

Remote sensing data assimilation in modelling of urban dynamics

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Introduction

- » **ASIMUD** is a **spin-off** of the **MAMUD** project
- » Duration: 2 years, started April 1st 2011

- » Consortium:
 - » VITO
 - » Vrije Universiteit Brussel
 - » Universiteit Utrecht

Land use models: tools for planners

Milieu- en Natuurverkenning - Windows Internet Explorer

http://rma.vgt.vito.be/verkenner/anim_run.jsf

File Edit View Favorites Tools Help

Milieu- en Natuurverkenning

Vmm inbo vito

Home Wat Indicatorenatlas Gebruik Contact ▶ Indicator afdrukken

Kies indicatorgroep... Kies gebiedsindeling...

Indicator Scenario Gebied

Landgebruik RR Vlaanderen

Landgebruik ▶ Stop animatie

Omschrijving Evaluatie Links Legende Grafiek

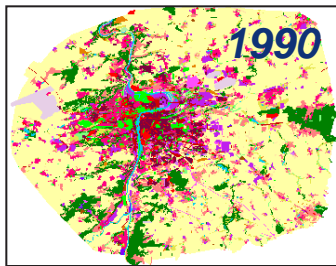
Deze indicator beschrijft hoe het landgebruik van Vlaanderen en Brussel zich zal ontwikkelen tussen 2005 en 2030 aan de hand van 28 landgebruiksklassen. Dit wordt uitgewerkt voor zes verschillende scenario's: twee referentiescenario's (RR en ER), twee scenario's scheiden (RS en ES) en twee scenario's verweven (RV en EV).

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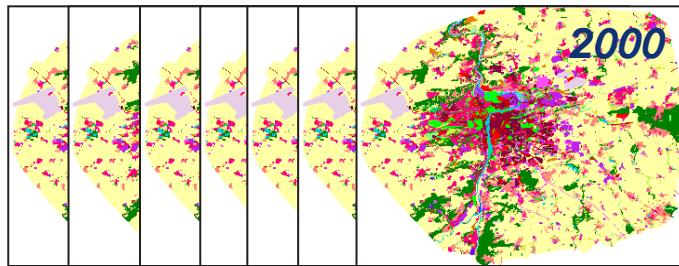
Historic calibration

- » Land-use change models are typically calibrated using a **historic calibration**

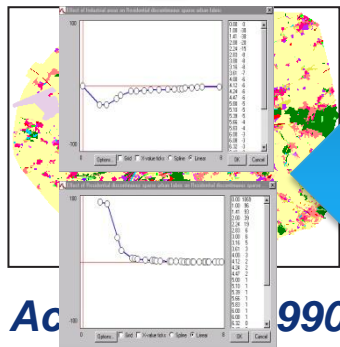
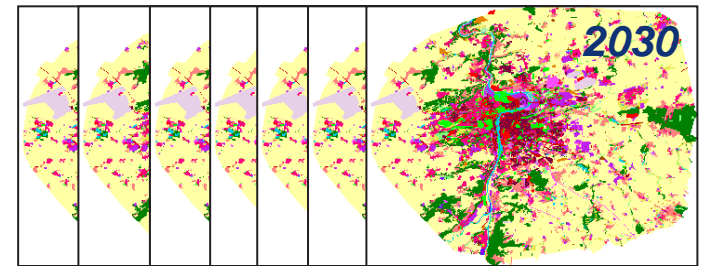
Model initialisation



