



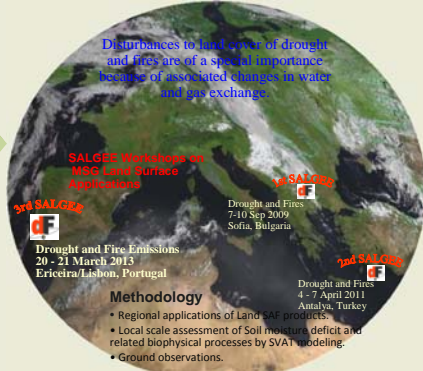
3rd SALGEE workshop on "MSG Land Surface Applications: Drought and Fire emissions", Lisbon/Ericeira, Portugal, 20 - 21 March 2013



SALGEE, The Satellite Applications in Land surface analyses Group for Eastern Europe, has been established in 2009 for gathering experts in the field of satellite meteorology to complement the activities of EUMETSAT Land Surface SAF for progression of using satellite Land Surface Analyses techniques in Eastern Europe and other regions of interest regarding their application (CGMS-38, 2010) in conjunction with other source of information, <http://www.eumetsat.int/Home/Main/AboutEUMETSAT/InternationalRelations/CGMS/CGMSPublications/Index.htm>

SALGEE Project of EUMETSAT

- ♦ **Aim of the SALGEE initiative**
- Support to LSA SAF activities in user services & training in Eastern Europe and order regions of interest to take full advantage of remotely sensed data on land, land-atmosphere interactions and biosphere applications.
- ♦ **Role & Objectives**
- Facilitate exchange of knowledge on integrated approach for using satellite data in conjunction with ground observations and model outputs.
- Coordinate research and operational activities in using MSG and EPS data for quantification of land surface processes as well as to facilitate the validation and use of LSA SAF products.
- Contribute to increase benefits from the satellite products in target region.



SALGEE Project of EUMETSAT

- ♦ **Activities**
- Fostering the use of satellite data in conjunction with other available information (e.g. NWP and Land Surface Model output, ground measurements, etc.)
- To establish mechanisms where scientists and user community provide feedback to product developers at EUMETSAT and LSA SAF
- To support the use of new land surface analysis methods and operationally generated geophysical products.
- To develop training materials.
- To support the implementation of EUMETSAT SAF Strategy related to climate monitoring and use of products for Terrestrial-Essential Climate Variables (TECVs).
- To maintain a close cooperation with the LSA SAF, NOAA/NEEDS and NASA.
- To organize biennial international workshops to review and discuss progress.
- ♦ **SALGEE Workshops**
- Sofia, 7-10 September 2009, Bulgaria
<http://info.meteo.bg/conferences/EUMETSAT07092009>
- Antalya, 4 - 7 April 2011, Turkey
<http://www.eumetsat.int/Home/Main/DataProducts/HowtoUseOurProducts/WorkshopsAndCourses/SP-201108091324359197.html>
- Lisbon/Ericeira, 20 - 21 March 2013, Portugal

NIMH, The National Institute of Meteorology of Bulgaria has initiated the 1st "Drought & Fire" workshop (7-10 September 2009, Sofia), recognizing the importance of fire hazard, as:

- An important process in modulating the Earth system, through the links among weather, climate, vegetation and human activities as well the potential to feed back to the global climate system.
- One of the important aspects of global environmental change in the Earth system environment, that shapes the landscape and vegetation structure, affecting ecosystem functioning and land-atmosphere interface process.

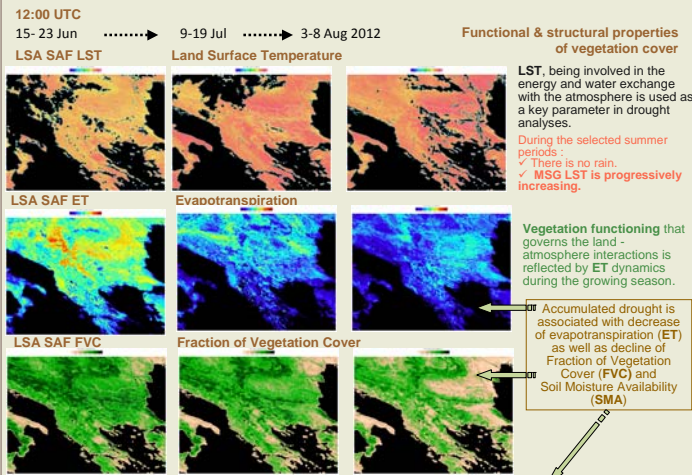
DROUGHT AS A BIOGEOLOGICAL PROCESS

The goal of this study is to evaluate the capacity of LSA SAF products based on MSG SEVIRI data to reflect some physical aspects of terrestrial drought conditions related to biogeophysical cycle on the Earth's surface.

