

# ORFEO Tools for Map Updating

## OTB-Applications “best of”

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ARMURS Workshop, Brussels, 2008/09/25



# Introduction

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- ▶ Spatial, spectral and temporal resolution have very much increased in the last few years
- ▶ Many operational sensors allow multi-sensor synergy
- ▶ Other sources of geographical information: maps, GIS, GoogleEarth, ...
- ▶ End users are becoming aware of all these possibilities and ask for operational tools to deal with large amounts of data in an efficient way



# Scope

- ▶ ORFEO Preparatory Program



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- ▶ Pleiades + Cosmo Skymed



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  - ▶ image classification and segmentation, change detection, etc.

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# Map updating

Main steps

1. Ortho-rectification and fine registration



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4. Image classification
5. Change detection
6. Object segmentation



# Outline

Map updating

**OTB Applications**

Ortho-rectification

Pan-sharpening

Feature extraction

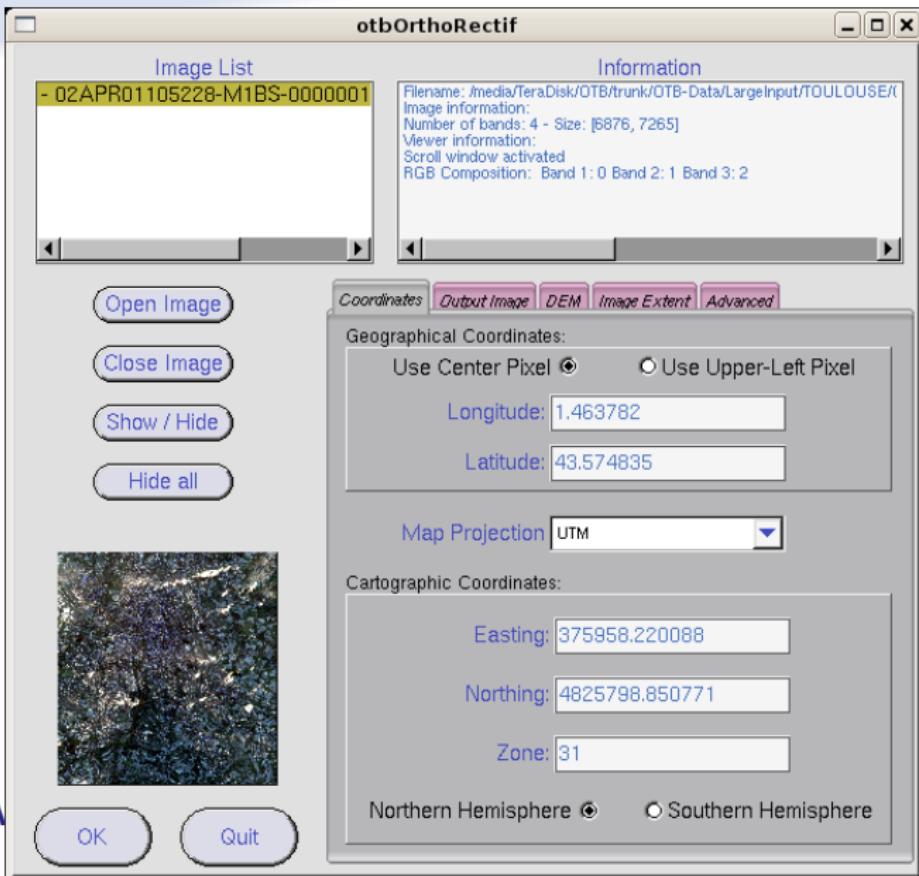
Image classification

Change detection

Object segmentation

Conclusion

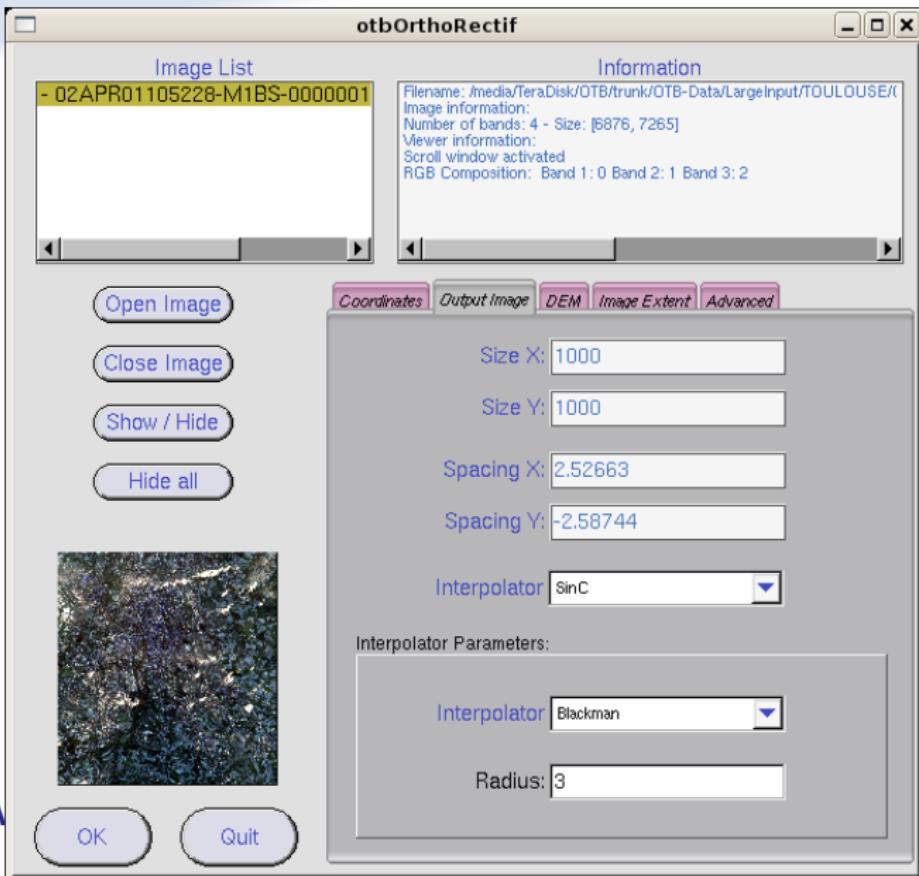
# Ortho-rectification



A



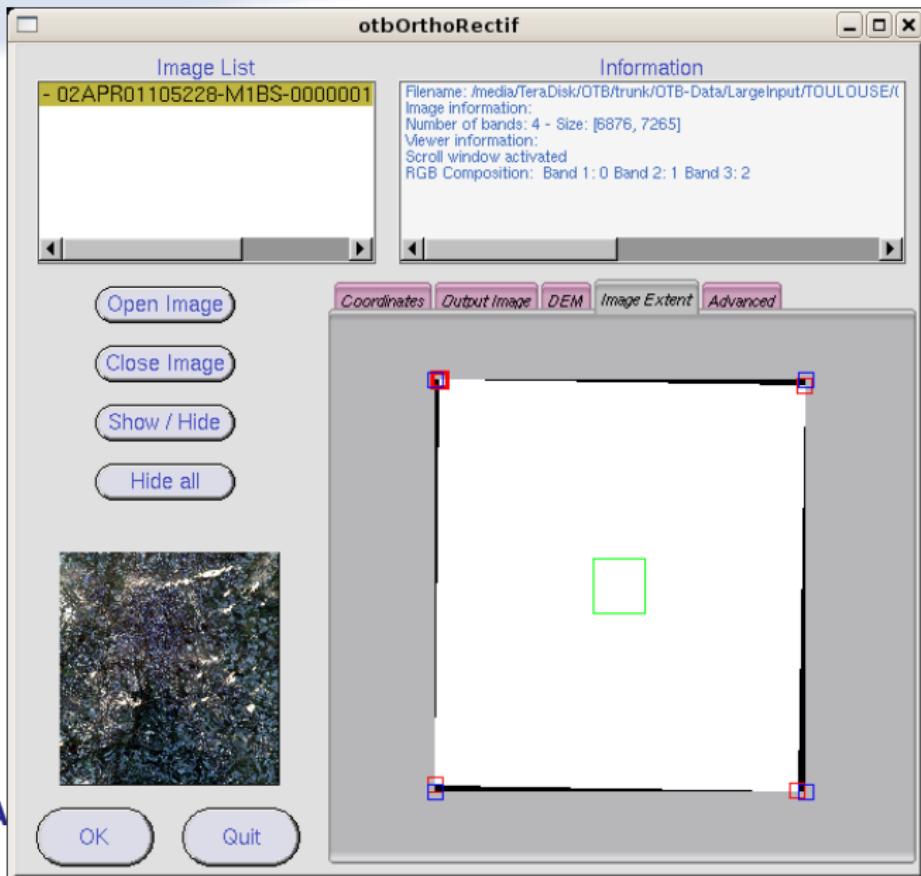
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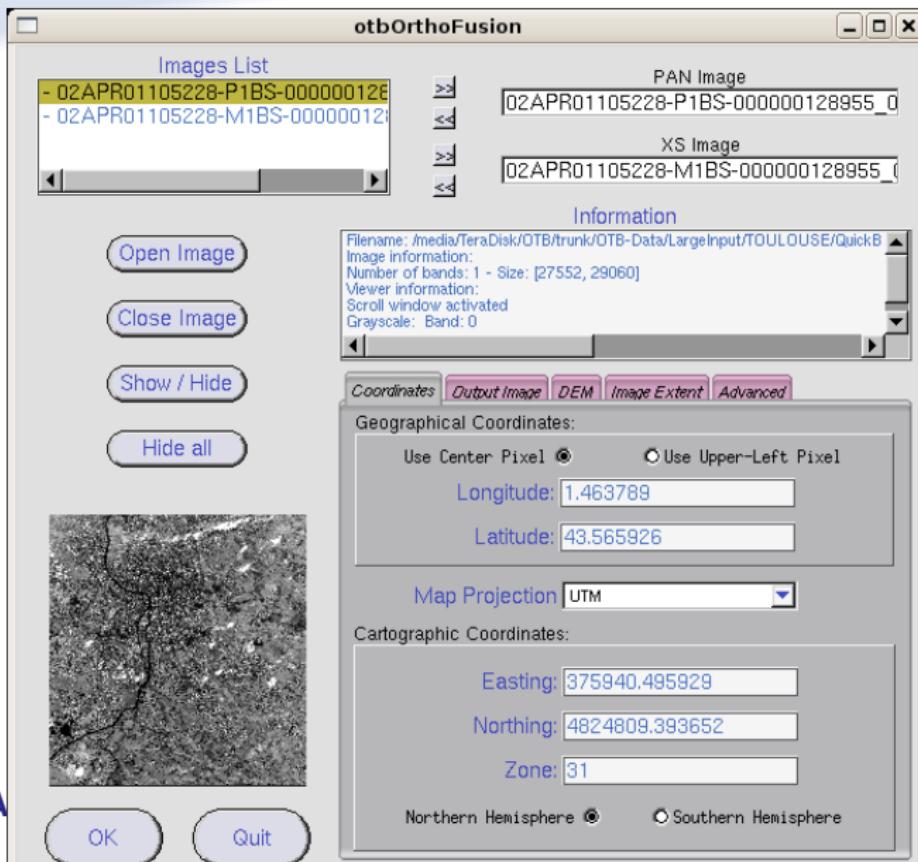
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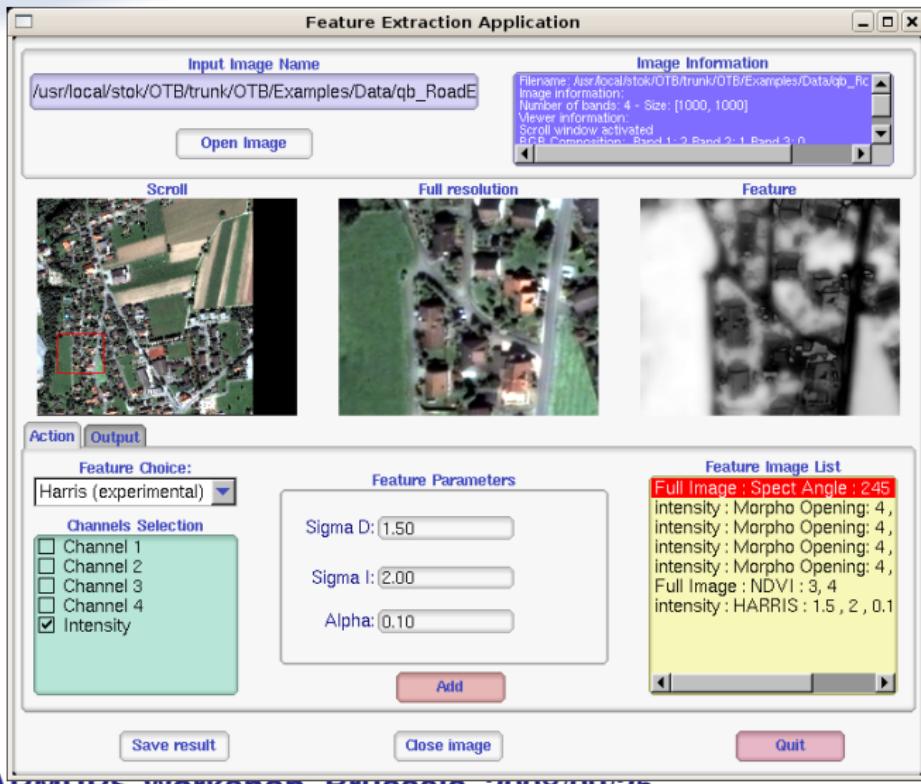
Image classification

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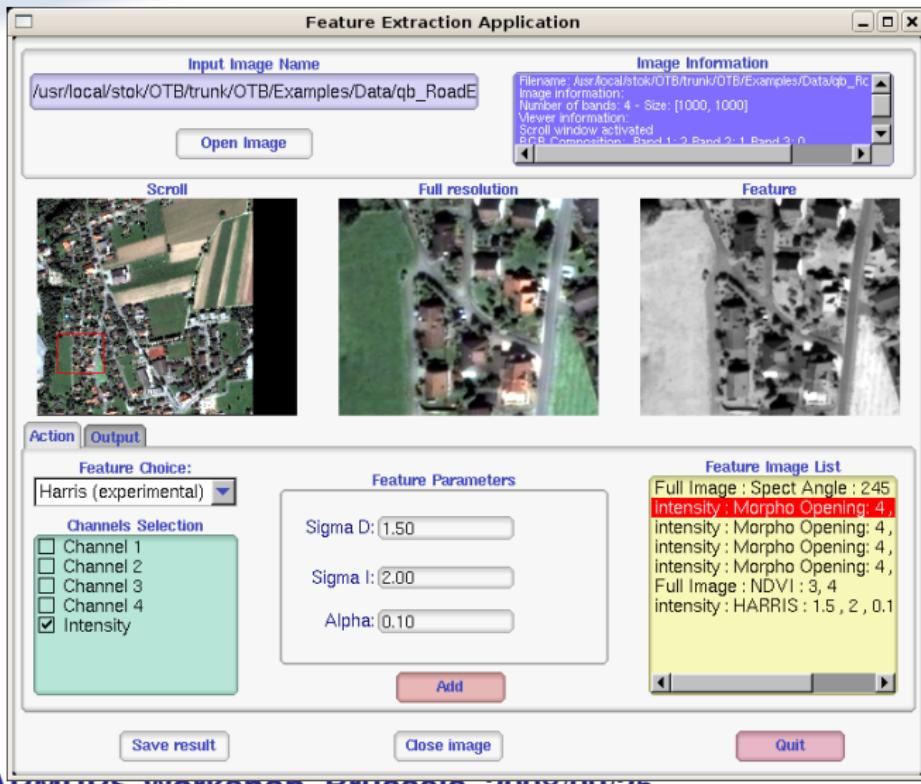
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# Feature Extraction



