OTB @ SERTIT

- Who is SERTIT ?
- How OTB infiltrated a commercial software environment
- Processing chains development
- Implementation
- Happy user ?
- OTB On The Beach

Who is SERTIT ?

SERTIT is a platform of ICube laboratory, University of Strasbourg

Remote Sensing R&D and applications development

Rapid mapping : a 24/7/365 operational service

COPERNICUS
Emergency Management Service

First crisis map
< 3 hours

International Charter
SPACE & MAJOR DISASTERS

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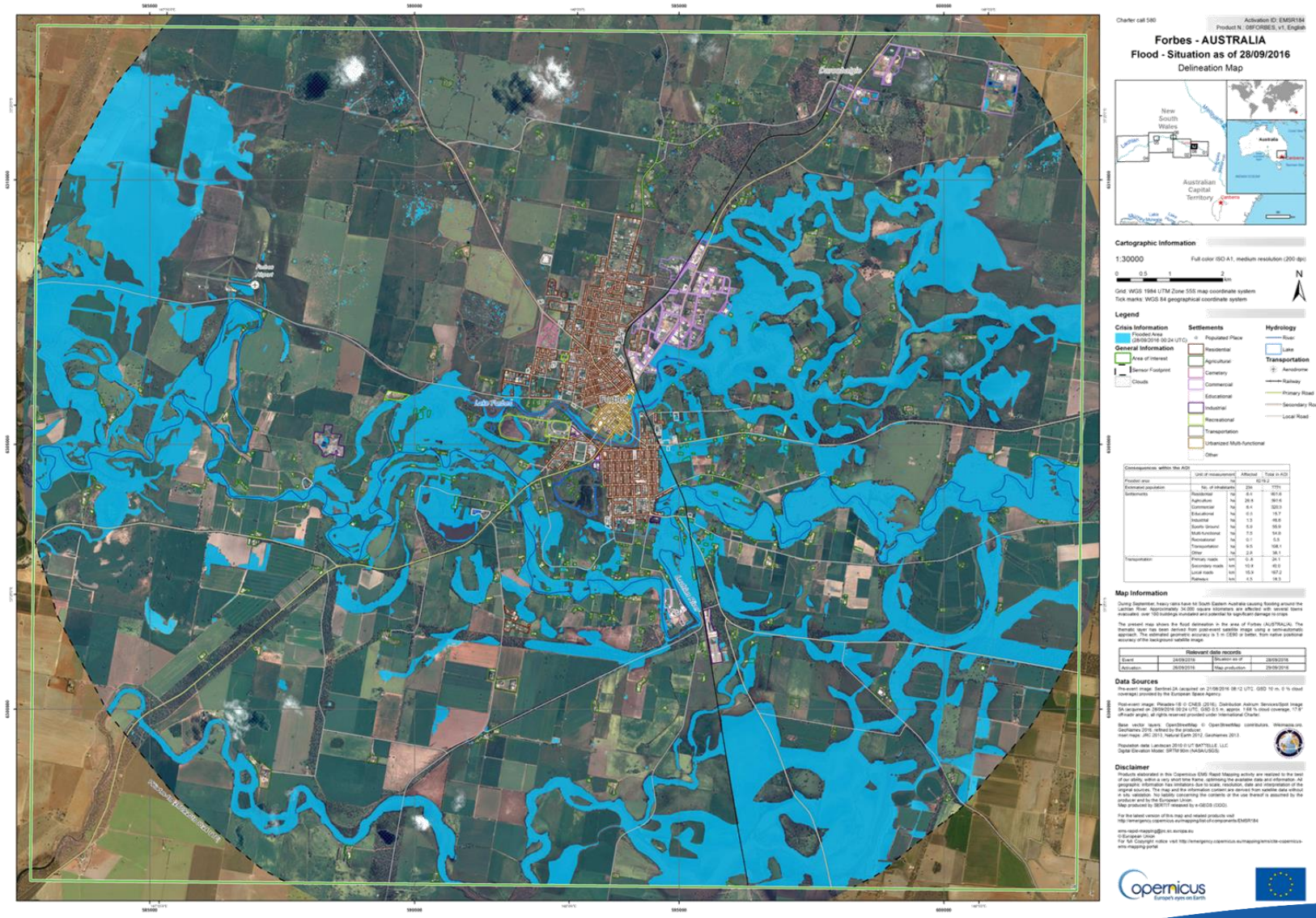
Floods in Australia September 2016



OTB User Days – June 2017

Forest fires in Chile
January 2017

Mapping forest fire

- Active fires, burnt areas

Why OTB @ SERTIT ?

