



Italo-Maltese Workshop on Integration of the geomorphological environment and cultural heritage for tourism promotion and hazard prevention















MALTA, 24-27 APRIL 2007

**Development of a web-based GIS
promoting the natural and cultural heritage
of the karst island Gozo**

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IRMC_o, Malta

IRMCo's research portfolio

		<i>Programme</i>	<i>Project Title</i>	<i>Logo</i>	<i>Our role</i>
	2006 - 2008		EDUNatHer: Educational strategies for the promotion of cultural heritage		Task Leader WP1.2 Time management WP5.2 Publications
	2006 - 2009		PLEIADeS: Participatory multi-Level EO-assisted tools for Irrigation water management and Agricultural Decision-Support		Workpackage Leader: WP1 Gender Action Plan WP7 Impact of External Drivers (Climate Change and Policies)
	2006 - 2008		F2F: An Innovation Project for SMEs		Task Leader WP3.1 Ideas Generation (for FP7)
	2004 - 2007		OPTIMA: Optimisation for Sustainable Water Resources Management		Workpackage Leader: WP2 Socio-economic Analysis WP16 Dissemination
	2004 - 2006		ITE: An Innovation Project for SMEs		Contractor
	2002 - 2005		COLASU: Sustainability of Mediterranean coastal lagoon ecosystems under semi-arid climate.		Scientific Coordinator
	1997 - 2000		RESMANMED: Resource Management in the Karstic Areas of the Coastal Regions of the Mediterranean		Contractor

Leonardo da Vinci Pilot Project

e-duNatHer
training web tools 4 everyone

***Educational Strategies
for the Promotion of
Natural heritage***

Nov 2006 – Nov 2008



EduNatHer Partners

No	Country	Partner
P1	Greece	Geocultural Park of Eastern Pythagoras
P2	Greece	AVMAP – Info MapGIS
P3	Romania	University of Bucharest – Faculty of Geology and Geophysics
P4	Portugal	Instituto Politécnico de Bragança
P5	Italy	Università Telematica GUGLIELMO MARCONI
P6	Malta	Integrated Resources Management Company
P7	Turkey	Faculty of Engineering and Architecture – Yasar University

