

Modeling soil sustainability to water erosion in a context of global change. An example in South of France

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Introduction



Climate and land use changes

→ Changes in soil erosion rate

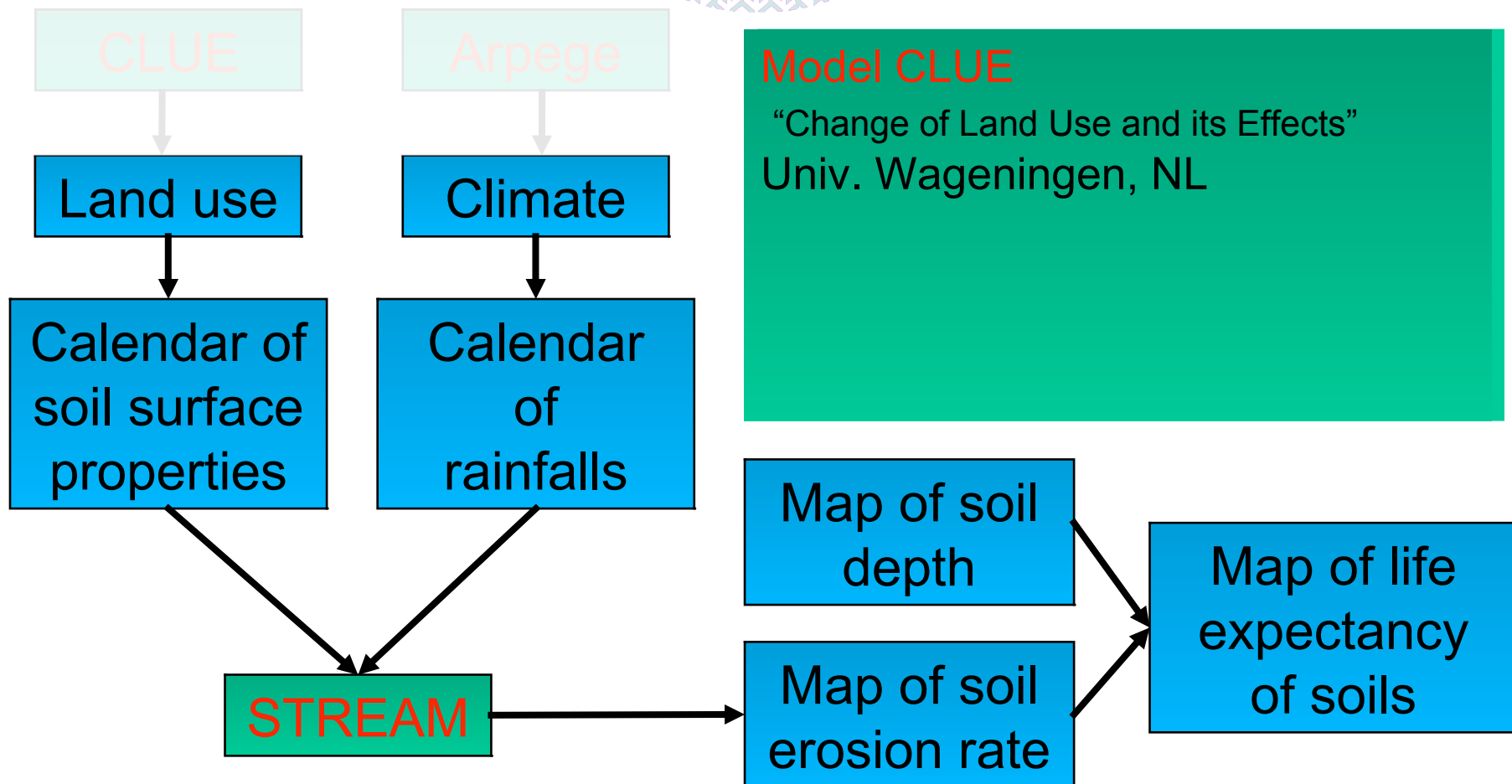
→ Soil sustainability

→ Watershed management

Change in soil sustainability = Change in soil thickness

From soil erosion rate to life expectancy of soil
(based on Sparovek & Schnug, 2001)

