

European Union (EU)
European Commission (EC)
Community Research and Development Information Service (CORDIS)

Seventh Framework Program of European Union research, technological development and demonstration activities (2007-2013) focuses on building an integrated European Research Area (ERA) to achieve lasting and sustainable economic growth

GMES, which stands for Global Monitoring for Environment and Security, is a European programme (FP7) for the implementation of a European capacity for Earth observation. Initiative of the European Commission and European Space Agency. GMES will provide decision-makers who rely on strategic information with regard to environmental and security issues with an independent and permanent access to reliable data.

SAFER implements and validates the preoperational versions of the GMES Emergency Response Service.

SAFER will extend the use of its products to early warning (before the emergency situation occurs) and to reconstruction (after the emergency situation has occurred).

The general goal of ReSAC is to facilitate local, national and international authorities, as well as private enterprises, to introduce RS/GIS products into agricultural and environmental management, land cover/land use, soil and forest inventory, water resources, environmental hazards, disaster management and urban planning.

Global monitoring for environment and security

The aim of the Space theme under FP7 is to support a European Space Programme focusing on applications such as GMES with benefits for citizens and for the competitiveness of the European space industry.

The Global Monitoring for Environment and Security (GMES), is a European programme for the implementation of an European capacity for Earth Observation.

The main objective of GMES is to monitor and better understand our environment and to contribute to the security of every citizen. Land, sea and atmosphere – each Earth component is observed through GMES, helping to make our lives safer.

The purpose of GMES is to deliver information which corresponds to user needs. The processing and dissemination of this information is carried out within the "GMES service component".

The thematic areas within the GMES service component comprise:

- land, marine and atmosphere information
- climate change information
- emergency and security information

Services

The provision of these first services is ensured through R&D projects funded under the 7th Framework Programme of the European Union.

GMES in Bulgaria

GMES - Bulgaria project aims to support the participation of Bulgaria and other member-states and candidate countries in the European Earth Observation Program - Global Monitoring for Environment and Security. The establishment of a single national point called Bulgarian Information Office for GMES (BIO) will concentrate information, advisory and support activities related to GMES in one institution, what should result in an increased efficiency and synergy.

Safer
Services and Applications For Emergency Response

SAFER Objectives

- Rapid mapping with driving priority on quick information delivery:**
 - Gradual increase of activations: 30-40-60 events per year.
 - Reference maps available in less than 6 hours.
 - Anticipation of new acquisitions, based on events monitoring, to speed-up assessment mapping.
- More complete information content:**
 - Reference mapping prepared in advance. More than 6,8 M km² covered during the project.
 - Progressive enrichment of the service with thematic maps (assets and population maps, risk maps, historical damage maps) for the different types of hazards.
- An end-to-end support service:**
 - Focal point, as single point of contact available 24H/7D to manage service delivery.
 - Service gateway for efficient access to products.
 - Geo-information delivered up to the intervention field, via "in-field GIS" light solutions.

Products are made from SAFER and DLR are available, with appropriate maps and geographic data on the site of DLR:

<http://www.emergencyresponse.eu>
<http://www.zkl.dlr.de>

Service organization

Emergency Response
Co-ordinated Services for Virtual Risk Management

SAFER
Services and Applications For Emergency Response

Remote Sensing Application Center (ReSAC) Bulgaria

- Established in 1998 with the support of FAO/UN
- Observer member of EARS since 2005
- R&D structure of Agency for Sustainable Development and Eurointegration - ASDE (ASDE signed a collaboration agreement with the DG JRC in 2007)

Main Objectives

- to facilitate local, national and international authorities as well as private enterprises
- to introduce RS/GIS to agricultural and environmental management,
 - land cover/land use,
 - soil and forest inventory,
 - water resources,
 - environmental hazards,
 - disaster management, and
 - urban planning
- co-operation & participation in regional and international projects

