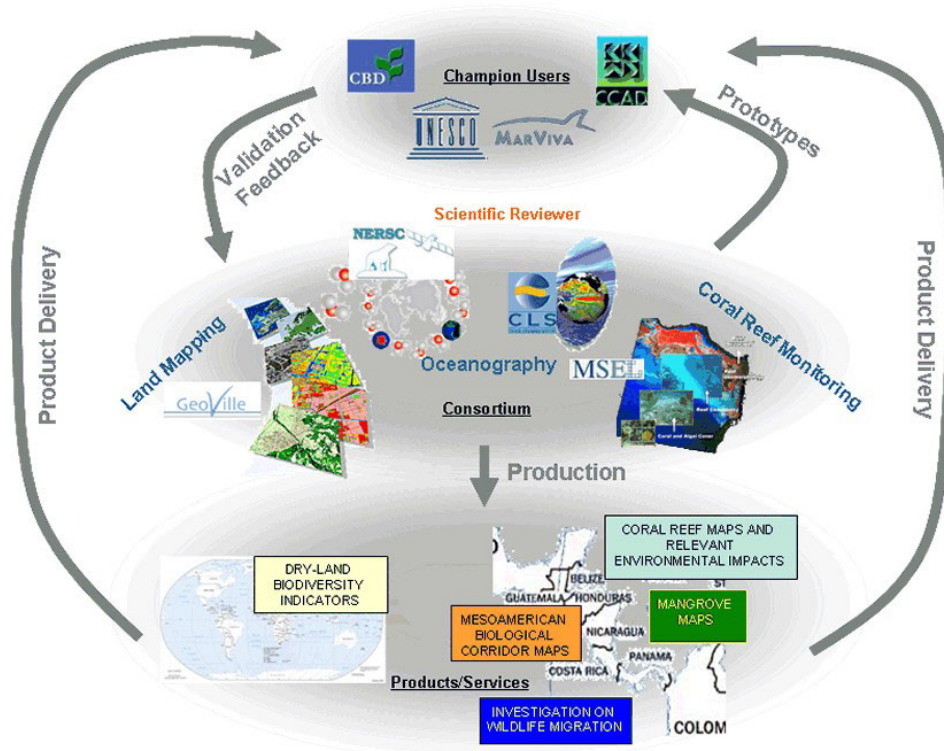


Figure 1: Illustration of the project set-up

Partner background experiences range from landmapping (by use of remote sensing and GIS) and oceanography to coral reef monitoring. A scientific advisor with strong background in indicators, biodiversity, islands, and coral reefs will review the scientific approaches and selected processing strategies for generating the products requested from the champion users. In addition, we have selected Dr. Wolfgang Pagenkopf from the company geodaten i&a, Germany, who is a specialist on mapping land sources of marine pollution.

The following table provides links to the involved partners for further information:

GeoVille Information Systems GmbH, Austria	www.geoville.com
Nansen Environmental and Remote Sensing Center (NERSC), Norway	www.nersc.no
Marine Spatial Ecology Lab (MSEL), University of Exeter, United Kingdom	www.projects.ex.ac.uk/masel/projects/sensing.html
Collecte Localisation Satellites (CLS), France	www.cls.fr

Project- and product managers

The project manager assigned for DIVERSITY from ESA is

Diego Fernández Prieto
 EO Science & Applications Department
 European Space Agency
 Address: ESA-ESRIN, Via Galileo Galilei, 00044 Frascati, Rome, Italy
 Phone: ++39 06 94180 676
 Fax: ++39 06 94180 552
 Email: Diego.Fernandez@esa.int

The project manager and main interface between the consortium and the champion users is

Lutz Petrat
 GeoVille Information Systems GmbH
 Address: Museumstraße 9 – 11, A-6020 Innsbruck, Austria
 Phone: ++43 (0)512 562021-10, Fax: ++43 (0)512 562021-22
 Email: petrat@geoville.com

As each of the partners has a specific experience and expertise, each partner organization takes a product specific leading role in the technical product/service development. An overview on the product managers linked to each product requested is given in the following table.