Method

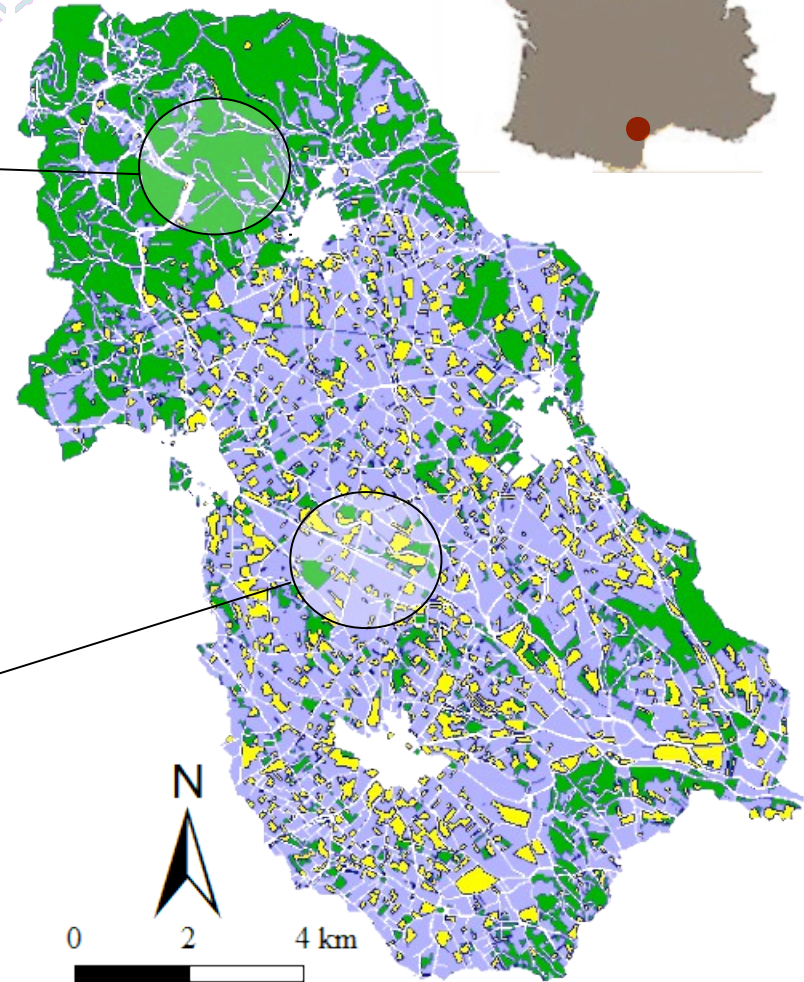


Test watershed

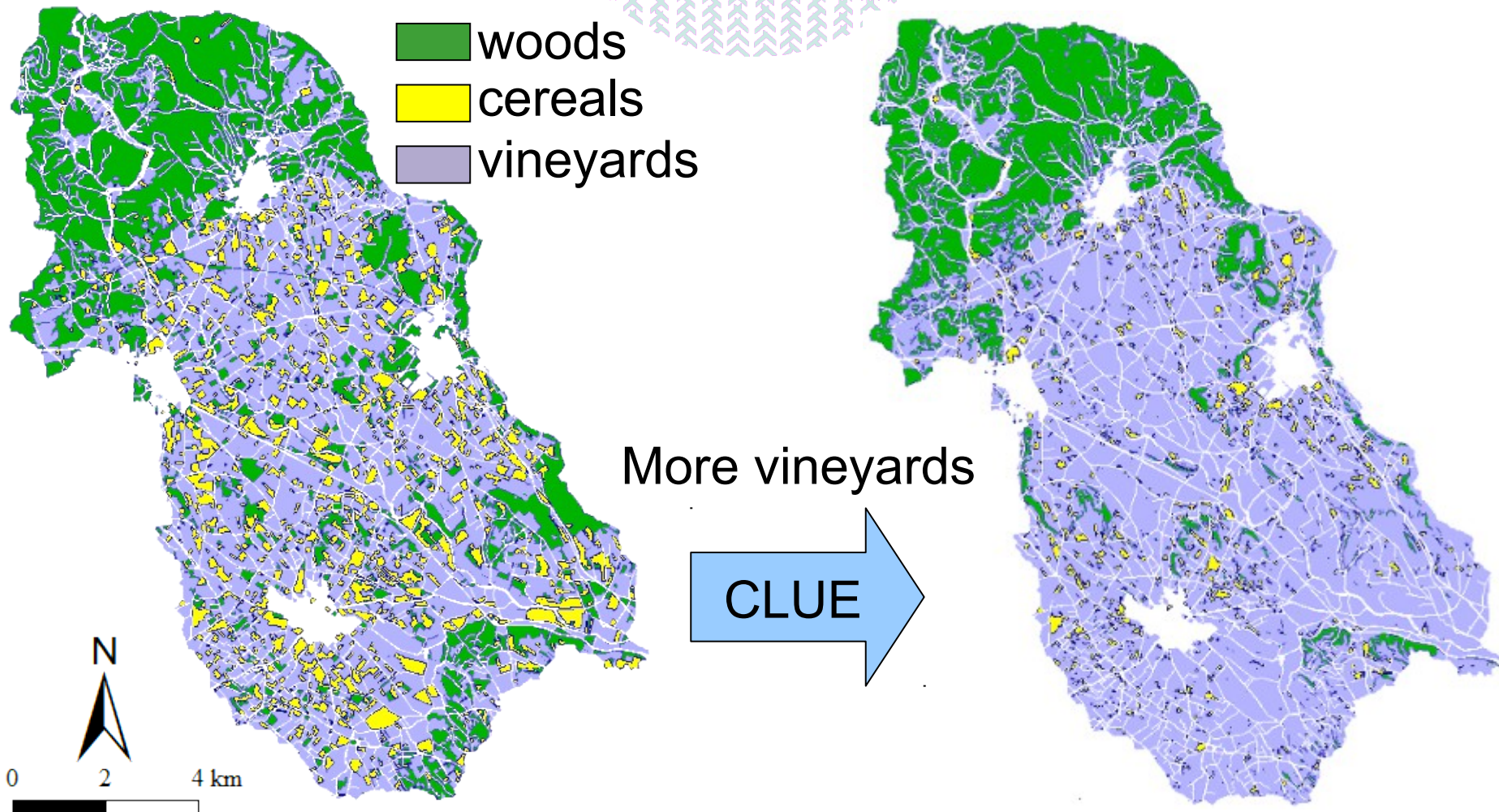
75 km²



- woods
- cereals
- vineyards

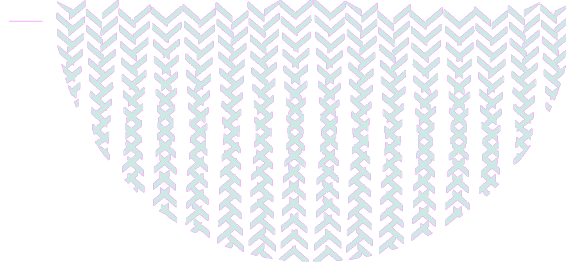


