

The LSA-SAF evapotranspiration products

Nicolas Ghilain

Alirio Arboleda, Françoise Meulenberghs & LSA-SAF Team



6th LSA-SAF Users workshop, Reading, UK, 8-10 June 2015

Europeans Act to Stem Drought Damage



Stephane Mahe/Reuters

Europe's long drought has created severe conditions like this at the Loire River, near the Anjou-Bretagne Bridge in the western French town of Ancenis.

By DOREEN CARVAJAL

The New York Times

Published: June 9, 2011

PARIS — Suffering from a record-shattering drought, European nations started preparing emergency plans this week to conserve water and provide millions of euros in aid to farmers, including the deployment of soldiers to deliver hay for cattle grazing on sun-baked soil.

Europe's dry spring could lead to power blackouts, governments warn

River levels may cause nuclear reactors to go offline, while dry weather in northern and eastern Europe will raise food prices

John Vidal, environment editor

guardian.co.uk, Tuesday 31 May 2011 12.16 BST

theguardian



Low river levels caused by a dry spring could lead to power blackouts as nuclear reactors go offline. Photograph: Patrick Hertzog/AFP/Getty Images

One of the driest springs ever recorded in northern Europe could lead to power blackouts this summer, with nuclear reactors going offline because of low river levels. The exceptionally dry weather will also raise food prices and has already forced water restrictions on millions of people, say governments, farm groups and meteorological organisations across the continent.

Need for a near-real time provision of daily ET

Monitoring system of land evapotranspiration
based on a simplified SVAT model
constrained by satellite observations.

Requirements

Near-real time

Continuous

Freely available

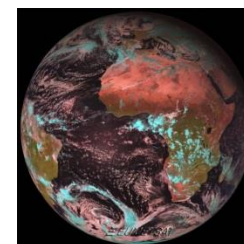
Continental view

Data sources

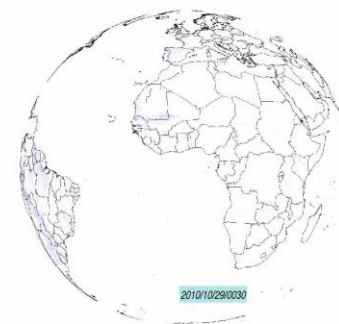
Geostationary satellites

Suppl. Polar satellites

Numerical weather forecasts



Today, such service is almost unique !



The LSA-SAF evapotranspiration products

The EUMETSAT
Network of
Satellite Application
Facilities

LSA SAF
Land Surface Analysis

- The evapotranspiration products
- Quality assessment
- Applications
- New products & plan of release



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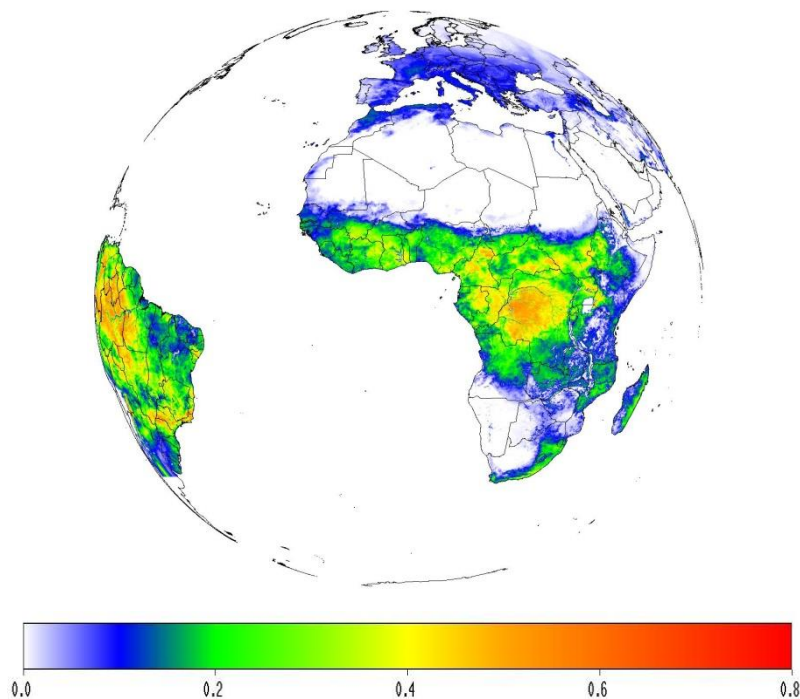