Table 1: Requested Products and related Product Managers

Products		Partner Responsibility	Product Manager	Involved Champion Users
1	Dry-land Biodiversity Indicator Maps	GeoVille	Stefan Kleeschulte GeoVille Information Systems GmbH Museumstraße 9 – 11, A-6020 Innsbruck, Austria Phone: ++43 (0)512 562021-0 Fax: ++43 (0)512 562021-22 Email: stefan.kleeschulte@uab.es	CBD
2	Meso-american Biological Corridor Maps	GeoVille	Ute Gangkofner GeoVille Information Systems GmbH Museumstraße 9 – 11, A-6020 Innsbruck, Austria Phone: ++43 (0)512 562021-15 Fax: ++43 (0)512 562021-22 Email: gangkofner@geoville.com	CCAD UNESCO

Products		Partner Responsibility	Product Manager	Involved Champion Users
3.1	Coral Reef Maps	MSEL	Peter Mumby Marine Spatial Ecology Lab University of Exeter, The Queen's Drive, Exeter, Devon, UK EX4 4QJ, UK Phone: ++44 1392 661000 Fax: ++44 1392 263700 Email: P.J.Mumby@exeter.ac.uk	CCAD UNESCO MarViva
3.2	Water quality and conditions	NERSC	Lasse Pettersson Nansen Environmental and Remote Sensing Center (NERSC) Thormøhlensgt. 47, N-5006 Bergen, Norway Phone: ++47 55 2058 00 Fax: ++47 55 2058 01 Email: lasse.pettersson@nersc.no	CCAD UNESCO MarViva
3.3	Land sources of marine pollution identification	GeoVille	Jürgen Weichselbaum GeoVille Information Systems GmbH Museumstraße 9 – 11, A-6020 Innsbruck, Austria Phone: ++43 (0)512 562021-17 Fax: ++43 (0)512 562021-22 Email: weichselbaum@geoville.com	CCAD UNESCO MarViva
4	Mangrove Maps	GeoVille	Lutz Petrat GeoVille Information Systems GmbH Museumstraße 9 – 11, A-6020 Innsbruck, Austria Phone: ++43 (0)512 562021-10 Fax: ++43 (0)512 562021-22 Email: petrat@geoville.com	CCAD UNESCO MarViva
5	Investigation on Wildlife Migration	CLS	Philippe Gaspar Collecte Localisation Satellites 8-10, rue Hermés 31520 Ramonville, France Phone: ++33 561 3947 81 Fax: ++33 561 3937 82 Email: Philippe.Gaspar@cls.fr	UNESCO MarViva

Invitation to Kick-Off Meeting

The project DIVERSITY will officially be initiated on a Kick-Off meeting to be held at ESRIN, Italy.

We therefore formally invite all champion users to participate at this meeting in order to start with the collaboration at the very beginning of the project!

The meeting is foreseen to be held alternatively between 27 – 30, November or 12 – 15 December depending on the partner's availability. We propose to have a two days meeting in order to start with the operational work, as well.

Please give a short response regarding the most suitable meeting date for you to Diego (Diego.Fernandez@esa.int) or Lutz (petrat@geoville.com)!

The following schedule can apply (responsibilities in brackets) – you are kindly invited to make any further proposals regarding points to discuss during the meeting.

1st Day – Introduction

Morning

- Formal "Kick-Off" (ESA)
- Introduction of involved champion users and the consortium (ESA)
- Summary on project's contents (GeoVille)
- Notes on management aspects, e.g. project plan, responsibilities (GeoVille)
- Short Presentation on the partners skills and experience (GeoVille, NERSC, MSEL, CLS)
- Presentation of the champion user's fields of work (UNESCO, CBD, CCAD and MarViva)

Afternoon

Presentation and Discussion of Initial User Requirements

- "Dry-Land Biodiversity Indicator Maps" (CBD),
- "Mesoamerican Biological Corridor Maps" (CCAD, UNESCO),
- "Coral Reef Maps and relevant Environmental Impacts" (CCAD, UNESCO),
- "Mangrove Maps" (CCAD, UNESCO),
- "Investigation on Wildlife Migration" (MarViva, UNESCO) with possibility to continue individual discussions on user requirements on Day 2.

2nd Day – Ground Truth Data Campaign Preparation

Morning

Presentation, Discussion and agreement on applicable (considering the user's facilities and resources) Ground Truth Data collection strategy and initial schedule for

- Product "Mesoamerican Biological Corridor Maps" (GeoVille),
- Product "Coral Reef Maps" (MSEL),
- Product "Water Quality and Conditions" (NERSC),
- Product "Land Sources of Marine Pollution" (GeoVille),
- Product "Mangrove Maps" (GeoVille).

Afternoon

Initial Requirements to and Training on Ground Truth Data collection for

- Product "Mesoamerican Biological Corridor Maps" (GeoVille),
- Product "Coral Reef Maps" (MSEL),
- Product "Water Quality and Conditions" (NERSC),
- Product "Land Sources of Marine Pollution" (GeoVille).

In addition to this general invitation a formal invitation to all potential participants will follow by email including a final meeting schedule.

For further information and questions or remarks regarding the Kick-Off meeting or the newsletter, please contact Diego (Diego.Fernandez@esa.int) or Lutz (petrat@geoville.com)!