Hindcast



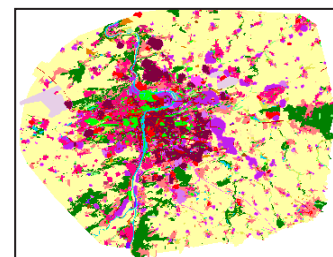
Forecast



Actual map 1990

not Ok

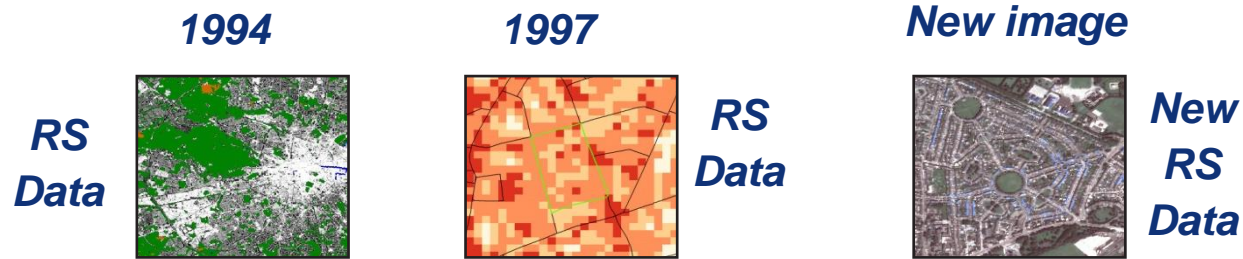
Ok



Actual map 2000

parameters

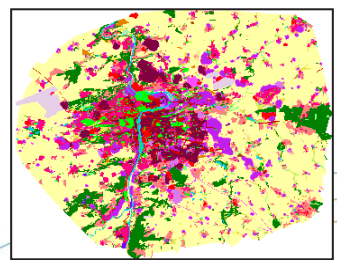
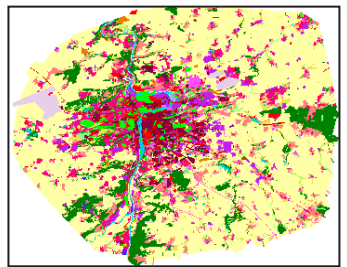
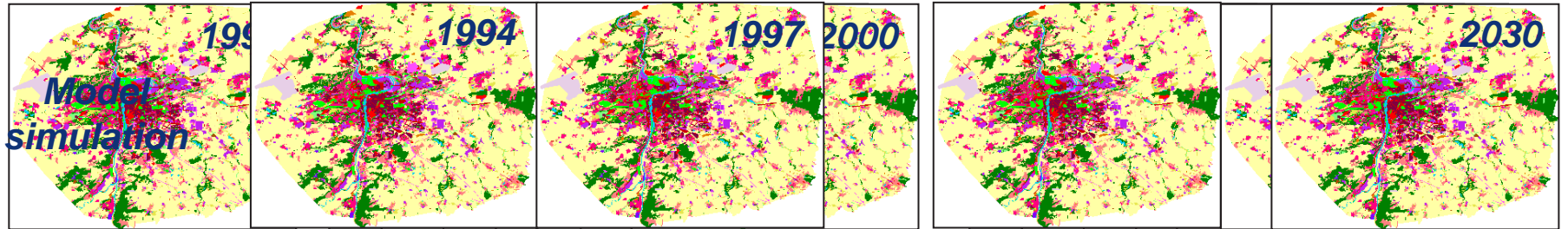
Remote sensing data for calibration