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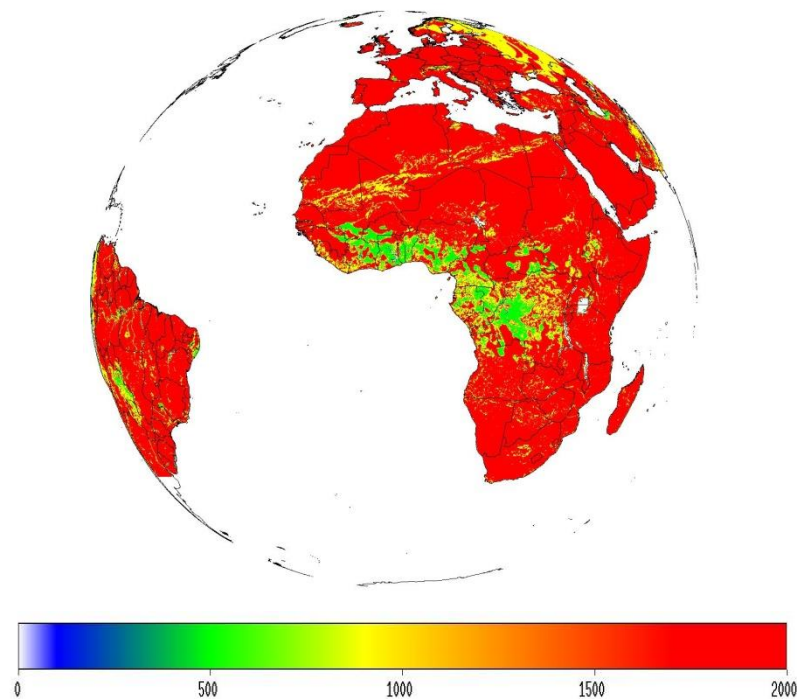
Half-hourly evapotranspiration (MET)

Operational since 2009

- 4 files: Euro, NAfr, SAfr, SAmc
- Layers in file:
 1. instantaneous ET [mm.h^{-1}]
 2. quality information per pixel (depends on input quality)



ET [mm/h] for 2010/10/29 at 12:00 UTC



Associated quality flag (-)

Daily evapotranspiration (DMET)

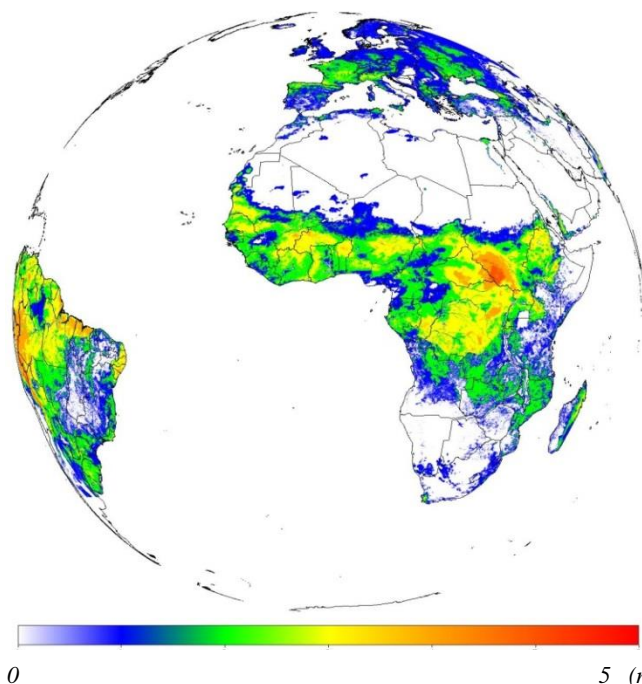
Operational since 2010

4 files: Euro, NAfr, SAfr, SAmc

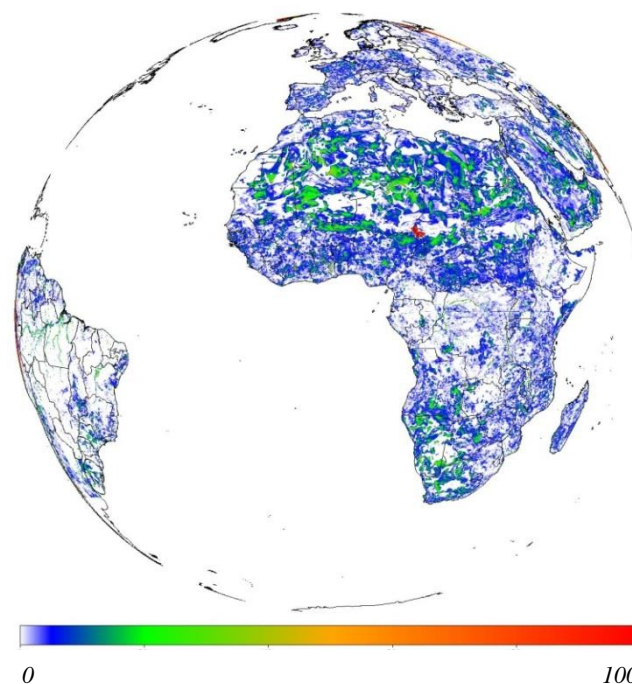
Layers in daily file:

1. Daily cumulated ET [mm]
2. % Missing value for daily integration

a) DMET (mm/day)



b) % missing values

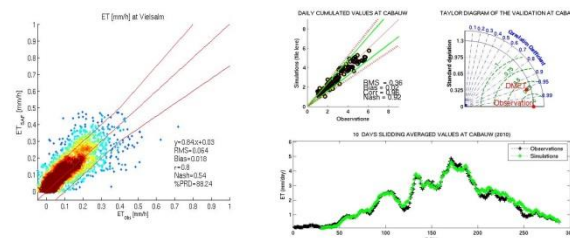
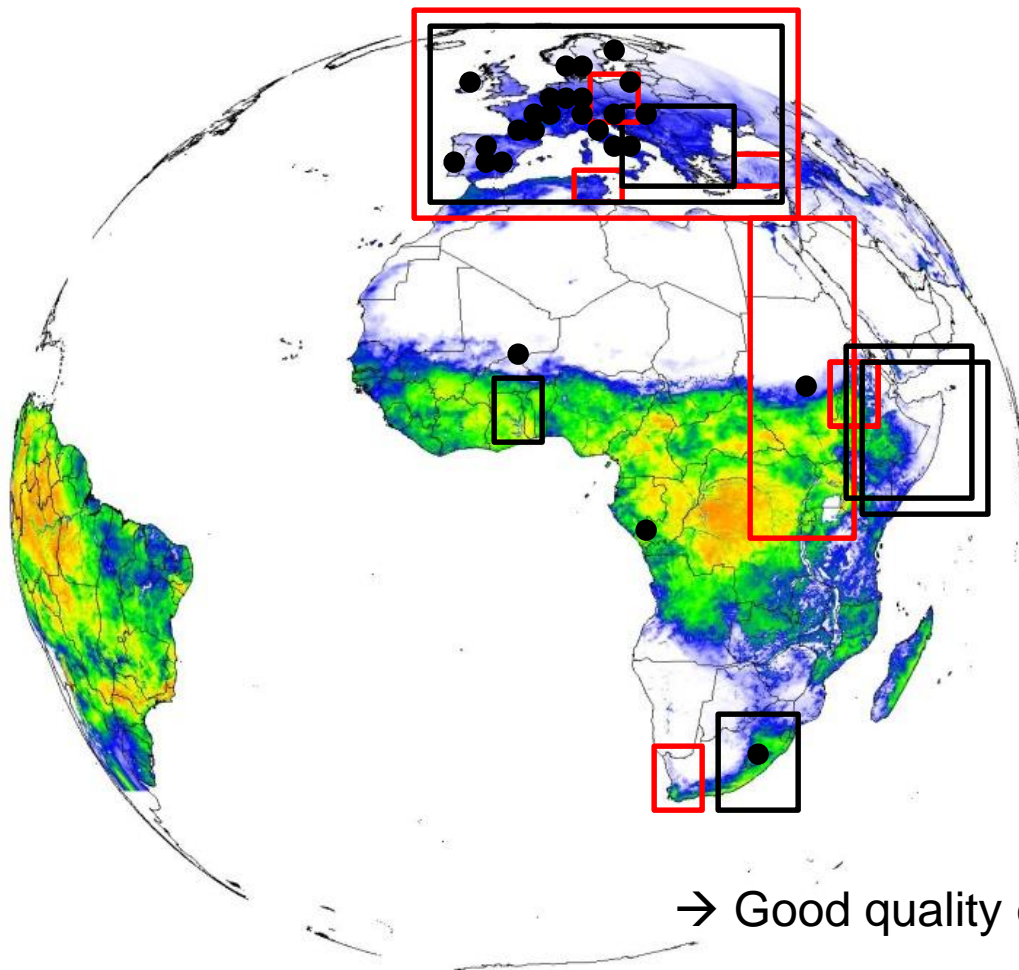


The LSA-SAF evapotranspiration products

- The evapotranspiration products
- **Quality assessment**
- Applications
- New products & plan of release

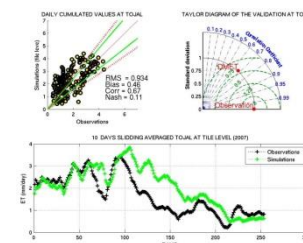


Quality assessment: team & users findings



→ Good quality over Europe & parts of Africa

→ Still some room for improvement in semi-arid/water stress areas.



