Biomass and soil moisture simulation and assimilation over Hungary using an offline land surface model with prognostic vegetation

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Alapítva: 1870

Introduction

ImagineS Project: 2012-2016 (EU-FP7)

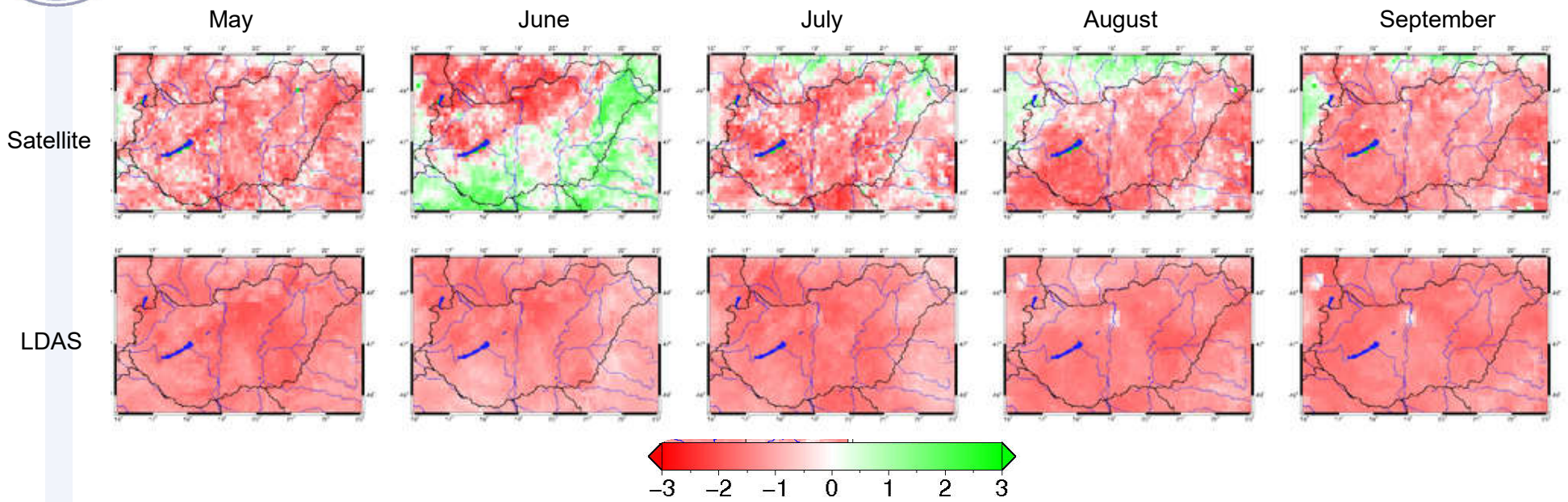
- Land Data Assimilation System (LDAS) was implemented at the Hungarian Meteorological Service
- Running near real time (10 day lag)
- Monitoring of:
  - Vegetation
  - Soil moisure
  - Surface fluxes (moisture, CO_2)

Land Data Assimilation System:

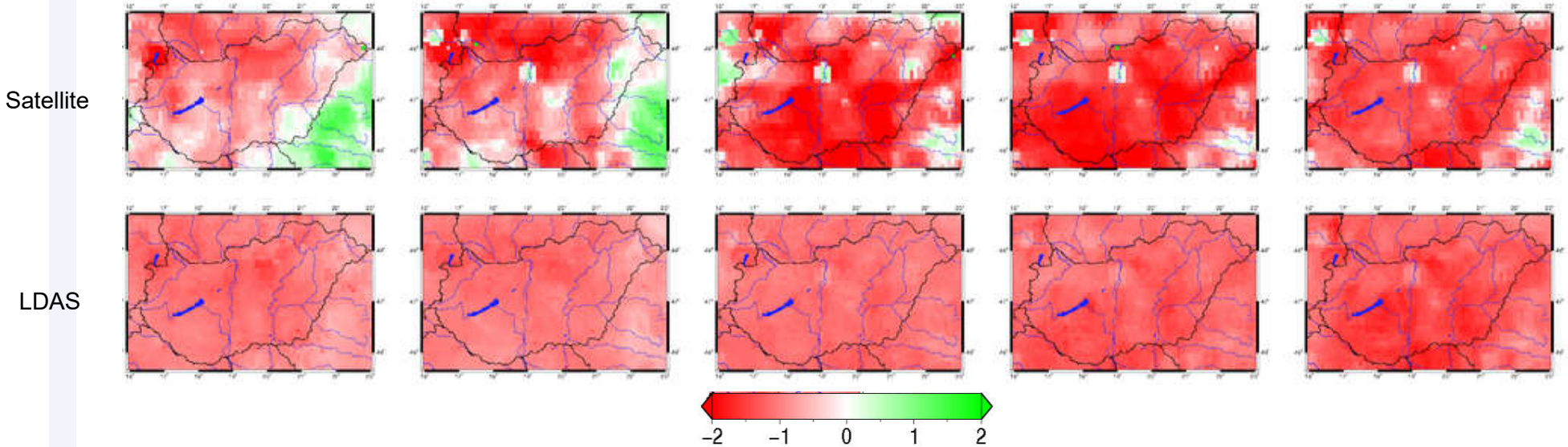
- SURFEX model (with prognostic vegetation: ISBA-Ags)
- 12 ISBA patches
- 8 km resolution over Hungary
- EKF assimilation of:
  - **LAI:** SPOT-VEG (until May 2014) and PROBA-V (from May 2014) at 1 km resolution, 10 day average, timeliness: 10 days
  - **SWI** (Soil Water Index) [0,1]: MetOp. ASCAT 10 km resolution, 1 day average.

