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The Greek section of ERSA



URBAN SENSIBILITY OF LANDSCAPE STRUCTURES
GENERAL CHARACTERISTICS AND LOCAL DETAILS IN ITALY

*The information and data are relative to Italian case study situation, but the photos are referred to Greece territory to have a useful comparison of the phenomena.
Photo by B. Romano*

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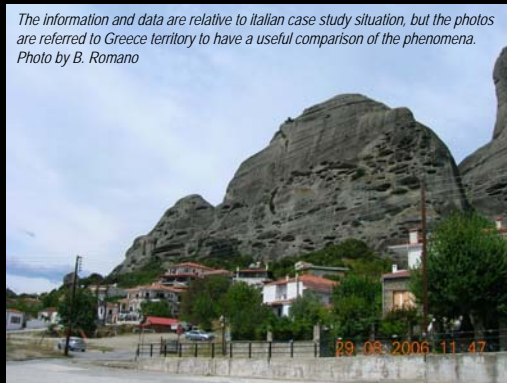
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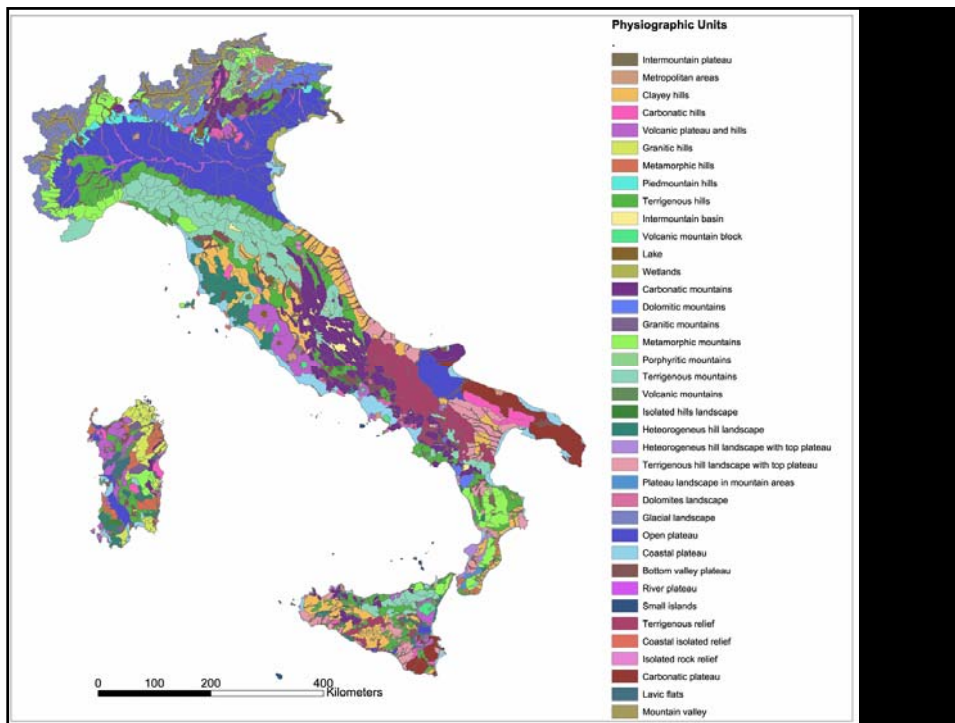


The environmental planning, since some years, has a main goal that is the mitigation of ecosystem fragmentation impacts by means the integrate researches between territorial and environmental sciences and an action on control instruments of territorial transformations.

The clear goal of these researches, now in progress, is that to establish the links between the rules of urban planning – relative to the civic quality of the cities and territories – and the effects on the ecosystem structure due to urban evolution. Is particularly important to know and draw the environmental condition before and after the anthropic transformations.

The present paper shows the characteristic data and indices on urban spaces structure and their configuration. These indices has been implemented on the bases of the Landscape Units for linking it with biodiversity analytical data to highlight causa-effect relation.

