



WP2: The challenge of forecasting impacts

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WP2 scope

Wide variety of Natural Hazards to be covered:

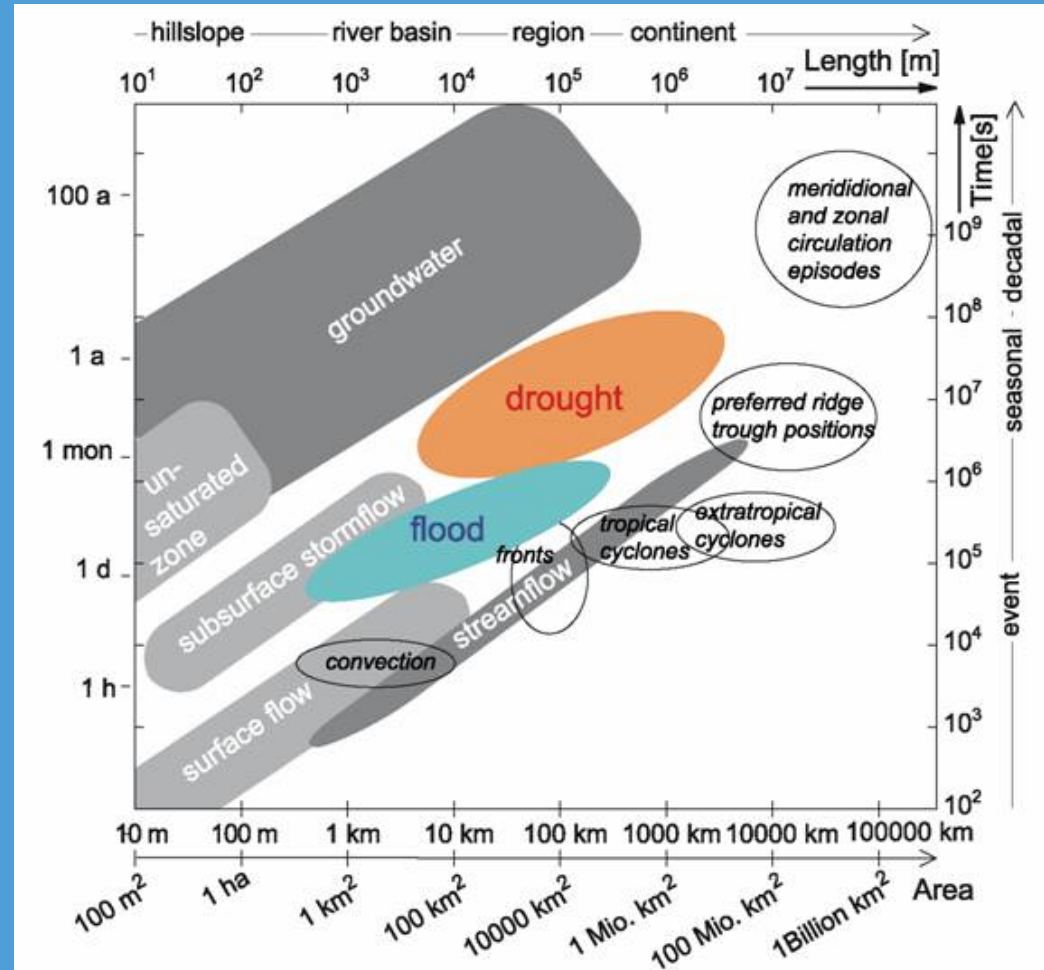
- Floods, flash floods, incl. related landslides, debris flow
- Storm surges
- Heat waves and health
- Wild fires
- Drought
- Convective storms, severe winds and heavy snowfall



WP2 Forecasting impacts

Space and Time domain

Requires seamless prediction of weather events from subdaily, months to seasons



Stahl and Hisdal, Elsevier, 2004



WP2 Forecasting impacts

Short,
Small



Long,
Large

Temporal and Spatial scale of Natural Hazards:

- Flash floods, incl. related landslides, debris flow
- Convective storms, severe winds and heavy snowfall
- Floods, Storm surges
- Heat waves, Wild fires
- Drought





WP2 Forecasting impacts

Uncertainty propagation



Models,
tools /
Data

Seamless
meteorological
prediction
(*probabilities*)



