



PROTEST project: multidisciplinary methodology for territorial forest analysis

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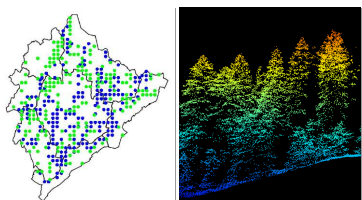
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PROTEST project: multidisciplinary methodology for territorial forest analysis

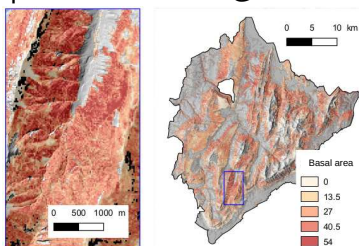
Forest resource mobilization is at the crossroads of local and global stakes. The PROTEST projects aims at combining remote sensing, territorial foresight and forest landscape simulation to support forest management decision. The case study is the Massif des Bauges Geopark (50 000 ha of forests, French Alps).

Forest resource



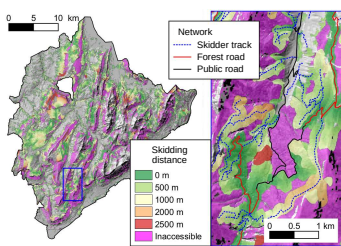
315 field plots ALS data

Area-based approach: maps of basal area and mean quadratic diameter @25 m



Accessibility

Map of skidder accessibility simulated with **Sylvaccess** model, with forest road network and topography as inputs



Bibliography

Factors identification

Interviews with stakeholders

Territory analysis

Scenarios

Local or global factors impacting forest management :

- Politics and institutions
- Demography and territory
- Economy
- Silviculture and climate change

Possible and contrasted combinations of factors evolution: 5 scenarios

- Constrained adaptation (subsidies to adapt to CC)
- Energy (high fuel wood demand)
- Management fostering
- Business as usual (outdoor activities, local wood sector)
- Conservation (biodiversity, carbon storage)

FOREST MAPPING

TERRITORIAL FORESIGHT

EVOLUTION SIMULATIONS

ECO. SERVICES ASSESSMENT

Design

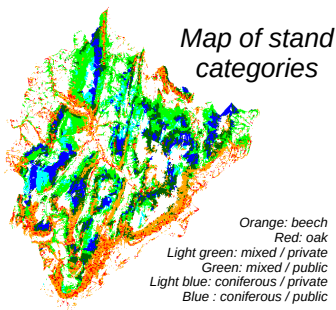
- Stand-level simulation for a period of 30 years
- Territory divided into 25 000 stands of approx. 3 ha
- Composition: pure stands (4 species) and mixed stands
- Silviculture : coppice / even-aged / uneven-aged / no action
- **Salem** simulator

Management

- 6 stand categories are defined based on species + ownership
- Each scenario is translated into a matrix of silviculture distribution in each category
- Silviculture is affected to each stand based on accessibility, surface, structure...

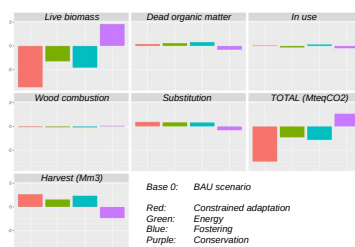
Initialization

- Species-specific fertility maps
- Stand structure by aggregation of ALS maps



Carbon accounting

CAT software is fed with simulations results

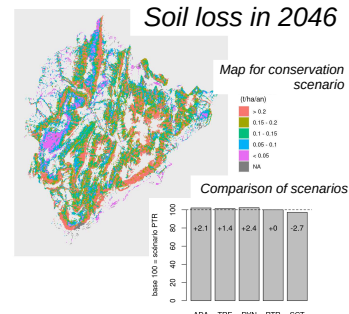


Carbon stocks and wood harvest in 2046

Ecosystem services

Linker functions are applied to compare the scenarios

- Landscape impact
- Rockfall protection
- Avalanche prevention
- Erosion control



The case study illustrates how ownership fragmentation and accessibility issues hamper mobilization, and questions the trade-off between CC adaptation and carbon storage. The global workflow has high added value for forest stakeholders, even though a better integration of components is possible.