SIGMA Activity: Potential for Agricultural Intensification

Room for intensification of agriculture and possible environmental impact can be estimated through the yield gap concept. The yield gap is the difference between potential yield (irrigated crops), or water limited yield (rain fed crops) and actual yields. In SIGMA we focus on accurate and spatial explicit yield gaps with local relevance. This effort also contributes to an improved monitoring capacity as an input to Early Warning Systems on Food Security and the Agricultural Market Information Systems.

AGRICULTURAL PRODUCTIVITY - MAIN OBJECTIVES

- Set-up, calibrate process based crop models to assess potential yield levels under rain fed or irrigated conditions for selected sites
- Develop and compare procedures to generate spatial explicit maps of potential and attainable yields
- Improve estimation of spatial explicit actual yields at regional level using EO-data and yield statistics and/or observations.

MODELS | LOCAL AGRONOMY | REMOTE SENSING | SCALING

SIGMA AT A GLANCE

Title:

Stimulating Innovation for Global Monitoring of Agriculture and its Impact on the Environment in support of GEOGLAM

Funded through EC FP7, Collaborative Project

Duration: 42 months

Start Date: November 2013

Consortium: 22 Partners from 17 countries

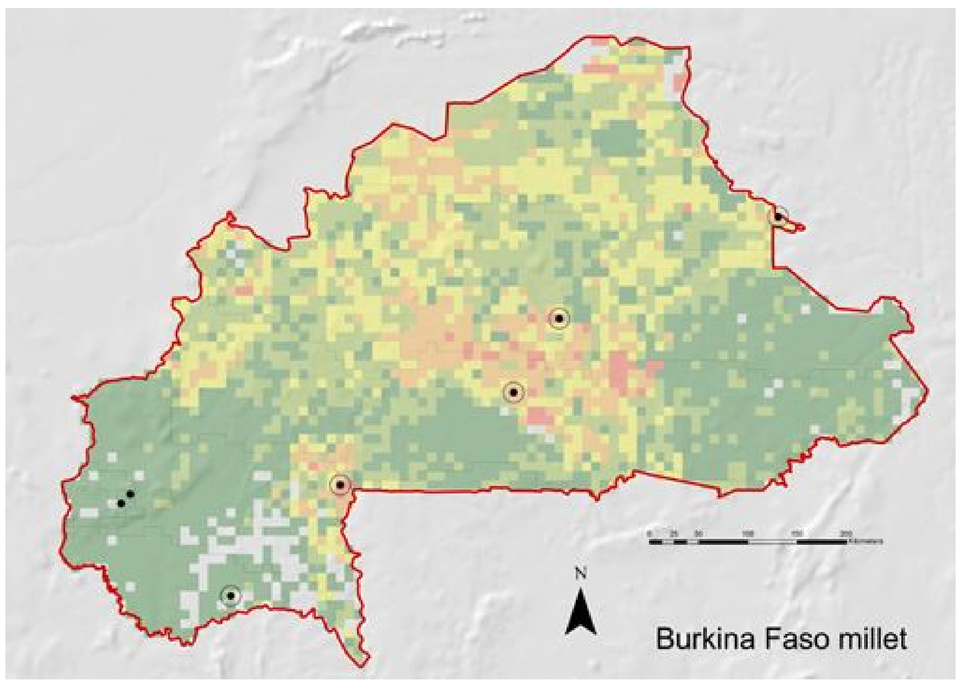
Project Coordinator: VITO

Activity Coordinator: Alterra

Project Web Site: www.geoglam-sigma.info

Contact: esiteSigma@vito.be

- Process based crop models are most appropriate to assess potential yield levels
- Use of local agronomy data is key for proper calibration
- Manage local in-situ data (STAC approach)
- Use best of available data sources:
  - ü Crop masks
  - ü Weather data
  - ü Agronomy
  - ü Soil data