Land use change

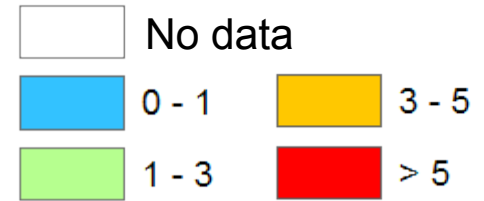


Results

Soil erosion rate



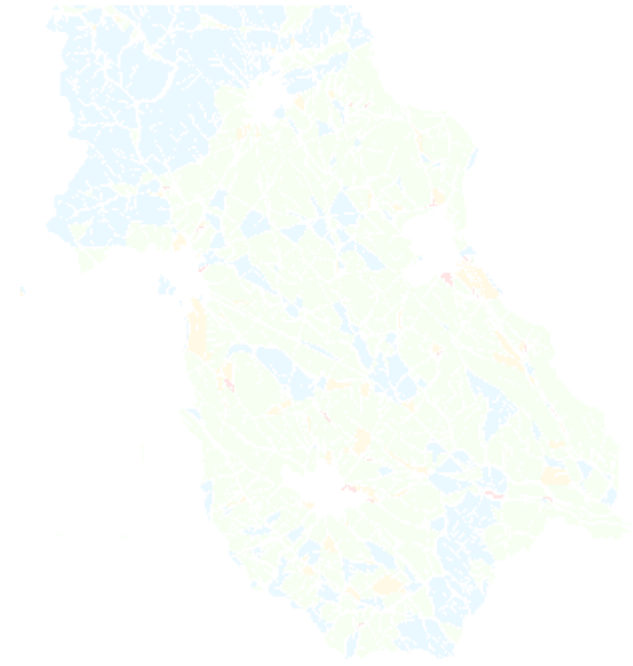
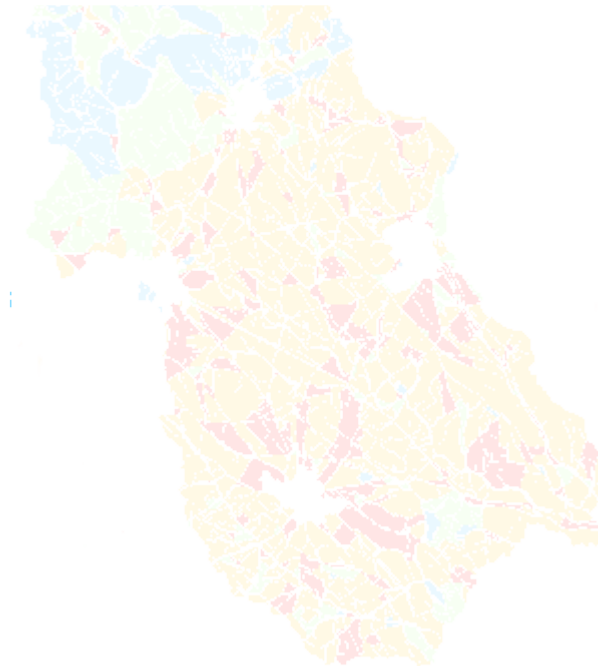
