

Water Quality Services

Service Providers

- Infoterra GmbH (DE)
(service coordinator)
- GISAT s.r.o. (CZ)
- IGP (PT)
- Infoterra France SAS (FR)
- IST - Maretec (PT)
- Metria (SE)
- SYKE (FI)
- Tragsatec (ES)
- Unitelco (PT)
- YDreams (PT)

Reference Users

- International Commissions for the Protection of the Moselle and the Sarre (IKSMS/ CIPMS) (DE, FR, LU, BE)
- Administration de la Gestion de l'Eau (LU)
- Agence de l'Eau Rhin-Meuse (FR)
- River Basin Authority Weser (FGG Weser) (DE)
- German Federal Environment Agency (UBA-D) (DE)
- Ministry for Environment, Forestry and Consumer Protection Rhineland-Palatinate (DE)
- Ministry for Environment Saarland (DE)
- Ministerio de Medio Ambiente y Medio Rural y Marino (MARM) (ES)
- National Geographic Institute Spain (IGN) (ES)
- Swedish Water Authority for the Bothnian Sea River Basin District (SE)
- Southwest Finland Regional Environment Centre - Finnish Environment Institute (SYKE) (FI)
- Research Programme for Integrated River Basin Management in Research Department of Finnish Environment Institute (FI)
- Southwest Finland Regional Environment Centre (FI)
- AdP (PT)
- INAG - Portuguese Water Authority (PT)
- FenaReg - Portuguese Federation of Local Irrigation Associations (PT)
- ARH-Tejo - Tejo Hydrographic Region (PT)

Customer Statement

"The International Commissions for the Protection of the Moselle and the Sarre have a long tradition in transnational cooperation lasting more than 45 years. [...] The services delivered within the framework of the GSE Land project provide us with information that is consistent over the whole catchment area. Moreover it is of better quality than that available to date. This allows us to implement the WFD more efficiently. [...] the harmonised methodological approach



applied is also of great importance for our daily work." (Armin Müller, IKSMS / CIPMS - International Commissions for the Protection of the Moselle and the Sarre)

Users

The main users are national and international River Basin Authorities who have the direct mandate for or who are coordinating the implementation of the WFD. Additional users are national or international authorities dealing with the WFD, who are collecting, aggregating and analysing information on water quality.

User Needs / Drivers

As one main element of European environmental legislation, the WFD is becoming more and more important for all levels of water and environmental administration. Cross-border reporting and managing water resources on a river-basin scale rather than on the administrative level is one of the main challenges within this Directive.

Service

The GMES Water Quality Services focus especially on the identification and management of nutrient and plant protection agents inputs into the water cycle resulting from diffuse and point sources. The methodologies/tools applied within GSE Land are adapted to specific implementation sites, taking into account the differences in both the ecological/ environmental conditions throughout Europe, and customer-accepted validated methodologies and tools for the implementation of the WFD. The products are as follows:

- **Land Cover Mapping Products** based on high and/or medium resolution satellite imagery, fine-tuned to directly serve water quality models with key driving parameters.

- **GIS data sets** enabling spatially explicit working and reporting on issues related to the WFD (e.g. hydrological units information).

- Operating **Water Quality Models** with a focus on Nutrients and Plant Protection Agents (e.g. pesticides) to localise and assess the impact of diffuse pollution sources (e.g. as related to local agricultural practice and hydrological conditions).

Benefits

GSE Land products in combination with user-side analysis and management tools efficiently help users to define measures to fulfil the requirements imposed by the WFD, and in particular to define river basin management plans, which should help water bodies to obtain "good status" by 2015. One of the main advantages of GSE Land products is that they are designed to take into account ecological/ environmental units across administrative borders. This is a particular need for focus-topics of the WFD, namely the management of river basins as a unit and not a conglomerate of administrative units. This is very well supported by delivering services on a spatial and not merely an administrative basis.

Outlook

A representative range of products has already been provided to public agencies across Europe since 2004. GSE Land has rolled-out the services to more nations and large trans-boundary catchments. The main work in water quality modelling has been conducted within the area of the supra-national catchment of the Moselle and Sarre. In the coming period water quality modelling will also be applied to other European catchment areas like Ljusnan, Elbe, Morava, Tajo, Lake Constance and Kokemäenjoki. It was demonstrated that the application across administrative borders is of particularly great relevance to the mandated user organisations.

The "Regional Land Cover Map" and the seasonal medium-resolution vegetation information used as a key up-to-date input source have been validated in the EC FP 6 Integrated Project geoland. Both concepts have been taken up in the discussion on the evolving European GMES "Land Monitoring Core Service".

National and regional roll-out by legally mandated user organisations have got a potential to be supported by the Commissions up-coming "Interreg4" (DG Regio) and "LIFE+" (DG Environment) programmes.