selected sites for local agronomy

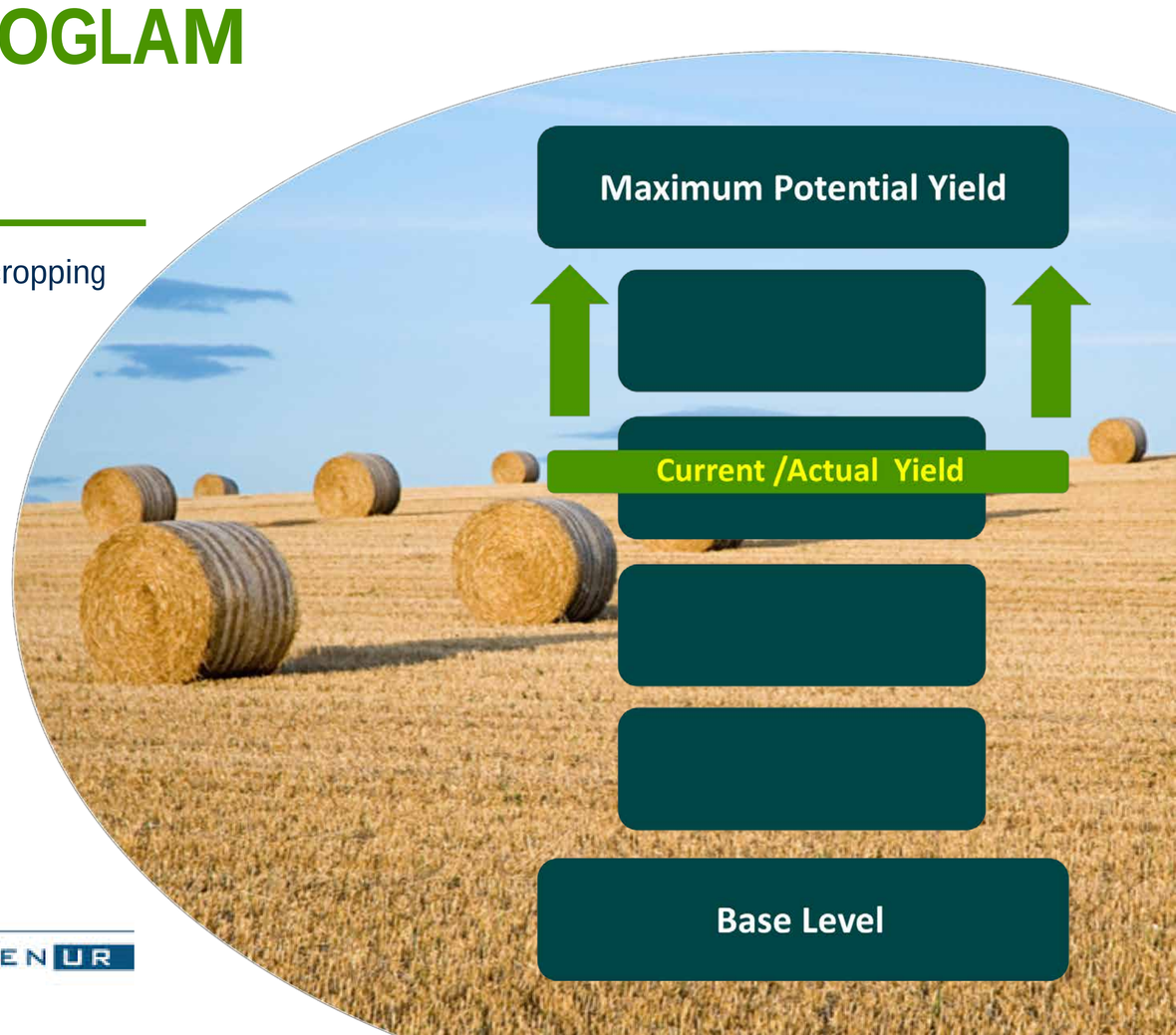
•Red = high appearance of millet
•Green = low appearance of millet

- Study scaling (spatial schematizations)
- Improvement of crop model solutions towards actual yields focussing on stresses like nutrient limitations and EO-data assimilation

GROUP ON EARTH OBSERVATION | GEOGLAM

EXPECTED OUTCOME

- Site & crop specific potential and their associated model crop characterization within local cropping system(s)
- Spatial explicit raster maps (grids of 1km – 300m) of crop specific actual yield level
- Spatial explicit raster maps (grids of 10-25 km) of crop specific yield potential
- Report on methods to assess potential and attainable yield levels, scaling methods (up- and downscaling yields), inter-comparison with other initiatives (GYGA, GAEZ…)



SIGMA
Stimulating Innovation for Global Monitoring of Agriculture

European Commission

ALTERRA WAGENINGEN UR

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