

Water Quality Services - Southern Europe

Customer Statement

"INAG (Portuguese Water authority) is responsible for the implementation of the 'Convention on co-operation for protection and sustainable use of Portuguese-Spanish River Basins [...] this service will allow the protection and management of the Portuguese-Spanish River Basins.'" (Letter of Intent of Portuguese extension of GSE-Land - J. Rocha Afonso – Vice-President of INAG).

"FenaReg (Portuguese Federation of Local Irrigation Associations)[...] is willing to use any knowledge or tools that can help its associates to improve their agriculture practices and to understand how individual activities contribute for the global catchment characteristics and the way around, how they can be affected by the catchment management policies [...]is looking forward for using GSE-Land products." (Letter of Intent of Portuguese extension of GSE-Land – José Nuncio – President of FenaReg).

"Águas de Portugal (AdP) is a major stakeholder in the water sector in Portugal providing drinking water and sanitation for about 7 million people [...] WFD and BWD is a major concern of AdP [...] AdP is highly interested in the outputs of GSE-Land extension for Portugal. (Letter of Intent of Portuguese extension of GSE-Land – José Martins Soares).

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 water quantity and quality problems.

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 GSE Land HARP-SWAT Services focus especially on the identification and management of nutrient inputs into the water cycle resulting from diffuse and point sources. HARP-SWAT are accepted validated methodologies and tools for the implementation of the WFD (www.euroharp.org). The products are as follows:

- **Land Cover Mapping Products** based on high and/or medium resolution satellite imagery, fine-tuned to directly serve SWAT model 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 to localize and assess the impact of diffuse pollution sources (e.g. as related to local agricultural practice and hydrological conditions).

Benefits

GSE Land HARP-SWAT Services in combination with user-side analysis and management tools efficiently help users to define measures to fulfill 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 HARP-SWAT 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

HARP-SWAT services have been provided to public agencies across Portugal since 2004 by IST-Maretec. In 2008 GSE Land started to provide this service in the Tagus river basin and the service is available for more national and trans-boundary catchments.

The "Regional Land Cover Map" information used as a key up-to-date input source has 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.

Service Providers

- Infoterra GmbH (DE) (service coordinator)
- IGP (PT)
- IST - Maretec (PT)
- Unitelco (PT)
- Ydreams (PT)

Reference Users

- AdP (PT)
- INAG - Portuguese Water Authority (PT)
- FenaReg - Portuguese Federation of Local Irrigation Associations (PT)
- ARH-Tejo - Tejo Hydrographic Region (PT)



Water Quality Services

Areas Mapped

Tagus/Tejo (PT)

Products

Land Cover Products:

- Nomenclature: the same nomenclature of the product M2.1.Regional Land Cover defined in S5-Service Portfolio Specification (ITDD-0421-RP-0015-S5)
- Thematic accuracy: $\geq 80\%$
- Geometric accuracy: better than 1 pixel
- Vector format
- Minimum mapping unit: 1 ha for artificial areas and 5 ha for all other classes
- Geographic coverage: the Portuguese part of the Tejo/Tagus Watershed (24.850 km²)

Water Quality Products:

Nutrient diffuse pollution (nitrate, phosphorous) (using HARP – SWAT methodology)

Input Data

Crop acreages:
Satellite data (SPOT-5 and IRS-P6 LISIII, including two seasons: Spring and Summer.). In-situ data (Soil maps, DEMs, meteorological data, hydro-geological maps, statistics, census data, etc.)