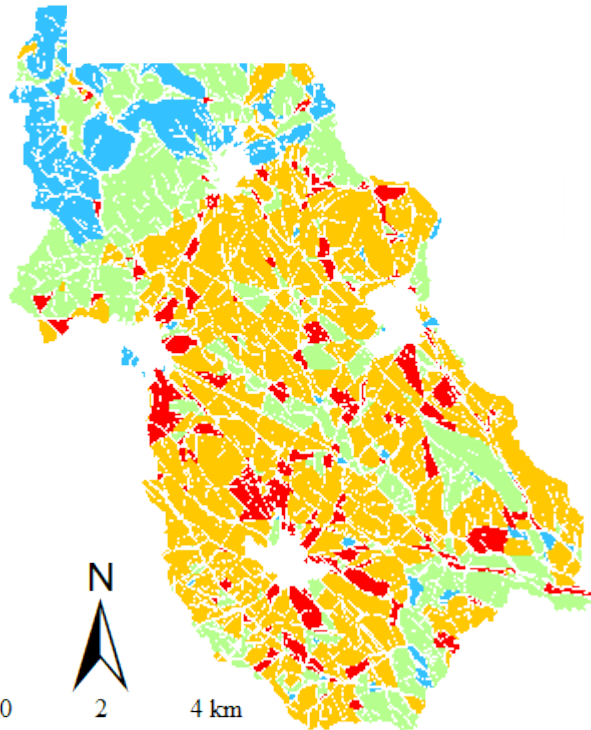
t/ha/a (9th decile)



Current

More vineyards

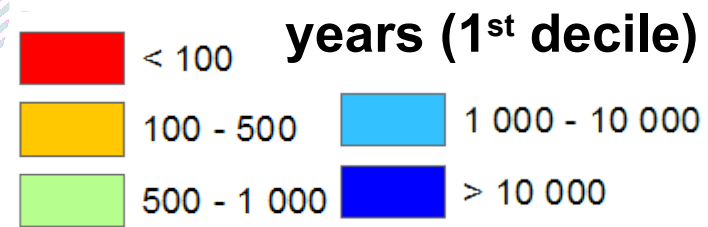
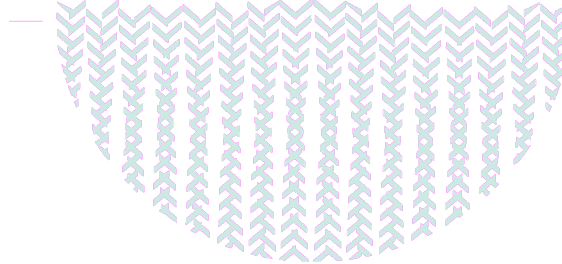
Environmental law