Hydrological/Hydraulic/
Morphological
Modeling



Impact modeling/
assessment





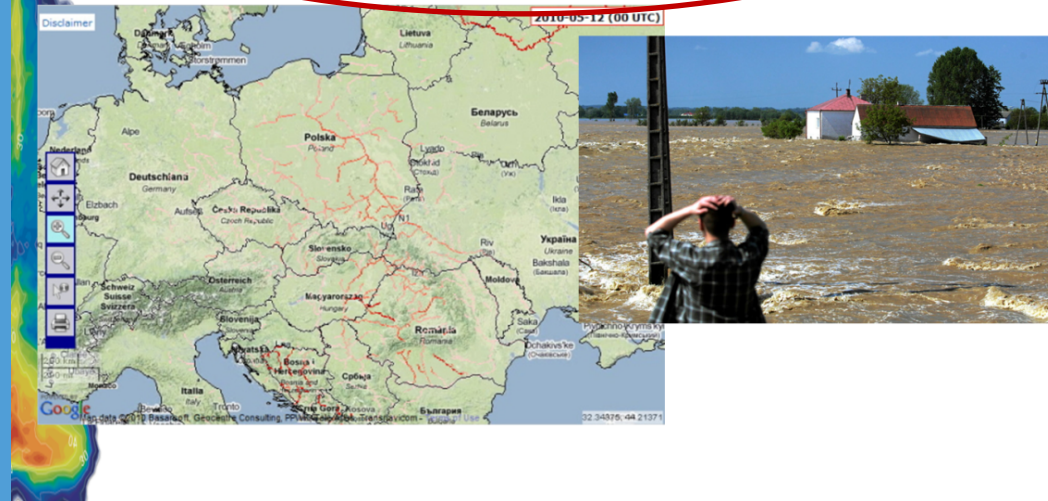
WP2 Forecasting impacts

T2.2 Nowcasting and forecasting algorithm to assess floods, flash floods, debris-flow and landslides impacts

- Riverine floods

Large spatio-temporal scale events

Flood forecasting well covered by the existing systems (such as the European Flood Awareness System, EFAS).



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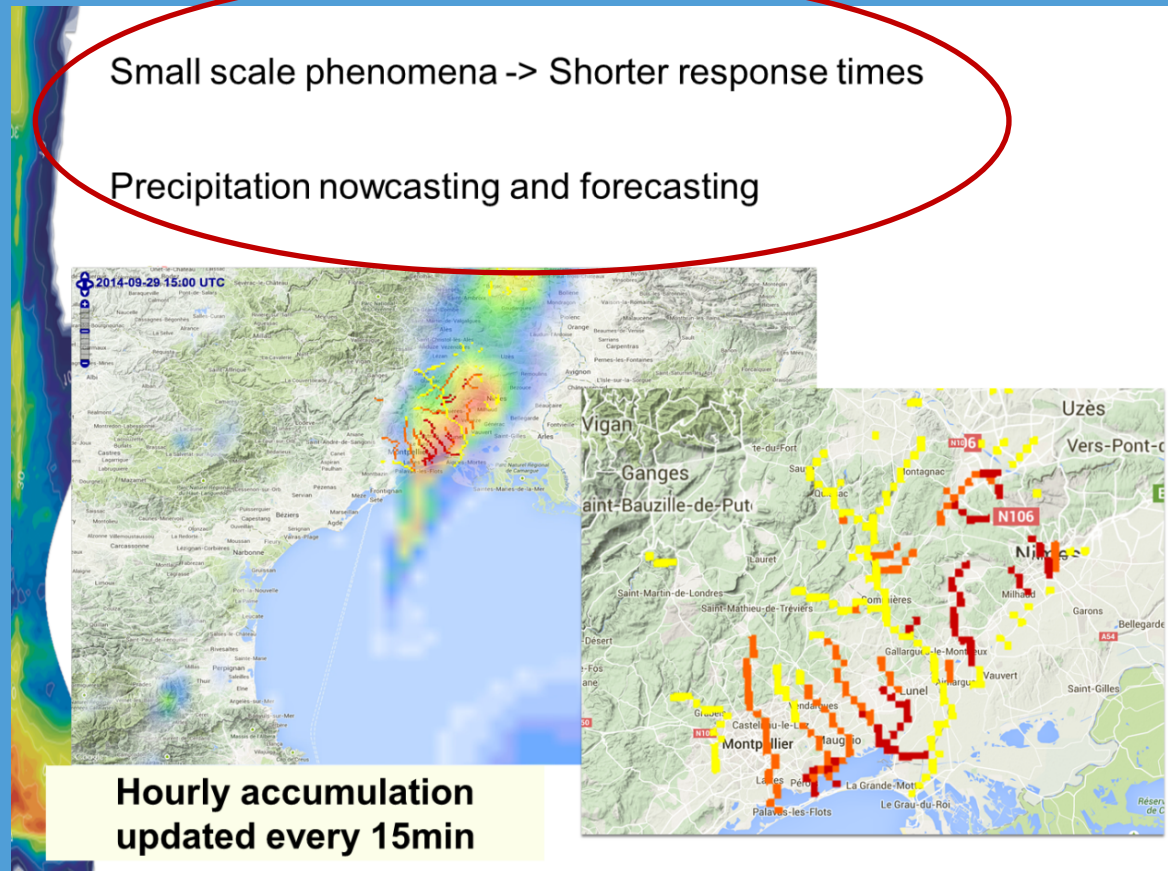
WP2 Forecasting impacts

T2.2 Nowcasting and forecasting algorithm to assess floods, flash floods, debris-flow and landslides impacts

