The Virtual Training Center of the enviroGRIDS research project is set-up for providing various learning resources to the project partners, stakeholders from the Black Sea Catchment involved in environmental management at different levels and anyone who is interested in the research topics covered by enviroGRIDS. Learning material in the virtual training center is provided from existing resources available within the enviroGRIDS consortium partners, resources generated through the research activities of the project and various contributions from workshops, symposia and conferences organized with collaboration or participation of enviroGRIDS partners in which contributions are provided from external partners, but on topics closely related to enviroGRIDS.

Since enviroGRIDS is an ongoing project, learning resources are added continuously. The complete set of learning resources and their final structuring is expected at the end of the project.

The topics covered by the learning resources include:

1. Introductory topics (River basin management concepts; Black Sea basin characteristics; Research approaches taken in enviroGRIDS)
2. Spatial data infrastructures (Standards and interoperability of spatial data using GEO and INSPIRE frameworks; Sensors data, remote sensing data and their integration; Grid-enabled spatial infrastructure)
3. Scenarios of long term changes (Population growth models; Climate change models; Land-use change models; Integration of models for composite scenarios development)
4. Catchment modelling using the Soil and Water Assessment Tool-SWAT (Introductory lectures on SWAT; SWAT modelling concepts and data requirements; SWAT modelling interface - ArcSWAT; Calibration, validation, sensitivity and uncertainty in SWAT modelling; Usage of the computational GRID for SWAT modelling tasks; SWAT model applications in the Black Sea catchment; Related modelling topics)
5. Long term impacts on selected societal benefit areas (Biodiversity and ecosystems, including alien species and wetlands; Agricultural impacts - usage of the GIS-based EPIC model [GEPIC]; Energy; Health; Flood risk assessment; Disaster early warning systems for aquatic alien species and floods; Overall assessment of vulnerability and sustainability)
6. Portal of the Black Sea catchment Observation System - BSC-OS (Introduction to portal tools and applications; Portal tools for grid-based data processing, management and modelling; Specific applications for decision makers, diverse stakeholders and citizens; Demonstrator case studies deployed on BSC-OS)

Topic 1: Introductory material

General

Introduction to enviroGRIDS - A. Lehmann (University of Geneva) (presentation from OpenWater symposium)

Introduction to enviroGRIDS - A. Lehmann (University of Geneva) (presentation from OpenWater symposium) (video+slides)

Lecture: Introduction to river basin management - A. van Griensven (UNESCO-IHE) - part 1

Lecture: Introduction to river basin management - A. van Griensven (UNESCO-IHE) - part 2

Topic 2: Spatial data infrastructures

Subtopic 2a: Systems interoperability

The System of Systems approach and multi-disciplinary interoperability: the EuroGEOSS experience - S. Nativi (Italian research council) (presentation from OpenWater symposium)

The System of Systems approach and multi-disciplinary interoperability: the EuroGEOSS experience - S. Nativi (Italian research council) (presentation from OpenWater symposium) (video+slides)

The What, Why and How of the OGC/WMO Hydrology Working Group - D. Lemon (CSIRO, Australia) (presentation from OpenWater symposium)

The What, Why and How of the OGC/WMO Hydrology Working Group - D. Lemon (CSIRO, Australia) (presentation from OpenWater symposium) (video+slides)

Sharing Water Data Through Web Services - D. Maidment (University of Texas) (presentation from OpenWater symposium)

OpenMI: Open Modelling Interface for integration of models and data - S. Hummel (Deltares) (presentation from OpenWater symposium) (video+slides)

Subtopic 2b: GIS and Remote sensing

Open Source Software in GIS and Environmental Modeling - D. Ames (Idaho University) (presentation from OpenWater symposium)

Subtopic 2c: GIS and remote sensing applications

Ecosystem Monitoring using Digital Change Detection Method - Example of Igneada Mangrove Forest - F. Bektas (Istanbul Technical University) (presentation from OpenWater symposium)

Determining the Impacts of Water Quality and Quantity on Public Health using GIS Technology - F. Bektas (Istanbul Technical University) (presentation from OpenWater symposium)

Subtopic 2d: Bringing GEOSS services into practice - enviroGRIDS workshop

Go to the dedicated page of this workshop for workshop material

Topic 3: Scenarios of long term changes

Available soon..

Topic 4: Catchment modelling - SWAT

Subtopic 4a: Introductory material on SWAT modelling

Main SWAT web site with software downloads, documentation, links to user groups any many other useful resources

Instructional videos on using SWAT - from the main SWAT web site

Subtopic 4b: SWAT lectures by R. Srinivasan (Texas A&M University) delivered at UNESC

Lecture 1

Lecture 2

Lecture 3

Lecture 4

Lecture 5

SWAT concepts PowerPoint presentation

Subtopic 4c: ArcSWAT (SWAT interface) screencasts by R. Srinivasan (Texas A&M Univer

Lecture 1

Lecture 2

Lecture 3

Lecture 4

Lecture 5

Lecture 6

Lecture 7

Subtopic 4d: Utilizing online resources for hydrological research

A series of videos by K. Rahman (UNIGE) explaining how to get online data to build a SWAT model

Topic 5: Impact on societal benefit areas

Subtopic 5a: GEPIC model for analysing agricultural impacts

Main GEPIC web page with links to software downloads and documentation

GEPIC software download (zip file)

GEPIC user manual download (pdf)

MODAWEC software download (zip file) ; MODAWEC is a weather generator model for daily dat

MODAWEC user manual download (pdf)

Data sources for GEPIC

Type of dataset and supporting publication

Soil data Batjes, N.H., 1995. A Homogenized Soil Data File for Global Environmental Researc

Soil map FAO, 1990. Soil units of the soil map of the world. In: FAO-UNESCO-ISRIC, Rome, I

Fertilizer IFA/IFDC/IPI/PPI/FAO, 2002. Fertilizer Use by Crops, fifth ed. International Fertilizer

Land use Portmann, F. T., Siebert, S. & Döll, P. (2010): MIRCA2000 - Global monthly irrigated

Reported yields Monfreda, C., Ramankutty, N., and Foley, J.A., 2008. Farming the planet. Par

DEM EROS Data Center, 1998. Global 3000 Digital Elevation Model (http://edcwww.cr.usgs.g

Slope USGS - United States Geological Survey, 2000. HYDRO1k.

Climate data Mitchell and Jones, 2005: An improved method of constructing a database of mo

Supporting literature (articles in scientific journals (pdf)

Application of GEPIC for Sub-Saharan Africa

Application of GEPIC in China

GEPIC model development (I)

GEPIC model development (II)

MODAWEC development

GEPIC material used in a workshop in Romania (presentation slides)

1. Introduction

2. Set-up of simulation parameters

3. Data evaluation

4. Input data preparation

Topic 6: Portal of Black Sea Catchment Observation System -BSC-OS

Subtopic 6a: Portal tools for managing spatial data

Presentation on capabilities of HS Layers (v3.2) tools for printing maps from map portals - Petr Horak (CCSS), Prague (available on YouTube)