Results – 2012 drought

LAI monthly anomalies - 2012



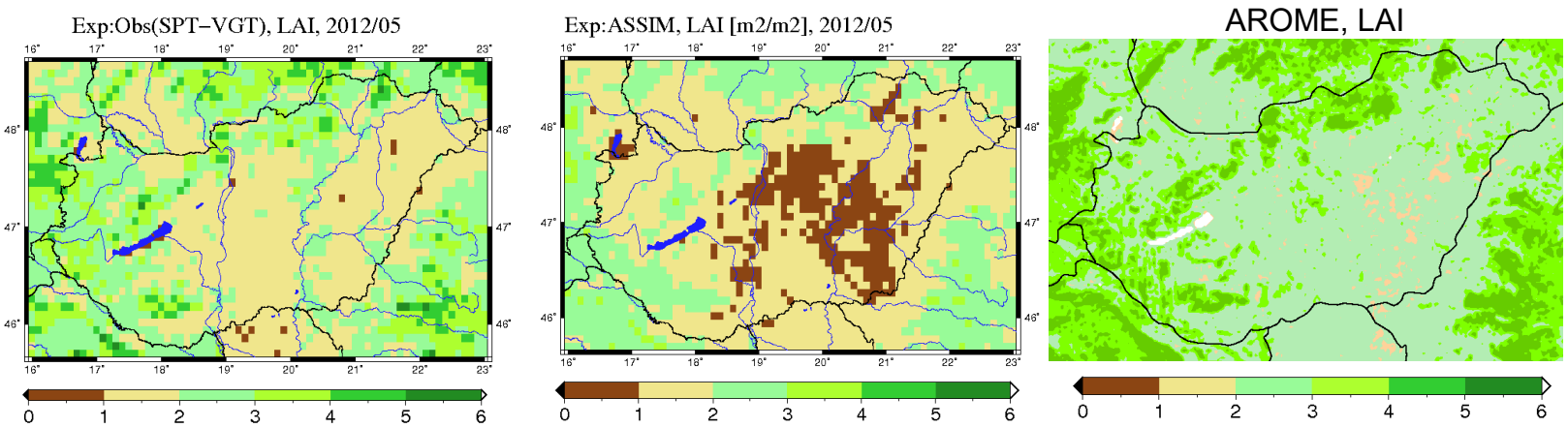
Root zone soil moisture monthly anomalies- 2012



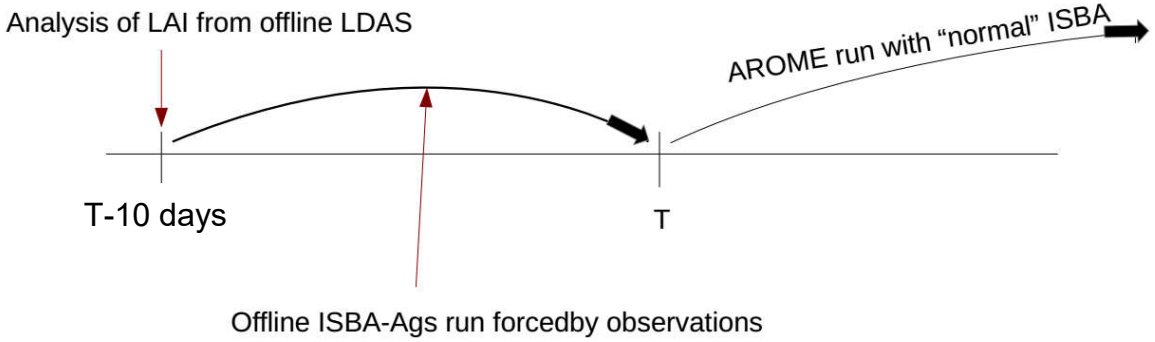
Plan – 1

Daily updated LAI in the AROME operational NWP model

- Currently operational NWP models use LAI climatology



- Goal: implement daily updated LAI from ImagineS system to AROME



Plan – 2

Long-range land surface forecasting system with prognostic vegetation

- Based on ISBA-Ags
- Started from analyses of the ImagineS system
- Forced with ECMWF extended range or seasonal forecasts