- Flash floods
(incl. detailed landscape data)

Small scale phenomena -> Shorter response times

Precipitation nowcasting and forecasting



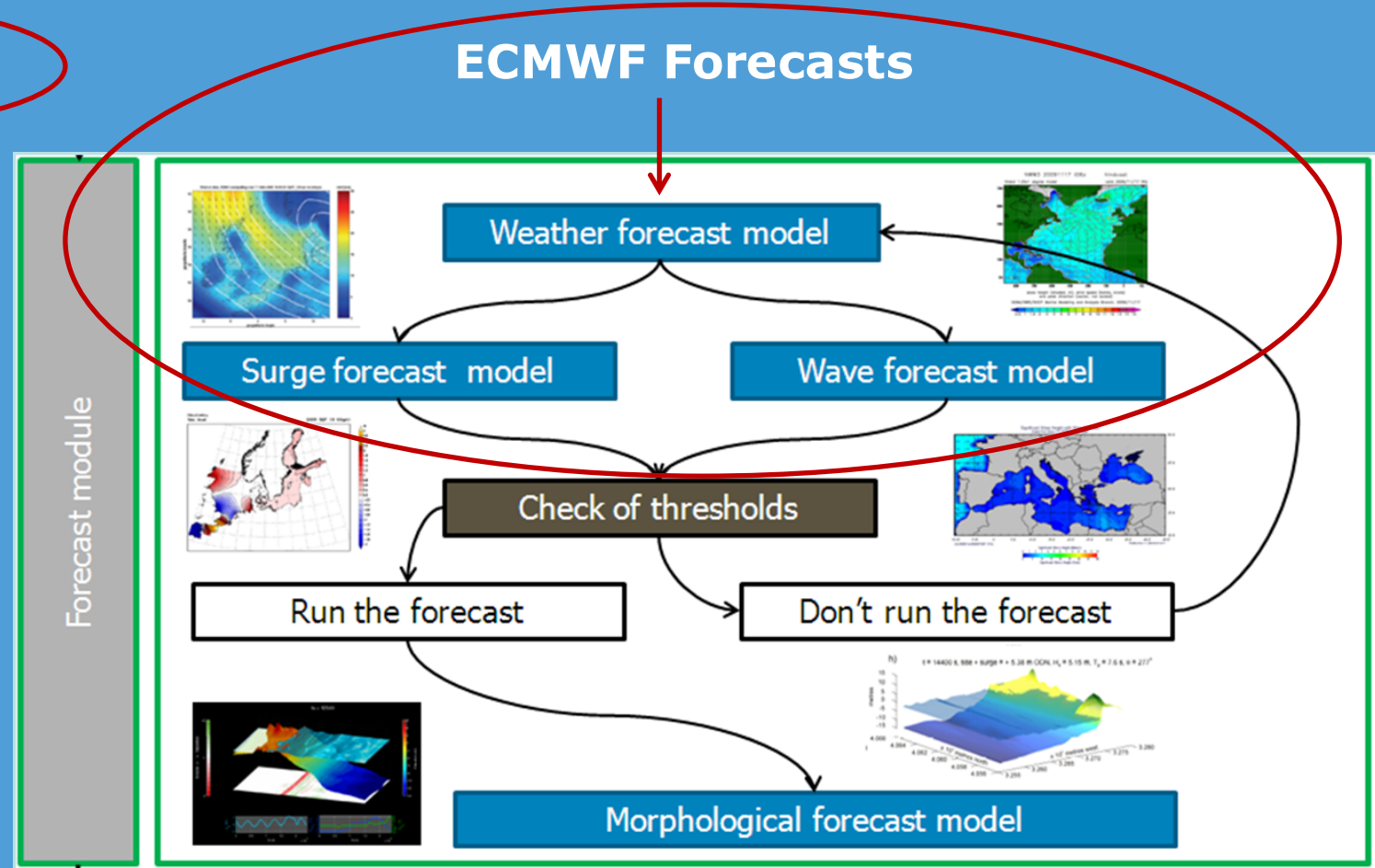
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WP2 Forecasting impacts