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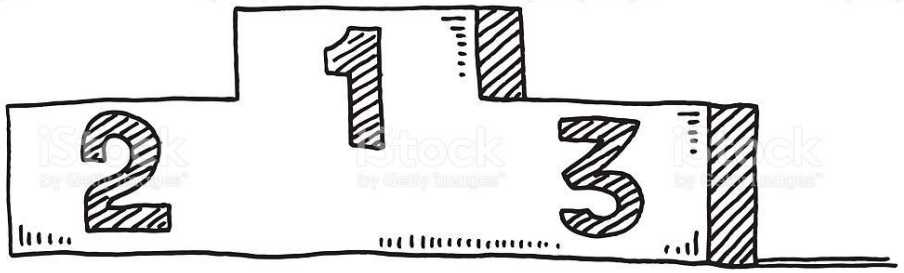
Why OTB @ SERTIT ?



- Not a black box
- Automation easy (cli)
- Linked with scientific progress

- Free
- No license management
- Standalone library

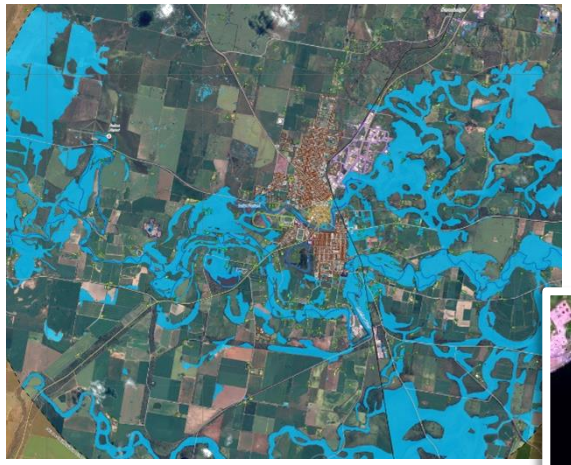
Missions

Training sessions

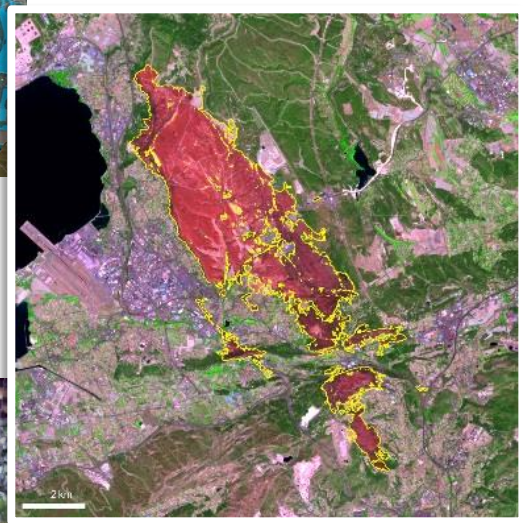
Processing chains

Automatic tools based on OTB :