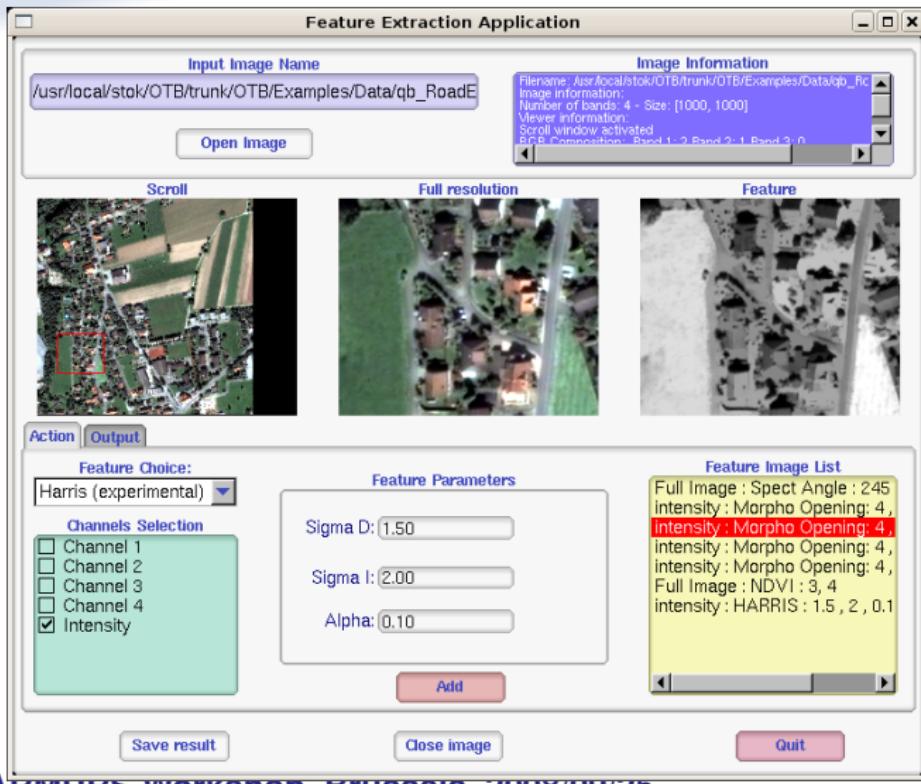
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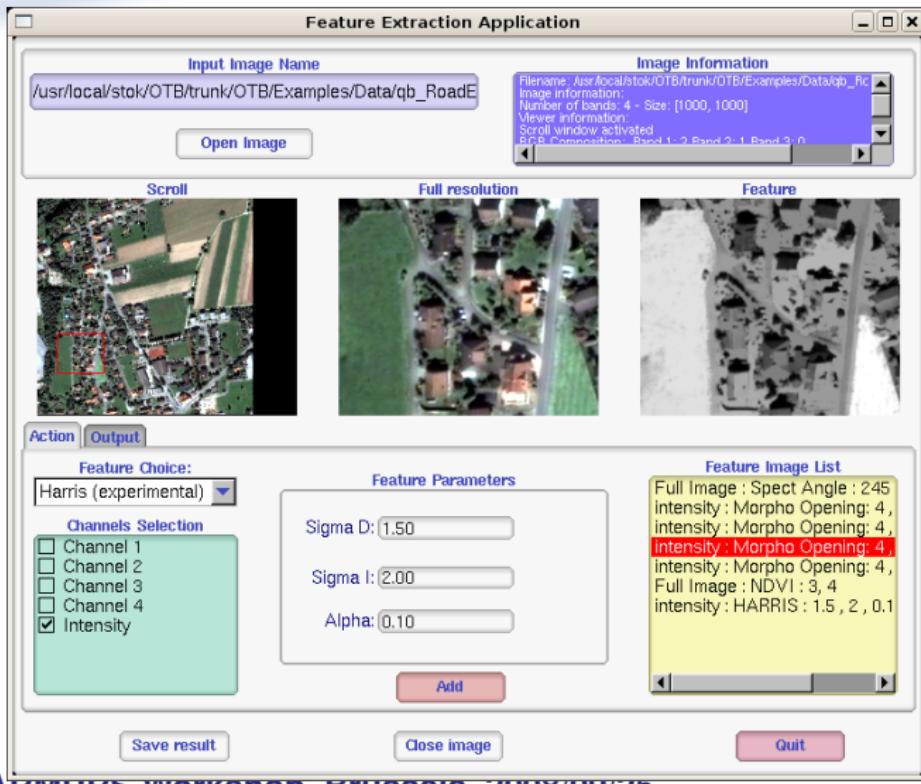
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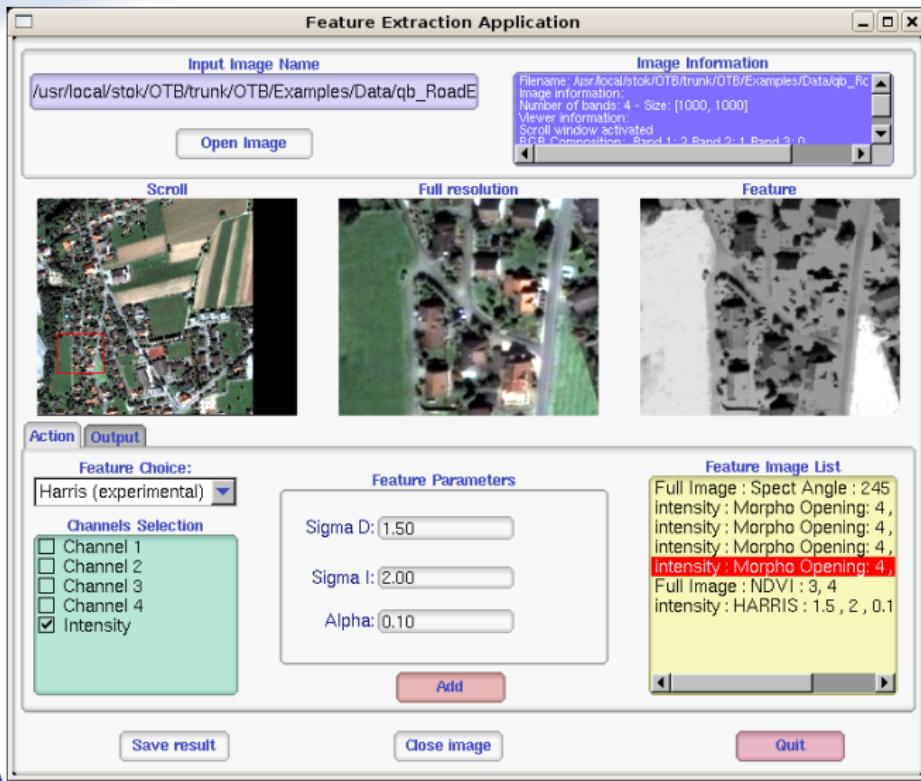
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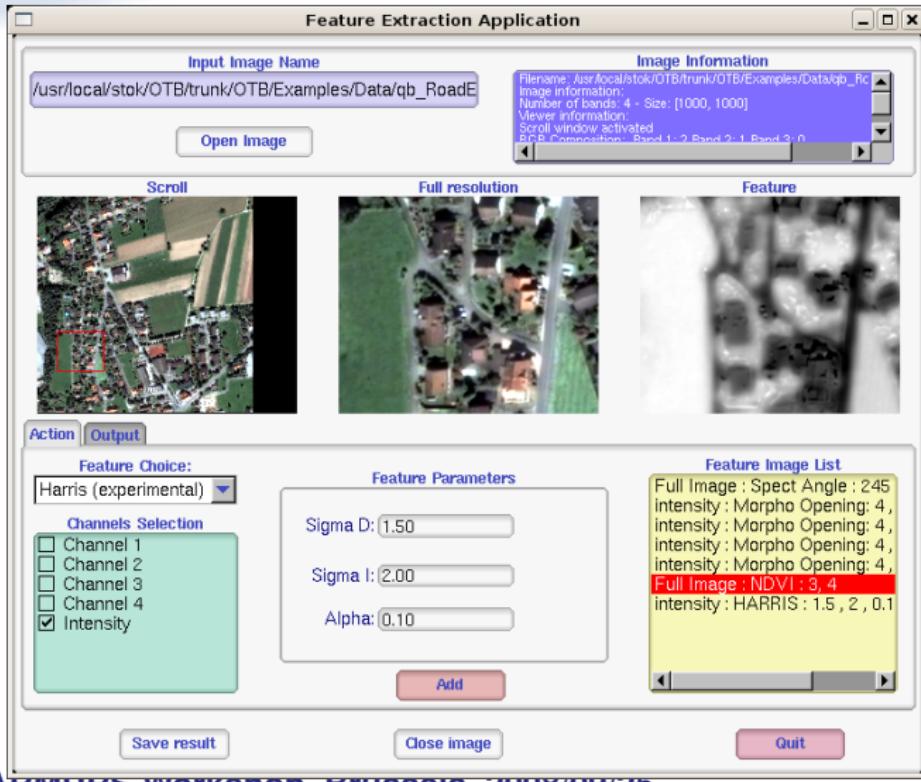
