

DEWETRA

Interoperability: international case studies



Giorgio Boni

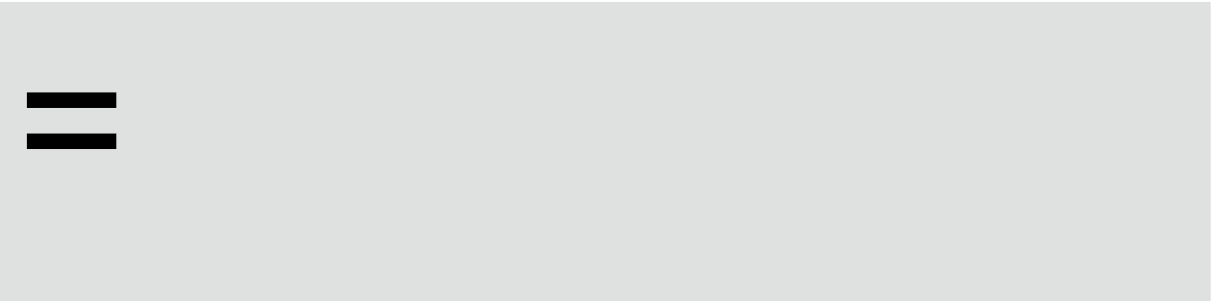
*CIMA Research Foundation
Civil Protection Department – Italy*

Reference system for Civil Protection for

- ✓ *Evaluation of the risk scenarios in real time -> useful for the decision maker*
- ✓ *Certification of the tools of the national warning system*

The risk assessment compliance platform

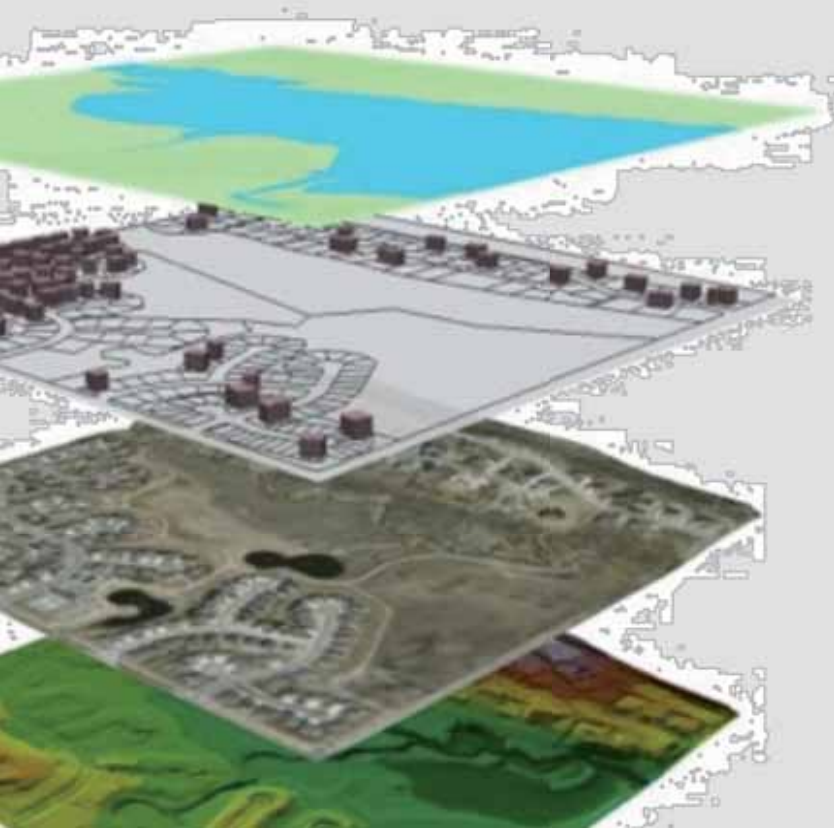
Real-time Risk Assessment & Prediction



=

Real-time Risk Assessment & Prediction

$$= E \times V$$



Quasi-static information

element at risks, hazard maps, ...