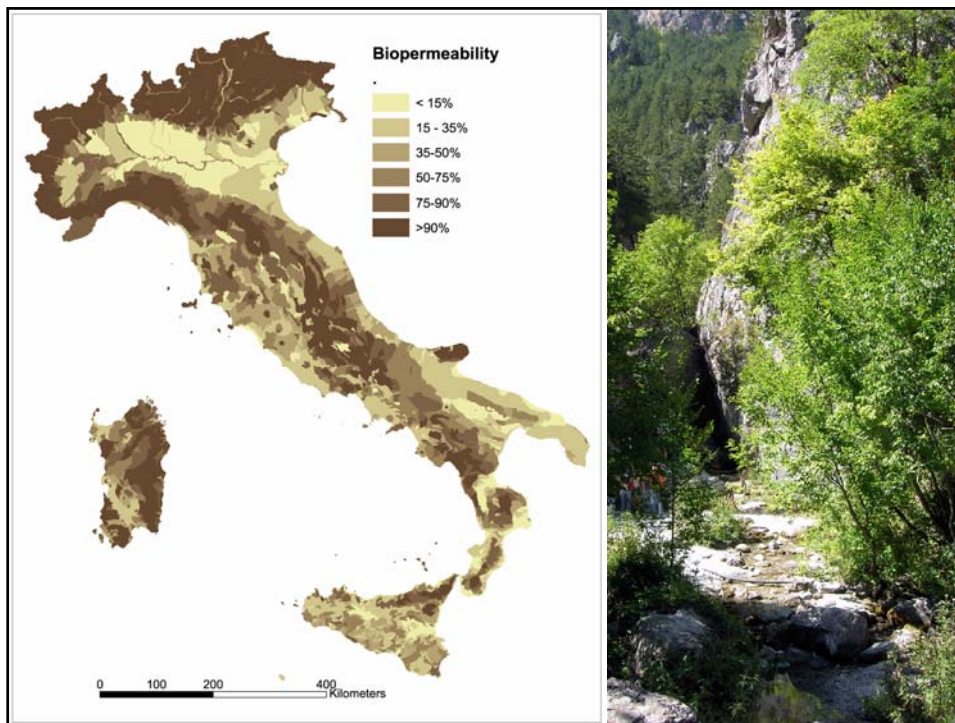




In order to the environmental characteristics one significance product that it is possible to show is the "biopermeability" map based on physiographic units. Biopermeability condition is related to the territories that are not interested by urbanisation phenomena, comprised some very intensive agricultural forms.

- Corine Land Cover categories (Level 3) linked to the biopermeability condition:
Land principally occupied by agriculture, with significant areas of natural vegetation;
Broad-leaved forest;
Coniferous forest;
Mixed forest;
Natural grasslands;
Moors and heathland;
Sclerophyllous vegetation;
Transitional woodland-scrub;
Bare rocks;
Burnt areas;
Glaciers and permanent snow;
Inland marshes;
Coastal lagoons;
Salt marshes;
Water courses;
Water bodies.