T2.3 Nowcasting and forecasting algorithm to assess storm surges impacts

- pan-Europe



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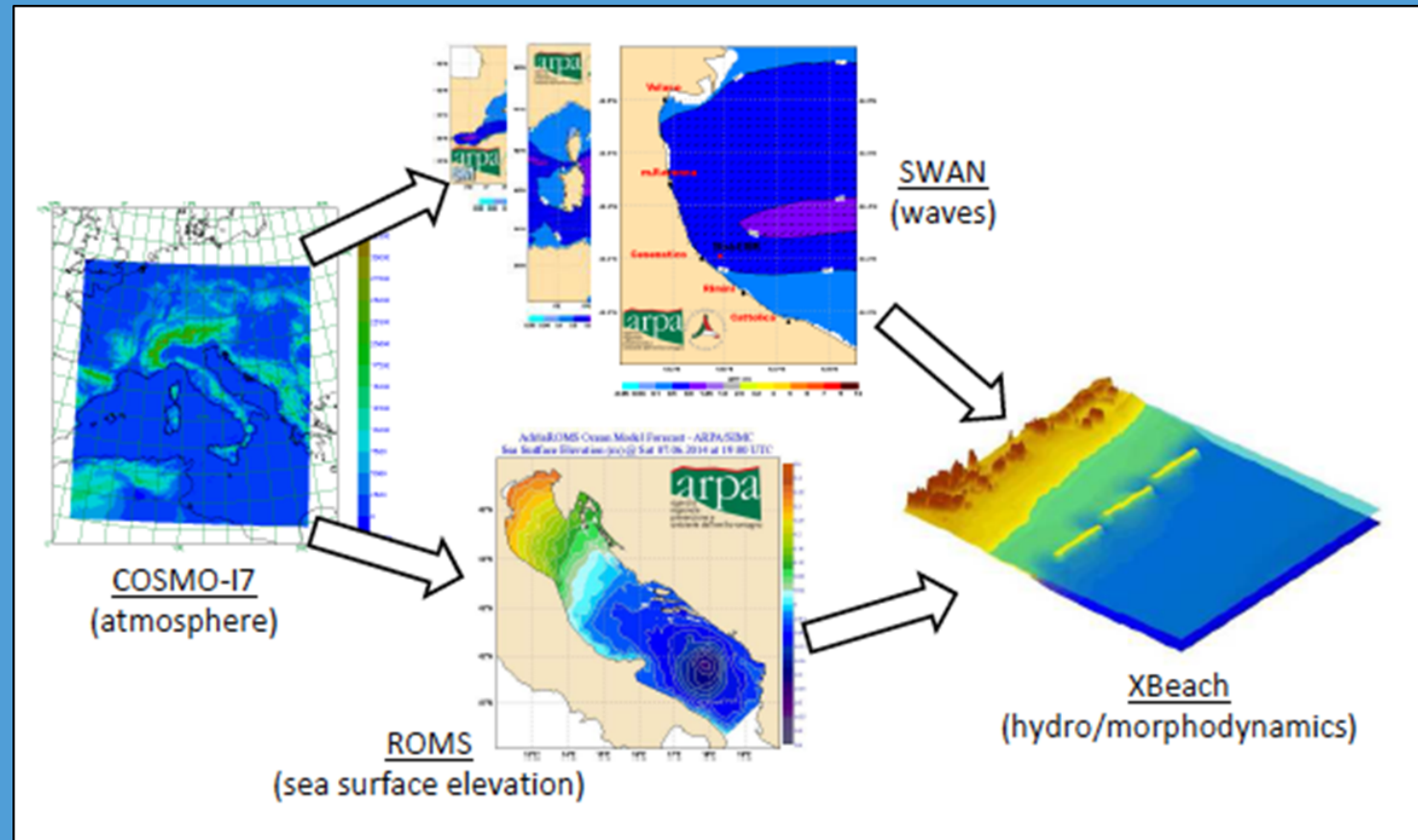
WP2 Forecasting impacts

T2.3 Nowcasting and forecasting algorithm to assess storm surges impacts

- Detailed scale (key sites)

Coastal typology
EFAS/GLOFAS

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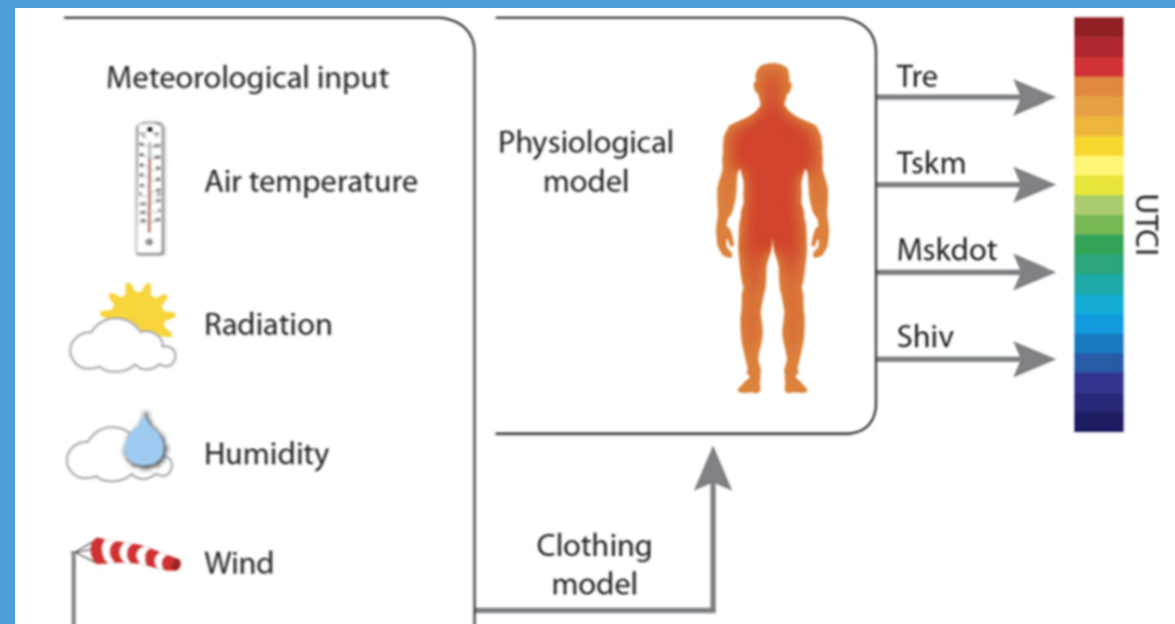
WP2 Forecasting impacts