Real-time Risk Assessment & Prediction

$$= E \times V \times H$$

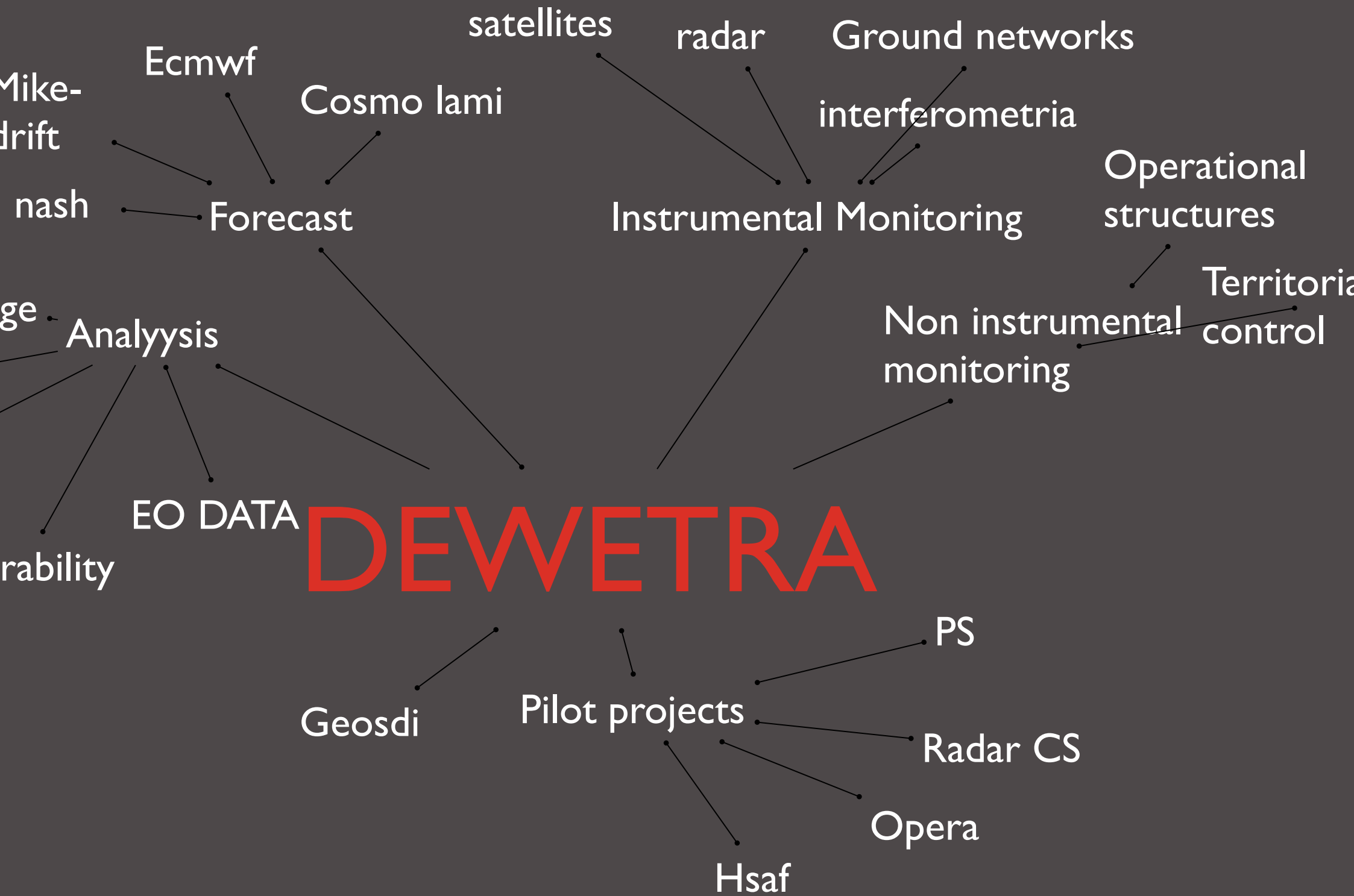


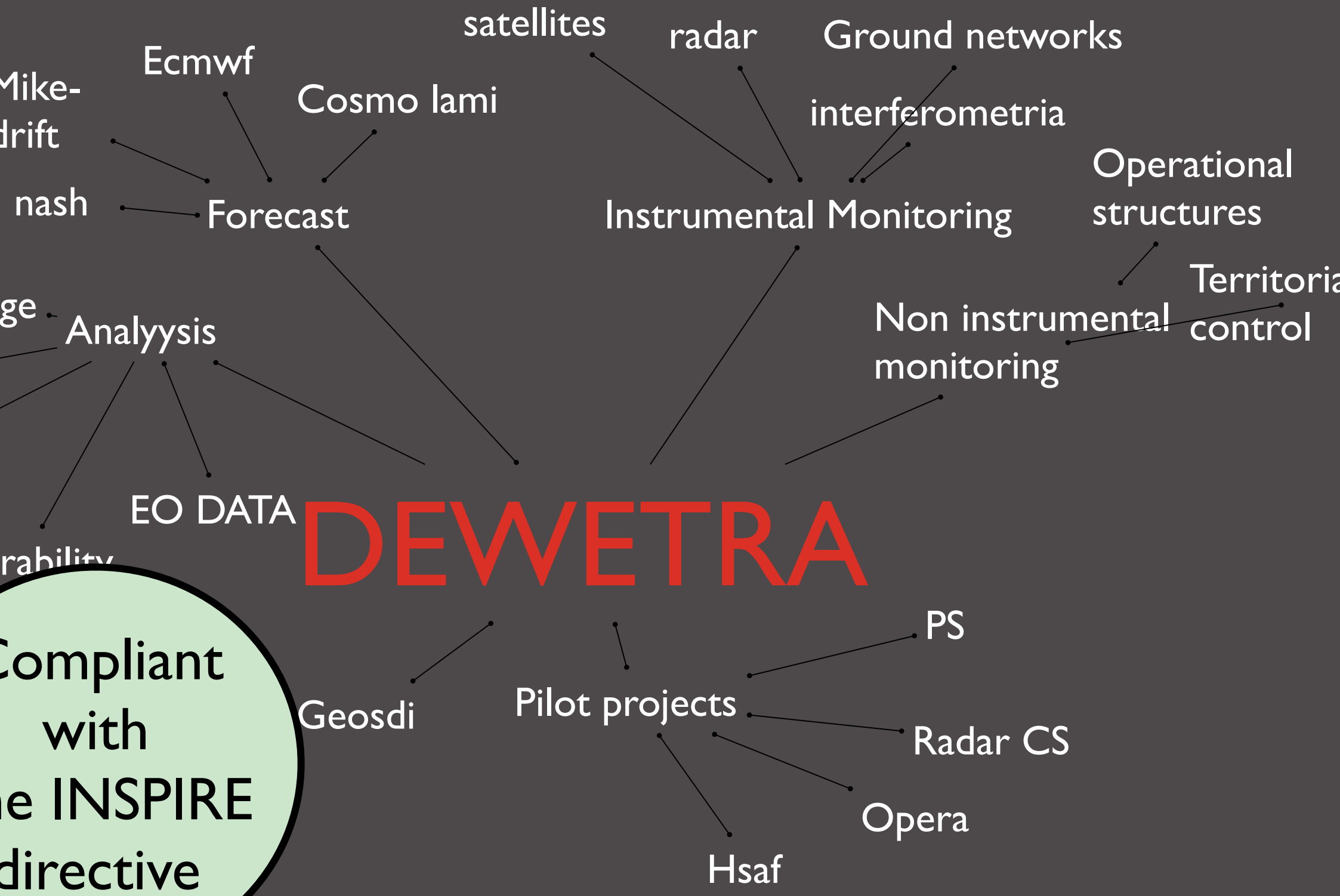
Real-time information

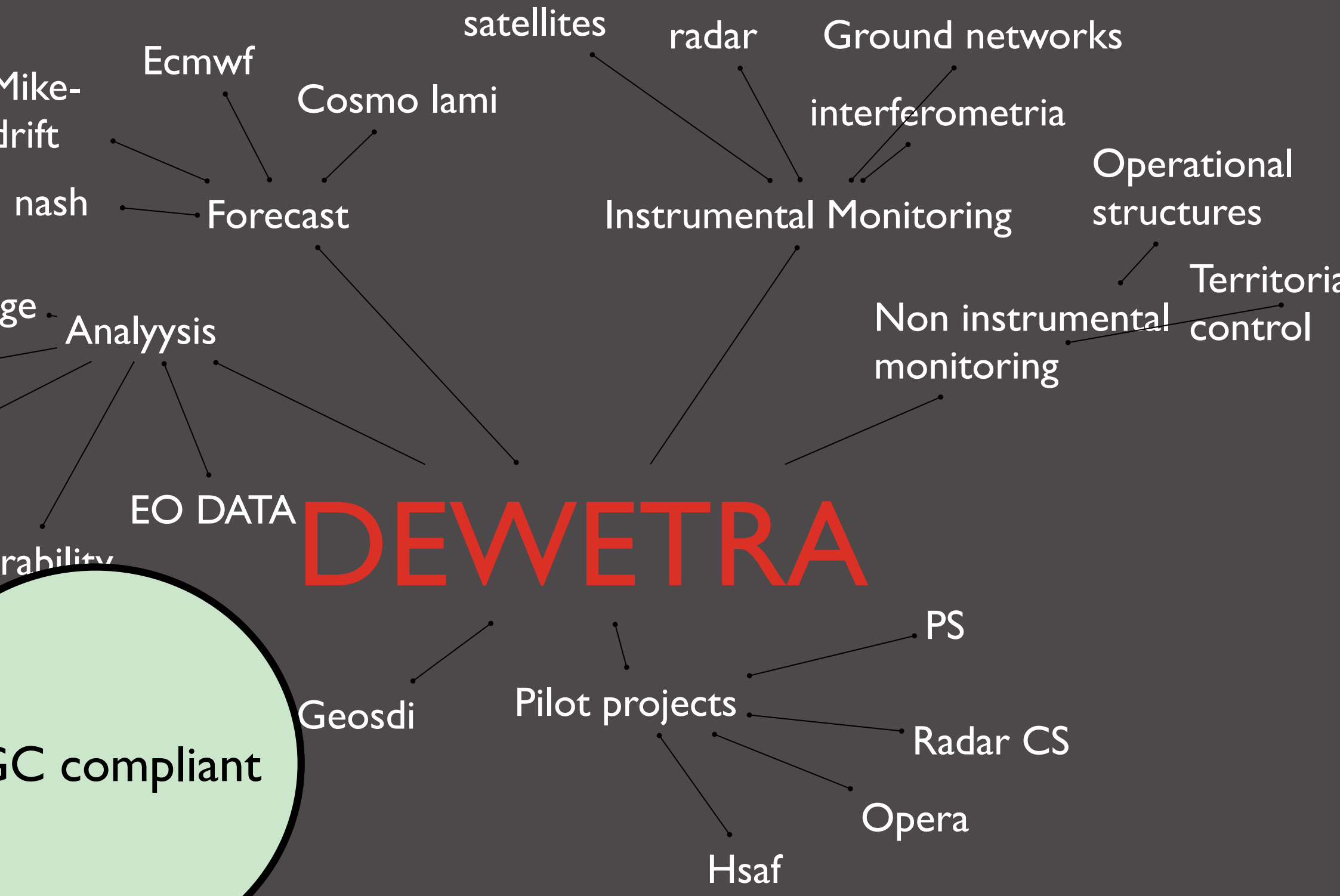
medium and short range weather forecasts
hydro-meteorological monitoring ,
impacts prediction (flood, soilslip),
uncertainty estimation,...