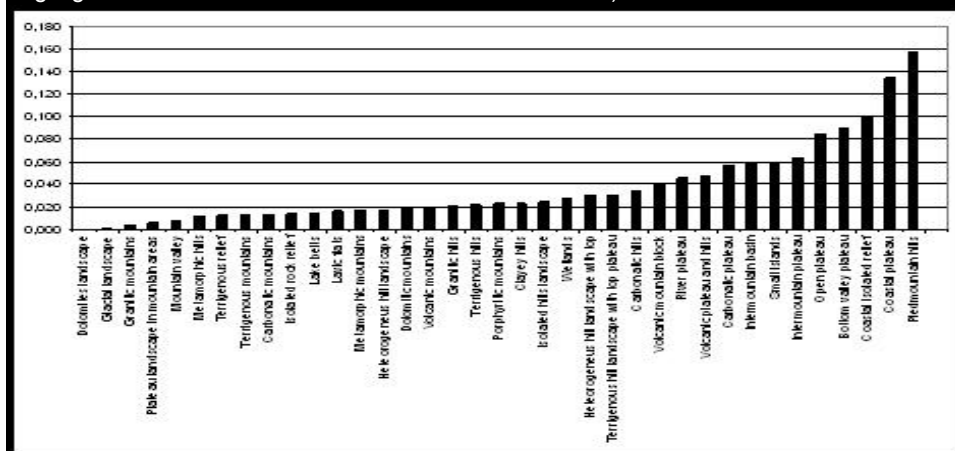


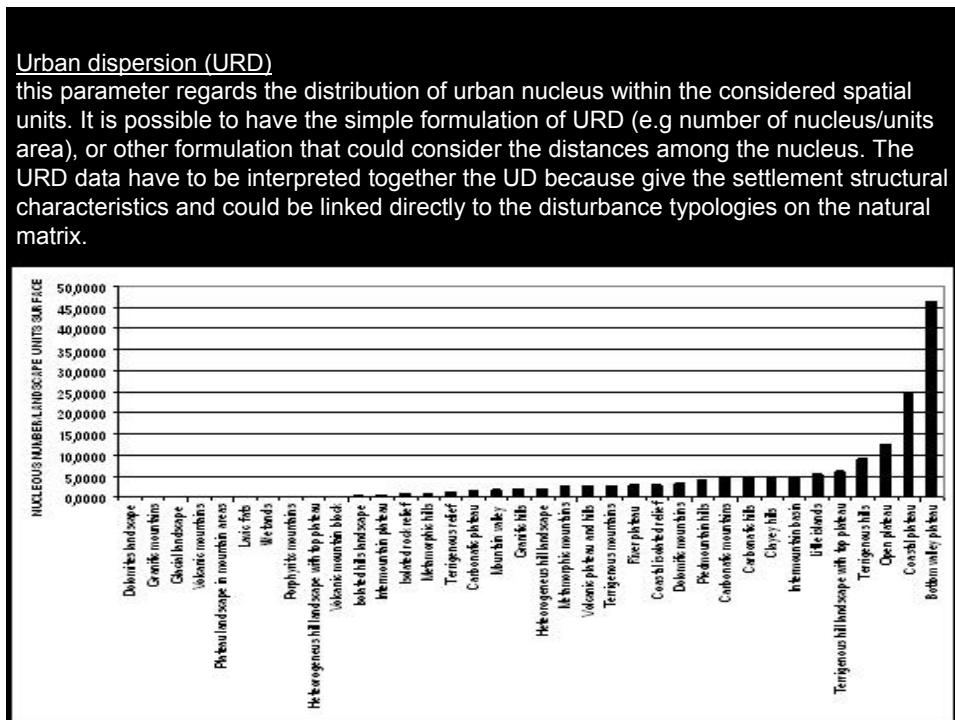
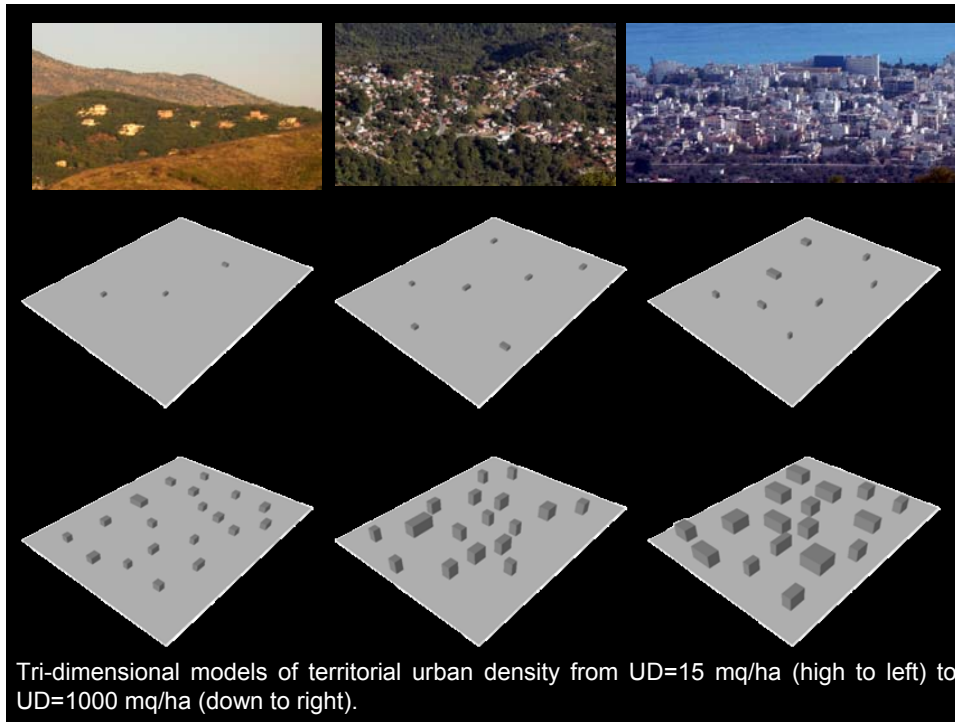