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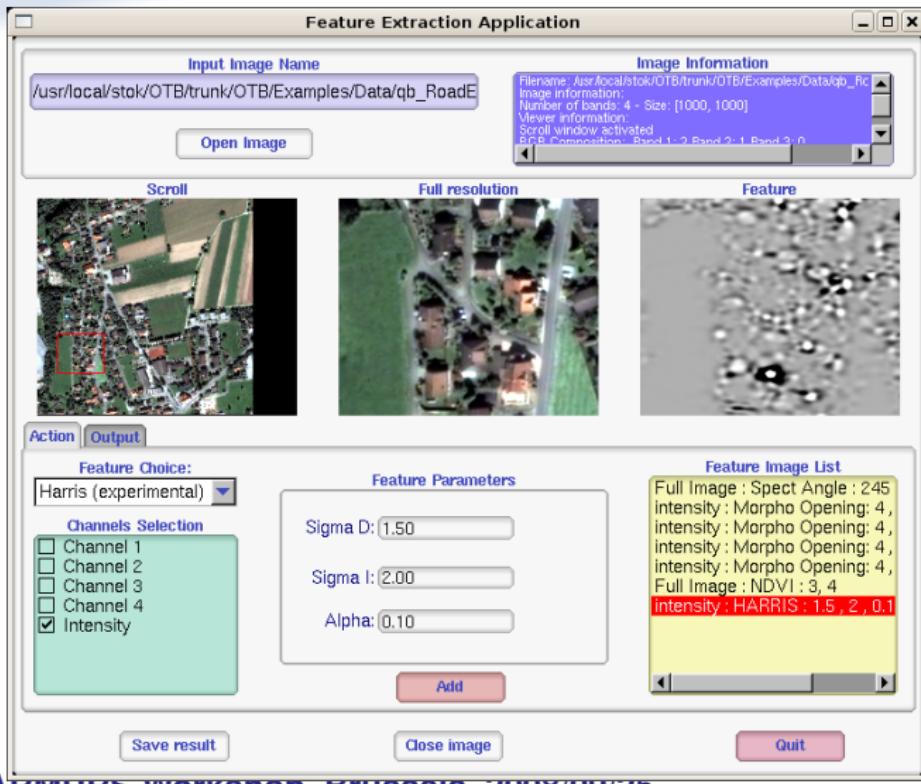
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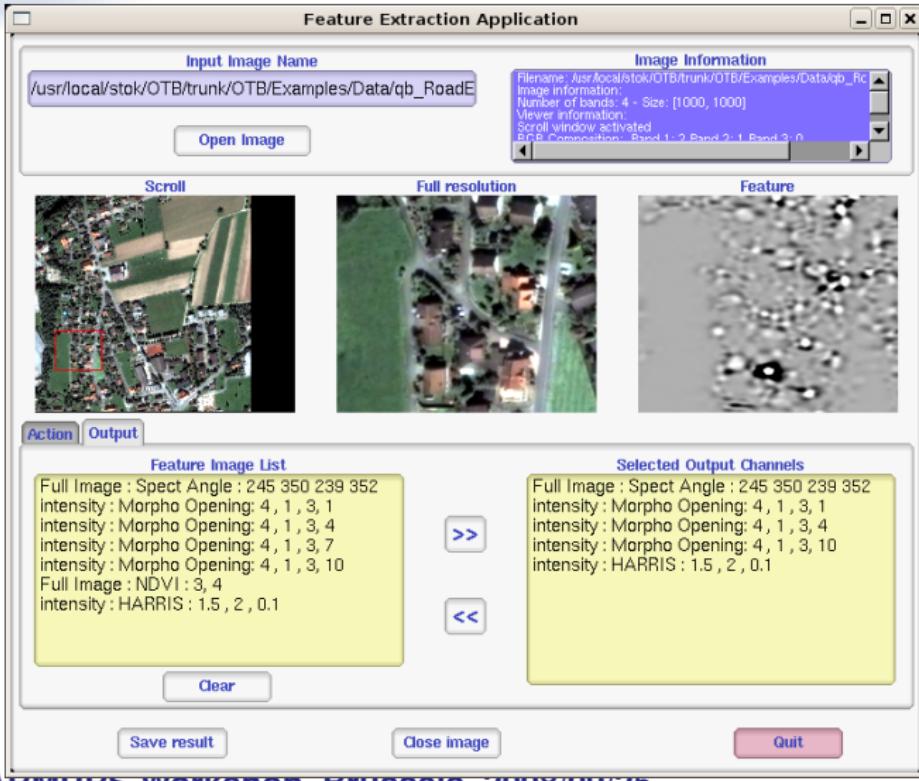
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# Supervised image classification

