



Towards a better understanding of river dynamics in semi-urbanized areas: a machine learning analysis on time-series satellite images

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Introduction

Hydraulic
function

Ecological
function

Landscaping
function



Hydromorphological
functionality

Introduction

Water

Sediments

Vegetation



Balance among hydraulic security, river morphology, and environmental quality

Remote sensing

2006



2012



2019



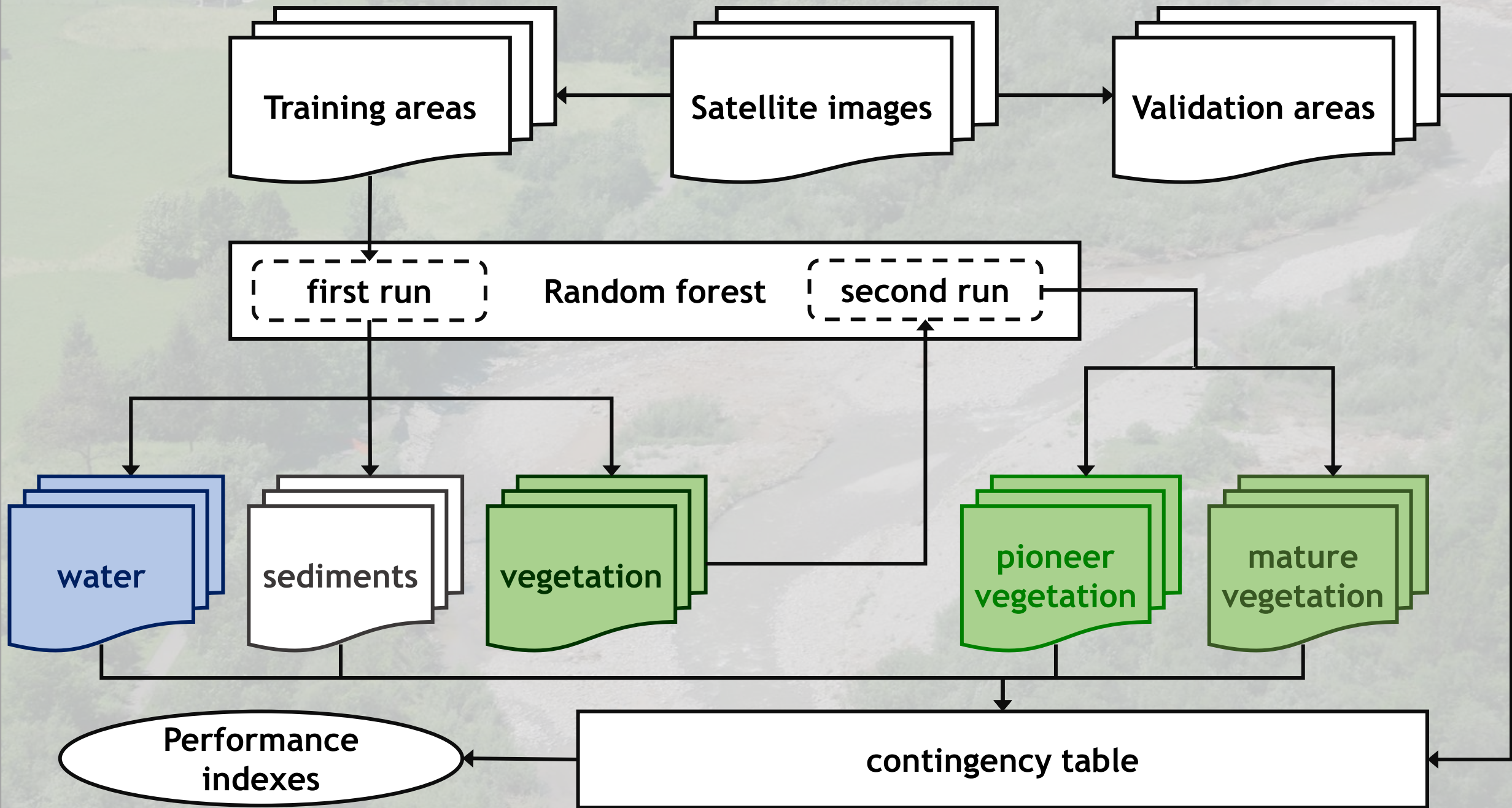
Goals

Find a methodology to automatic classify the elements of water, sediments and vegetation