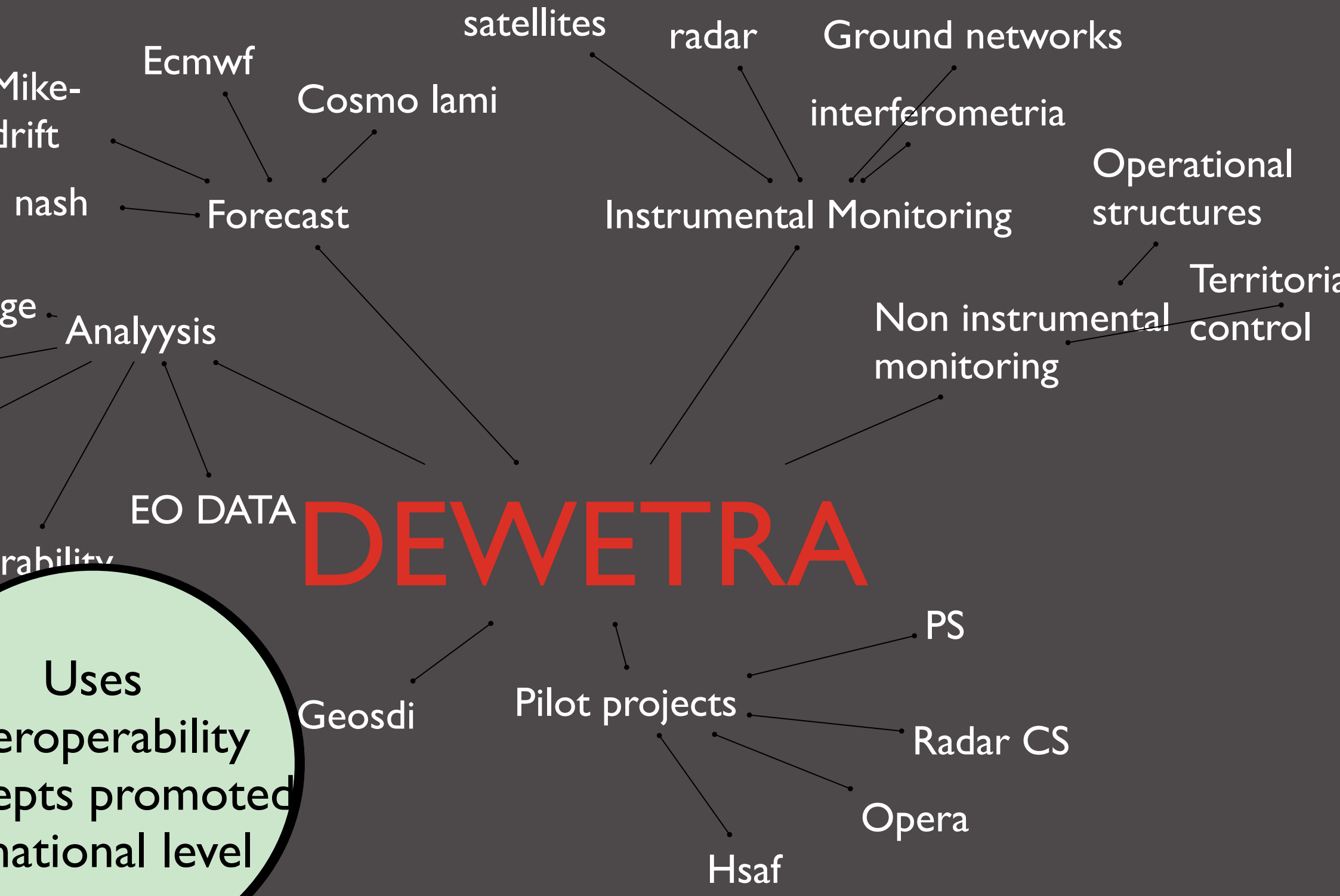
Quasi-static information

element at risks, hazard maps, ...









Credits:  

Username:

Password:



<http://dewetrabk.cimafoundation.org/dewetraTEST/>



Username:

Password:



<http://dewetrabk.cimafoundation.org/dewetraTEST/>



Username: **cimh**

Password:

Login



<http://dewetrabk.cimafoundation.org/dewetraTEST/>



Username:

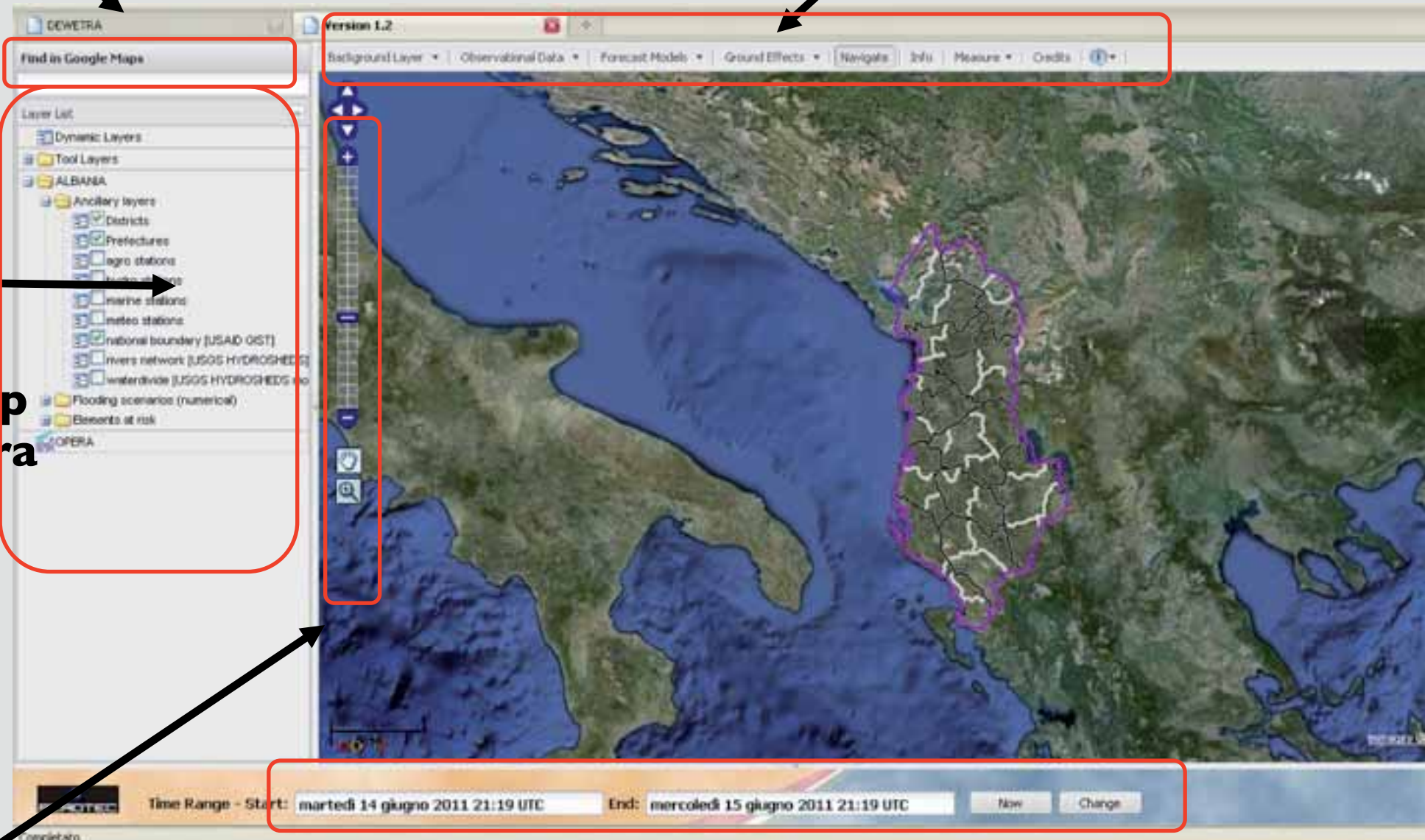
Password:

Login

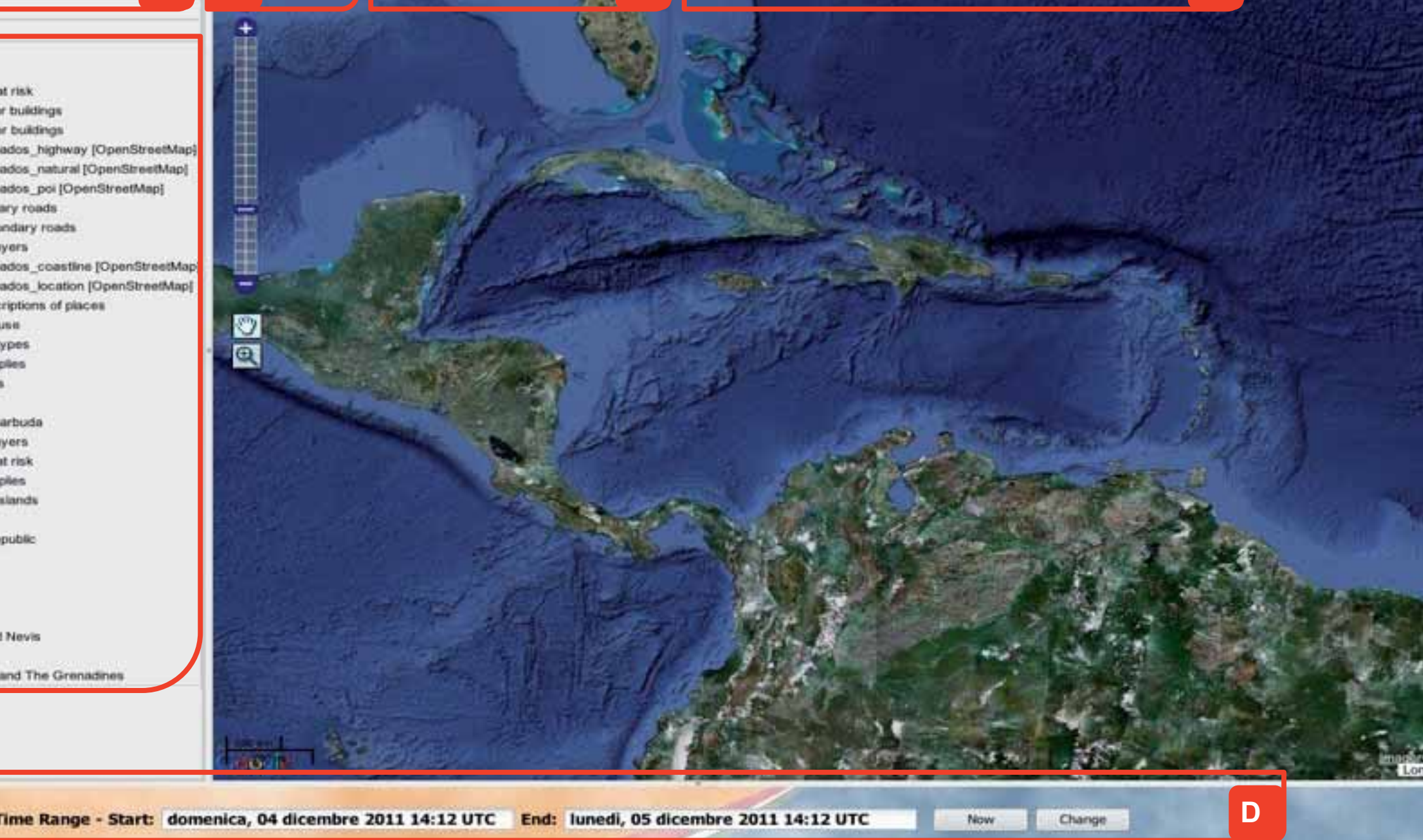
Google Maps®
ne

**Background layers, Dynamic layers, Weather Stations
Network, Navigation tools, WMS query, and Measuring
tools**

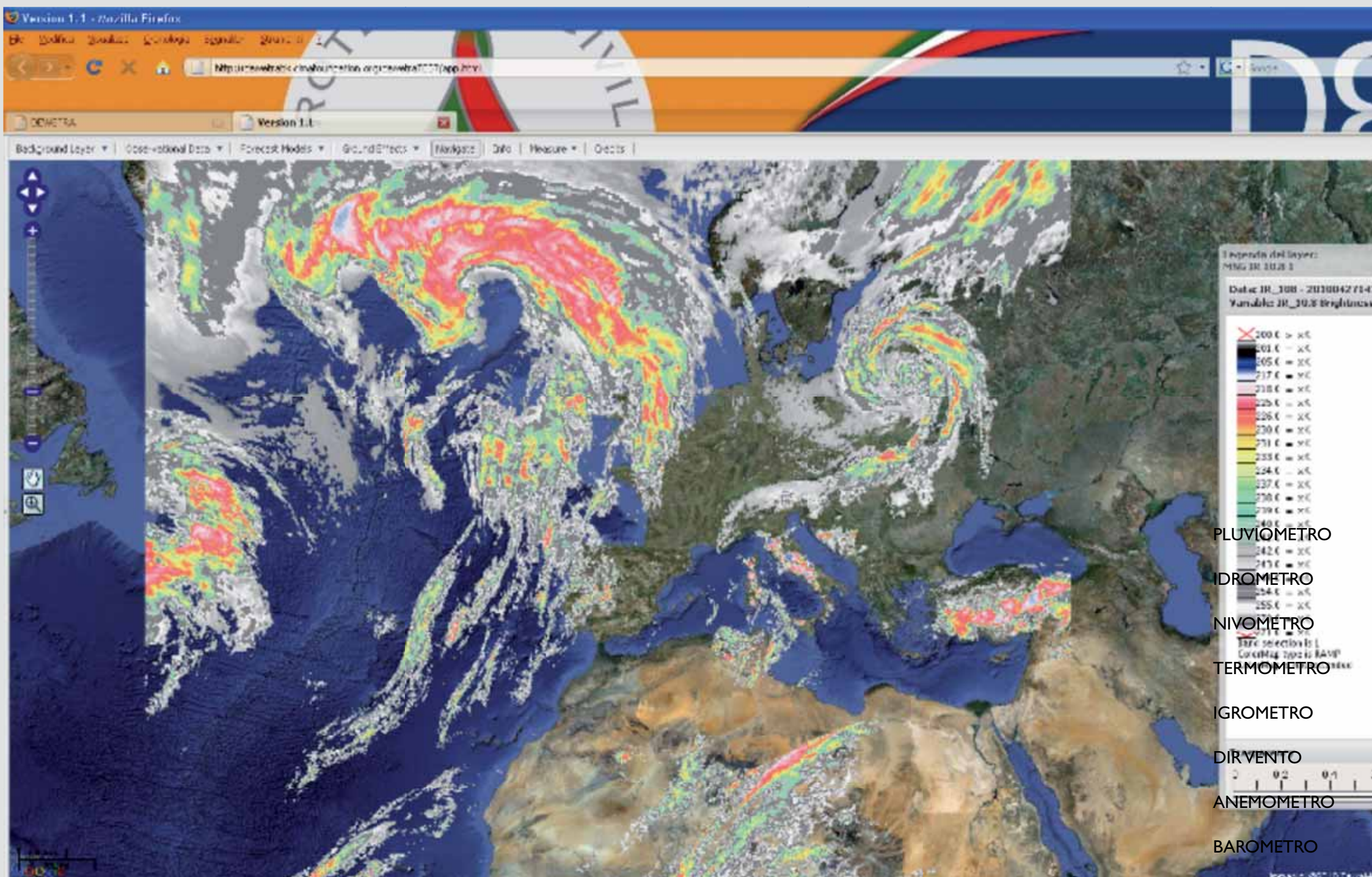
**Navigation
The tree
nodes
respond to
dynamic
s in the top
of Dewetra
ow.**