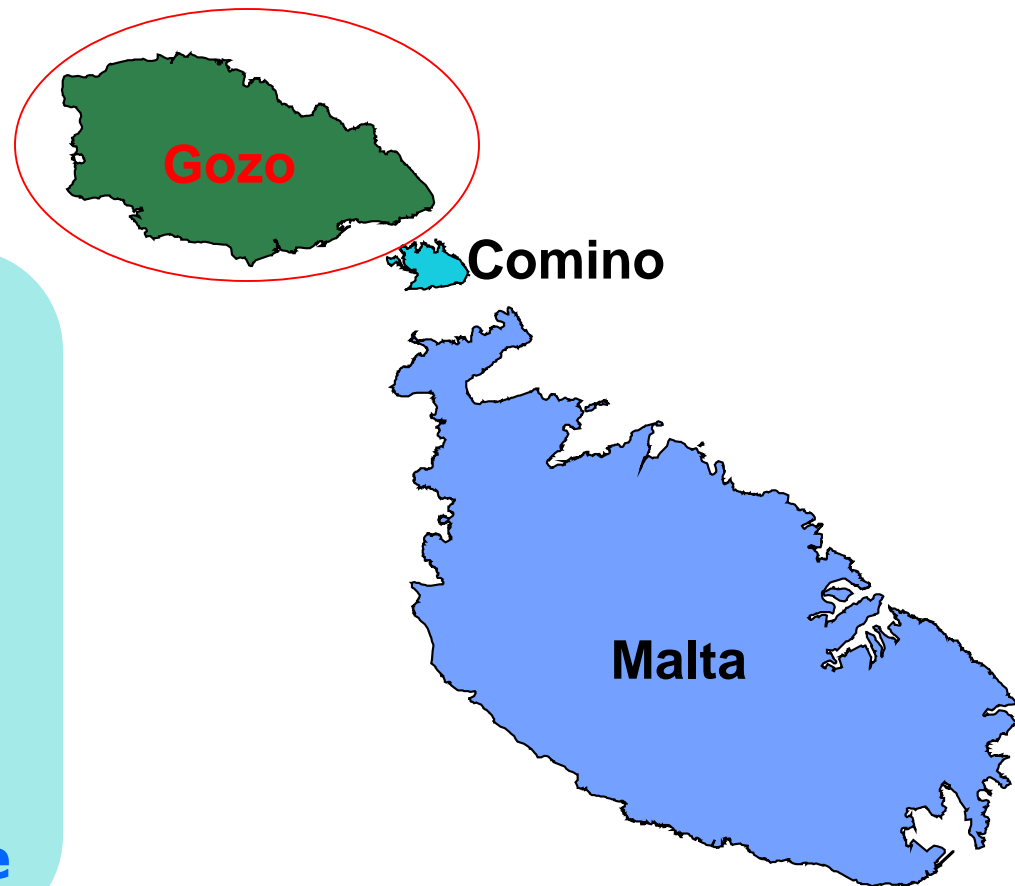
EduNatHer workpackages

WP 1	Management & Co-ordination	<ul style="list-style-type: none"> • Project co-ordination and administration • Setting up the 'Natural Education Network'
WP 2	Web portal	<ul style="list-style-type: none"> • Develop environments for internal collaboration and for dissemination • Preliminary needs analysis of end users
WP 3	Web GIS	<ul style="list-style-type: none"> • Develop a flexible web information system for data exchange and data retrieval
WP 4	Pilot projects	<ul style="list-style-type: none"> • Pilot actions with student target groups • Reinforce cooperation among academic institutes, research centres & training entities
WP 5	Dissemination – Evaluation	<ul style="list-style-type: none"> • Design & disseminate material aimed to promote the project initiatives • Evaluate the work plan and the pilot projects

Web-GIS Data Levels

<p>Web-GIS Level 1 – Europe</p>	<ul style="list-style-type: none"> • Country boundaries • E-roads • Capitals of all countries in Europe • Regional capitals • Topography (300m contour intervals)
<p>Web-GIS Level 2 – Partner Countries</p>	<ul style="list-style-type: none"> • Topography (100m contour interval) • Administrative boundaries • Main cities • Landscape data
<p>Web-GIS Level 3 – Case Studies</p>	<ul style="list-style-type: none"> • Malta: Karstic Island of Gozo

The karstic island of Gozo



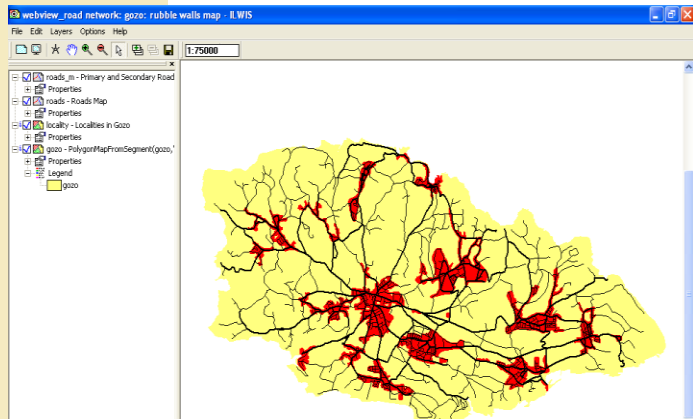
We are preparing web-GIS units on:

- **Geology**
- **Soils**
- **Water**
- **Karst features**
- **Biodiversity**
- **Landuse**
- **Cultural heritage**