**Supervised Classification Application**

**File Setup**

- Grass
- BareSoil
- Trees
- Building

**Class Information**  
Class name: Building (Id: 4)

**Class color**

**ROI list**

- ROI 0, 0 points
- ROI 1, 4 points
- ROI 2, 4 points
- ROI 3, 4 points

**Focus**

**Classification**

- Learn
- Display
- Validate

**Edit Classes**

- Add
- Remove
- Name
- Color

**Regions of interest**

- End polygon
- ClearROIs
- Erase last point
- Delete
- Polygon
- 0.75
- Opacity

**Sets**

- Training
- Validation
- Random

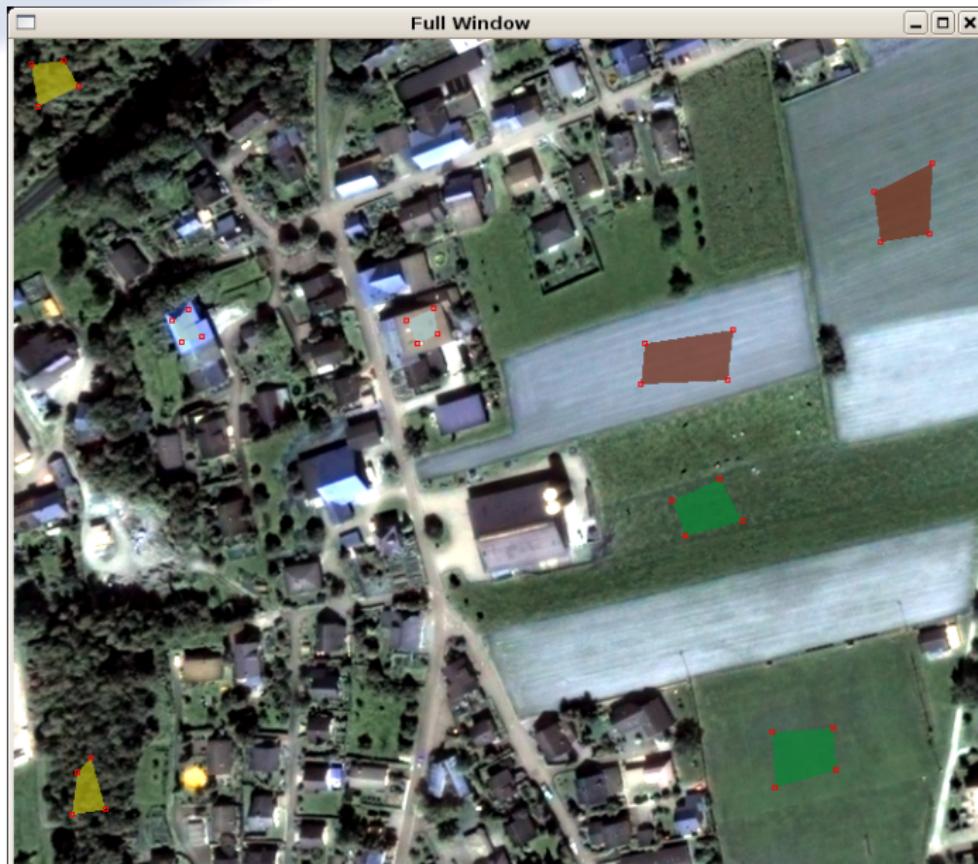
**Pixel locations and values**

**Image information**

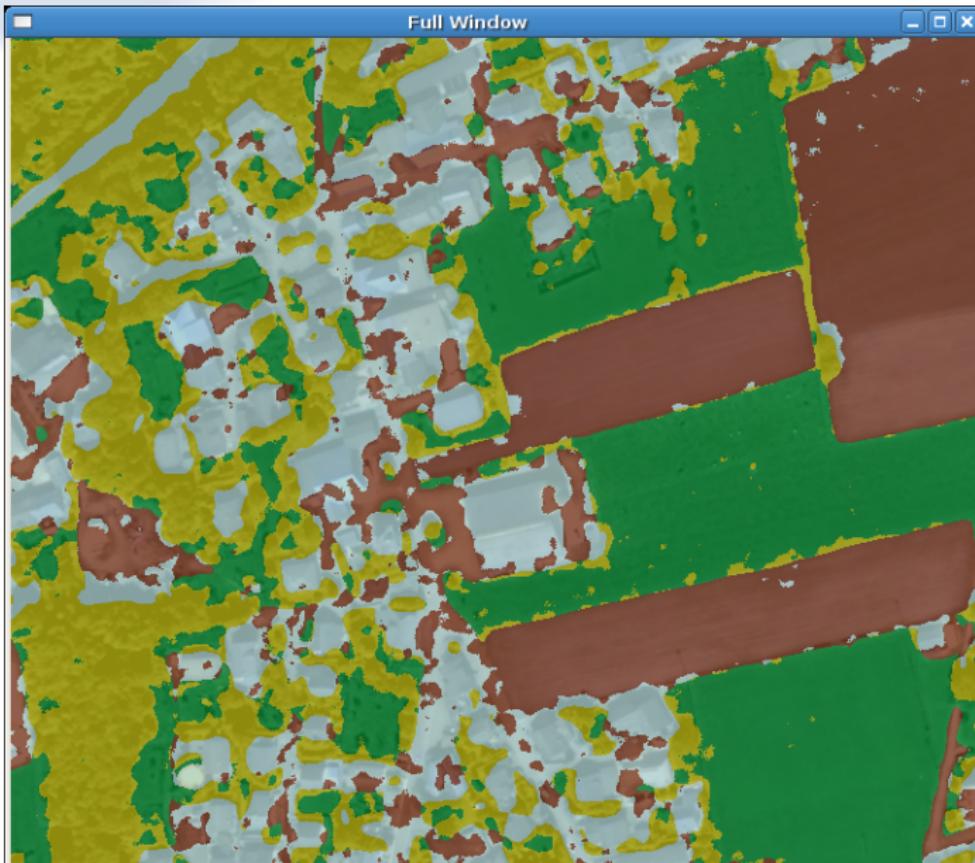
Filename: /usr/local/stok/OTB/trunk/OTB/Examples/Data/qb.  
Number of bands: 4 - Size: [1000, 1000]  
Scroll window activated  
RGB Composition: Band 1: 0 Band 2: 1 Band 3: 2



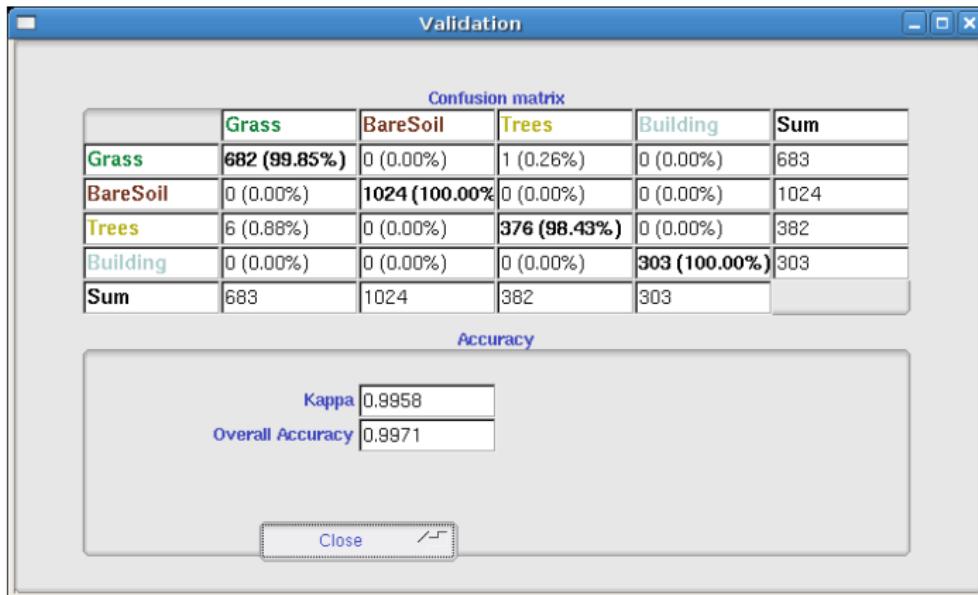
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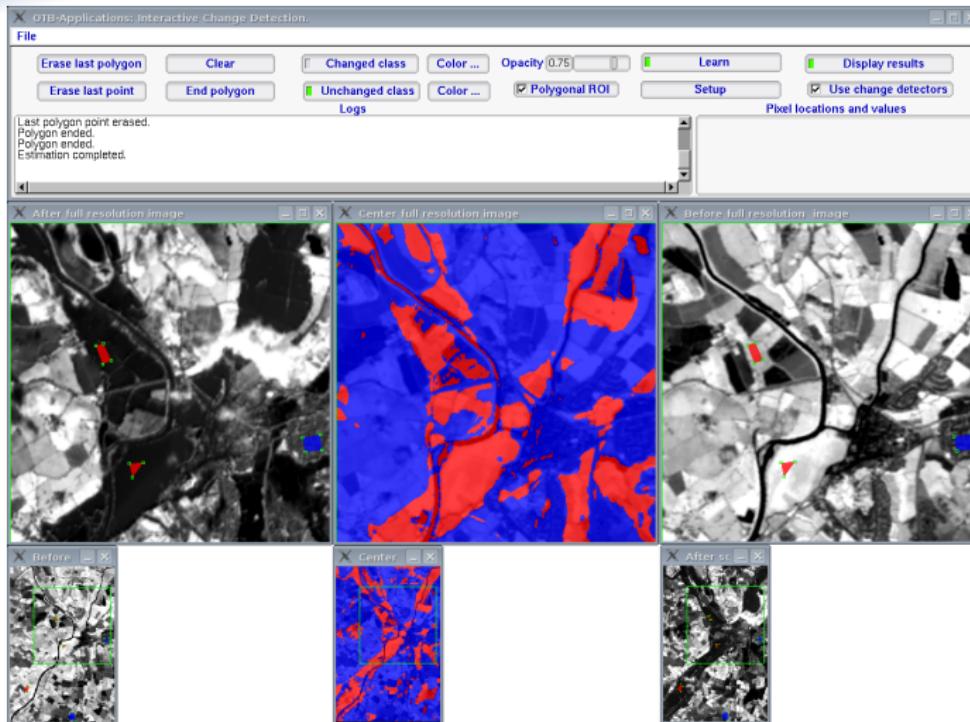
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# Supervised change detection



