



Feedback from users for G2 model & soil erosion data

**Geoland-2 Training event
School of Forestry and Natural Environment
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G2 data and ESDAC*



European
Commission

<http://eusoils.jrc.ec.europa.eu/projects/Geoland2/data.html>

- ESDAC hosts **FP7** project outputs
- ESDAC applies an **automated** data distribution system
- Data and documentation about **G2** are available in the European Soil Portal
- **G2** also in the **July 2011 Newsletter**

* *European Soil Data Centre*

The screenshot displays the European Soil Portal website. The header includes the European Commission logo and the text "JOINT RESEARCH CENTRE European Soil Portal - Soil Data and Information Systems". The main content area is titled "Soil Projects > Geoland 2 > Data - Maps" and features the "G2 model for erosion" section. This section describes the G2 model as a new generic model for erosion, developed through cooperation between JRC/LES/Land Management & Natural Hazards Unit/SOIL Action and the Lab of Forest Management. It estimates soil loss (in t/ha) from sheet and interrill erosion caused by splash and runoff, on a month-step basis and on a landscape scale. The model uses harmonized Carbon (TOC), BioPar products of Geoland2, the SPOT imagery, and the ASTER DEM datasets. It is a dynamic model that accounts for contemporary changes of rainfall erosivity and vegetation retention, based on empirical USLE-family models. The G2 model is described as a feasible, easy-to-run, data-driven model that is also realistic, as shown by preliminary validation with experimental erosion and sediment data. The "G2-regional" section notes that the model has been applied in the cross-border basin of the Strymonas river (14,500 km²) in South East Europe (Greece/Bulgaria). It mentions that model parameters were calibrated and validated, and that a study confirmed that monthly erosion mapping would identify critical months and allow erosion figures to be linked to specific land uses. The "Download the Data" section provides information on the data format (ASCII grid and TIFF), the ETRS89 UTM Coordinate System, and the temporal coverage (2003-2006). The "More Information - Links" section includes a reference to a paper by Panagos, P., Karydas, C.G., Gikas, J.Z., and Montanarella, L. (2011) titled "Monthly soil erosion monitoring based on remotely sensed biophysical parameters: a case study in Strymonas river basin". The "Download the article" link points to the DOI: <http://dx.doi.org/10.1080/17538947.2011.587897>. Below the text, there are four maps of the Strymonas river basin showing soil erosion for different seasons: winter, spring, summer, and autumn. The maps use a color scale from green (low erosion) to yellow and red (high erosion). A navigation menu on the left side of the page lists various categories such as HOME, Soil Datasets, Documents, Publications, Soil Projects, Completed Projects, Biochar, DIGISOIL, DSM: Digital Soil Mapping, EcoFINDERS, ERIVASSO, eSOTER, Geoland 2, Data - Maps, Agri-Env Indicators, Demonstration Sites, Documents, ISOB, LUCAS, IMEIS (MultiScale Soil Inf. Sys), Landform Classification, OSACA, Ramsol: Risk Assessment, Renewable Energy Directive, Safeland, SoCo: Soil Conservation, SoilFec, Soil Images Catalogue (SIC), SREMI (Shuttle Radar Topogr.), Soil Themes, European Soil Bureau (ESB), International Cooperation, Events - Presentations, Awareness Raising, What's new?, DIRBios - Various, Team - Action SOI, and Links.



- **Download the for free (no costs)** by accepting the license agreement
- **Simple process:** Enter the User Details in a Web form
Name, Organisation, E-mail, Country of Origin, purpose for which the data will be used.
- **ESDAC Authorisation**
ESDAC helpdesk Authorises/Rejects the user request
- **ESDAC Data Log**
Useful information/feedback both for ESDAC and for Project Managers

ESDAC Datalog

July 2011 - May 2012



- July 2011 - May 2012:
1351 data licenses
released
- **18 datasets** are
delivered through this
system
- **G2 data: 16 licenses** ,
1.2% of the total

Dataset	Downloads	% of total
European Soil Database (ESDB) Vector and Raster	651	49%
Data for the Soil Information System for the MARS Crop Yield Forecasting System	20	1.6%
Soil Profile Analytical Database 2	60	4.4%
Pan European Soil Erosion Risk Assessment data (from the PESERA project)	95	7%
Topsoil Organic Carbon for Europe	121	8.9%
Natural Susceptibility of Soils to Compaction in Europe	30	2%
Saline and Sodic Soils in the European Union	24	1.7%
Soil pH in Europe	77	5.6%
GroundWater Resources	35	2.6%
Soil Erosion Risk Assessment (MESALES Model)	32	2.1%
Spatial Layers for Estimating Soil GHG Emissions from ILUC due to the Production of Biofuels	16	1.2%
European Food Agency Data (EFSA) Data	75	5.5%
Geoland 2: Soil Erosion risk in Strymonas	16	1.2%
Interactions between soil related sciences (iSOIL)	9	0.6%
Soil Erodibility (K-Factor) in Europe	62	4.5%
Global Soil Organic Carbon Estimates	29	2.2%
TOTAL	1351	