T2.4 Nowcasting and forecasting algorithms to assess weather-induced **heat waves and health** impacts

- Universal Thermal Climate Index (UTCI)

Linked to pan-European Platforms (ECMWF)

University of Reading



UTCI (C) range	>46	38–46	32–38	26–32	9–26	0–9	0 to –13	–13 to –27	–27 to –40	<–40
Stress category	Extreme heat stress	Very strong heat stress	Strong heat stress	Moderate heat stress	No thermal stress ^a	Slight cold stress	Moderate cold stress	Strong cold stress	Very strong cold stress	Extreme cold stress



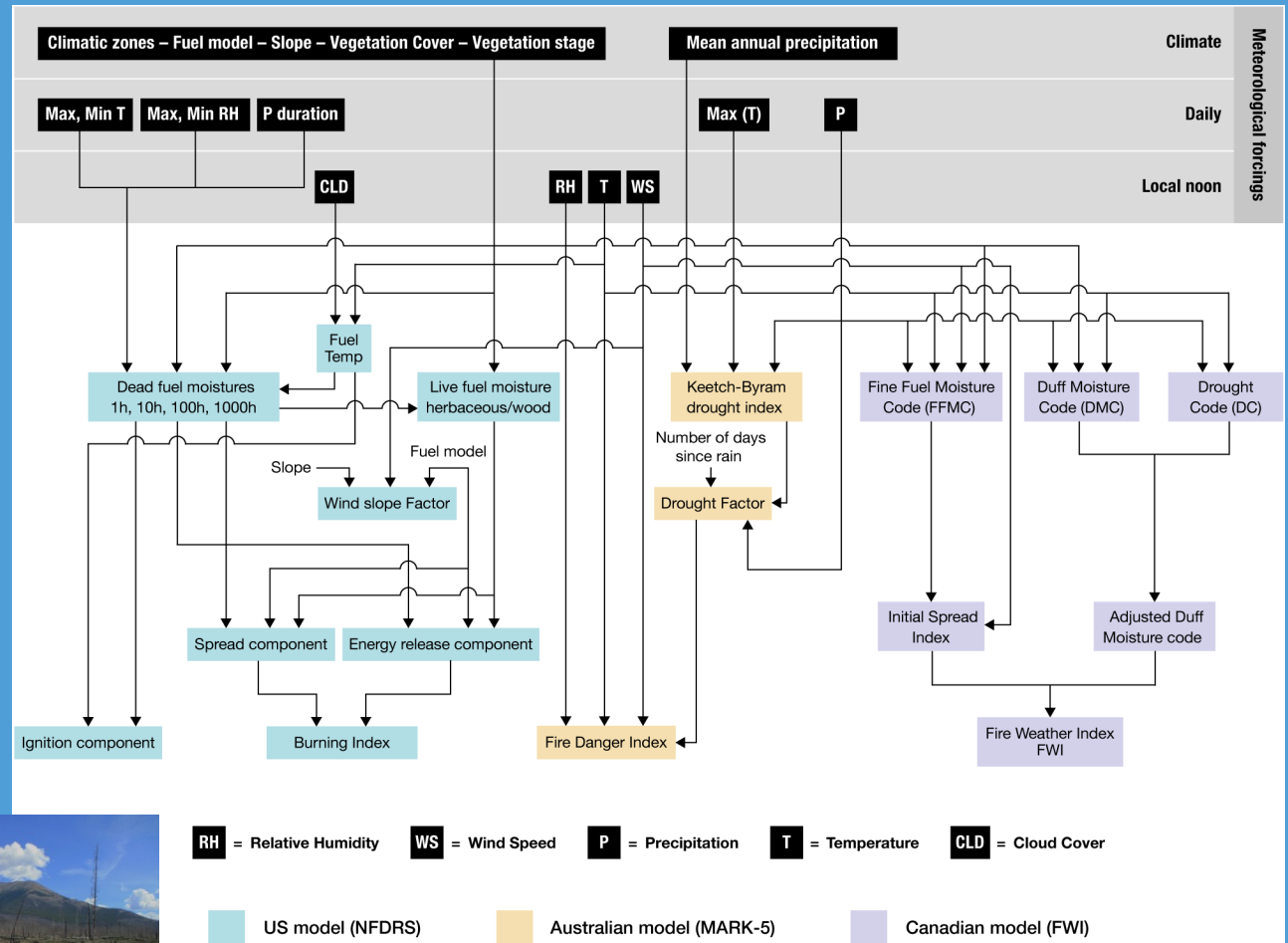


WP2 Forecasting impacts

T2.5 Nowcasting and forecasting algorithms to assess weather-induced fire impacts