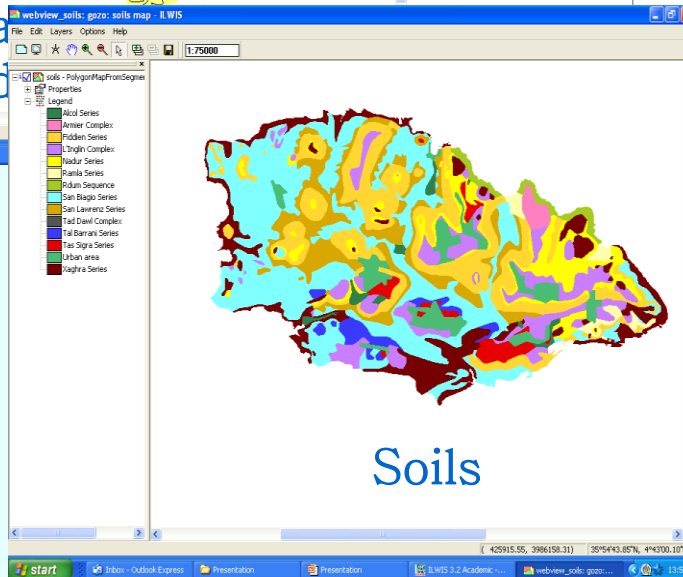
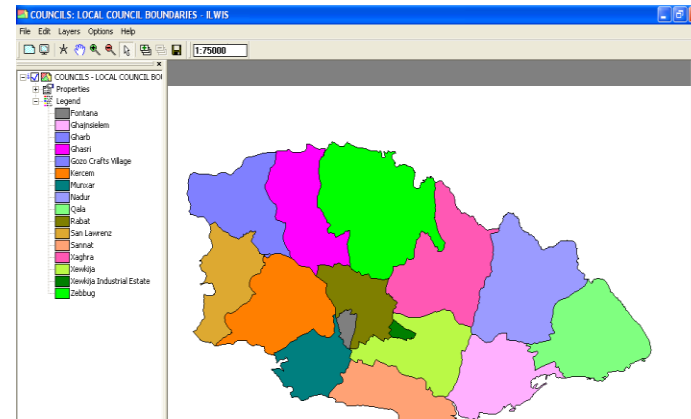
Data layers from existing maps

Data Layers	Data type	Resolution
Topography	Contours at every 25 feet interval	1:25000
Roads	Primary and secondary roads	1:25000
Landscape data	Geology	1:25000
	Geological faults	1:25000
	Karst features: Dolines	1:25000
	Soils	1:31680
	Nature reserves	1:5000
	Water courses	1:25000
	Additional karst features: caves, gorges	1:2500