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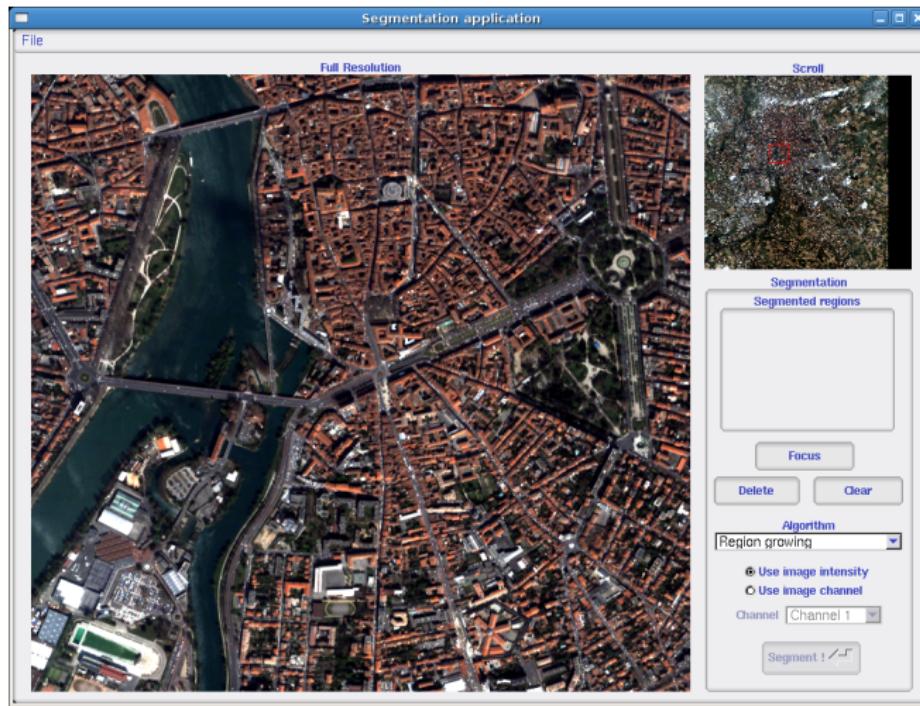
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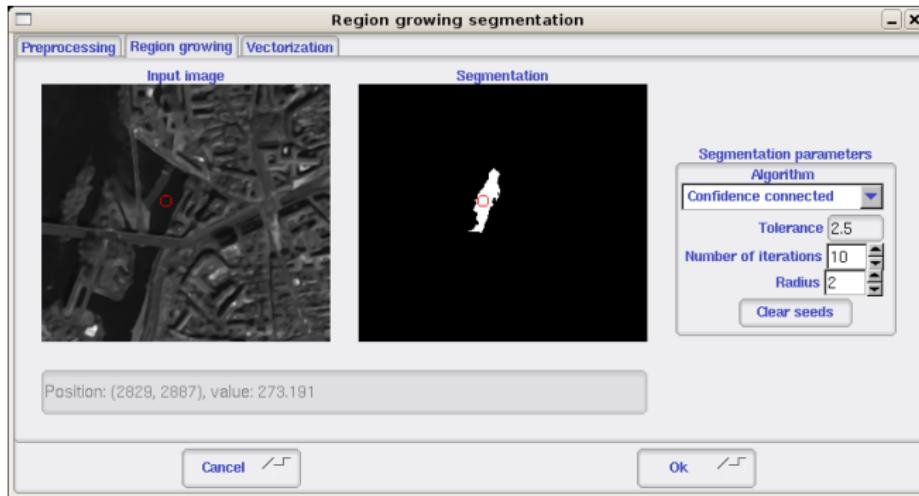
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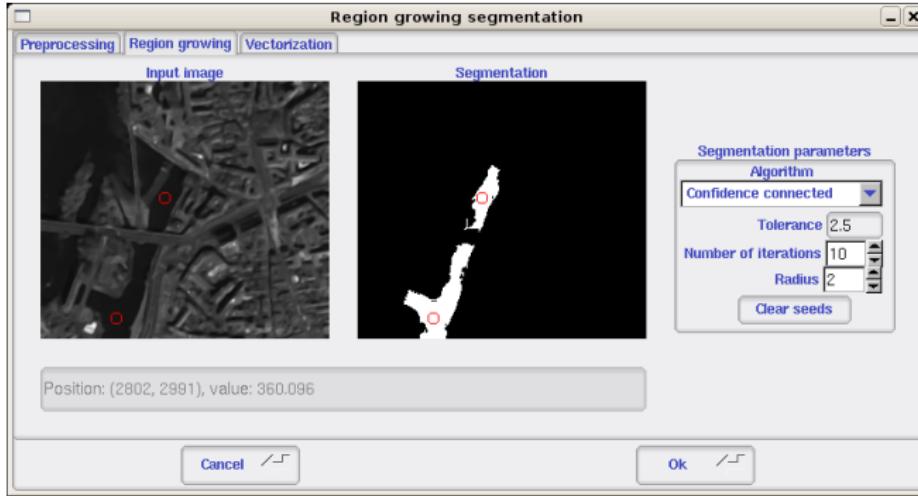
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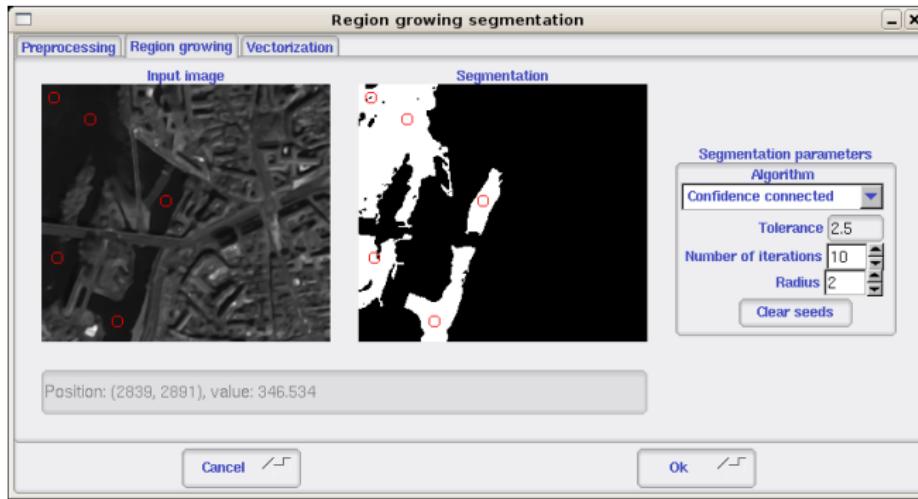
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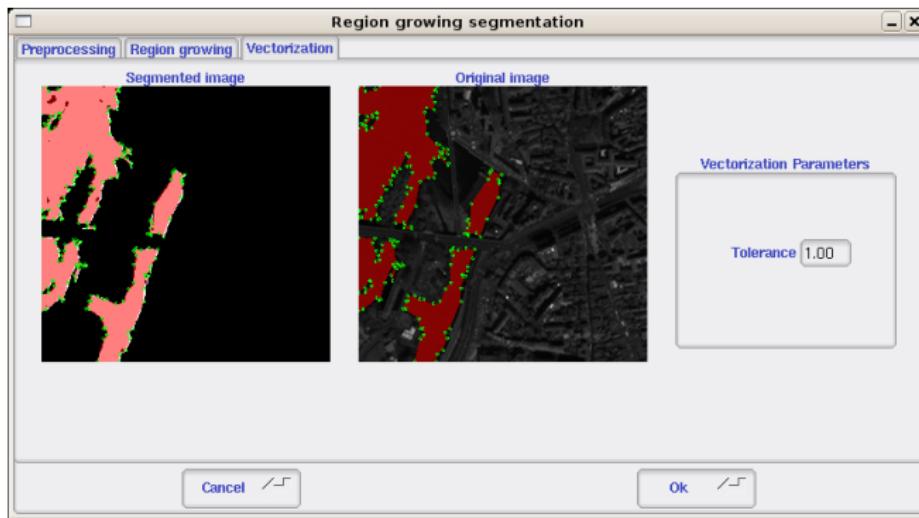