- Pan-European Fire algorithms (incl. EFFIS)

European Centre for Medium-Range Weather Forecasts





WP2 Forecasting impacts

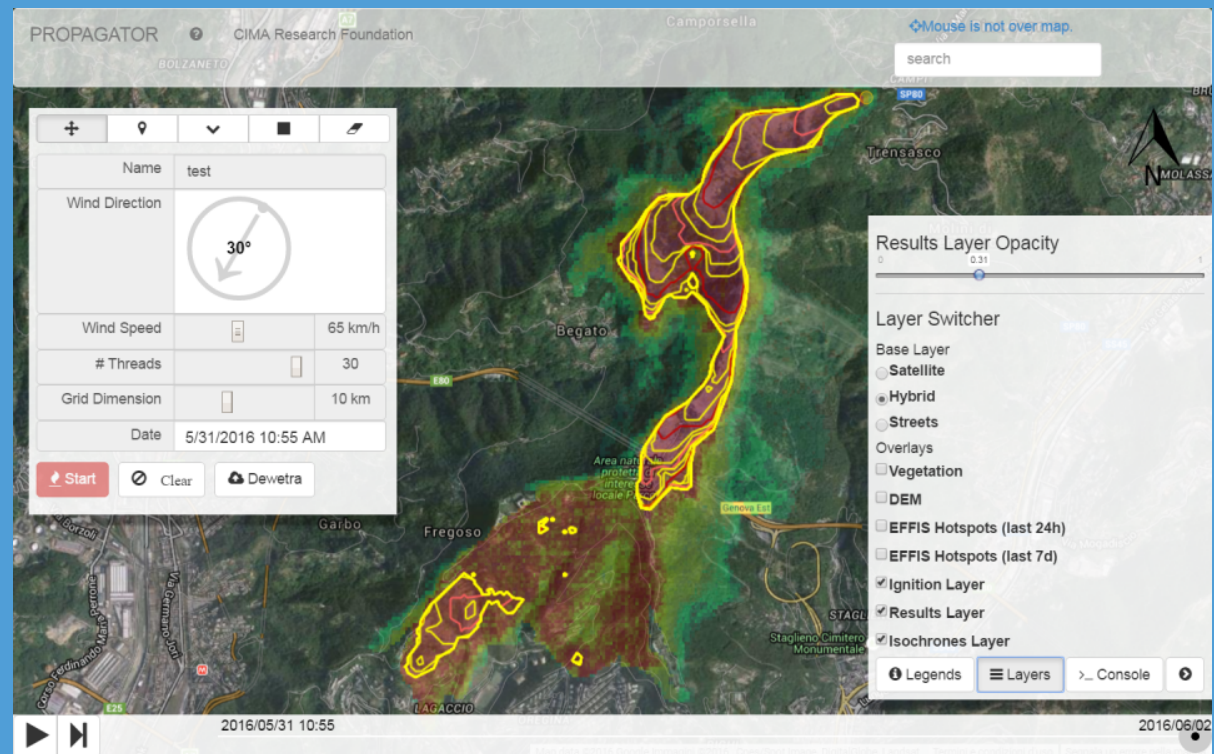
T2.5 Nowcasting and forecasting algorithms to assess weather-induced **fire** impacts

- National and local

PROPAGATOR; fire front propagation (20 m)