Methodology

- Land use/land cover mapping (visual interpretation)
- Input data harmonization
- GIS based model operations
- Map/statistics/database generation

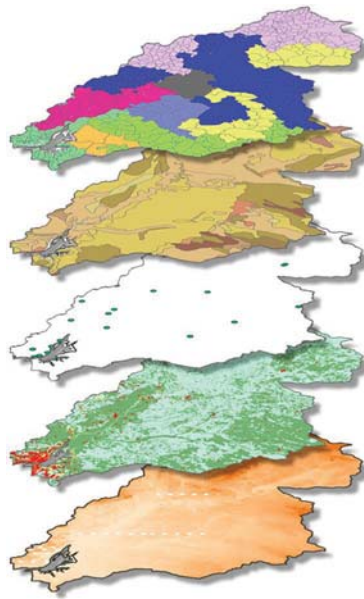
Type and Format of Output

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

Service Portfolio & Specification Details:

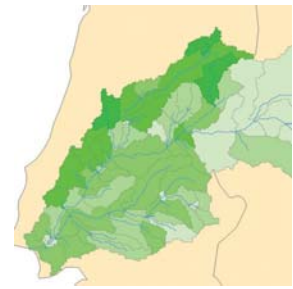
<http://www.gmes-gseland.info> and

<http://www.aquapath.info>



© IST - MARETEC, 2008

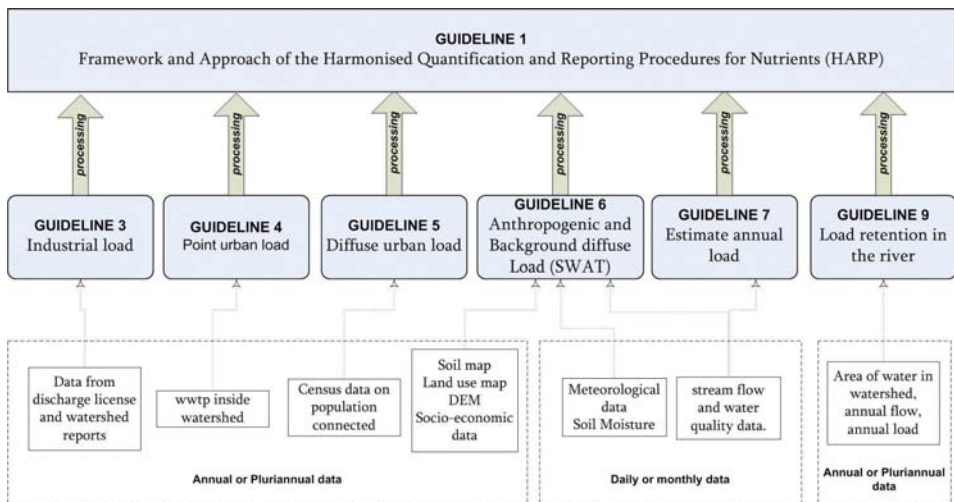
Input: Regional Land Cover (M2.1), Soil maps, DEMs, meteorological data, hydro-geological maps, statistics, census data, etc



© IST - MARETEC, 2008

Output: Example of Nutrient Diffuse Load at different levels of detail (Tagus catchment)

Watershed nutrient loads estimation Processes



© IST - MARETEC, 2008

HARP-SWAT Service Providers



Infoterra GmbH
Claude-Dornier-Strasse,
88090 Immenstaad - Germany
www.infoterra.de
Thomas Schrage
thomas.schrage@infoterra-global.com
+49 7545 8 4513



IST-Maretec
Av. Rovisco Pais,
1049-001 Lisbon - Portugal
www.aquapath.info
Pedro Chambel Leitão
aquapath@aquapath.info
Tel + 351218419424 - Fax + 351218419423



Instituto Geográfico Português
Serviços Centrais- Rua da Artilharia 1
1099-052 Lisbon - Portugal
Mário Caetano
<http://www.igeo.pt/gdr/en/>
mario.caetano@igeo.pt
Tel: +351213819600



Unitelco
Unitelco-Engenharia e Construção em
Telecomunicações, Lda.
Urbanização Vale do Alecrim, Lote 121
Pinhal Novo, 1950-683 Palmela - Portugal
www.unitelco.pt
paulo.ferreira@unitelco.pt
Tel: +351 21 238 3247 - Fax: +351 21 238 0287



YDreams
YDreams Entertainment
Research & Development
Madan Parque - Sul P-2829-149 Caparica -
Portugal
www.ydreams.com
pedro.matos@ydreams.com
Tel: + 351 21 294 9683 - Fax: + 351 21 295 2380