- **Geographical Distribution:** Greece 5, One user from Austria, Bulgaria, Germany, Latvia, Russia, France, UK, *Outside Europe* 4
- **Type of users:** Majority is Universities or Research Organisations (11), Public administrations (2) , Private companies (3)
- **Intended use:**
 - ✓ *Environmental Risk assessments,*
 - ✓ *Validation/Verification of the model,*
 - ✓ *Research and development purposes,*
 - ✓ *Assess the soil erosion risk in North Greece,*
 - ✓ *Comparison of data outputs with their studies,*
 - ✓ *Education,*
 - ✓ *Assessment of ecosystem functions (soil erosion),*
 - ✓ *Conduct soil investigation and land use suitability classifications*



- **Users of AgriEnv service:** In 2008, Geoland 2 AgriENV service had registered users for the specific service of soil erosion.
- **Who are the Geoland 2 users?** NAGREF, Forest Research Institute (Ινστιτούτο Δασικών Ερευνών) , Nikola Poushkarov (Bulgaria)
- **Feedback from users :**
 - ✓ *Assessed with Geoland 2 User's feedback Questionnaire (end 2011)*
 - ✓ *Very positive*
 - ✓ *The methodology/product is very competitive at the scale of the study*
 - ✓ *.....(many other positive points).....*
 - ✓ **Criticism:** *if the model can be repeatable or can be applied in other regions / scales?*

- Service AE-04 (JRC-Soil/AUTH) over *EU-15*:
 - Feedback from Institute of Soil Science 'Nikola Poushkarov' (Bulgaria)
 - “The products could help the staff of the institute to reduce significantly the field work by providing fast and efficient “overview map” »
 - “However, the product could not replace the existing old working process but provides a parallel data source very helpful”
 - Feedback from NAGREF – FRI (Greece)
 - “Product is considered credible at 85% and very competitive: more recent data, time and cost savings, harmonised inputs”
 - Feedback from NAGREF – Athens (Greece)
 - “Product also considered as credible at regional scale”
 - “It offers an efficient tool for a fast monitoring of soil erosion in land cover”



- Panagos, P., Karydas, C.G., Gitas, I.Z., Montanarella, L. **Monthly soil erosion monitoring based on remotely sensed biophysical parameters: a case study in Strymonas river basin towards a functional pan-European service.** *International Journal of Digital Earth* (2011), Article in Press, DOI: 10.1080/17538947.2011.587897.
- *Published June 2011 (in press)*
- Requested by many scientists. Response:
<http://www.tandfonline.com/doi/abs/10.1080/17538947.2011.587897>
- Cited 4 times in less than 11 Months

What is Next?



- Quality Assurance of the model and better calibration : *sensitivity analysis of the G2 model*
- G2 in Albania: Karydas follows a Master Thesis student who applies G2 in Albania in collaboration with Mediterranean Agronomic Institute of Bari (Italy)
- Soil Erosion assessment in Greece with G2

G2 in Greece and Input Data



- **Rainfall Erosivity (R):**
 - *Monitoring Agricultural ResourceS (MARS) at 25km x 25km grid.*
 - *Rainfall intensity: from EMY and National Observatory of Athens*
- **Vegetation Retention (V):** BioPAR data (Fraction of Soil, Leaf Area Index)
- **Soil Erodibility (S):** Use of Erodibility factor according to LUCAS data (*Panagos, P., Meusburger, K., Alewell, C., Montanarella, L. Soil erodibility estimation using LUCAS point survey data of Europe, Environmental Modelling & Software, Volume 30, April 2012, Pages 143-145*) with certain calibration
- **Topographic Influence (T):** ASTER DEM
- **Interception to Slope length (I):** SPOT mosaic 25m resolution IMAGE2006



- GMES (**Global Monitoring for Environment and Security**) is the European Programme for the establishment of a European capacity for Earth Observation
- G2 and (JRC/AuTH) have been called to write a manuscript for the **50 best cases in GMES. European Space Agency (ESA)** will publish the "50 Uses of GMES across European Regions".
- Among the **12 Major achievements in Geoland-2** whole project, GMES Page: <http://www.gmes-geoland.info/achievements.html>
- Will be an Operational Service in the initial operational of GMES?



Thank you for your attention!

<http://eusoils.jrc.ec.europa.eu/>