The LSA-SAF evapotranspiration products

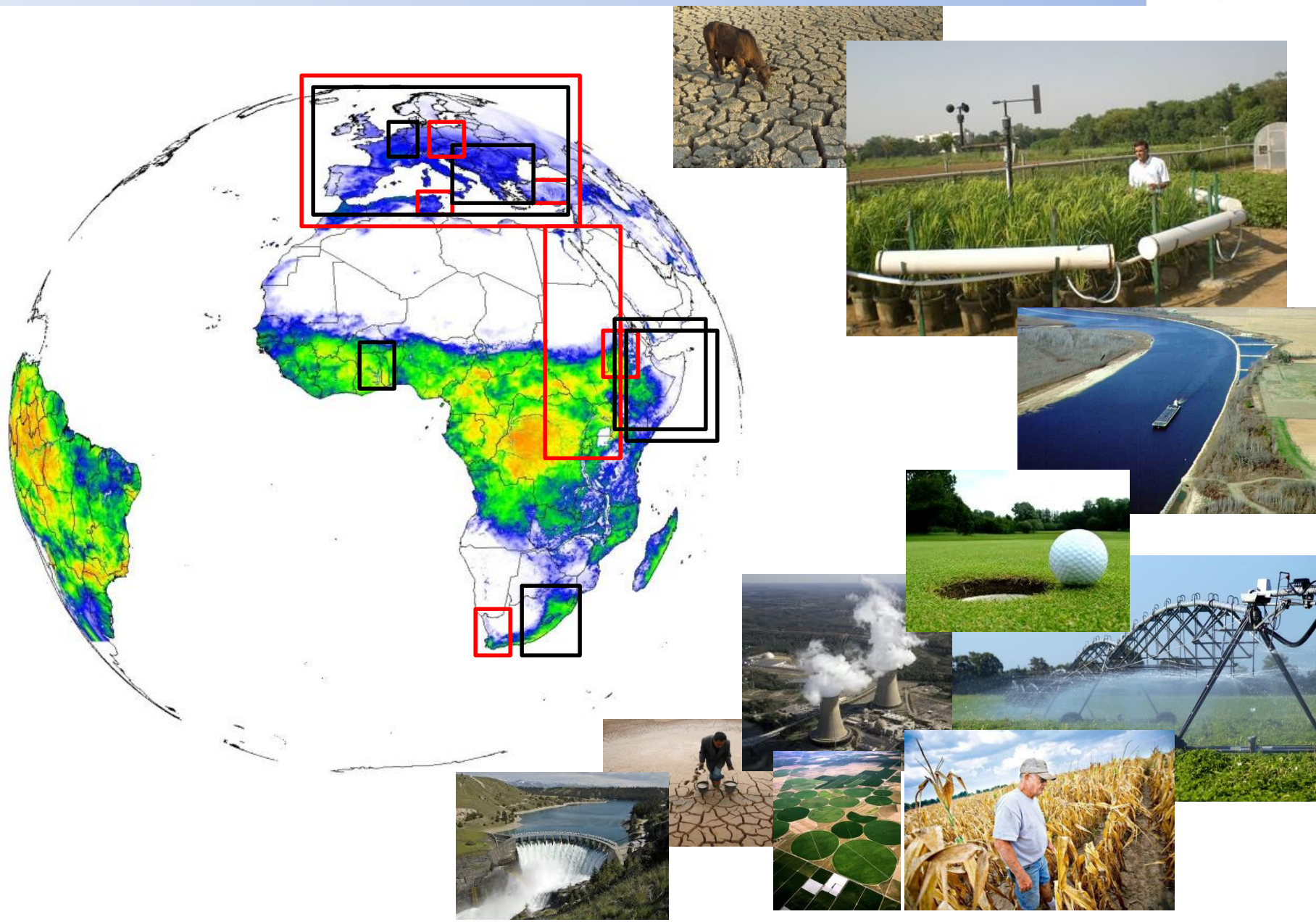
