

SIAS: a bottom-up approach for soil indicators.

Soil Organic Carbon and Soil Loss assessment for the Italian territory

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What is SIAS?

SIAS stands for Development of Soil Environmental Indicators. It is a pilot project promoted by the National Environmental Protection Agency (APAT) involving Regional Soil Survey Services (all Italian regions) and the European Soil Data Center (ESDAC, at the EC DG JRC, Ispra).

SIAS main goals

To provide a national technical tool to support soil protection from two of the main threats for European soils (erosion and organic matter decline) according to the [Soil Thematic Strategy](#) (COM(2006) 231)) and a [proposal for a Soil Framework Directive](#) (COM (2006), 232).

To provide high quality information together with harmonized assessment tools for the exploitation of local expertise, aiming at the development of the Multi-Scale European Soil Information System (MEUSIS).

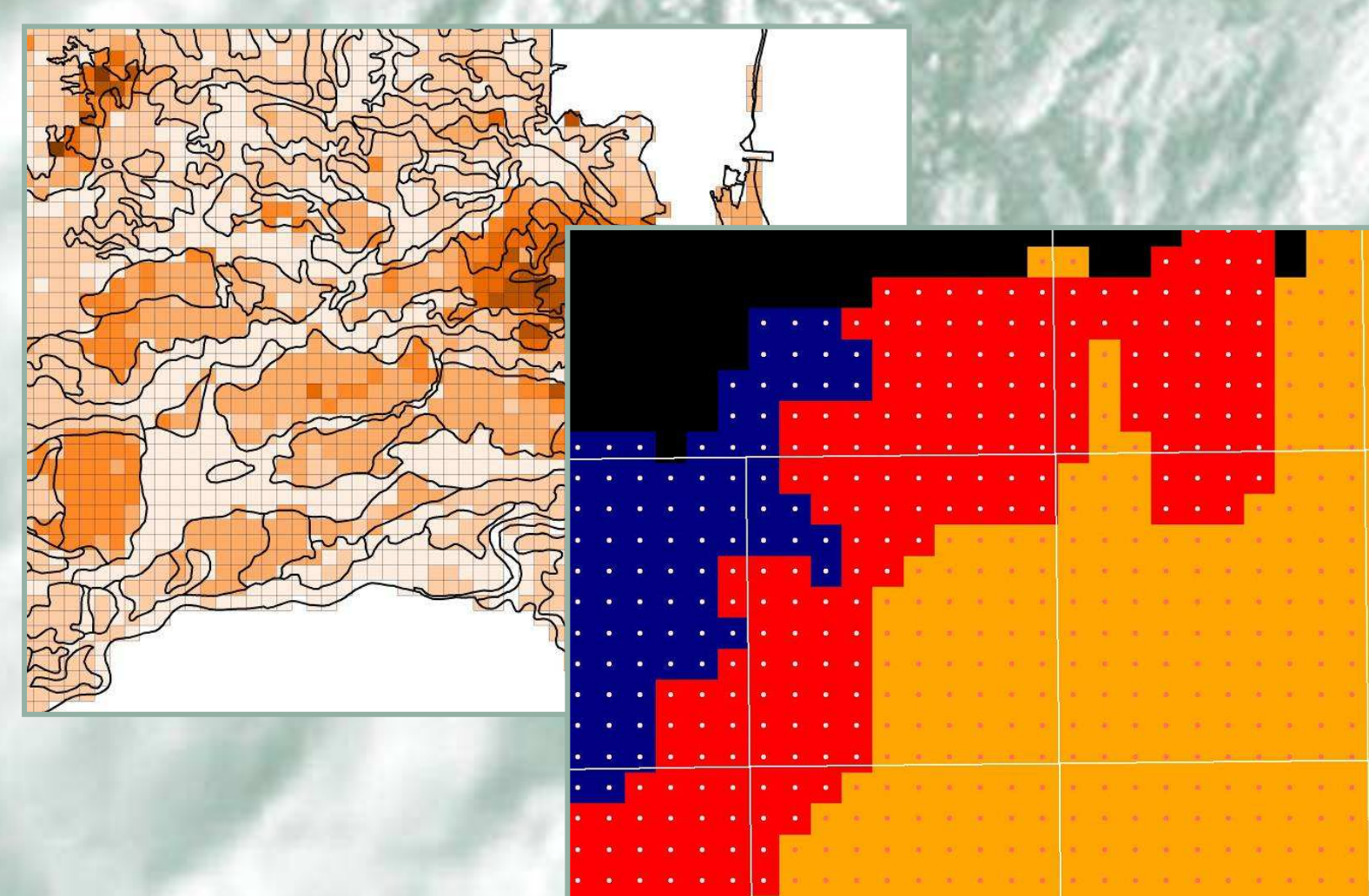
Creation of a partner network that can be the ground for future cooperation.