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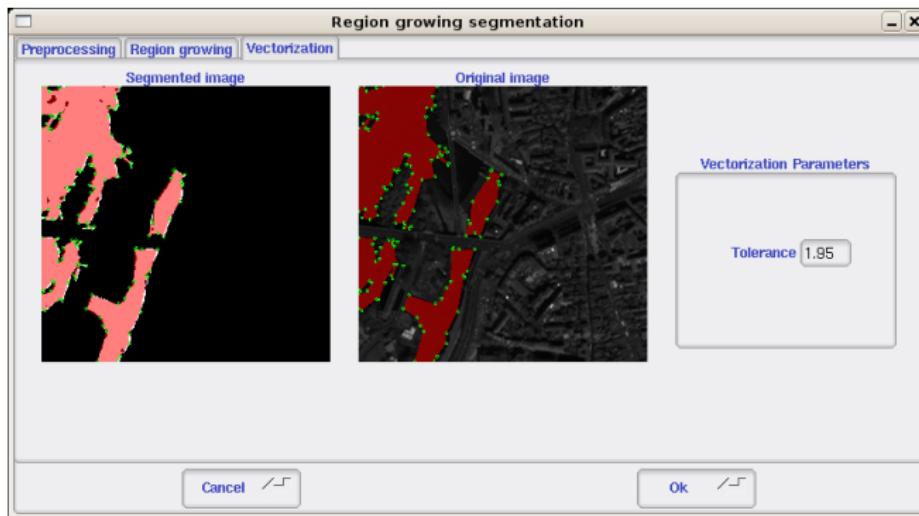
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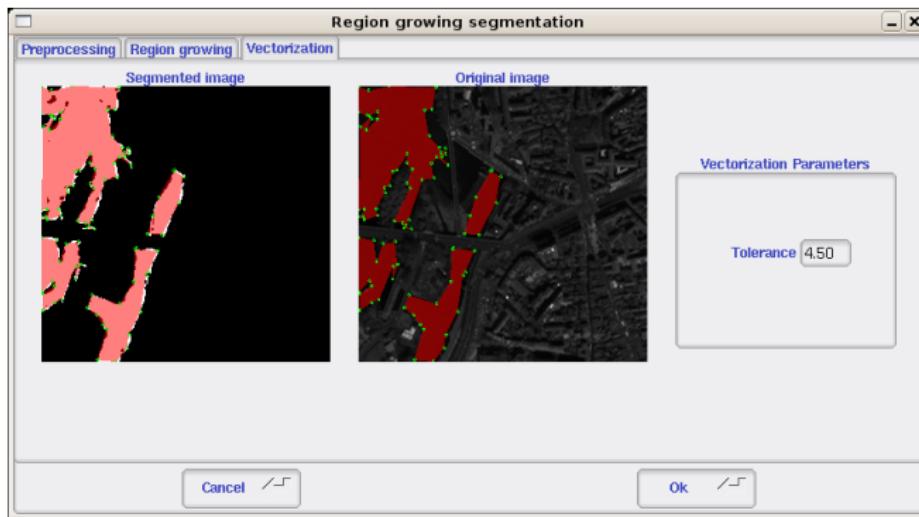
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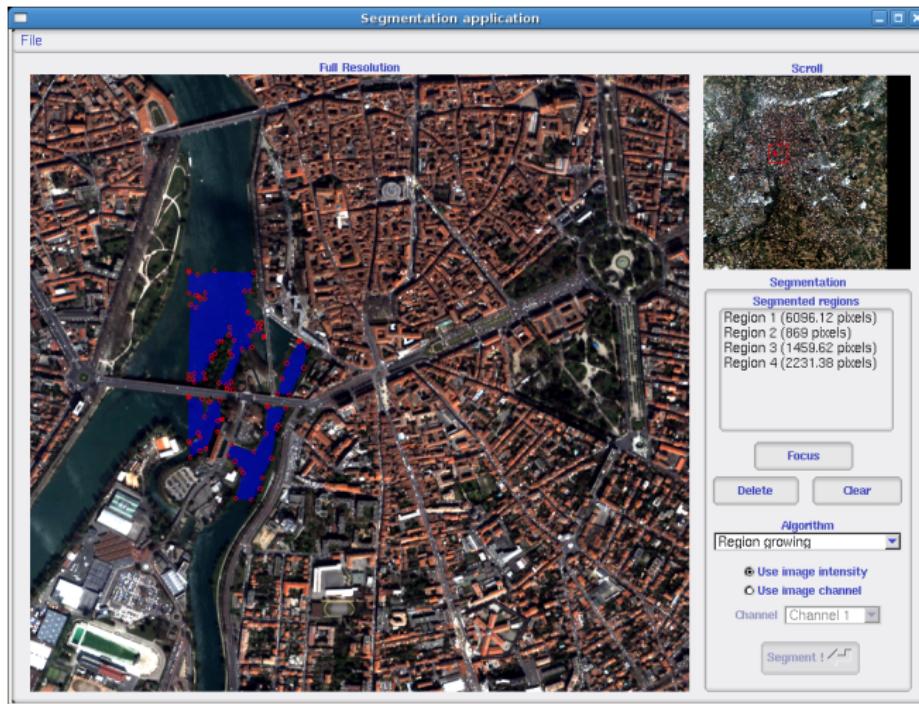
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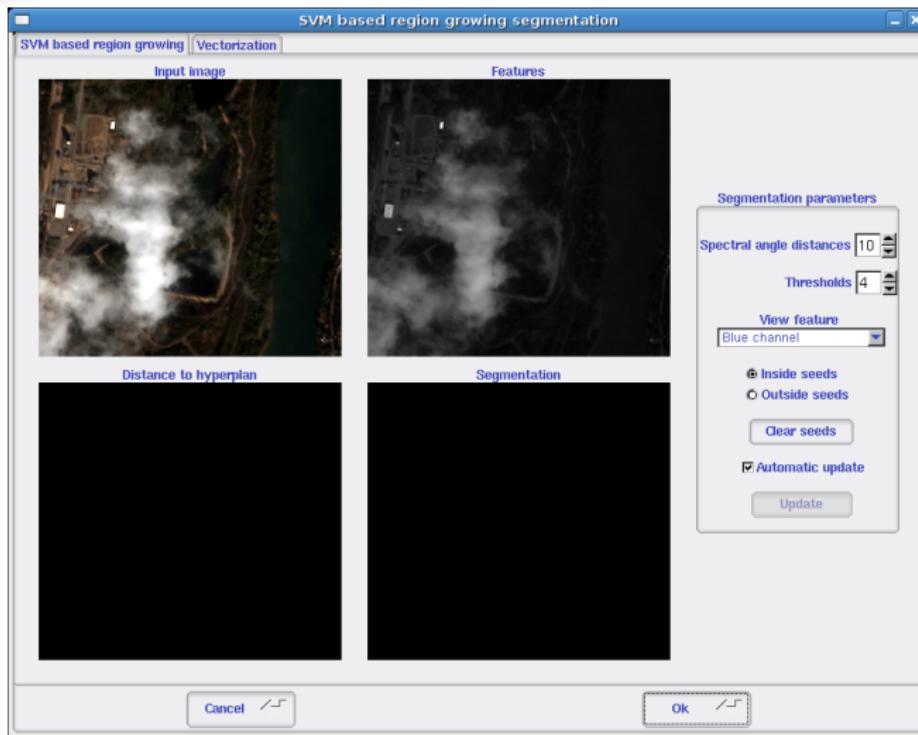
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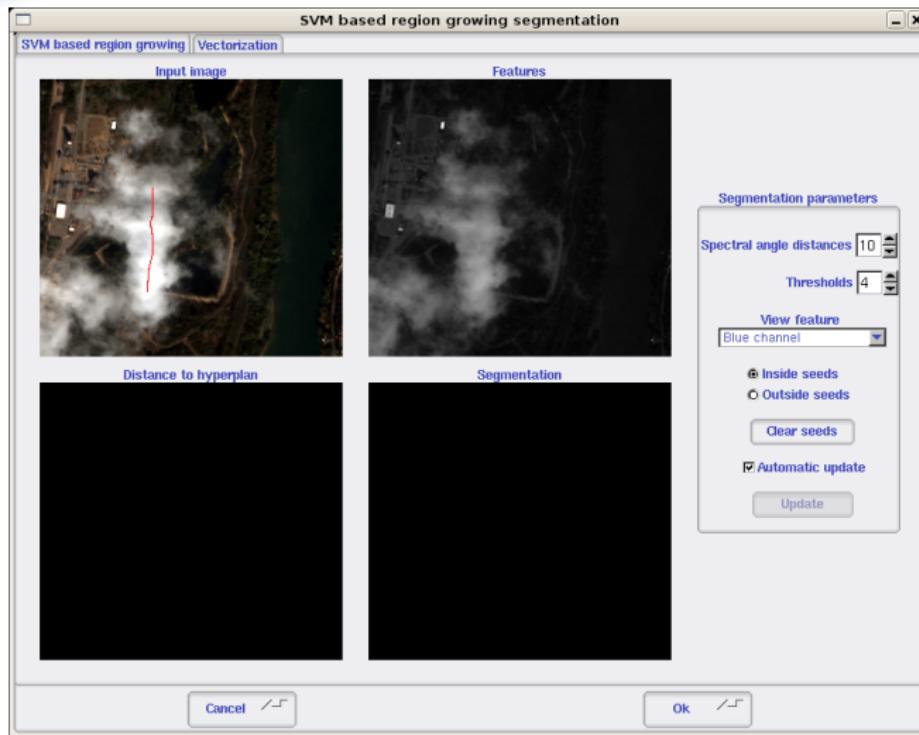