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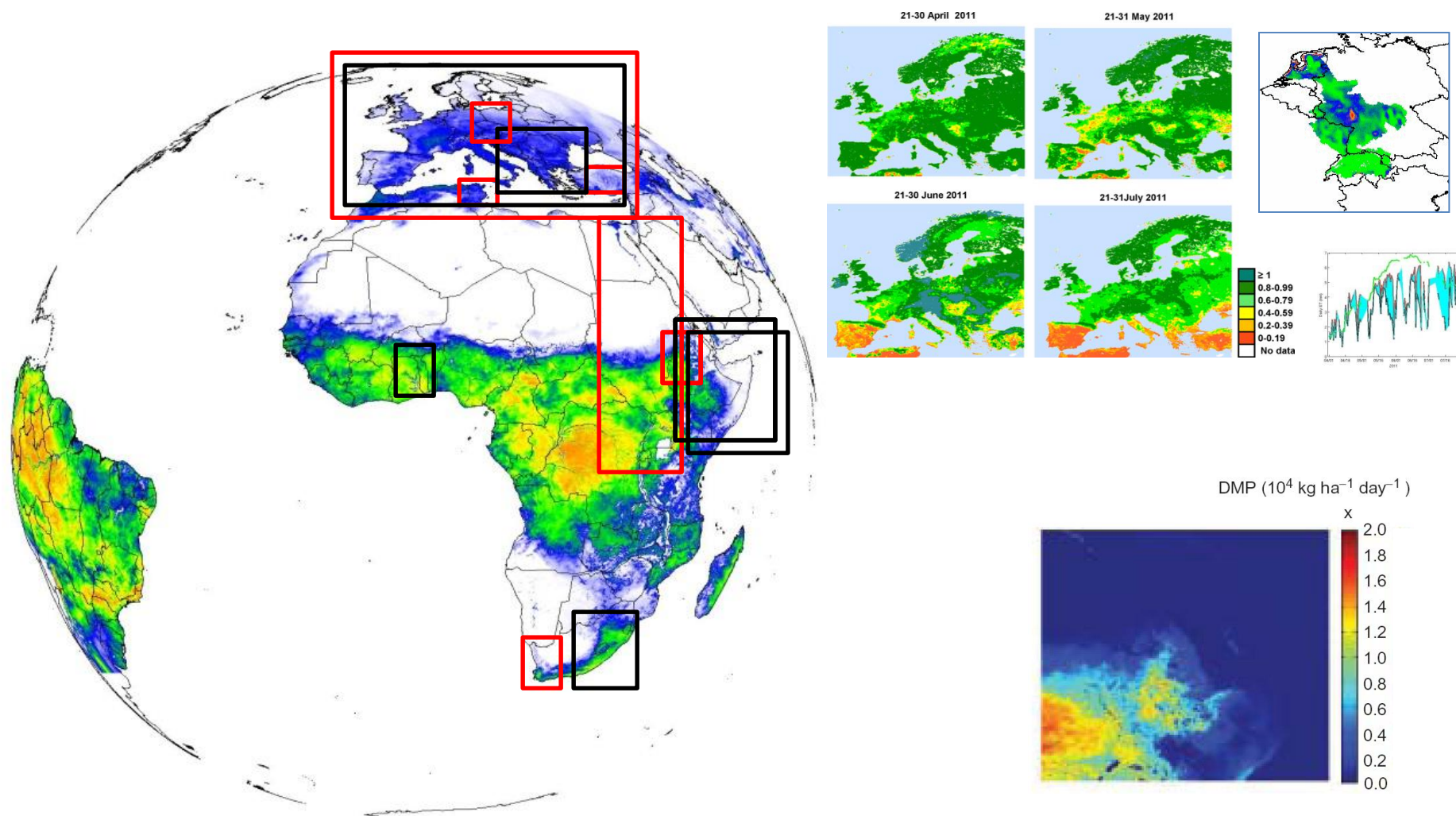
ET is useful for ...