1. FROM REGIONAL DETAIL TO 1 KM GRID: the most accurate and up-to-date soil data are used and worked out directly by institutions and experts involved in soil survey at local level according to the "bottom-up approach".

Materials and methods

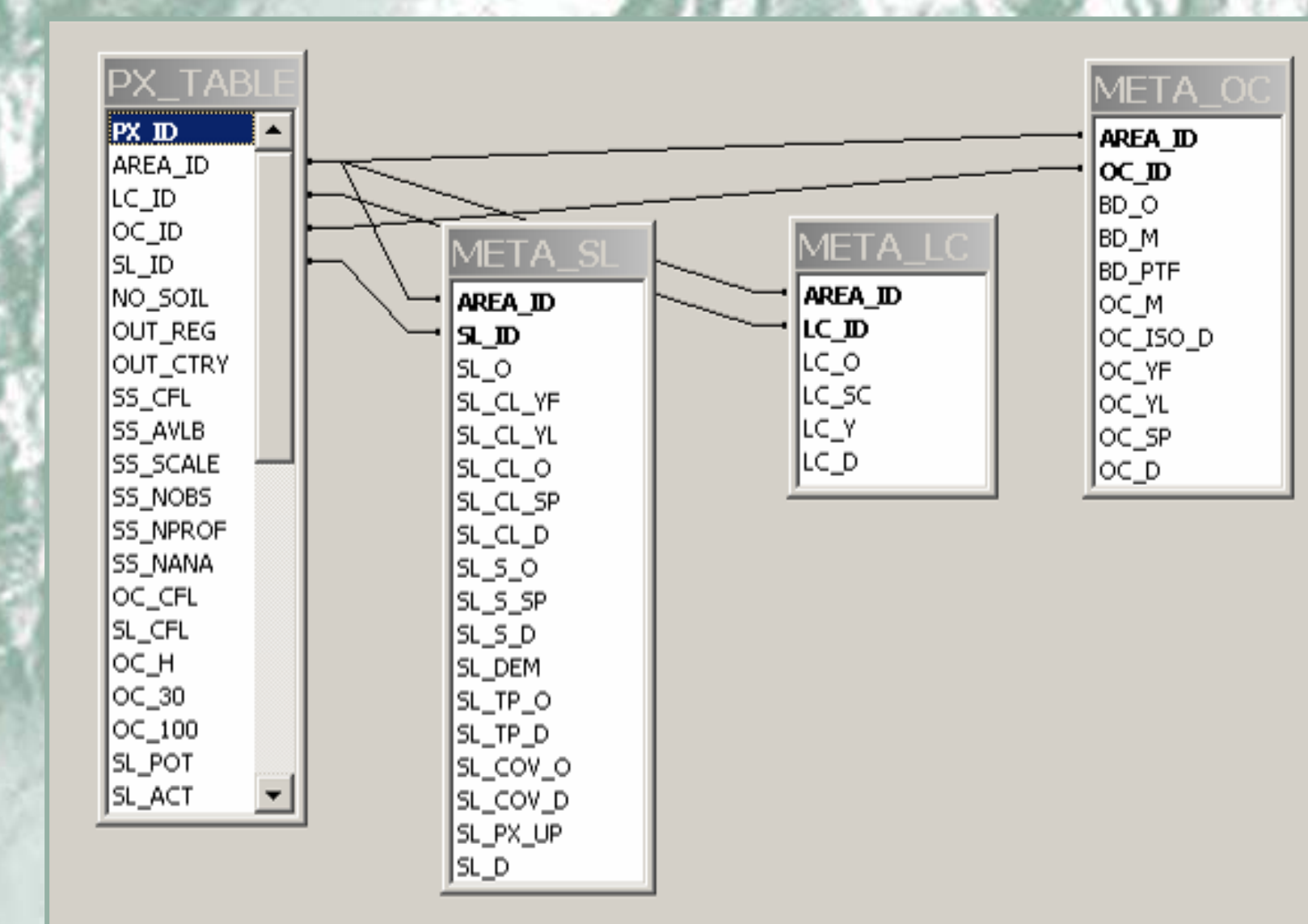
2. GEOGRAPHICAL REFERENCE: 1-km reference grid, resulting from the 1st Workshop on European Reference Grids (INSPIRE Directive), promoting the availability of harmonized geographic information and providing European standard reference grids and projection systems