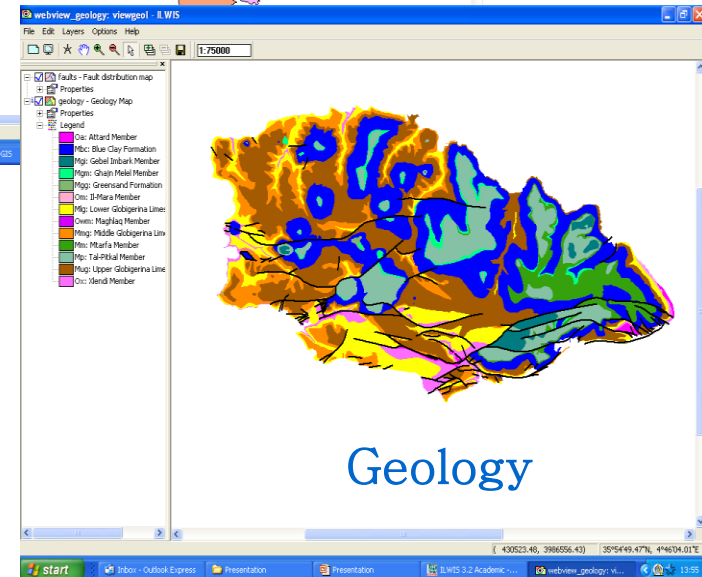
Digitization of existing maps



Urban
Road

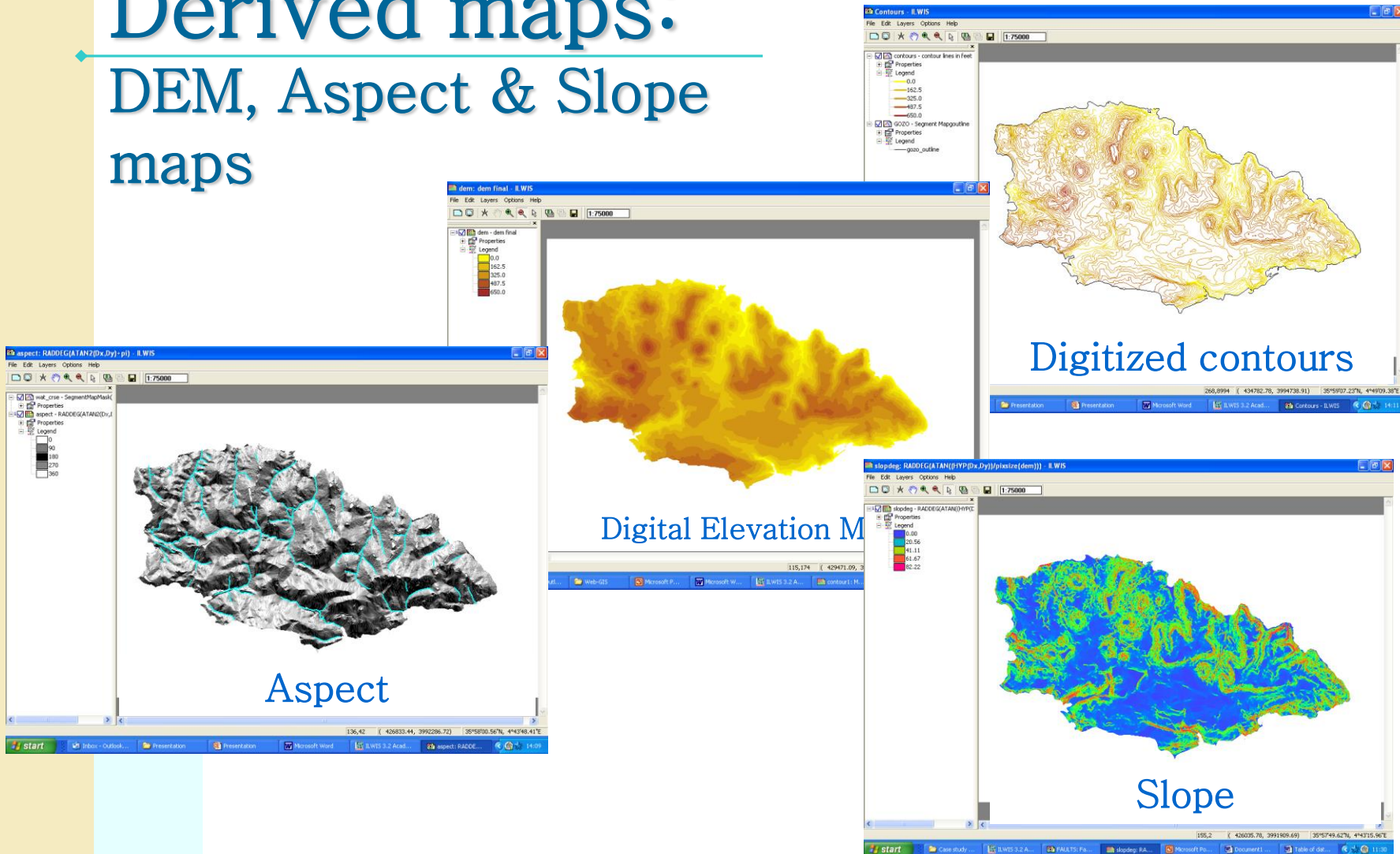


Soils

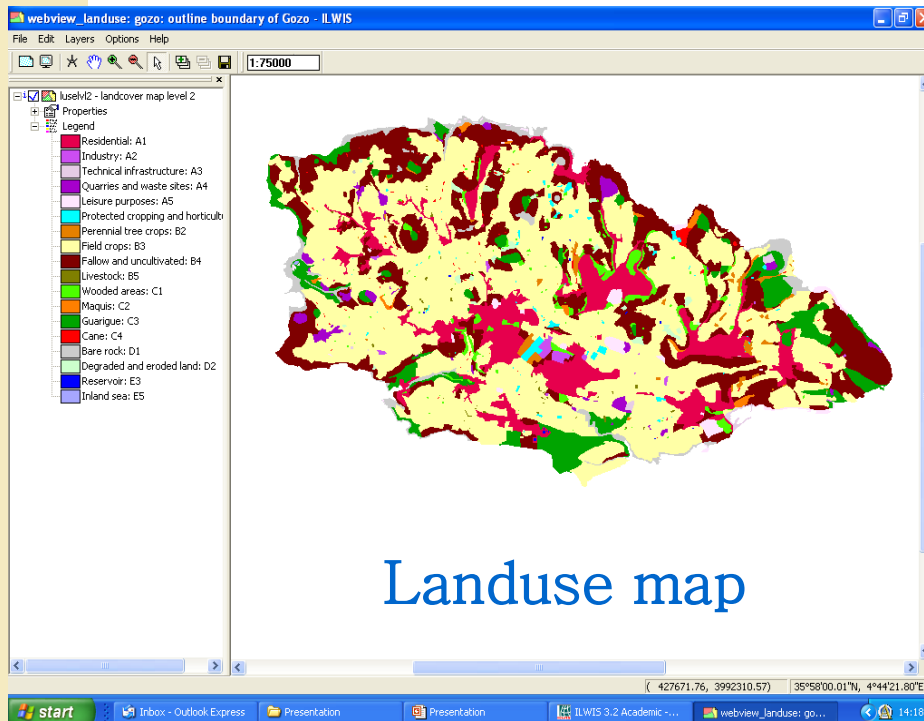


Geology

Derived maps: DEM, Aspect & Slope maps

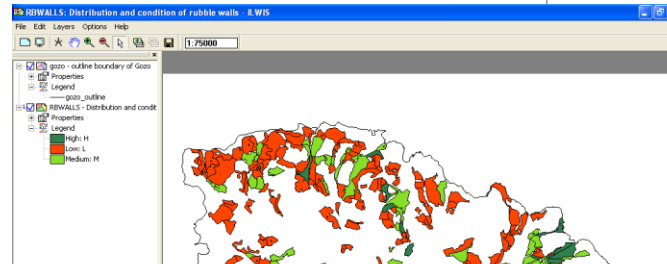
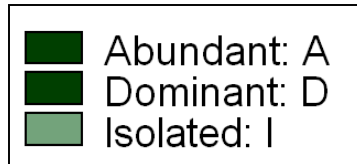


Field surveys

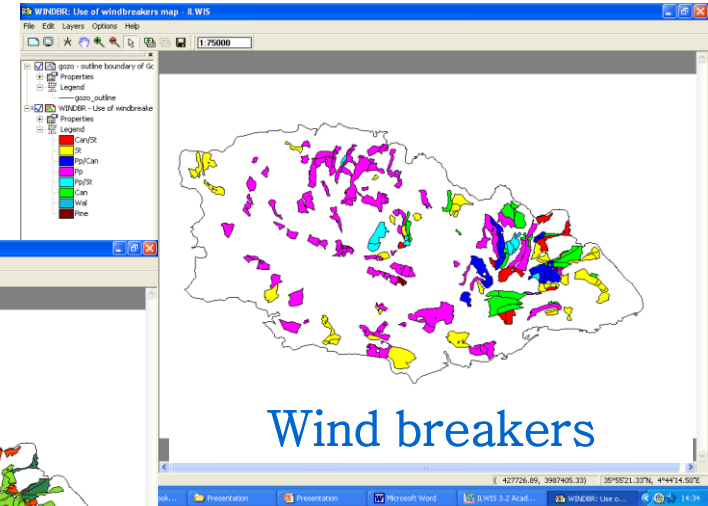


- Residential: A1
- Industry: A2
- Technical infrastructure: A3
- Quarries and waste sites: A4
- Leisure purposes: A5
- Protected cropping and horticulture: B1
- Perennial tree crops: B2
- Field crops: B3
- Fallow and uncultivated: B4
- Livestock: B5
- Wooded areas: C1
- Maquis: C2
- Guarigue: C3
- Bare rock: D1
- Degraded and eroded land: D2
- Reservoir: E3
- Inland sea: E5