MSG SEVIRI Capabilities for Land Surface Remote Sensing

- Landscapes water balance
- Surface energy balance
- Vegetation parameters
- Vegetation fires and carbon issue

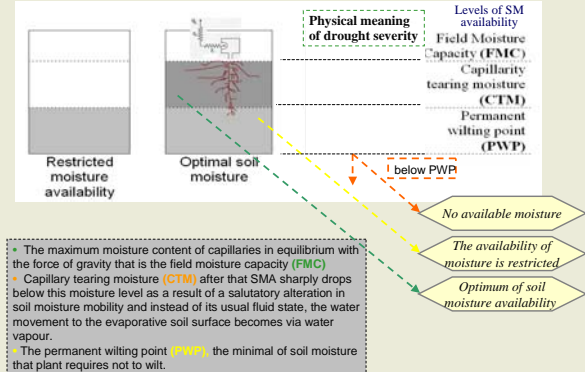
DROUGHT ASSESSMENT BY USING LSA SAF PRODUCTS



SVAT MODELING OF SOIL MOISTURE

As a reference: 'SVAT_bg' a Bulgarian LS model is used (Stoyanova & Georgiev, 2007; 2011)

Soil Moisture Availability /SMA/ Concept



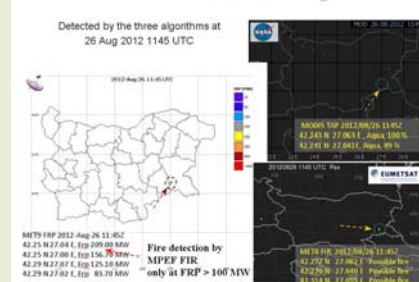
FIRE & FIRE EMISSIONS

Fire Detection & Monitoring

- Algorithms/Products for fire detections based on MSG SEVIRI
- MPEF SEVIRI FIR of EUMETSAT
- Fire Radiative Power, FRP of LSA SAF



Detection of a Large Fire



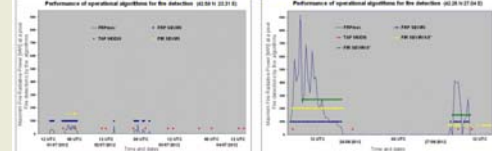
Differences and mismatches between LSA SAF FRP and MPEF FIR

- For small fires:** FRP < 100 MW per pixel, measured by SEVIRI at different stages of fire development.
- FRP product may provide more efficient fire monitoring than FIR.
- SEVIRI algorithms may fail to detect fires detected by MODIS.
- For large fires:** FRP > 200 MW per pixel, measured by SEVIRI.
- SEVIRI FRP and FIR (both from Full Scanning from 0° and Rapid Scan Service (RSS) from 9.5° E) can be equally efficient for fire detection.
- At some stages SEVIRI FIR from RSS may be most efficient in fire detection.

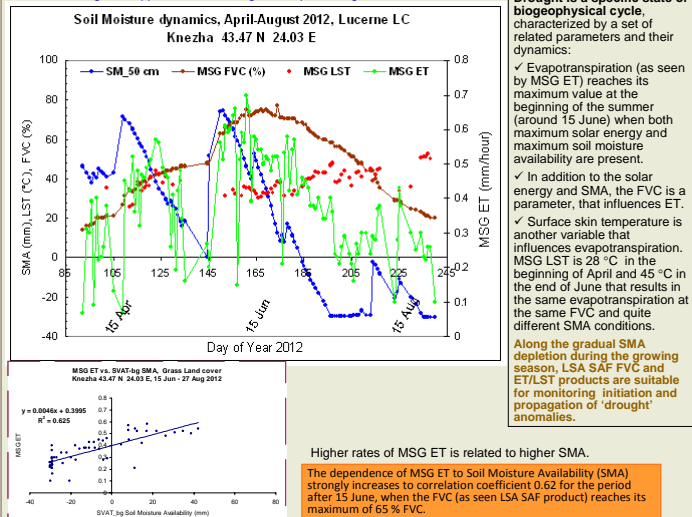
Monitoring fire development

SEVIRI and MODIS Products

Small fires vs. Large fires

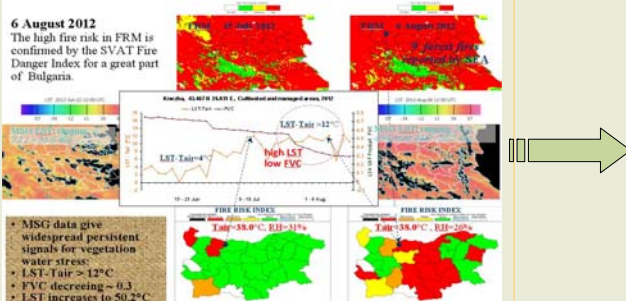


Due to the complex nature of drought its monitoring calls for a comprehensive and integrated approach, accounting for its specific regional and local reveals.



LSA SAF in support to diagnosing vegetation fire conditions

LSA SAF Fire Risk Map forecasts

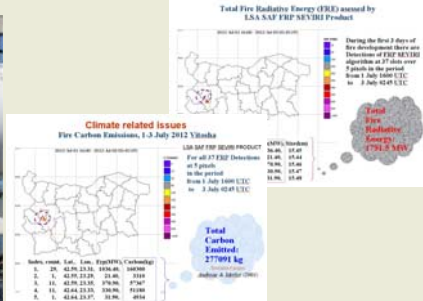


BIOGASS BURNING & CARBON eq. EMISSIONS

A wildfire broke out on 1st of July in the eastern parts of Vitosha Mountain, close to Bistrica, Bistrichko Braniste (announced by UNESCO since 1977 as a biosphere reserve), a suburb of the Bulgarian capital Sofia

The fire developed at altitudes about 1700 - 1800 m and there is still snow at the northern side of the mountain at altitudes about 2000 m in the beginning of this summer.

Vitosha mountain near Sofia, Bulgaria, 1-4 July 2012



DROUGHT RAISES FIRE HAZARD