3. EXCHANGE FORMAT: a database, set up jointly by the working group, stores information for each pixel concerning soil organic carbon stock, soil loss, pixel coverage (soil, no-soil, out of region and/or out of country), information quality (number of observations, number of analyzed observations, scale of available soil maps, etc.), confidence levels for each indicator, metadata (input data or assessment procedures according to codified paths).

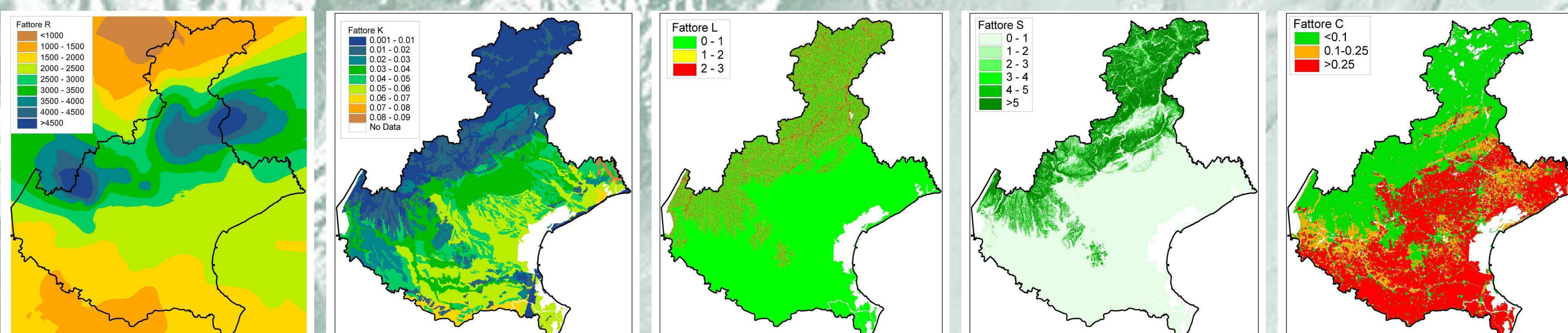


4369_2461	4370_2461	4371_2461	4372_2461	4373_2461	4374_2461	4375_2461	4376_2461	4377_2461
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4369_2477	4370_2477	4371_2477	4372_2477	4373_2477	4374_2477	4375_2477	4376_2477	4377_2477

1 km grid, by ESDAC in ETRS89 Lambert Azimuthal Equal Area projection. Regional grid sections avoid any overlapping between bordering regions by assigning pixels to the region with the prevalent surface.