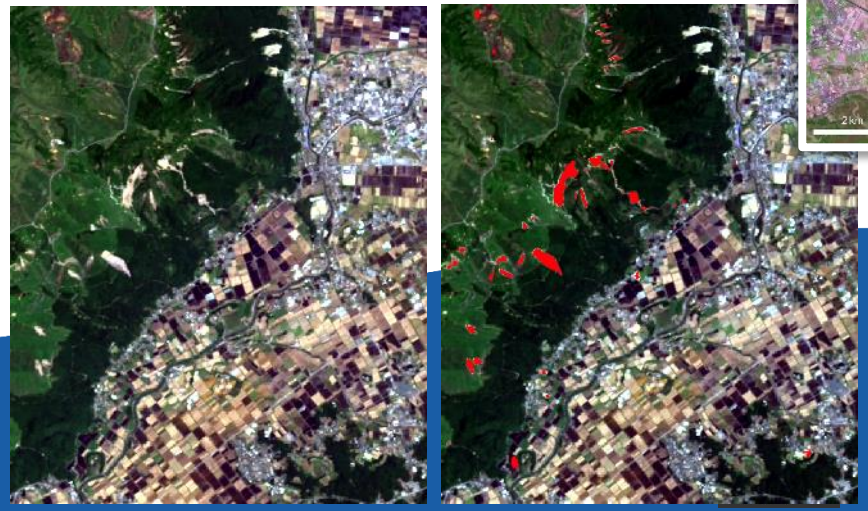
- WATEX : water extraction



- BURNOUT : burnt areas detection



- landslides detection



Automatic Water Extraction processing the S2 flux (extensible to S1 and all other images dataset)

Samples localisation derived from the best dataset available for training

Pertinent radiometric information associated to samples

Samples filtring (clouds, shadow)

Model training and classification

Post-classification steps reducing potential commission

Final result validated with the best dataset available for validation

Automatic burn scar mapping for Sentinel-2 and Landsat-8 datasets

Program based on Python

```
###### Calcul du model NBR #####

model_nbr=os.path.join(ecriture_temp, "MODEL_NBR.tif")
cirrus_pre=os.path.join(ecriture_temp, "pre_CIRRUS.tif")
cirrus_post=os.path.join(ecriture_temp, "post_CIRRUS.tif")
os.system('%s -il %s %s %s %s %s %s %s -out %s -exp "(im1b1>=0.1 && im2b1<1 && im3b1>0 && im4b1>-0.3 && im5b1<0.00568 && im6b1<0.00568 && im7b1<0.2)?1:0"' \
% (bandmath, nbr_diff, nri, ndvi_pre, ndvi_post, cirrus_pre, cirrus_post, nbr_post, model_nbr))

###### Calcul du model BAI #####

model_bai=os.path.join(ecriture_temp, "MODEL_BAI.tif")
bai_post=os.path.join(ecriture_temp, "post_BAI.tif")
os.system('%s -il %s %s %s %s %s %s %s -out %s -exp "(im1b1>=0.1 && im2b1<1 && im3b1>0 && im4b1>-0.3 && im5b1<0.00568 && im6b1<0.00568 && im7b1>50)?1:0"' \
% (bandmath, nbr_diff, nri, ndvi_pre, ndvi_post, cirrus_pre, cirrus_post, bai_post, model_bai))

###### Traitement final des deux modeles et extraction de la tâche #####

model_nbr_morph=os.path.join(ecriture_temp, "model_nbr_morph.tif")
model_bai_erod=os.path.join(ecriture_temp, "model_bai_erod.tif")
model_bai_dil=os.path.join(ecriture_temp, "model_bai_dil.tif")

os.system('%s -in %s -channel 1 -structype cross -filter opening -out %s' \
% (morph, model_nbr, model_nbr_morph))
os.system('%s -in %s -channel 1 -structype cross -filter erode -out %s' \
% (morph, model_bai, model_bai_erod))
os.system('%s -in %s -channel 1 -structype cross -filter dilate -out %s' \
% (morph, model_bai_erod, model_bai_dil))
```

OTB applications

Geometry : superimpose

Image manipulation : bandmath, concatenate and morphological operations

```
###### Variables globales ######

global superimpose
superimpose=os.path.join(otb,"otbcli_Superimpose")
global bandmath
bandmath=os.path.join(otb,"otbcli_BandMath")
global concatenate
concatenate=os.path.join(otb, "otbcli_ConcatenateImages")
global morph
morph=os.path.join(otb, "otbcli_GrayScaleMorphologicalOperation")
```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Implementation