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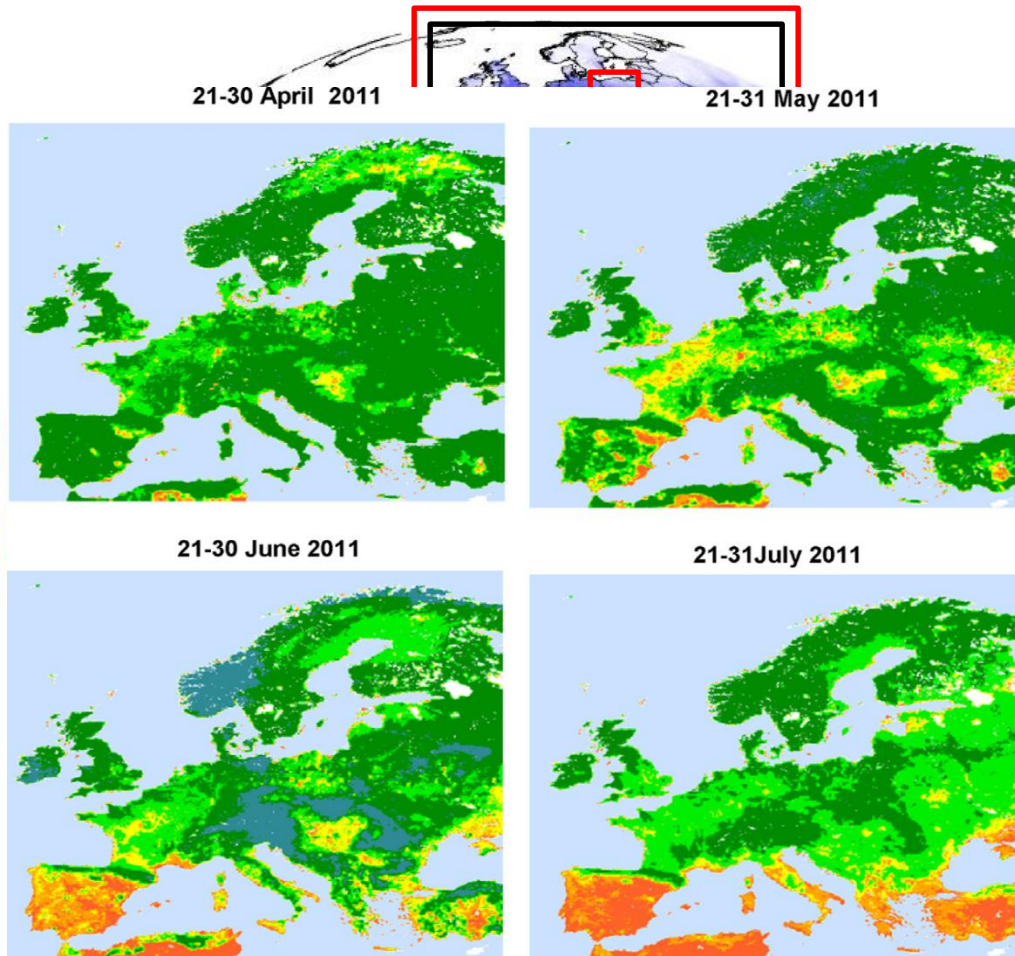
LSA SAF
Land Surface Analysis



Users achievements: drought & food

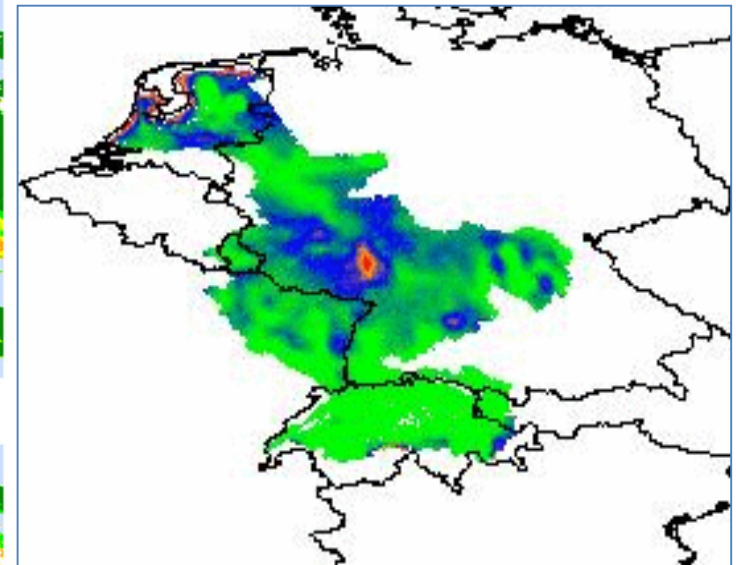


Users achievements: drought & food

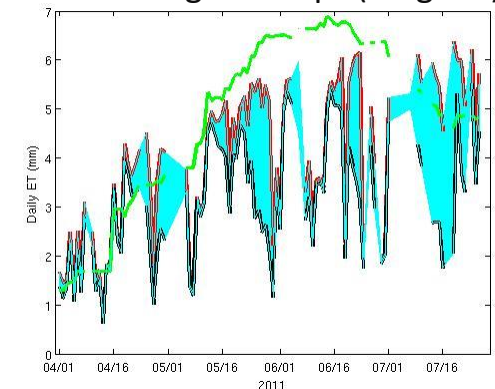


Water stress index (ET_{real}/ET_{pot}) over Europe , between April and July 2011