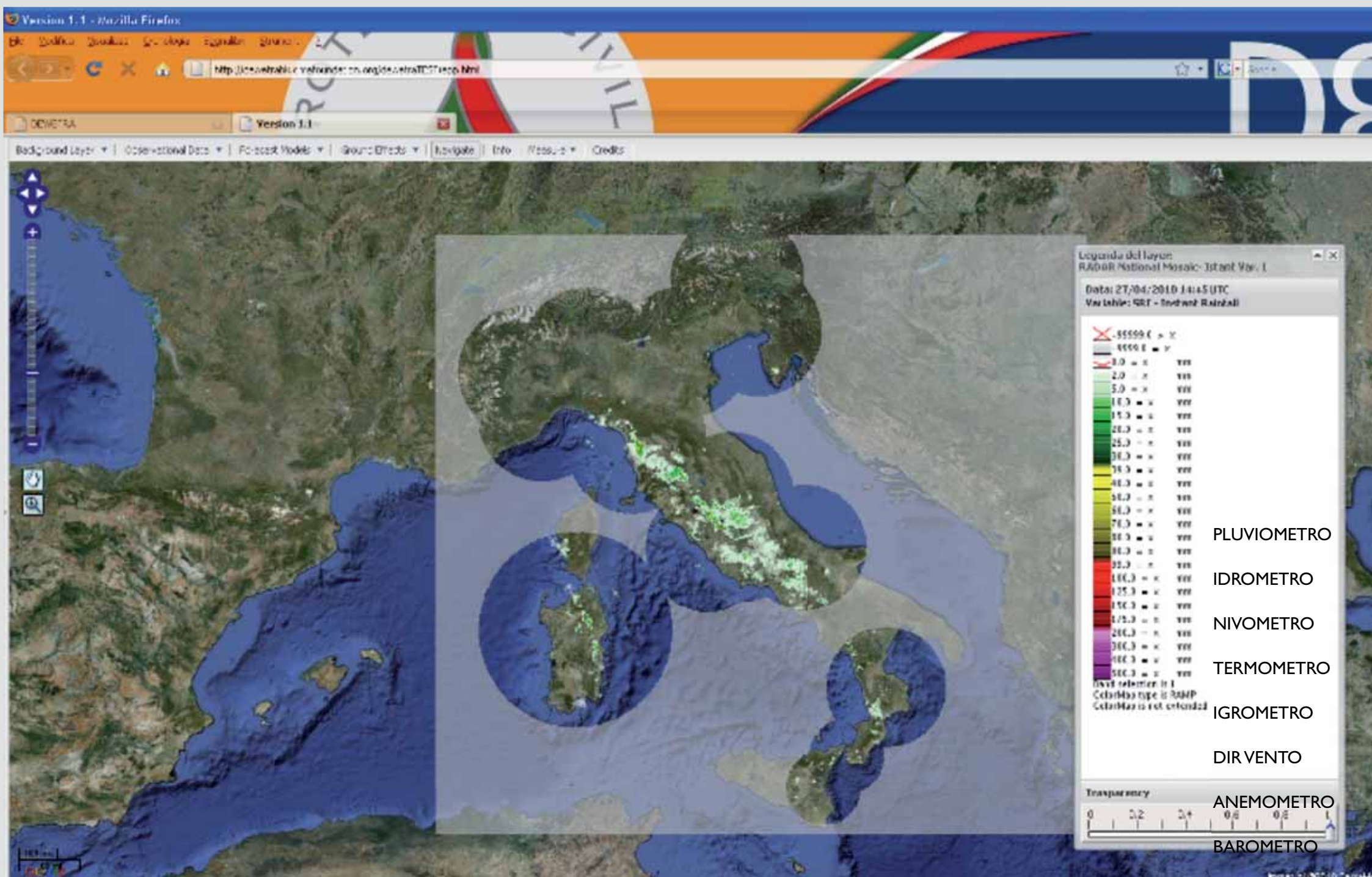


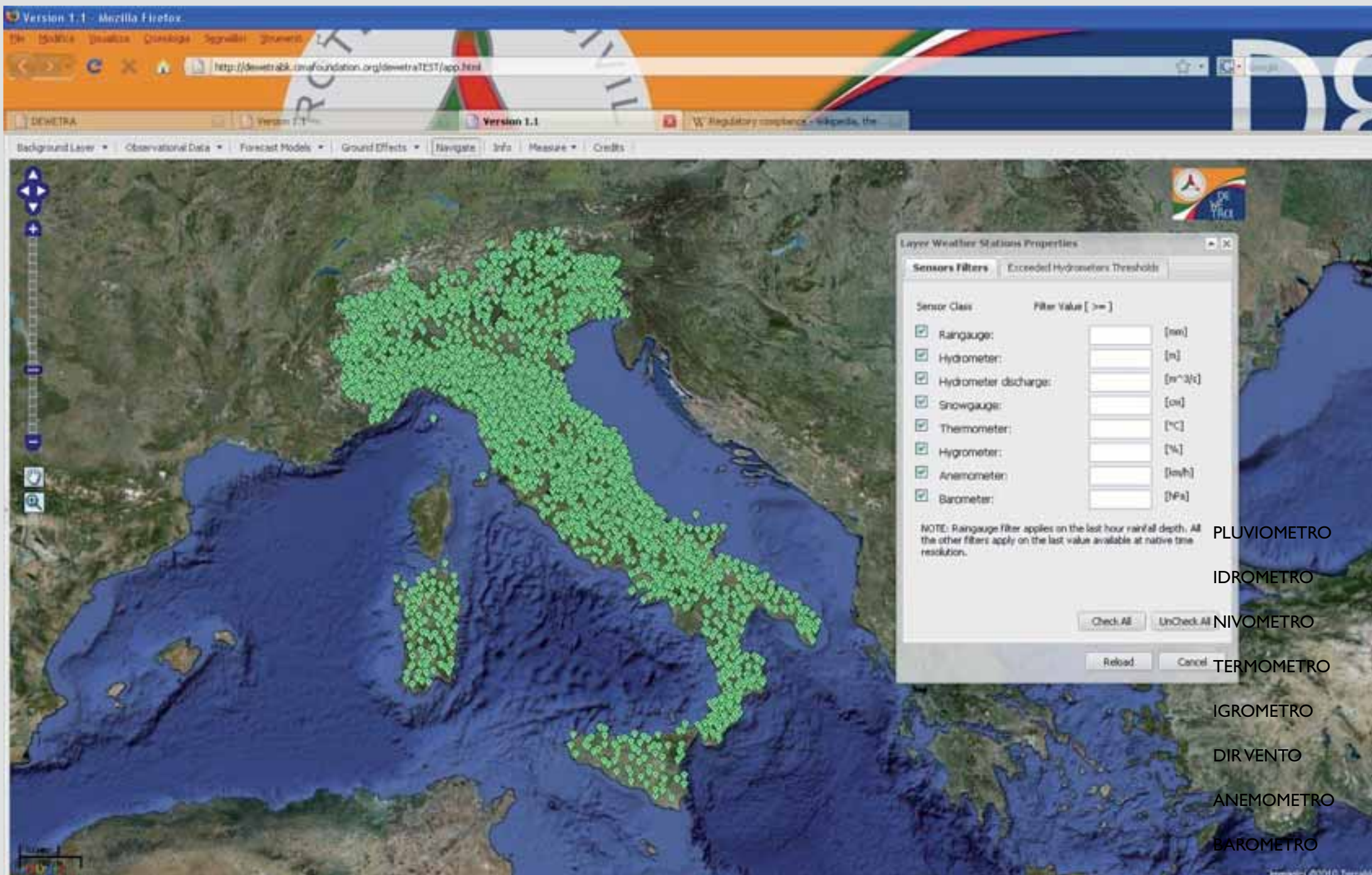
navigation tools- display of



ground layers
static information (exposure and vulnerability)
mic information (hazard)
range of the visualized data







Layer Weather Stations Properties

Sensors Filters Exceeded Hydrometers Thresholds

Sensor Class	Filter Value [>=]	
☒ Raingauge:		[mm]
☒ Hydrometer:		[m]
☒ Hydrometer discharge:		[m^3/s]
☒ Snowgauge:		[cm]
☒ Thermometer:		[°C]
☒ Hygrometer:		[%]
☒ Anemometer:		[km/h]
☒ Barometer:		[hPa]

NOTE: Raingauge filter applies on the last hour rainfall depth. All the other filters apply on the last value available at native time resolution.