Analyze the past river forms and study the variations over the years

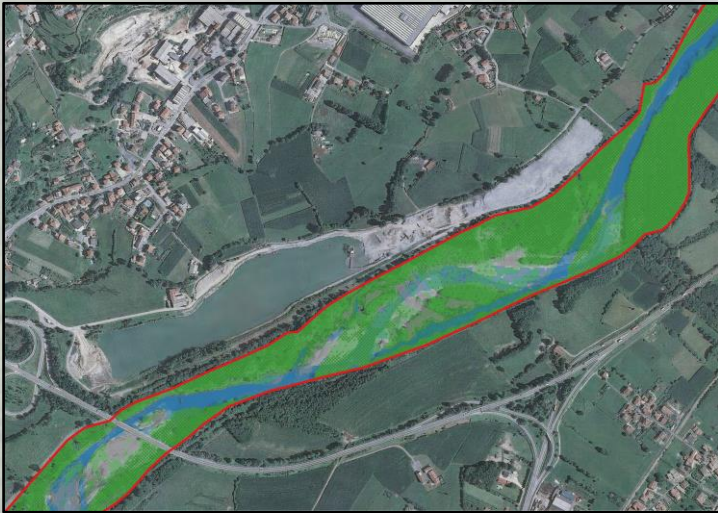


Organize proper management plans



Results

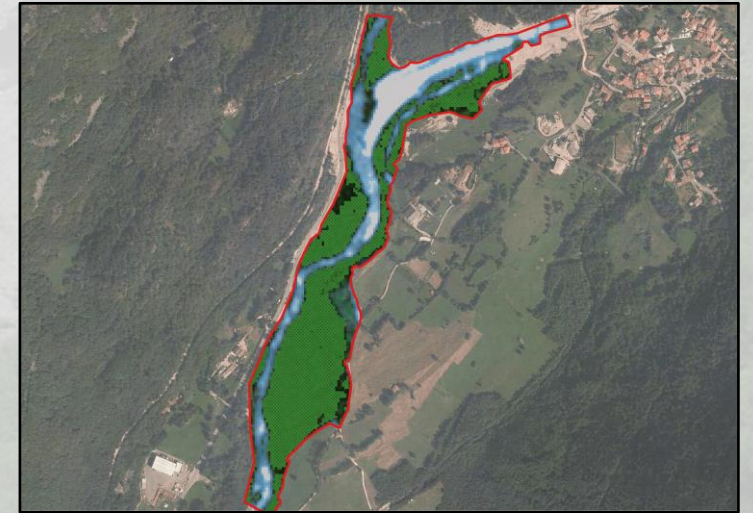
1. Cava Africa



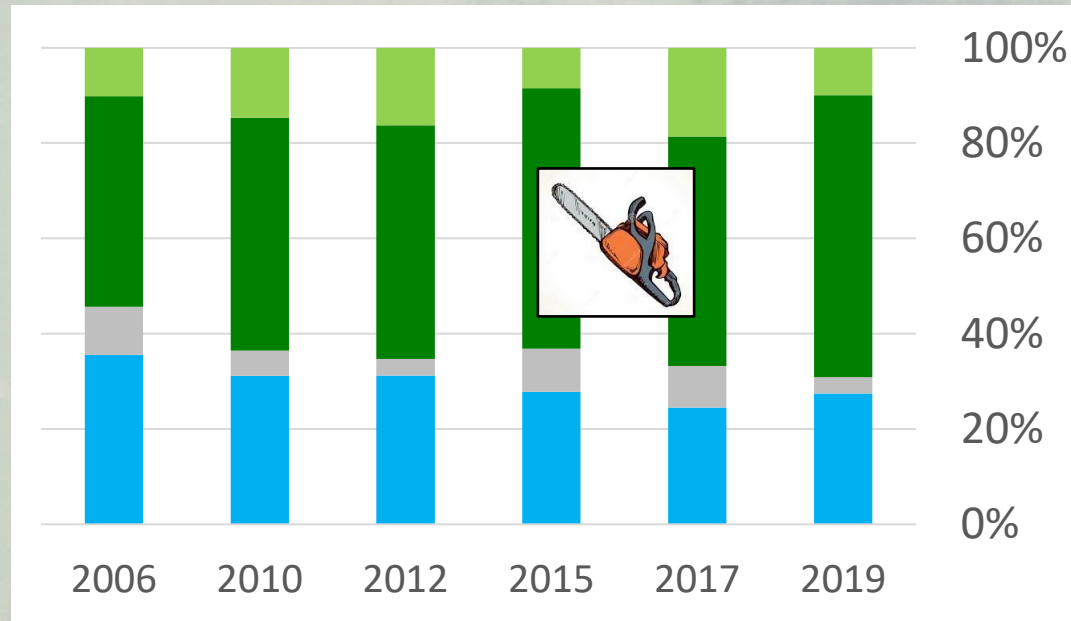
2. Località Fontanelli



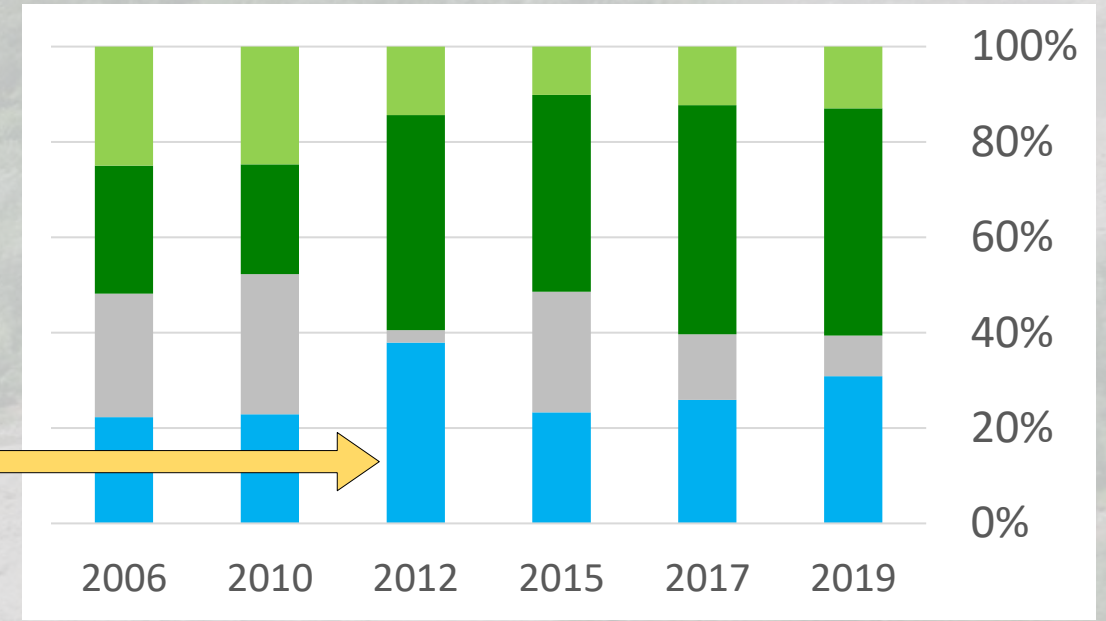
3. Val Rabbia



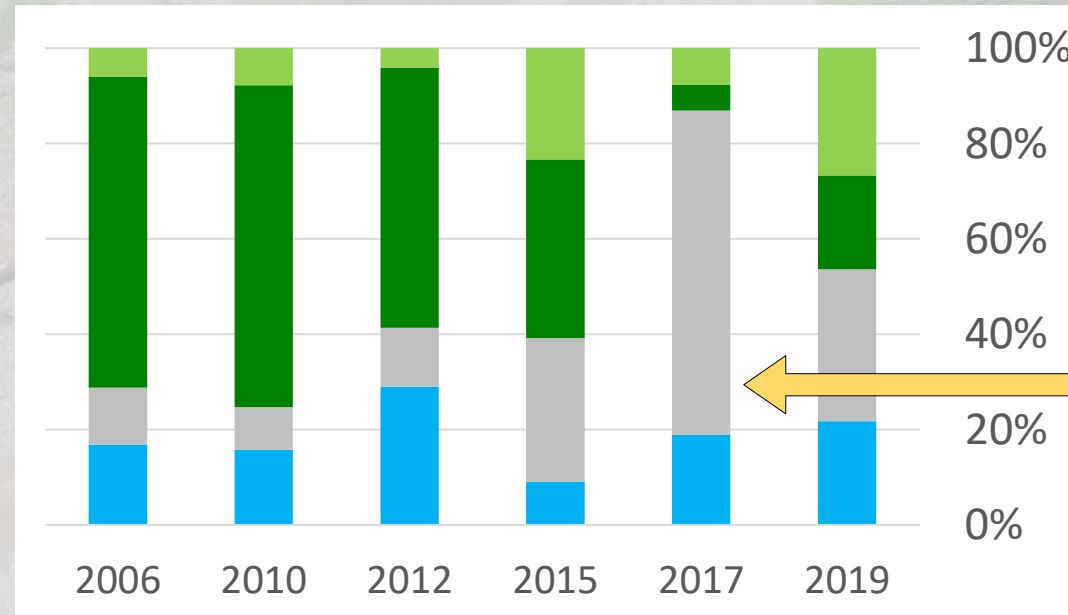
1. Cava Africa



2. Località Fontanelli



3. Val Rabbia



- pioneer vegetation
- mature vegetation
- sediments
- water



Conclusions

Remote sensing analysis is an important planning tool. The application of automatic classification processes is accurate, low time consuming and functional at different spatial scale. It provides spatial data on riparian vegetation growth for assessing the consequences due to a flood or a forest operation, and for designing a more sustainable management.



Thank you for your
attention!

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