Evolution of water stress index over the Rhine basin between April and July 2011



Water shortage in crops (Bulgaria)

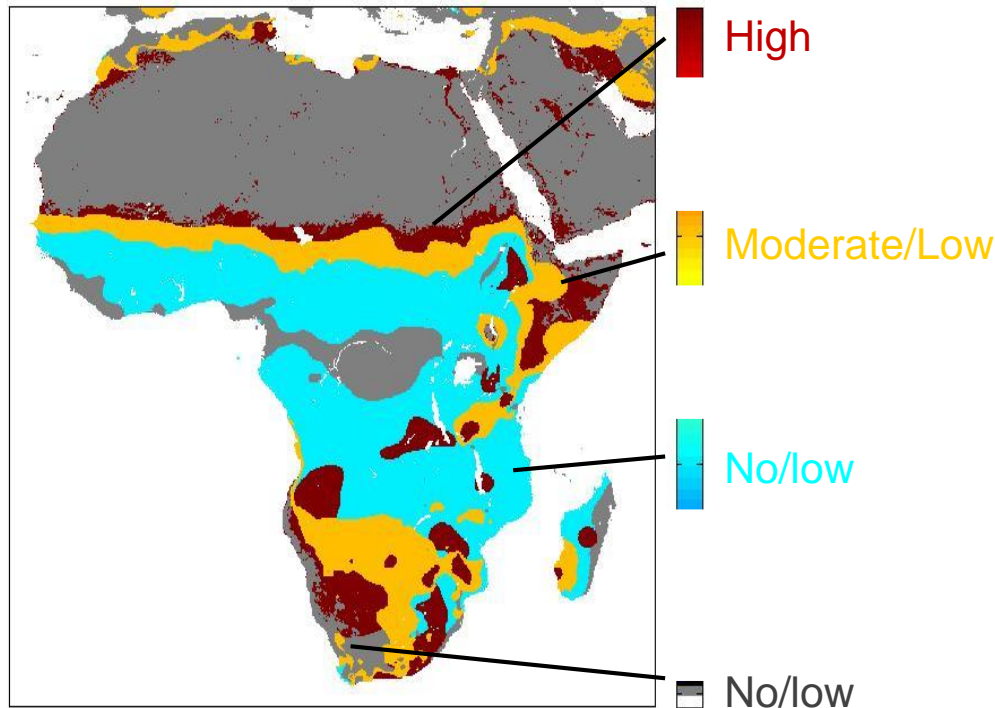


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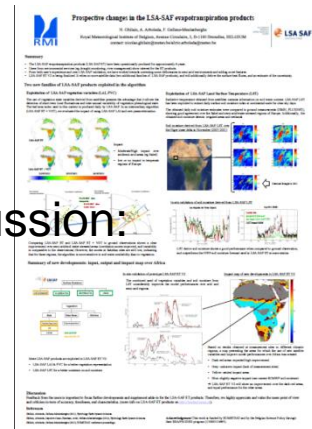
- Vegetation (LSA-SAF LAI & new parameterization)
- Soil moisture (combination of ECMWF & LSA-SAF LST)
- Rain interception
- Snow sublimation (H-SAF snow cover)