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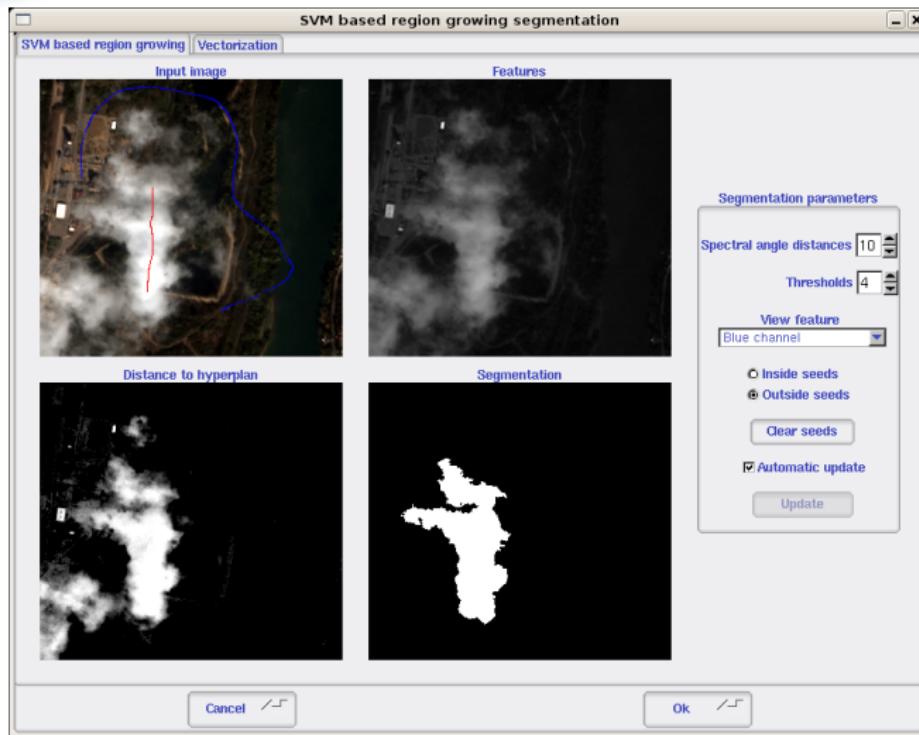
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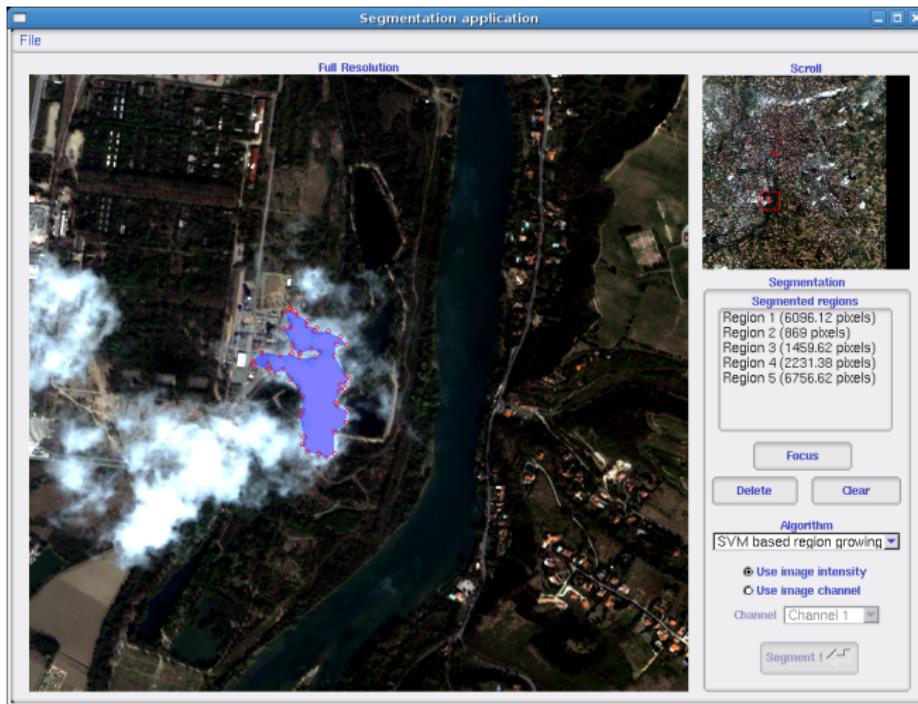
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- ▶ Automatic and semi-automatic approaches are complementary
- ▶ Interest of the active learning approaches
- ▶ OTB-Applications: growing set of tools for image information extraction



# Coming soon

- ▶ Image fine registration



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- ▶ KML input/output: display and share on Google Earth



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