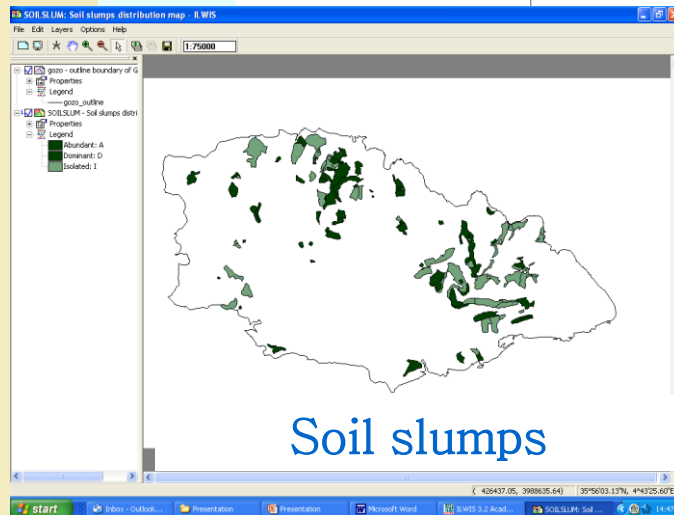
also from field surveys...



Condition of rubble walls



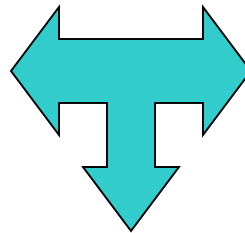
Wind breakers



Soil slumps

Identifying interdependencies

Digitizing of
existing maps
e.g. geology, soils,
roads, urban areas



Production of
maps from
field survey
e.g. land use

Interdependencies
e.g. rubble walls / soil erosion
SCI maps

Interdependencies ...

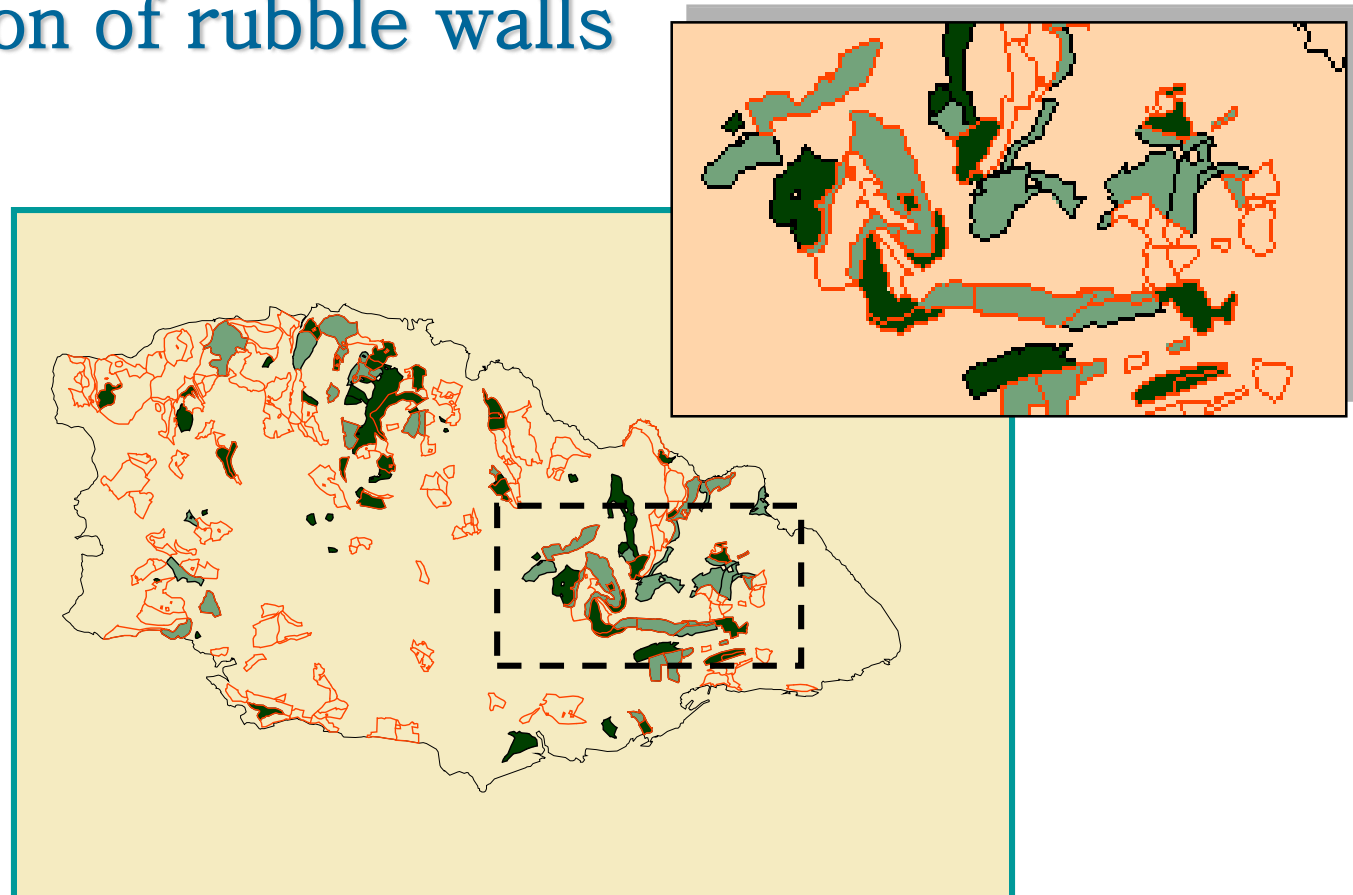
Soil erosion in relation to the condition of rubble walls