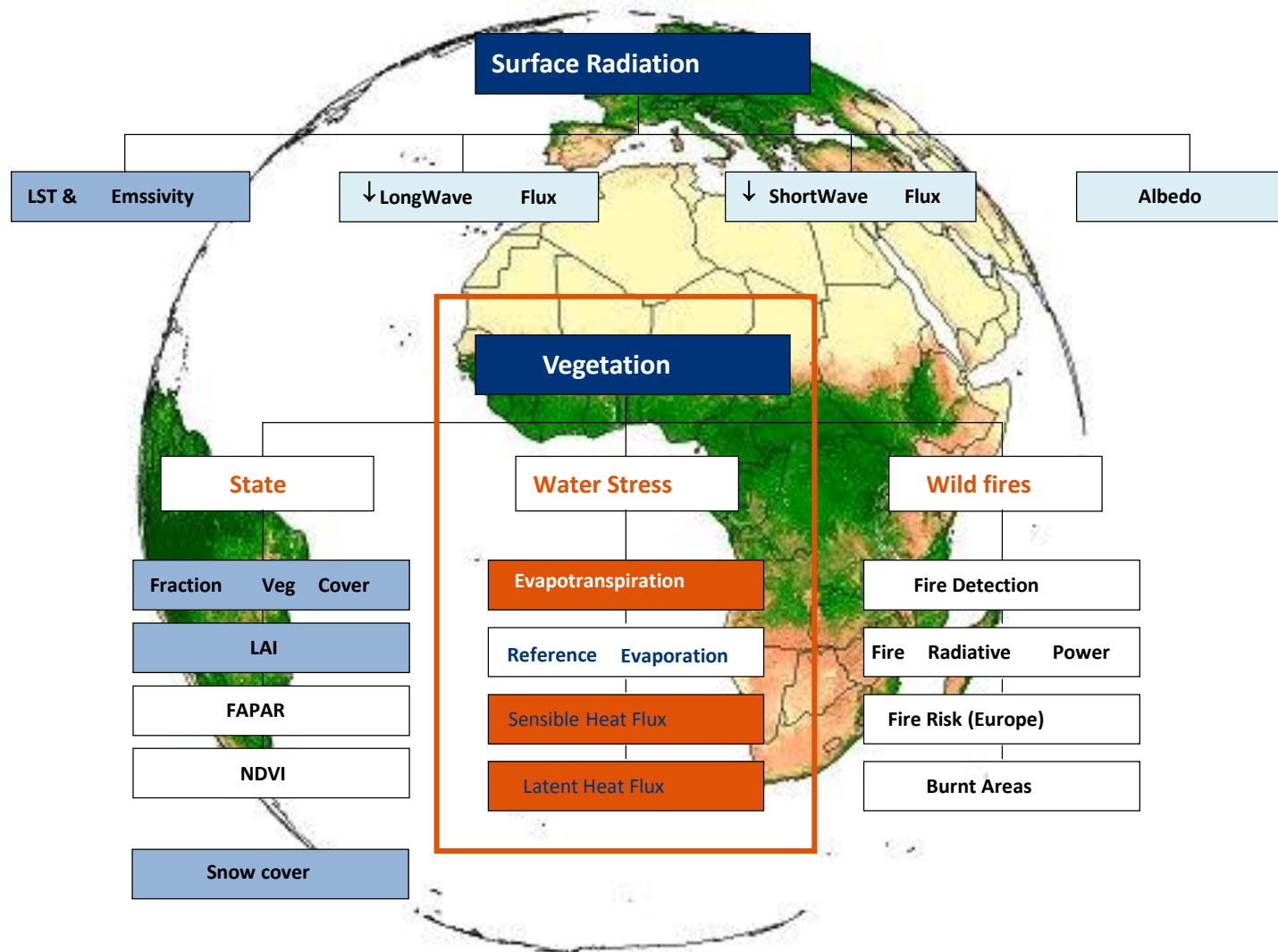


Expected improvements in:

- semi-arid regions
- Irrigated areas
- Wetlands
- Croplands

More info & discussion:
poster session !





Conclusion

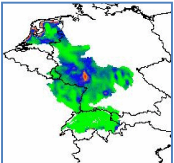
The LSA-SAF ET products are:

- Near-real time
- Operational since November 2010
- Freely accessible (<http://landsaf.meteo.pt>)



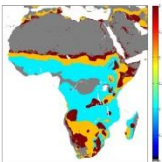
validated:

- At sites by LSA-SAF team & users (FLUXNET)
- Compared with other products (ET, SM, LAI)



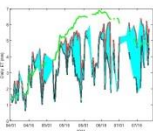
Are being/can be used:

- In drought monitoring (in combination ETPot)
- In agriculture management
- In water management



Upgraded to V2 in 2016:

- Expected improvements mostly in Africa
- New energy products



**Could include in the future:
(demand from the users)**

- ET potential
- Water stress index

The LSA-SAF evapotranspiration products

We welcome feedback from you:

Nicolas.ghilain@meteo.be // Alirio.arboleda@meteo.be // francoise.meulenberghs@meteo.be

Helpdesk.landsaf@ipma.pt