Water Quality Services

Areas Mapped

2005/2006: Saar-Mosel (DE, FR, LU, BE), Weser (DE), Jucar (ES), Ljusnan (SE),
2007 ff.: Kokemäenjoki (FI), Lake Constance (DE, AT, CH), Tajo/Tejo (ES, PT), Elbe (DE, CZ), Morava (CZ), Guadalquivir/ Guadalete (ES)

Products

Land Cover Products:

Ranging applicable scale
1: 25,000 - 1:50.000: Regional Land Cover (21 classes, 1 ha urban, 5 ha non-urban), Agricultural Land Cover (specific crops at 5 ha), Arable Acreages Maps (up to 2 km² MMU), Forest Parameters (16 classes, pixelwise probabilities and accuracy)

Water Quality Products:

Nutrient diffuse pollution (nitrate, phosphorous) (using MONERIS, NOPOLU, or Source Apportionment model)
Pesticide diffuse pollution (using DRIPS model). Resolution determined by the size of target Surface Water Bodies defined by Article 3 reporting for the WFD (>10km²)

Input Data

Satellite data (MERIS, MODIS, SPOT, Landsat). In-situ data (Soil maps, DEMs, meteorological data, hydro-geological maps, statistics, census data, etc.)

Methodology

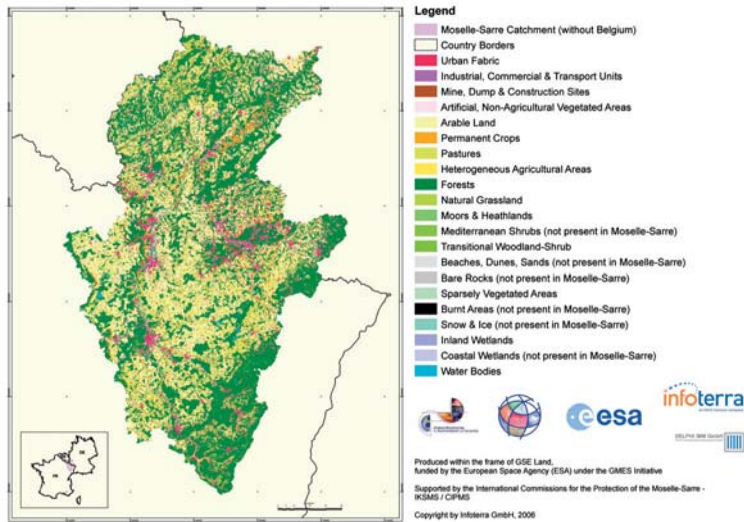
- Land use/land cover mapping (Image orthorectification, semi-automatic land use/land cover mapping based on TÜV SÜD verified production process)
- Input data harmonisation,
- GIS based model operations,
- Map/statistics/database generation

Type and Format of Output

GIS file (any format), printed maps, reports and statistics

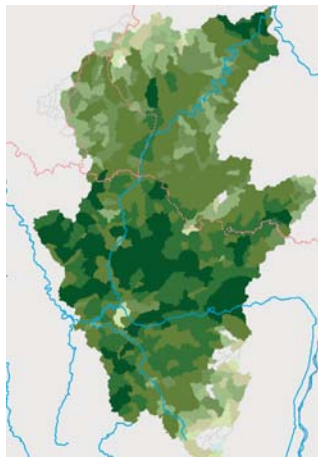
Service Portfolio & Specification Details
<http://www.gmes-gseland.info/sport/>

Regional Land Cover, one example for a potential European GMES "Land Monitoring Core Service" product (21 land use/land cover classes, minimum mapping unit: 1 ha - urban & 5 ha - non urban, overall thematic accuracy > 80%)

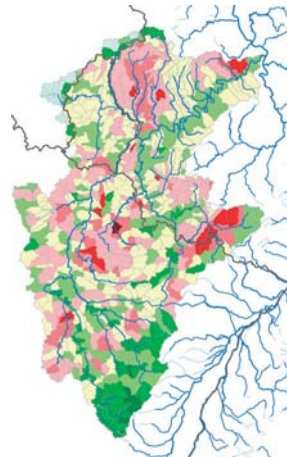


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Example: Saar-Mosel catchment,
Receiving user organisation:
IKSMS/CIPMS - International
Commission for the Protection of
the Moselle and the Saar

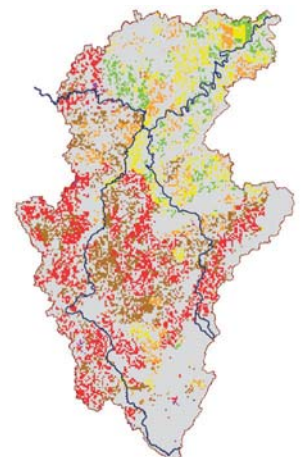
Nutrient and Pesticide Diffuse Pollution (Saar-Mosel catchment)



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Generic modelling of Nutrient Surplus (model
NOPOLU)



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Nutrient input and concentration
(NPP Service based on model MONERIS)



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Pesticide input and concentration
(model DRIPS)

Water Quality Service Providers



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