High resolution NWP
(incl. wind)
Vegetation
Topography

CIMA Research Foundation
International Centre on
Environmental Monitoring





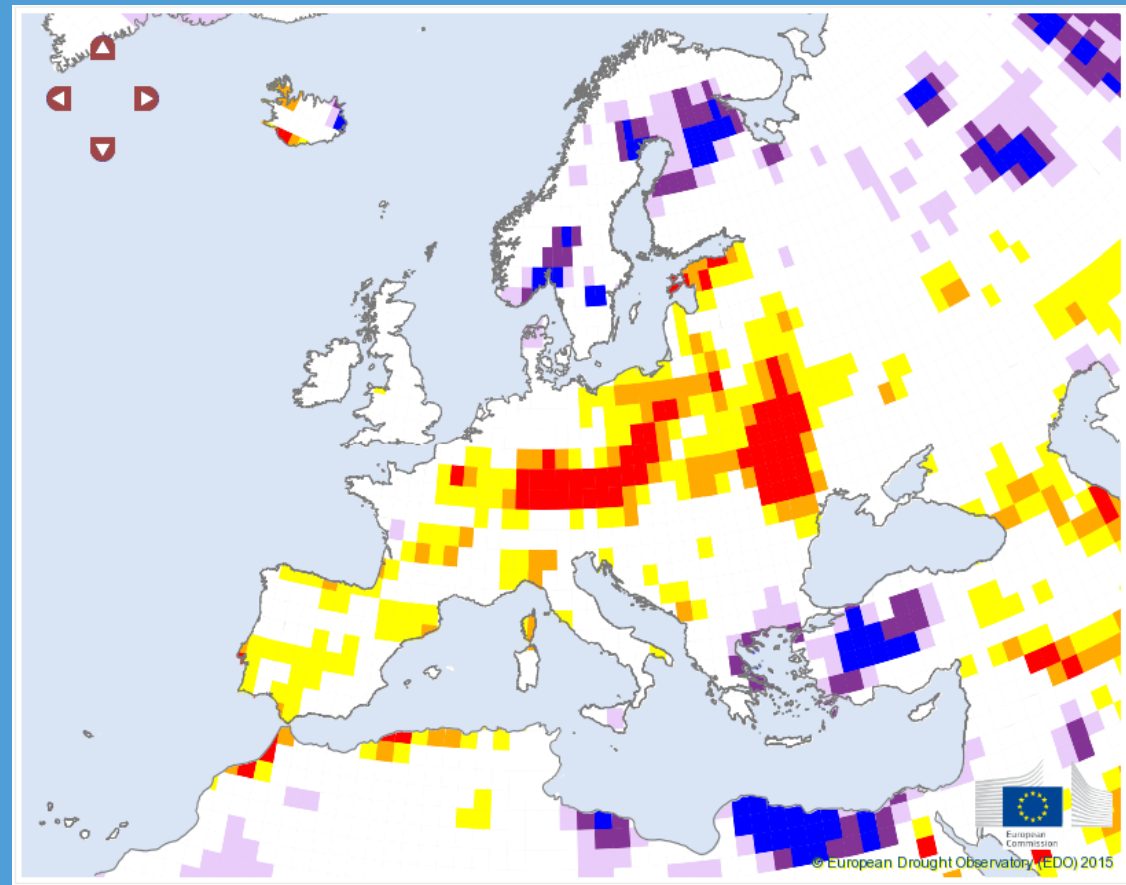
WP2 Forecasting impacts

T2.6 Forecasting algorithm to assess **drought** impacts

- pan-Europe

SPI-6, September 2015

Link with operational
European platforms,
EDO
(JRC, ECMWF)