ReSAC in SAFER

Service provider and interface with the user for WP5:

- WP 30112: Plain flood risk management
- WP 30500: Assets mapping

www.resac-bg.org

WP 30112 Plain Flood Risk Management

Objective For WP 30112:
Plain flood risk management

Consolidate and validate a "Plain flood risk management" service from mapping to modelling, including damage assessment and online provision

Partners: ITD, geomer, ROSA, EURS & ReSAC

Users:
From Bulgaria:
- Executive Agency „Electronic Communications Networks and Information Systems“, MTTC
- River Basin Directorate Danube Region
- Rousse Municipality

Test sites: BG: Iskar River (Sofia region, 1,343 km²) & Roussenski Lom River (Rousse region, 1,556 km²)

Products:
- Past flood event maps
- Flood hazard maps
- Flood risk maps incl. damage assessment
- Flood information System

Test site in Bulgaria

Iskar River (Sofia Region), 1,343 km²
Roussenski Lom River (Rousse Region), 1,556 km²

Sofia Region
Rousse Region

FRA1: Past Flood Event Map (FRA1)

Maps giving information on of past events
Products are derived from satellite observation of a flood event – possibly at different time instants of the flood event

Analysis of the past flood events, based on reports from:

- Basin directorates;
- Rousse municipality;
- Statistical data.

Satellite archive search:
- Optical and radar data
Image processing and map production

For BG test sites based on previous experience of ReSAC

Sofia Region - 2005

IRS, reference image 30 June 2005
IRS, 12 Aug 2005
IKonos, June 2005
IRS, Aug 2005

FRA2: Maps showing flood hazard (potentially flooded areas; interval HQ20, HQ100, HQ1000)

Flood Hazard Maps are the results of modelling and simulation. Products show extent and flooding depth for one or more events.

Required minimum input data :

- DEM
- Water level information
- Homogeneous land use
- Modelling software

FRA2 products comprise information on flood risk zones and the impact of specific flooding scenarios (e.g. dam failure) concerning flow direction / velocity, inundation depth, and flood extent line

Data Entry (Cross sections measurements, and creating DEM based on digitised topomaps in scale 1: 5000)

Product hazard maps

Simulation of flooded areas. Wave is increasing with 1, 2, 3 and 4 meters.

FRA3: Flood risk maps incl. damage assessment Maps showing adverse consequences of floods

Flood Risk Maps show the potential adverse consequences associated with flood scenarios.

- the indicative number of inhabitants potentially affected
- type of economic activity of the area potentially affected
- the IPPC installations (larger industrial installations) that might cause accidental pollution
- potentially affected areas that have been designated for the production of drinking water or for water recreation

Flood Risk Maps show the potential damage in monetary values (€, €/m²) and the amount of population either affected or at risk for life.

The assessment of damages and losses is based on the combination of land use data and statistics with flood extent, using actual (current or historic) or potential (simulated) flood events.

Land use types based on the cadastral data;

Analyses and methodology for land use types synchronization;

Methodology for attributive information extraction and CDB preparation.

Region - Sofia
Scale - 1:25 000
Area - 250 x 250 m (10km²)
Satellite - Spot 5 (5m)
Minimum mapping unit - 6.5 ha

FRA4: Flood information system for public use (webbased); integrating FRA1, FRA2, FRA3 and any further relevant information

www.floodrisk.eu

The flood information system has been set up within the framework of the already completed GMES projects RIS-EOS and PREVIEW. Currently it is being extended in the context of the GMES project SAFER. This extension consists of the geo-information content and technology. Geographically the focus of work is put on Romania, Bulgaria, Spain and France.

An essential objective of this service is the standardised depiction of flood hazard and flood risk maps as well as of assets maps and damage potential maps. The contents have been developed in RIS-EOS and PREVIEW. In the one hand or are provided as service for other projects. Contents related to the geographic focus mentioned above are in preparation.