Soil slumps:

- Abundant: A
- Dominant: D
- Isolated: I

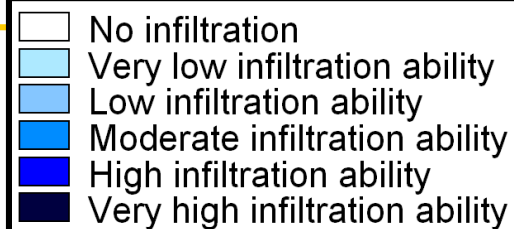
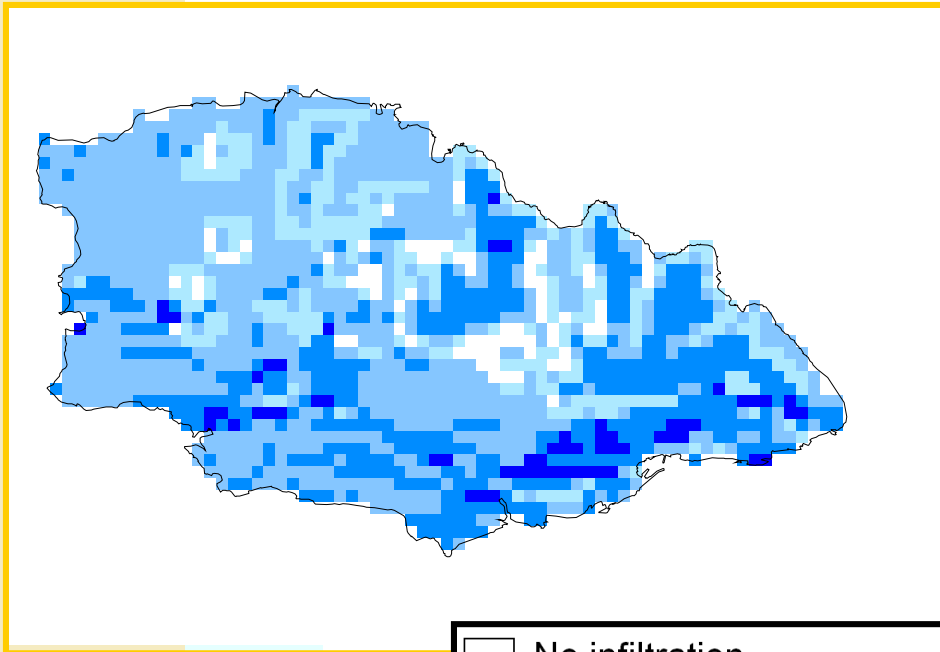
Rubble walls:

- Rubble walls in bad condition



Interdependencies ...