Check All Uncheck All

Reload Cancel

PLUVIOMETRO

IDROMETRO

NIVOMETRO

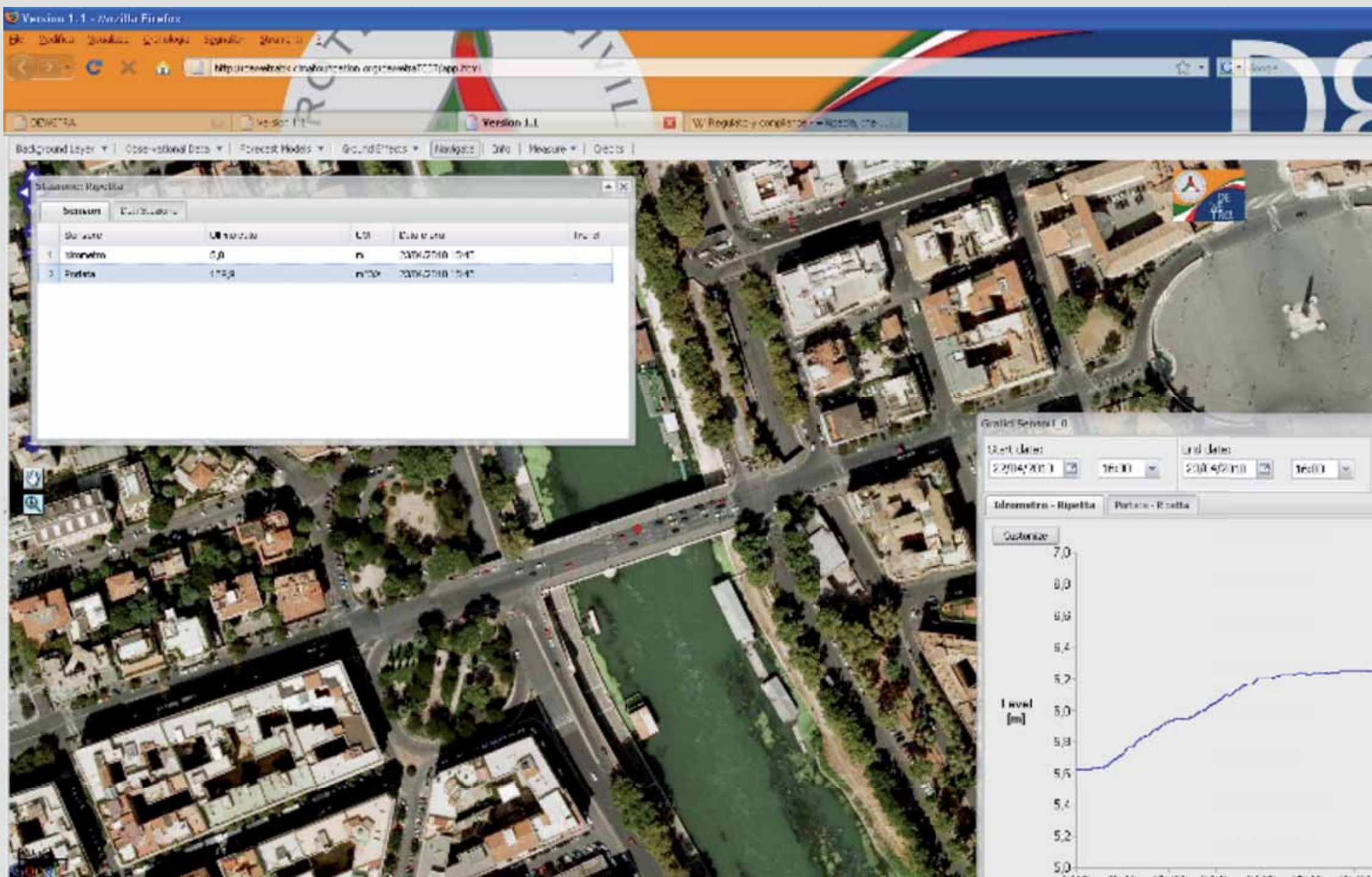
TERMOMETRO

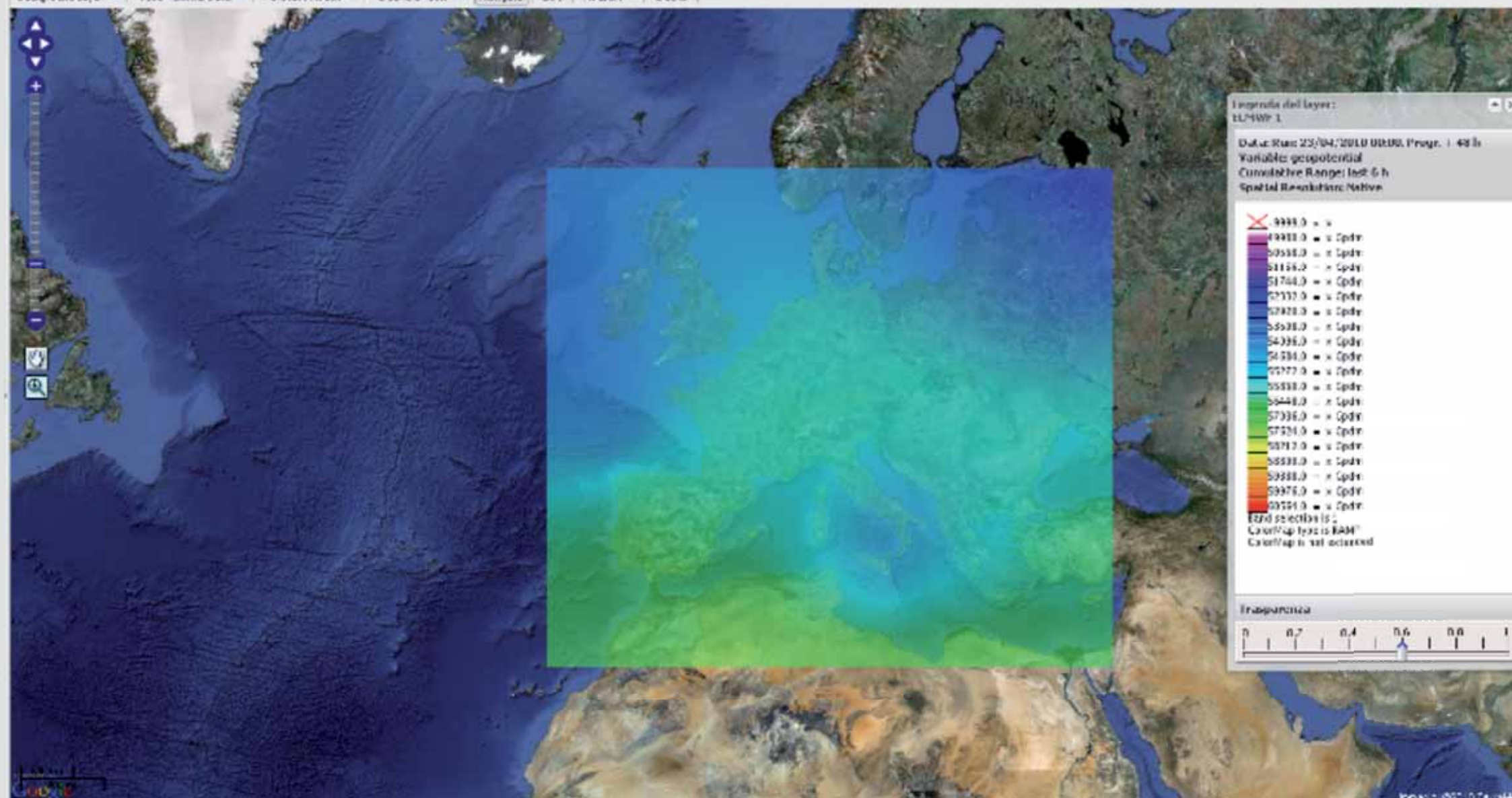
IGROMETRO

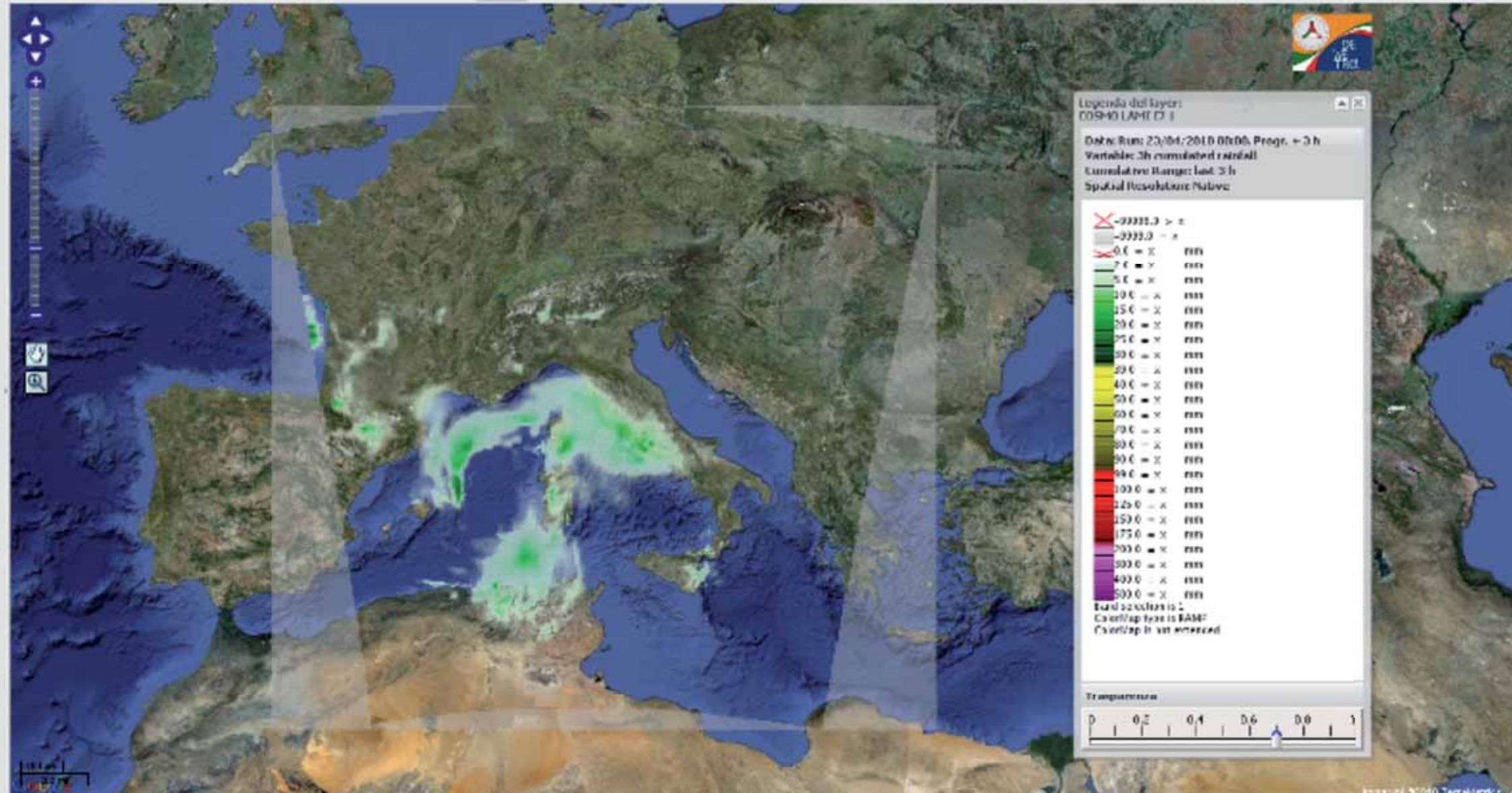
DIR VENTO

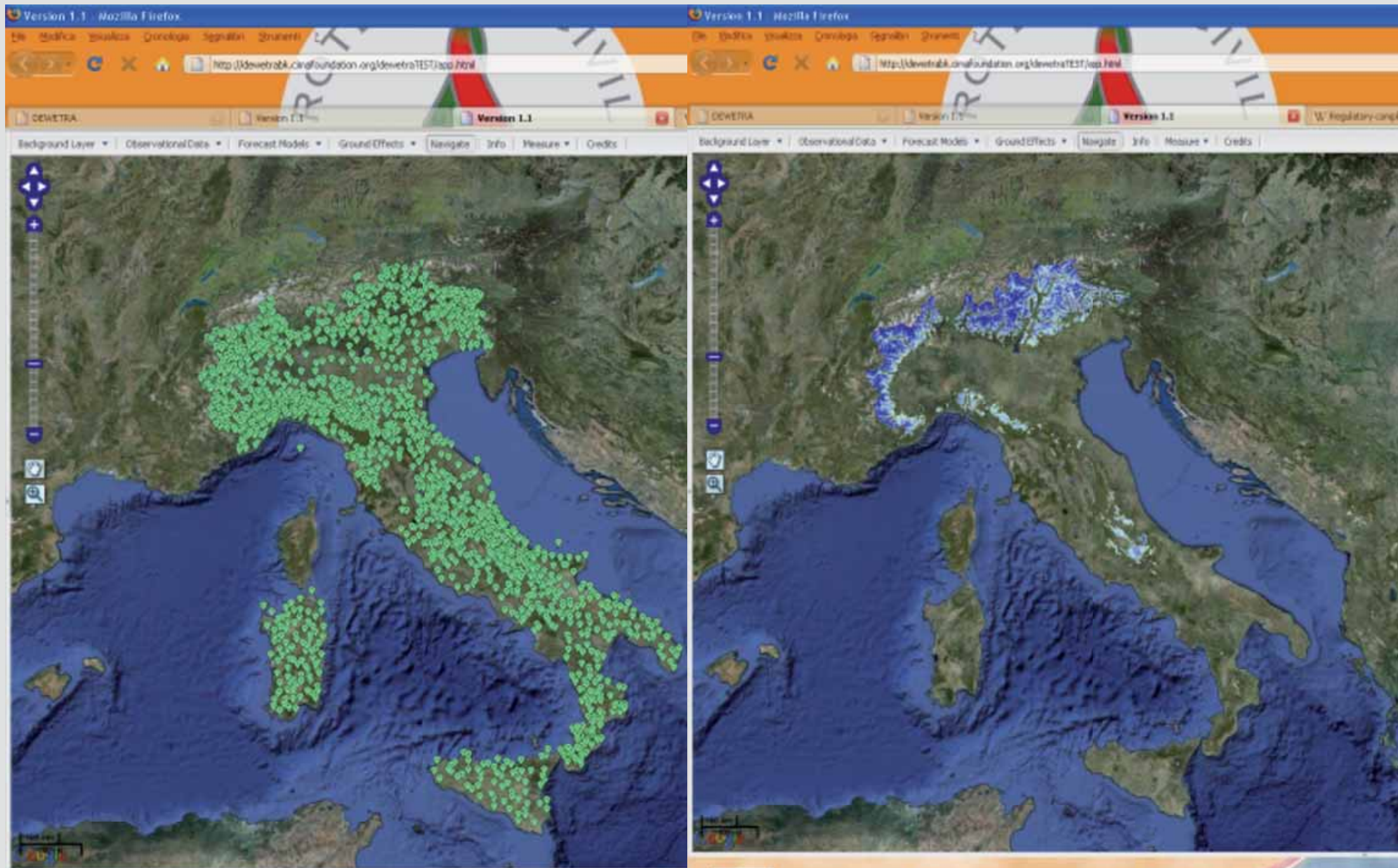
ANEMOMETRO

BAROMETRO









Version 1.1 - Mozilla Firefox

http://dewetrolab.cinefoundation.org/dewetroTEST/app.html

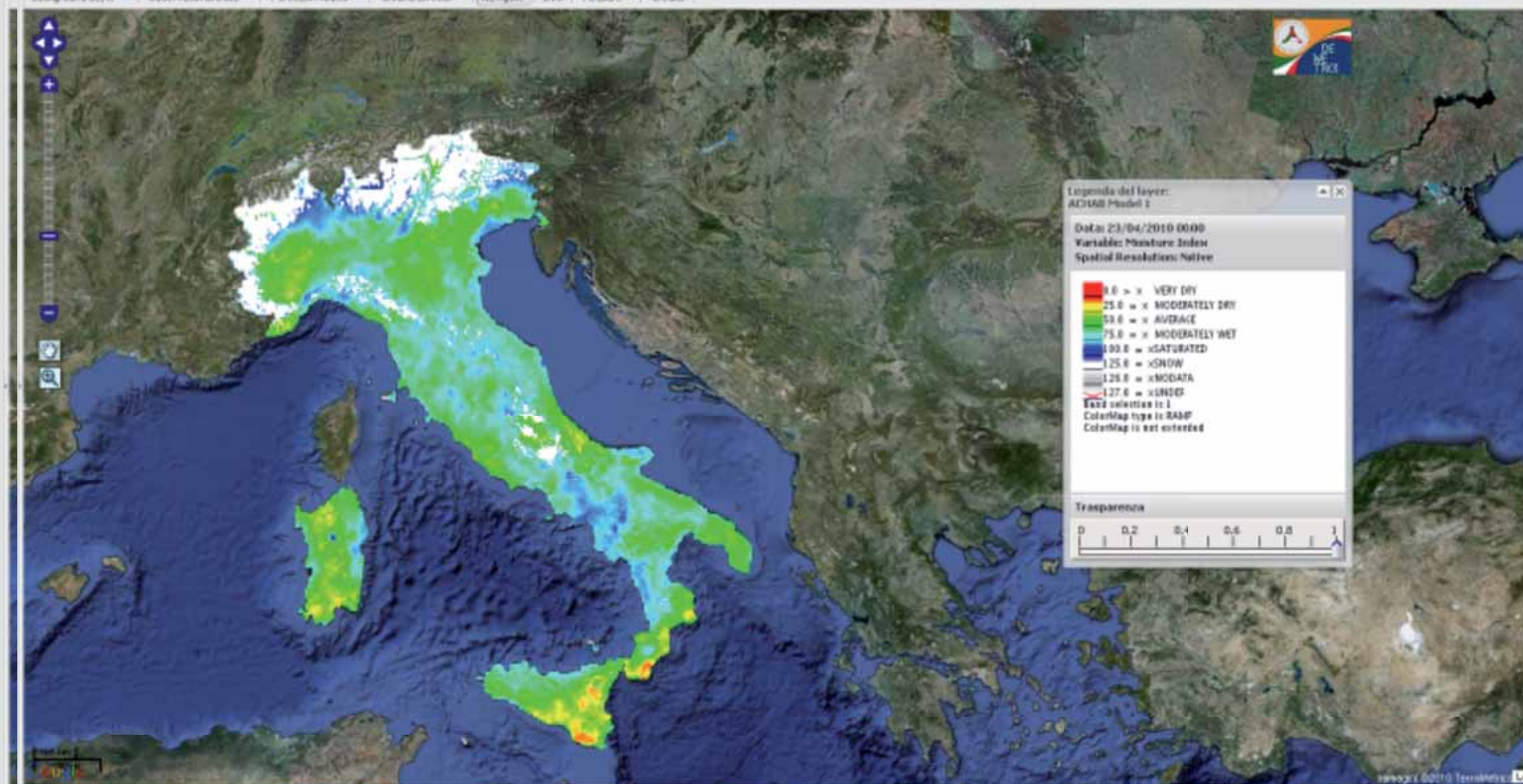
DEMETRA

Version 1.1

Version 1.1

Regulatory compliance - Wikipedia, the