Model initialisation

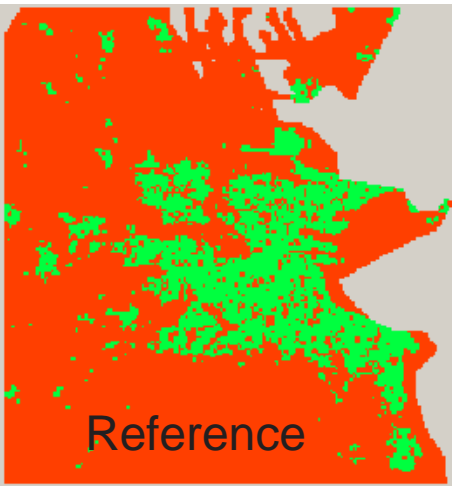
Hindcast

Forecast

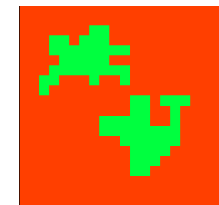
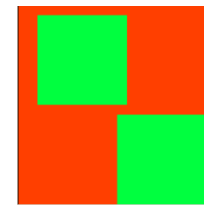
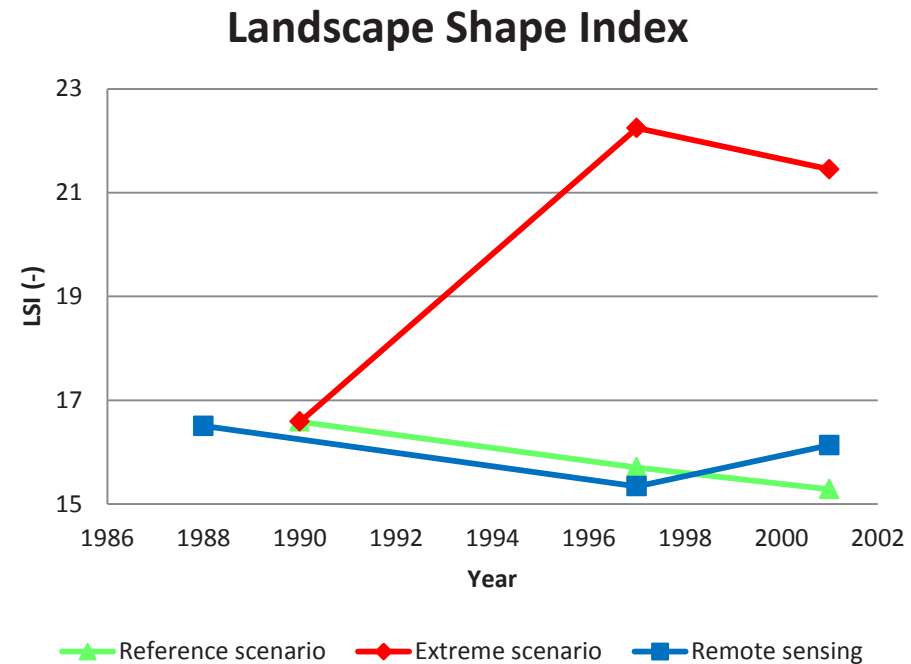
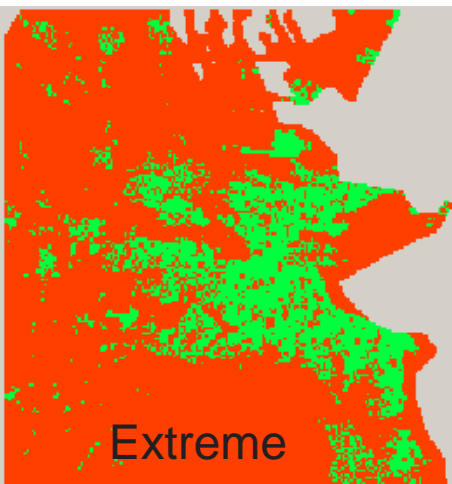
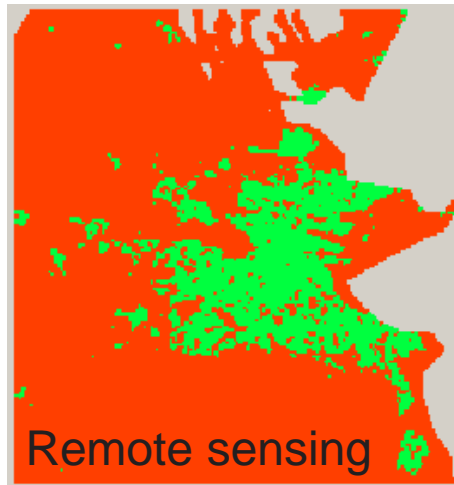