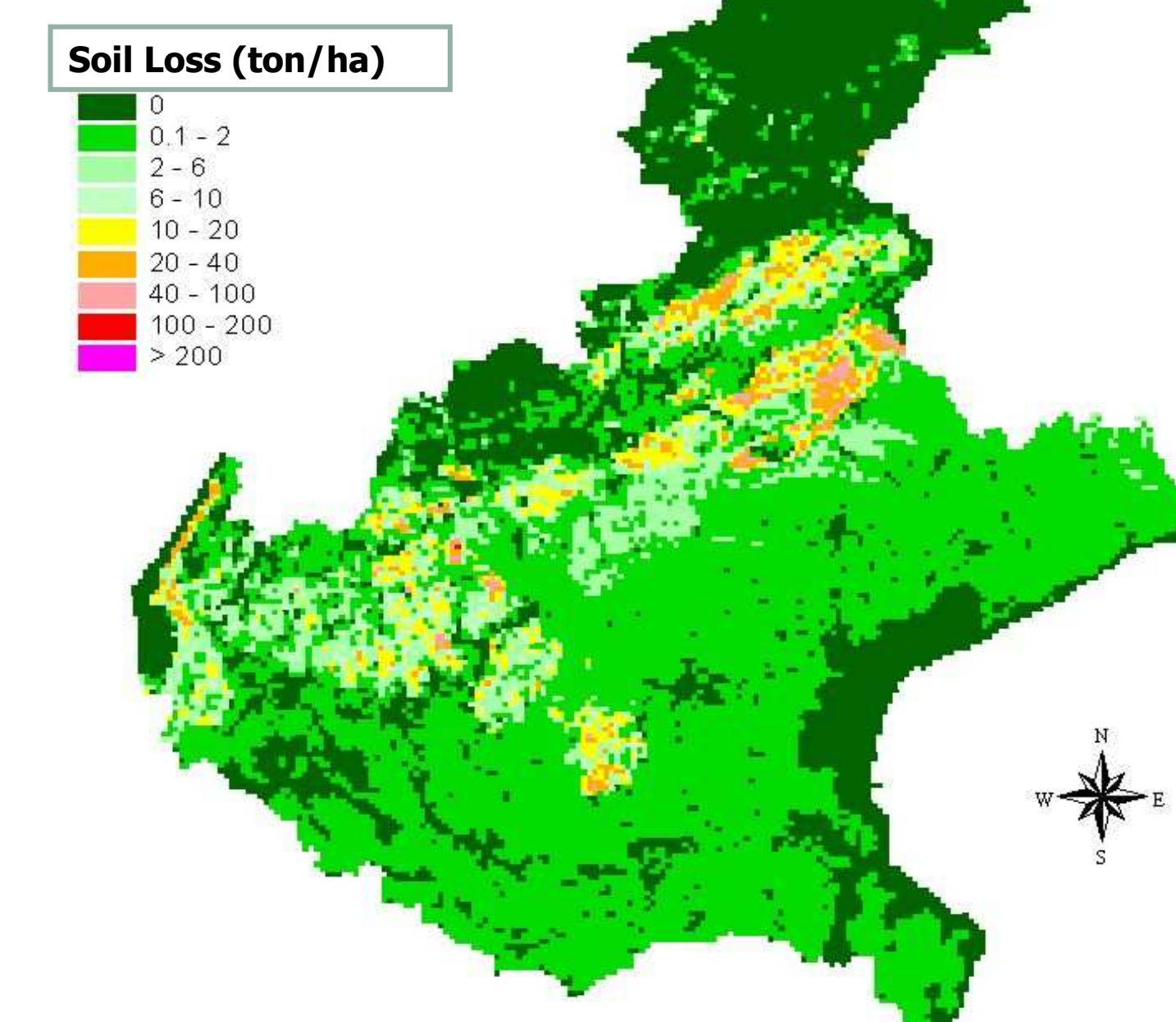


SOIL LOSS INDICATOR - Veneto region example

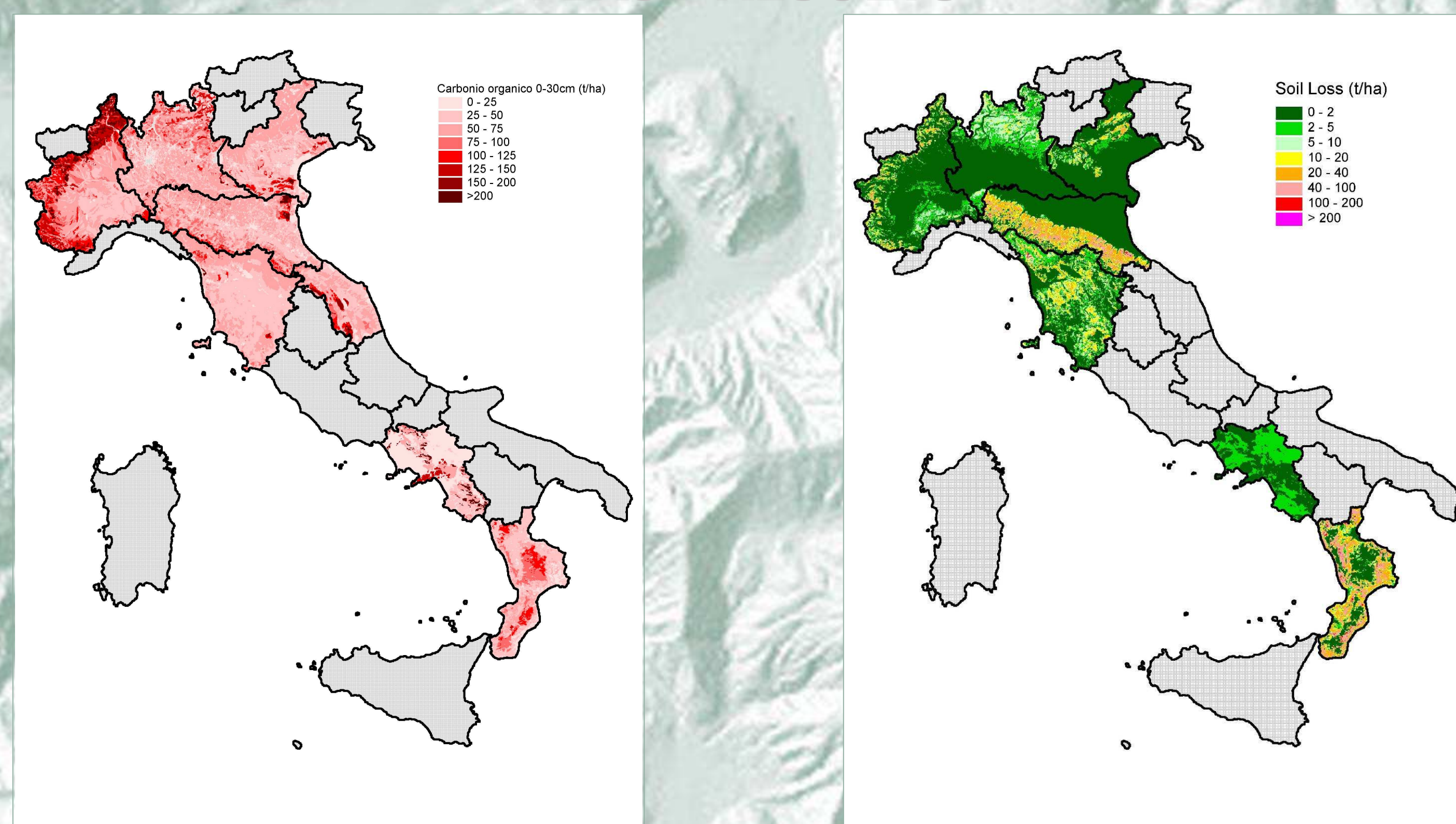


In Veneto region, soil loss has been assessed by means of USLE model, by overlaying the information layers shown above (R: rainfall erosivity, K: soil erodibility, L: slope length, S: slope angle, C: land cover factor). Regional detailed information has been then interpolated in order to fill in 1 km pixels of the SIAS exchange format

Exchange format - SL_ACT



FIRST RESULTS



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The final project phase will deal with different section merge and indicator result comparability and harmonization, particularly on bordering areas. Up to local experts, 1 km pixels seem to be representative for regional situations and indicator trends. As final step, though, some kind of result harmonization among regions will be necessary before merging all regional databases, in order to provide an effective and validated national tool.