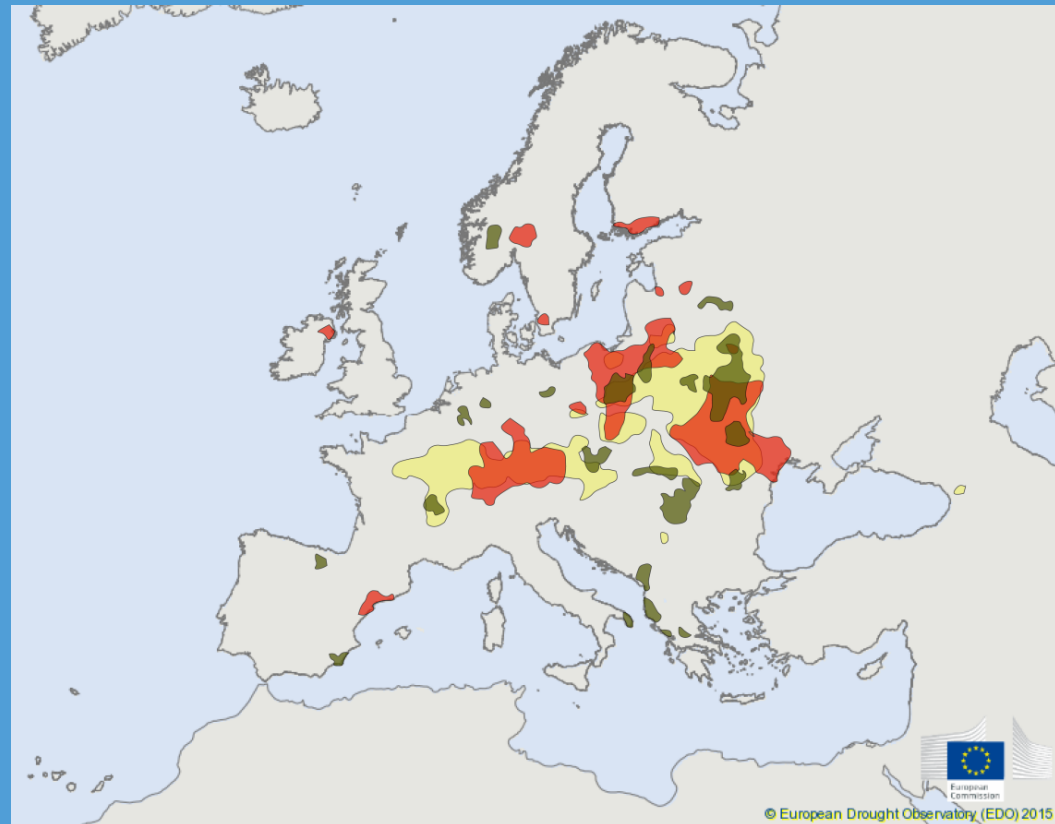
WP2 Forecasting impacts

T2.6 Forecasting algorithm to assess **drought** impacts

- pan-Europe
2015

Areas vegetation stress June, Aug and Oct

Link with operational
European platforms,
EDO
(JRC, ECMWF)



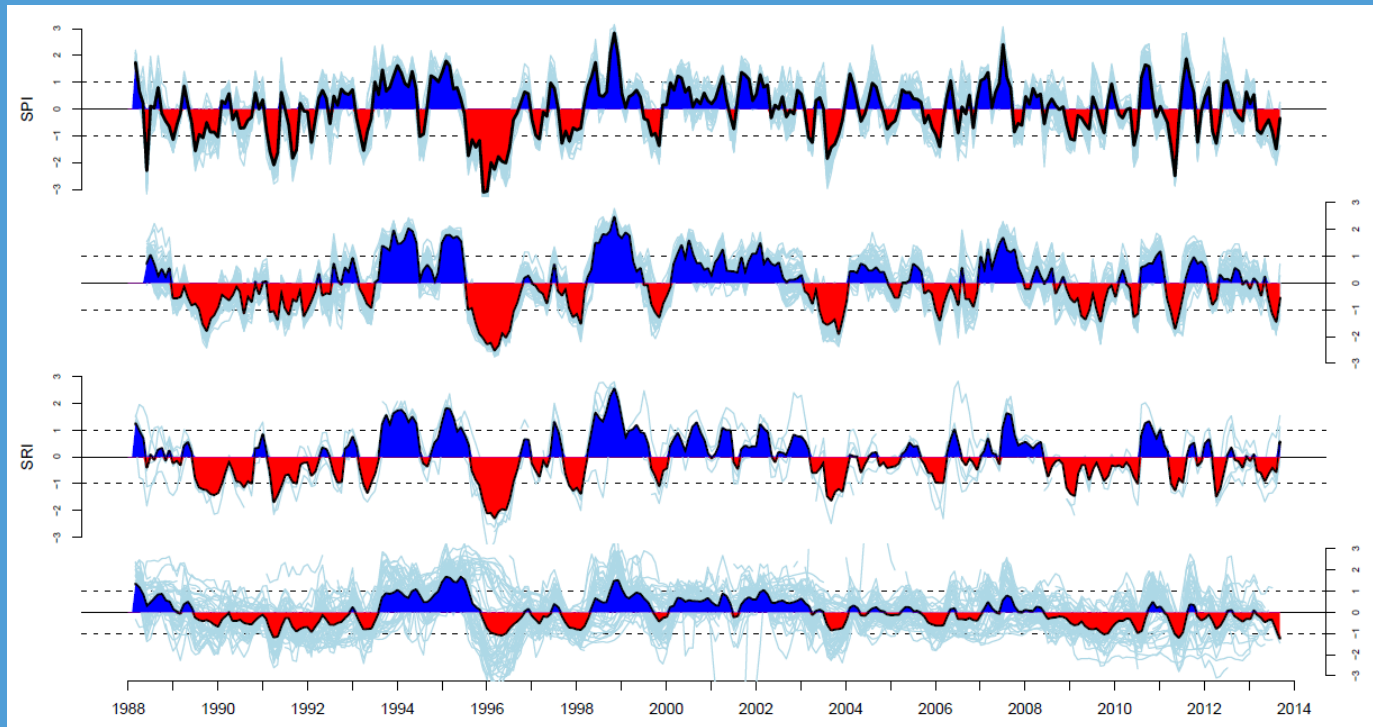
Wageningen University



WP2 Forecasting impacts

T2.6 Forecasting algorithm to assess **drought** impacts

Anomalies: standardized variables (SPI, SPEI, SRI, SGI)



- Seasonal/multi-year forecasting
- Propagation (meteo to hydro)

(Ten Broek et al., 2014)

Thank you

The WP2 team looks forward to a sunny and warm co-operation to cope with extreme W&C events



WAGENINGEN **UR**
For quality of life



WP2 forecasting

11:30-12:00 Present skills in meteorological forecasting
(ECMWF/FMI)

12:00-12:30 The challenge of forecasting impacts (WUR/JRC)
- Floods, surges, health, wildfire, drought:
Henny van Lanen (WUR)
- EFAS, EFFIS and EDO: Paul Smith (JRC)

12:30-13:00 Discussion