The flood information system is operated jointly by Interim GmbH (Frankfurt/Main) and General GmbH (Hamburg). In the framework of the SAFER project the geo-information products generated by Euronorm, ROSA, Interim France, ReSAC and ROSA will be accessible via this portal.

In addition to the designed maps detailed information (data basis, methodology) is available via respective links. New contents will be updated according to availability. For an additional view from project an overview of the service portfolio please click here.

FRA4 supports reliable and quick access to and use of data and information relevant for efficient flood risk management and decision making.

mapping procedure historic maps background information contact

WP 30500 Assets Mapping

WP 30500 Assets Mapping

- Consolidation, validation and initial provision of assets maps for European water management and civil protection users,
- based on a harmonised approach, and thus fulfilling the requirements of a cross-cutting / generic service.

Partners: ITD, geomer, ROSA, ReSAC, EURS, INDRA & ITF

Users:
From Bulgaria:
- Executive Agency „Electronic Communications Networks and Information Systems“, MTTC
- River Basin Directorate Danube Region
- Rousse Municipality

Test sites: BG: Iskar River (Sofia region, 1,343 km²) & Roussenski Lom River (Rousse region, 1,556 km²)

Assessment of economic values based on
Land use information
Socio-economical statistics

Products:
- Basic European Assets Map (BEAM): CORINE, EUROSTAT statistics
- Intermediate Assets Map (Higher Resolution Assets Map (HIRAM)):

- < Land use data more detailed than CORINE (e.g. SIOSE; GSE Land M2.1)
- < Urban Atlas (if available, e.g. for Sofia and Timisoara)
- < NUTS Level 3 / community level (eventually level 4 in RO due to different NUTS specification)

- Detailed Assets Map (Assets Map):
- < Object level value figures
- < Cadastral information concerning socio-economic statistics
- < House by house mapping

Critical infrastructure

This is a part of the database and maps of WP 30500 package, which ReSAC will elaborate.

DB of critical infrastructure is proposed by INDRA:

Information extracted from the urban and agricultural cadastral according to the Land Use Type and some other attributes

Critical infrastructure database - City of Rousse (SAFER project)

Sofia Municipality
Critical Infrastructure

Legend

- Health Services
- Education
- Police
- Fire
- Power
- Water
- Transport
- Other

Information extracted from the institutions addresses and digitized on the base of VHR satellite image

Critical infrastructure - Standing water bodies

A scientific research for identification and determination of the location and area of the natural and artificial standing wetlands on the territory of Bulgaria in the frame of the project: "Inventory of the wetlands in Bulgaria" of the "Le Balkan" Foundation

ReSAC – mapping of standing wetlands in Bulgaria in scale 1:50 000 over satellite images

Since 2006 - starting update wetlands database, based on VHR and HR satellite images (SPOT 5, Ikonos, Quickbird) GIS database in scale 1:25 000

Topographic maps in scale 1:50 000

Satellite images from LANDSAT TM and LANDSAT ETM

More than 7800 wetlands were identified such as lakes, dams, fish ponds, swamps, peat-bogs, etc.

Passports of standing water bodies should contain geographic and statistic information for each one wetland

River Network and Standing Water Bodies

Assets Maps

Input data:

- Land cover information
- Statistics on municipality level
 - Household area;
 - Livestock;
 - Population;
 - Employment;
 - Investments;
 - Agri production;
 - Industry;
 - GDP;
 - Salaries;
 - Vehicles.

Result:
Assets map [€/m²]

Region - Sofia
Scale - 1:25 000
Area - 250 x 250 m (10km²)
Satellite - Spot 5 (5m)
Minimum mapping unit - 6.5 ha

Overview Map
Damage potential map
Assets map
Flood extent map
Damage potential map

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Gmes Safer
European Commission
Service and Applications For Emergency Response

Links:
<http://www.gmes.info/>
<http://www.resac-bg.org/>
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