0 2 4 km

Results

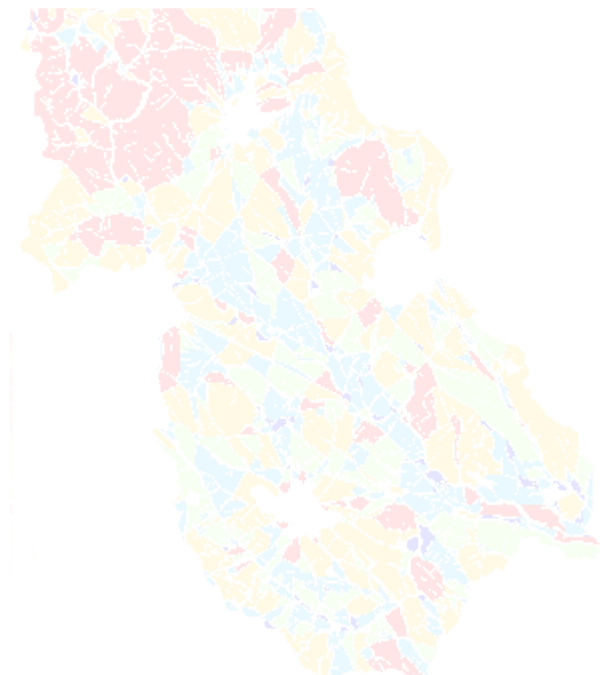
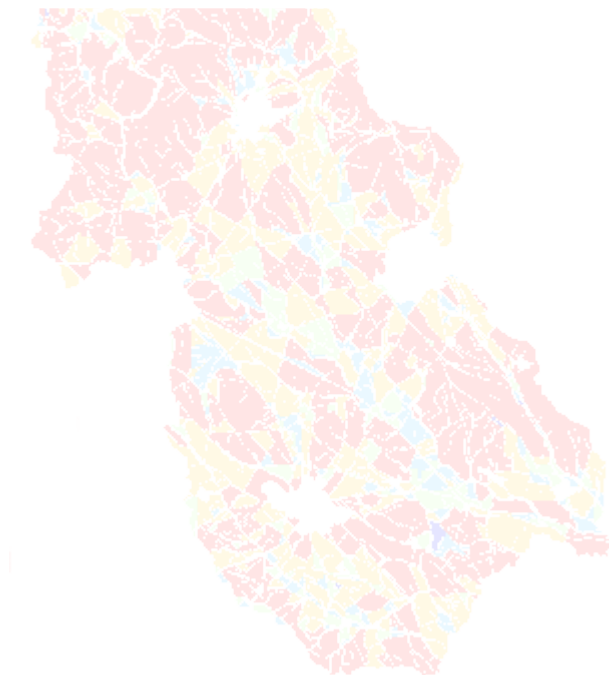
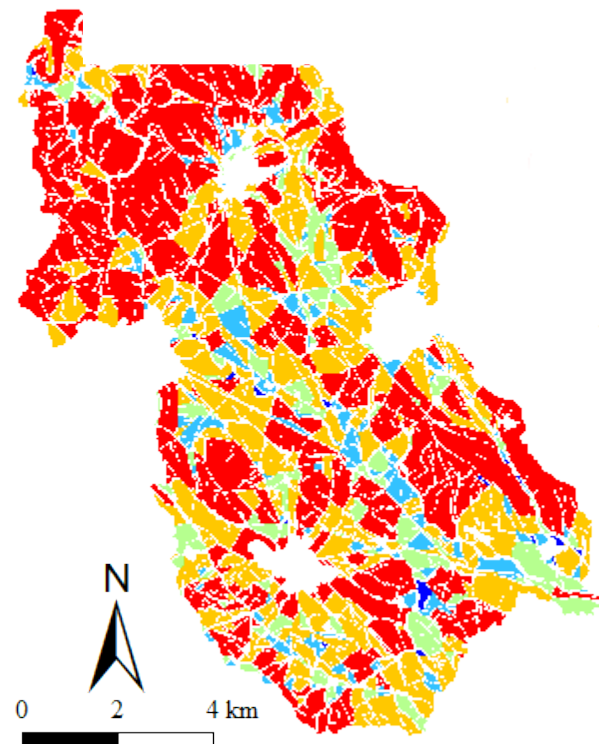
Life expectancy



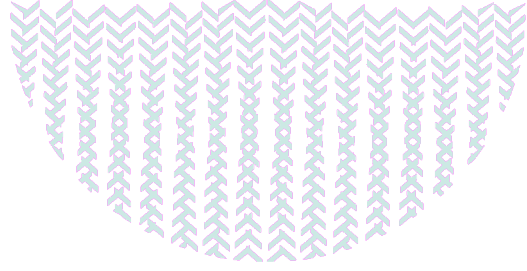
Current

More vineyards

Environmental law



Conclusion



Life expectancy of soil

- ✓ Definition of a methodology to assess soil sustainability to water erosion.
- ✓ Help in support decision-makers for long-term watershed management.

Future developments

- Water storage
- Carbon storage