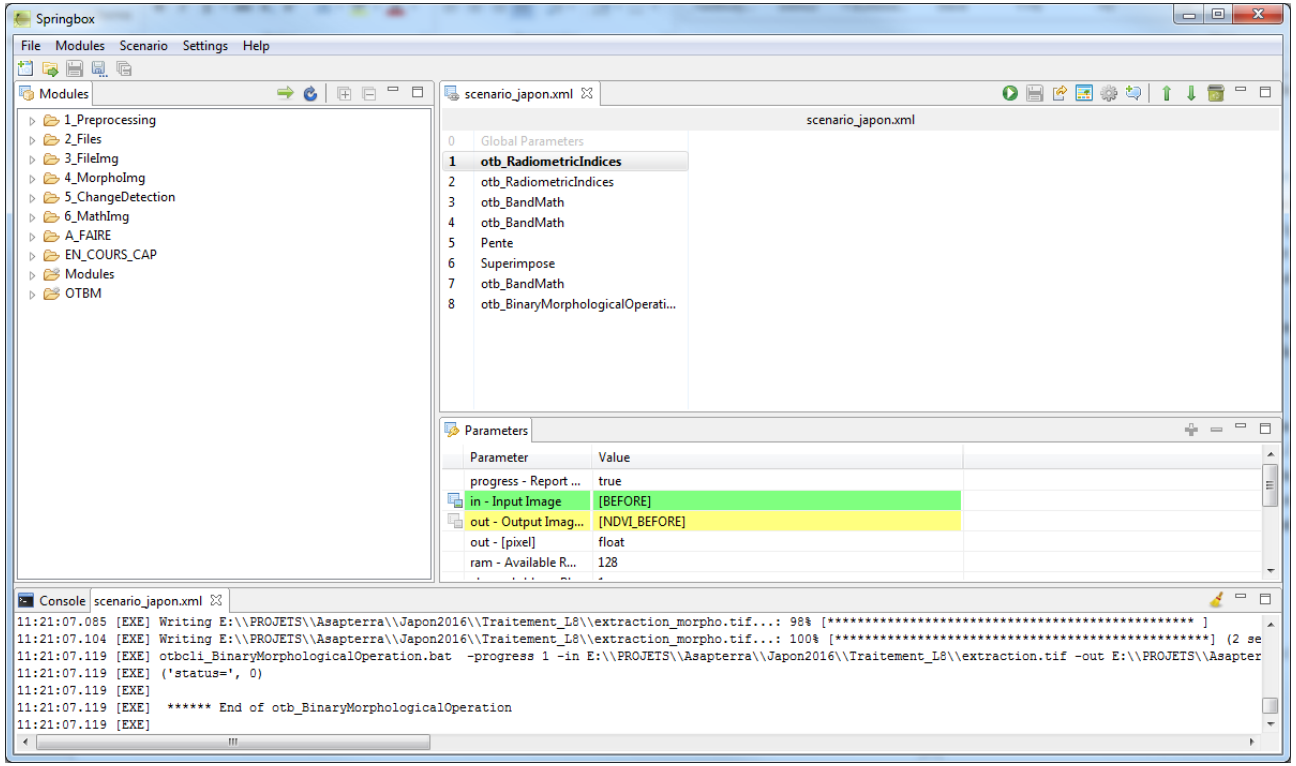
- Batch files (single user)

- Python program with GUI (through QGIS, ArcGIS or standalone)

- Springbox

Guided user interface (GUI) developed by CNES and allowing to call tools from extern libraries such as OTB or GDAL with parameters. Using this GUI makes it easier to disseminate the developed tool in a production environment especially for people not comfortable with script languages

Implementation



- Pre-configured applications
- Global parameters definition
- Processing chain can be run partially

Happy user ?

- OTB Cookbook highly appreciated, recipes very helpful to understand how tools are linked. A big effort has been made for documentation !

- Some applications are too long to be used in operational processing

Ex : polygon class statistics, sample selection

- Too much applications ? Impressive list, new users could be lost

Globally happy

Using OTB listening OTB

Neil Young

On The Beach

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