URBAN AND ENVIRONMENT SETTLEMENT PARAMETERS

Urban density (UD): this index can be implemented in different way in relation with the GIS data which are available on study area. In its easier form the index represent the surface percent covered by builds in relation with the entire surface of the considered spatial unit (mq/ha).

The significance of the UD index is directly linked to the urban sprawl and it is possible to have further information if exist data on builds destination (residential, productive, utilities, and so on), on the builds volume and inhabitants number (in this case could be highlighted the extensive and intensive urban conditions).





Infrastructural Fragmentation Index

The fragmentation caused by road infrastructure may be assessed by means of separate indices according to the type of infrastructure (motorways, railways, main roadways, local roadways, and overall standardised index) depending on the different features of environmental obstruction that each category entails for wildlife.

Infrastructural fragmentation may be measured using the Infrastructural Fragmentation Index (IFI):

$$IFI = \sum (L_i * o_i) * l_i / A_u$$

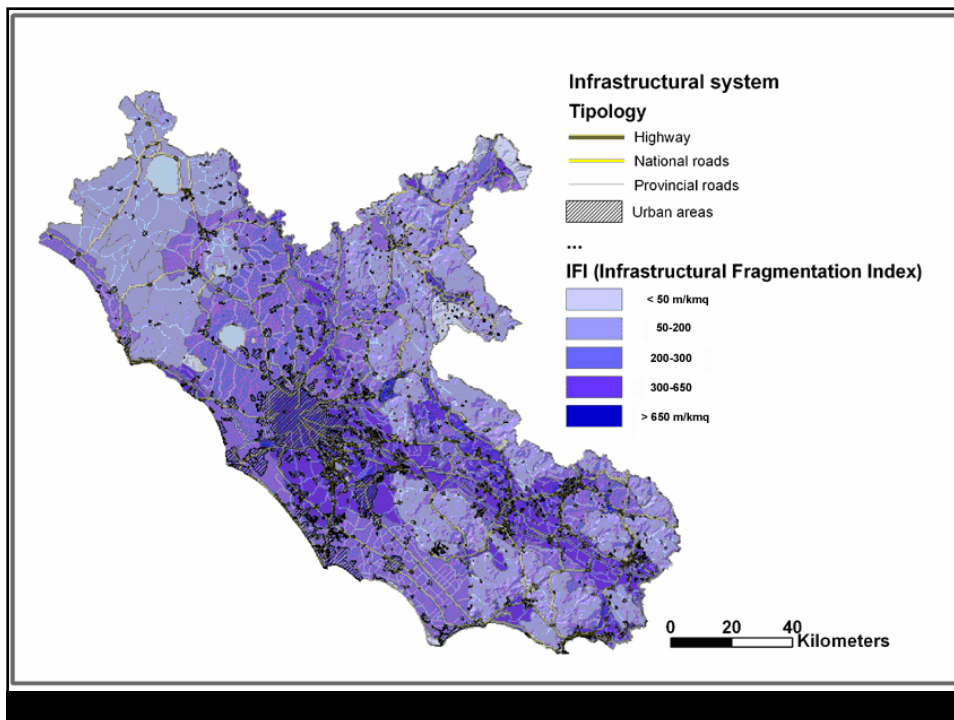
where:

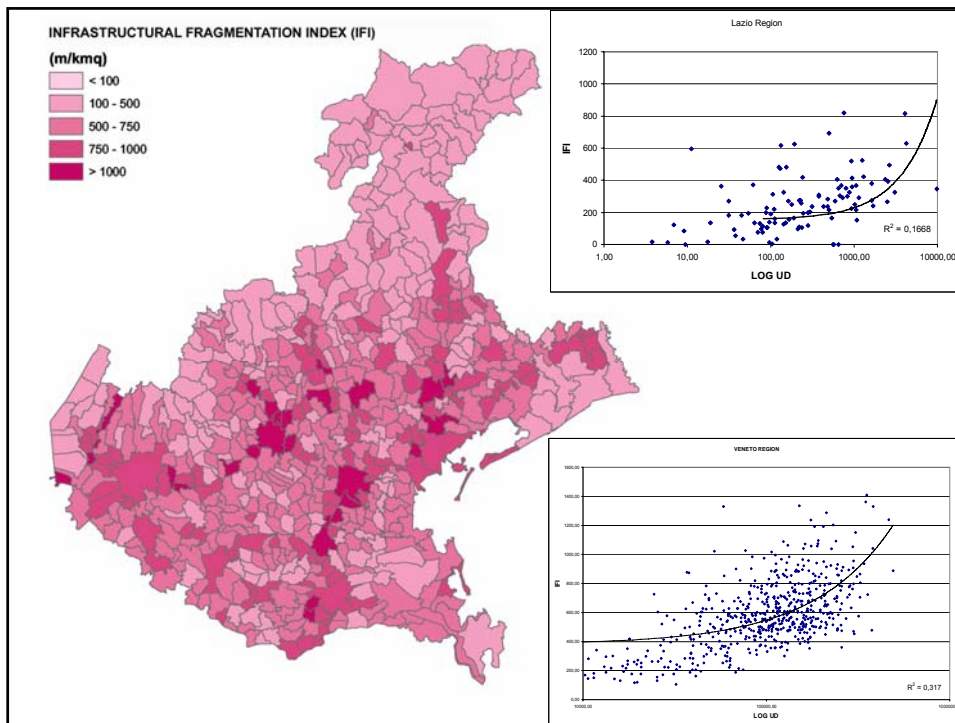
L_i = Length of the infrastructure (excluding tunnels and viaducts);

o_i = Obstruction coefficient of the infrastructure, depending on the type of infrastructure and traffic flow;

l_i = Road width ;

A_u = Area of the reference territorial unit





Urban Fragmentation Index

On the basis of the consideration that, if the size of settlements is the same, then the circular, polarised shape is the one that minimises environmental fragmentation, linear urban fragmentation can be measured using the Urban Fragmentation Index:

$$UFI = \frac{\sum L_i O_i * \sqrt{\sum S_i}}{A_U}$$

where:

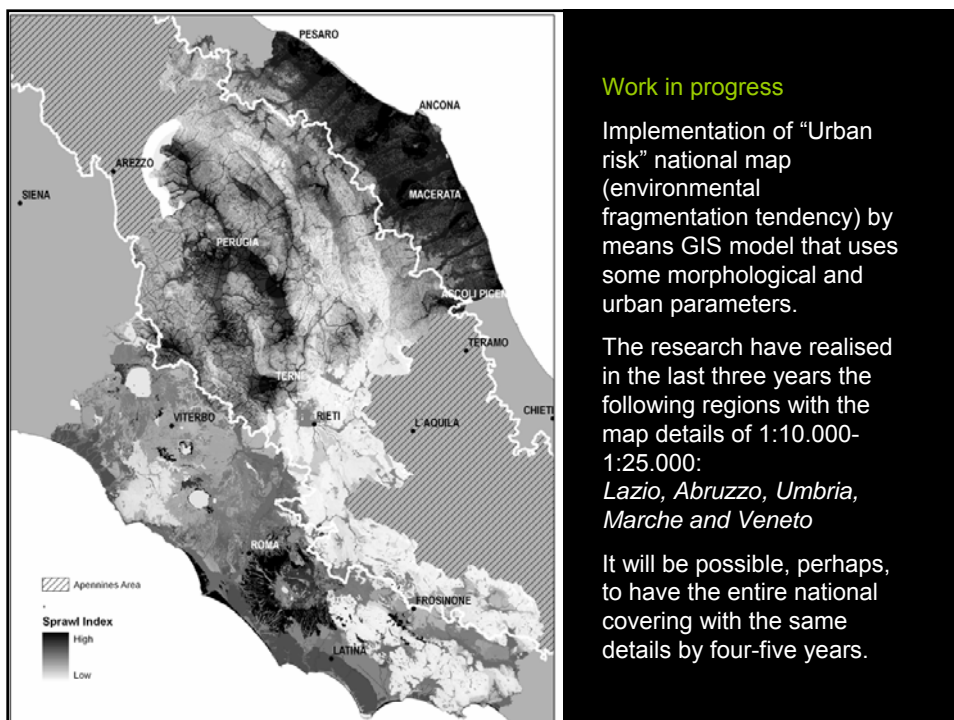
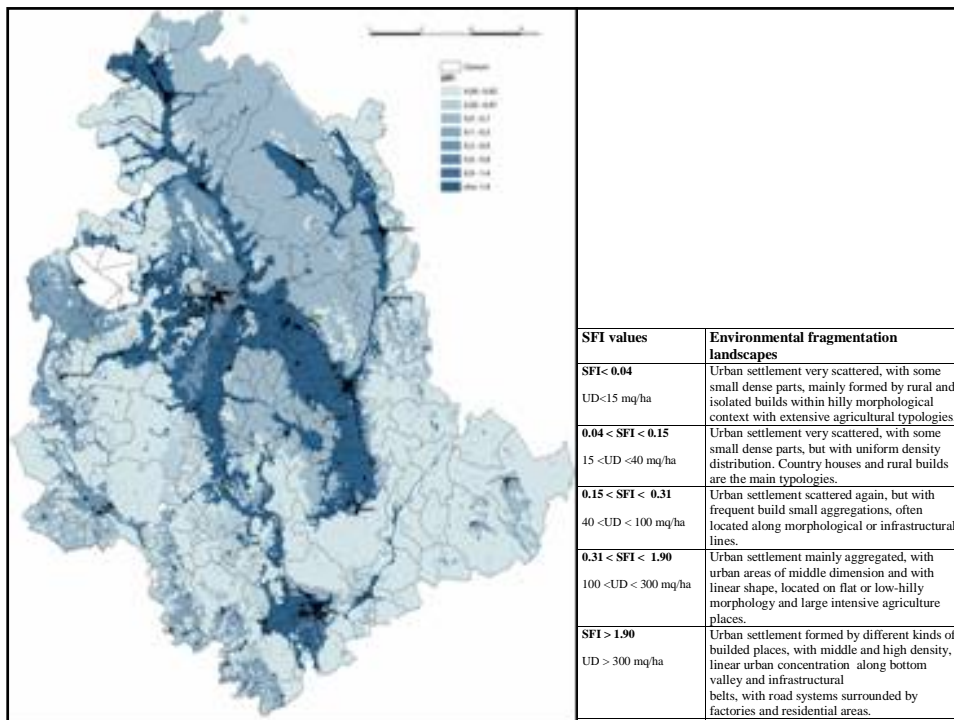
L_i = Maximum size of the linear urban barrier of the i type;

S_i = Surface of the urbanised area of the i type;

A_U = Area of the reference territorial unit;

o_i = Coefficient expressing the level of disturbance that is characteristic of the various types of urbanised areas for the species considered.







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THANK YOU FOR YOUR ATTENTION