Source: MAMUD project

Spatial metrics for calibration

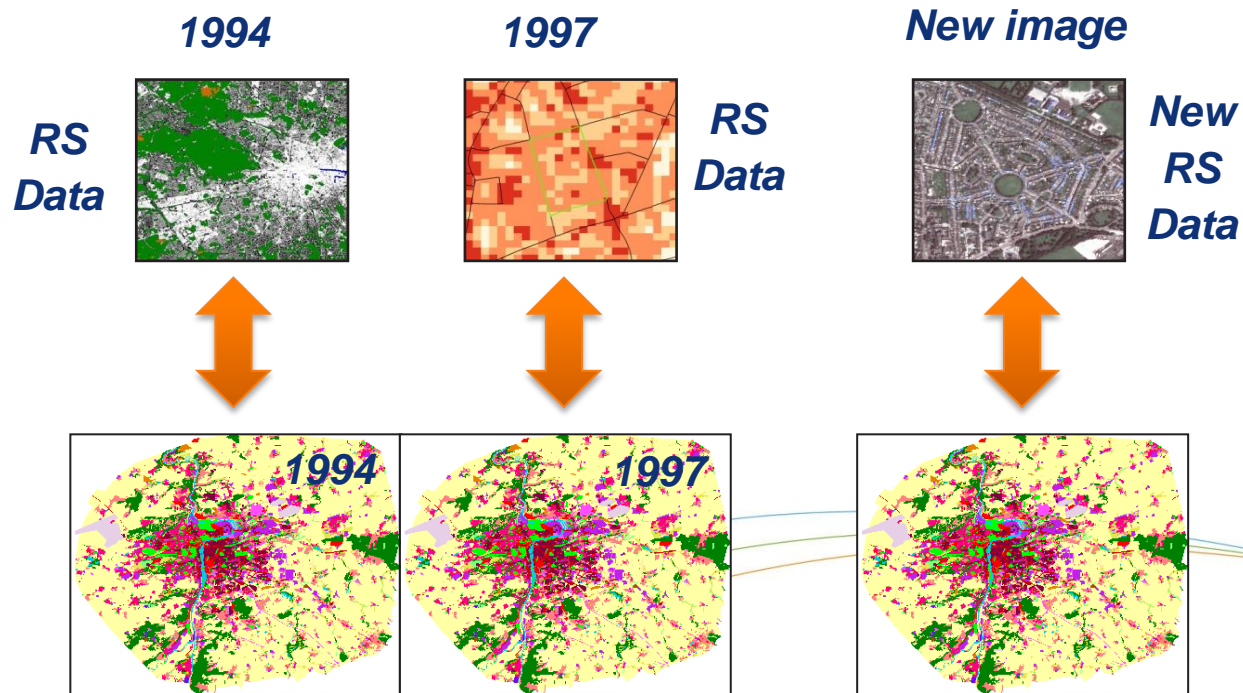


Masks 1997



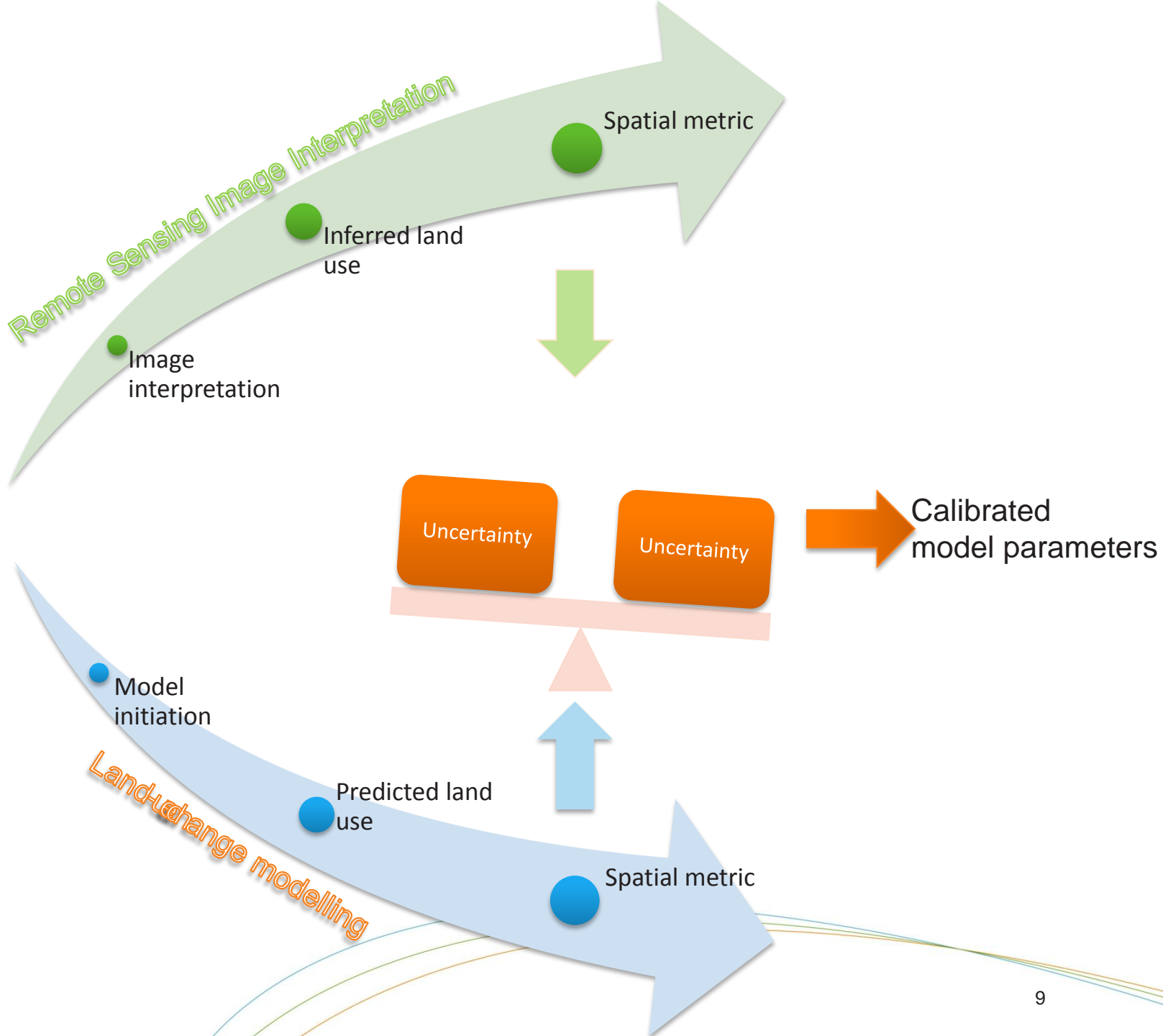
Uncertainties in predicted land use

- » A major shortcoming in the calibration of land-use change models is that **uncertainties are neglected**. Uncertainties mostly exist in:
 - » Model parameters
 - » Reference data used for calibration of the model
- » This leads to uncertainties in the prediction of land use



Objectives ASIMUD

- » Main objectives of ASIMUD:
 - » **Improving** the **quality** of predictions of future land use by **reducing** the **uncertainty** in land-use simulations
 - » Provide end users with **robust** and **reliable** tools for land-use change modelling and calibration, based on the best available scientific knowledge and data



Anticipated results

- » **Improved land-use simulations** with **lower uncertainties** compared to other automatic calibration methods
- » An **automatic calibration method** based on methods developed in the MAMUD project combined with an innovative data-assimilation approach
- » **Robust** and **reliable tools** for land-use change modelling and calibration for use in policy contexts will be facilitated and promoted
- » The **probability maps** of simulated land use will be valuable additional data for end users to assess planning policies

- » Website: <http://www.asimud.be>