Surficial Cover Infiltration (SCI) Index Map



$$4$$

$$SCI = \sum_{i=1} W_i R_i$$







Weights assigned to Surficial Cover Infiltration factors

'SCI' FACTOR	WEIGHT (%)
1) Surface Lithology	35
2) Lineament	20
3) Karst Features	30
4) Drainage Density	15

SCI INDEX	Description
>0.40	No Infiltration
0.41-0.85	Very Low Infiltration Ability
0.86-1.30	Low Infiltration Ability
1.31-1.75	Moderate Infiltration Ability
1.76-2.20	High Infiltration Ability
>2.20	Very High Infiltration Ability

Interdependencies ...


SCI:

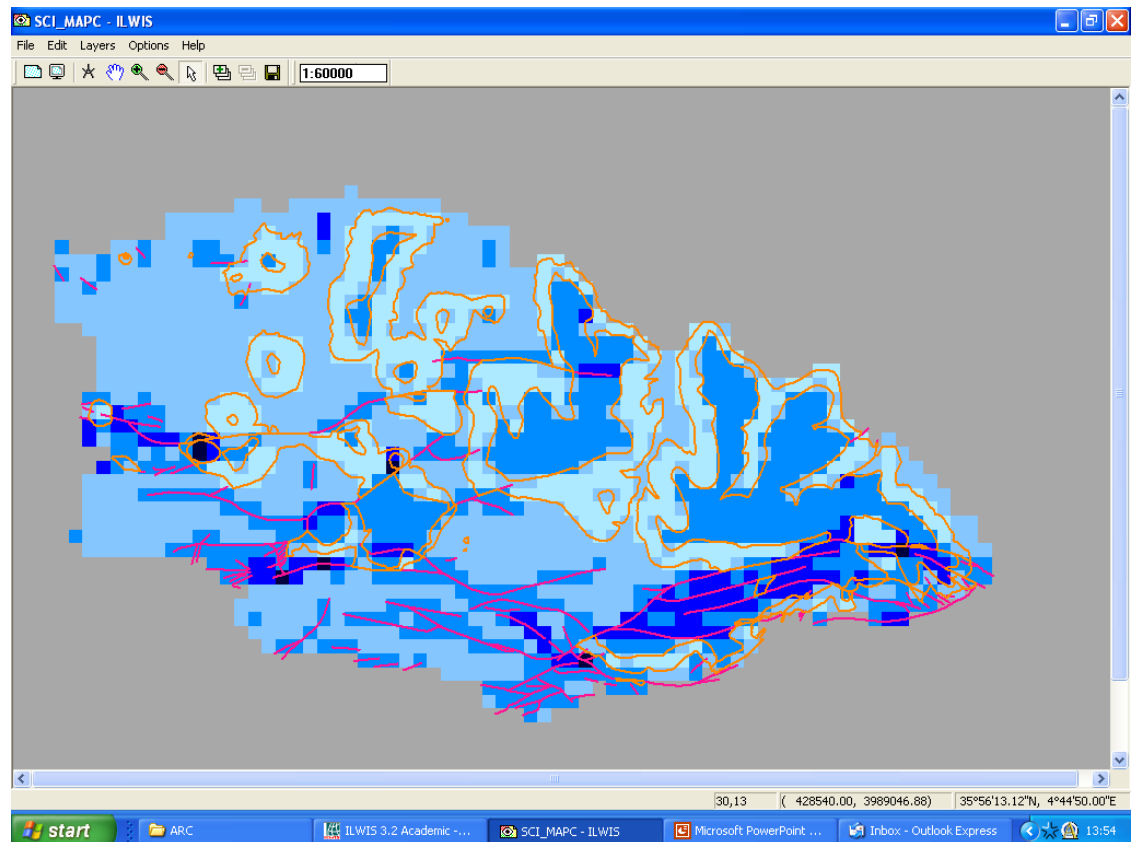
-  No infiltration
-  Very low infiltration ability
-  Low infiltration ability
-  Moderate infiltration ability
-  High infiltration ability
-  Very high infiltration ability

Surface lithology:

 Blue clay

Lineaments:

 Faults



*Thanks for your
attention!*

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