Background Layer | Observational Data | Forecast Models | Ground Effects | Navigate | Info | Measure | Credits



Legenda del layer:
ACHUB Model 1

Data: 23/04/2010 00:00

Variable: Moisture Index

Spatial Resolution: Native

0.0 = x VERY DRY
25.0 = x MODERATELY DRY
50.0 = x AVERAGE
75.0 = x MODERATELY WET
100.0 = x SATURATED
125.0 = x SNOW
150.0 = x MODATA
175.0 = x UNDEF

Band selection is 1
ColorMap type is RGB
ColorMap is not entered

Trasparenza

0 0.2 0.4 0.6 0.8 1

Find in Google Maps

Ripetta

Layer List

Dynamic Layers

RADAR National Model - Persistence TS

Legend

RADAR National Model - SRT Derivative 1

Legend

RADAR National Model - Inter View 2

Legend

Temperature Field Map 1

Legend

RADAR Model 1

Legend

CSM - Drive Modelling Mapping and Model

Legend

RADAR National Model SRT mergepage 1h Cum

Legend

Thermal Index Map 1

Legend

CTSDAO LAM 011

Legend

ECMWF 1

Legend

Total Layers

Mission

Search Result

Weather Options

Auxiliary layers

TEST Layers

Elements at risk

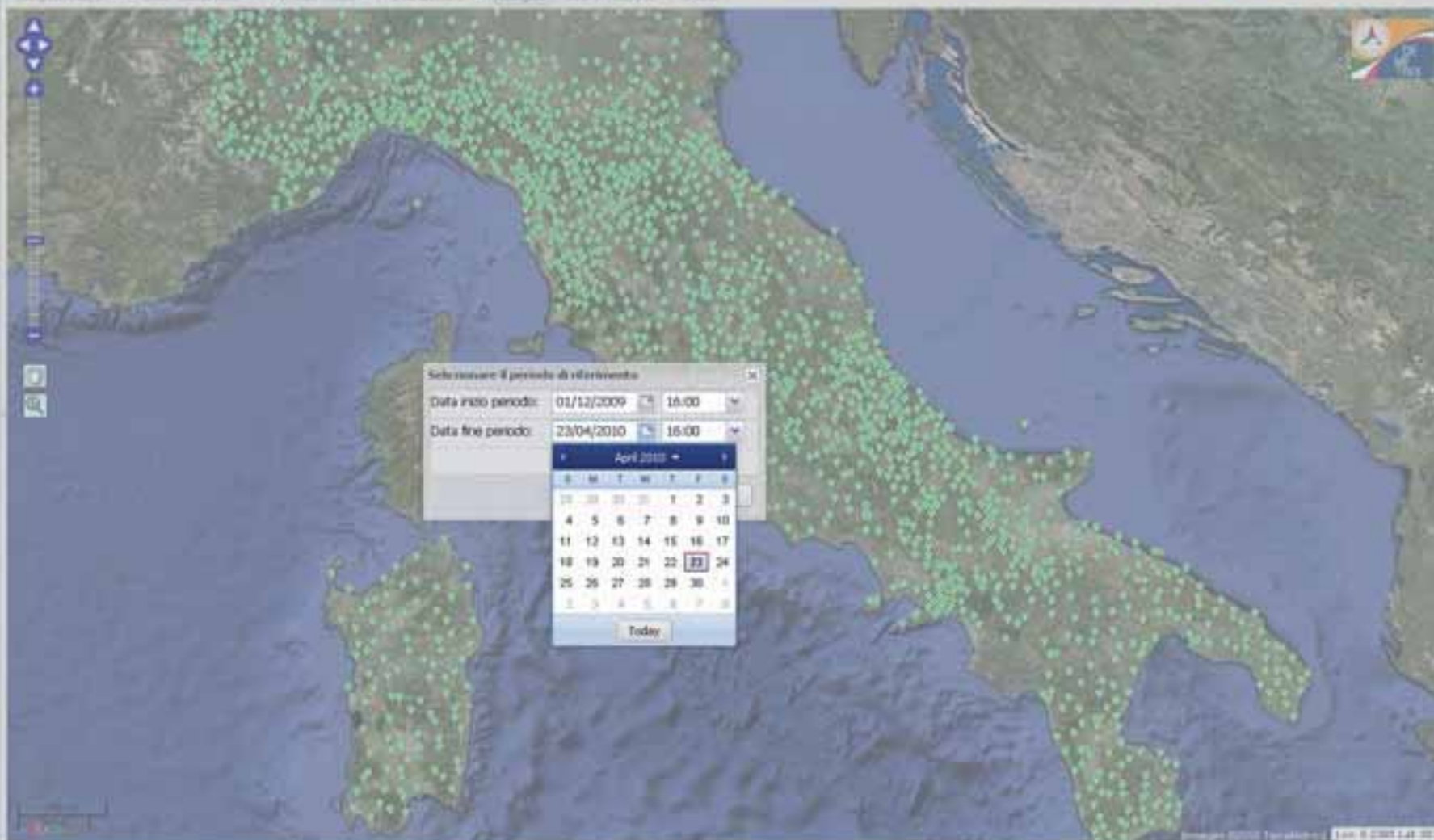
Damage graph

Fire map

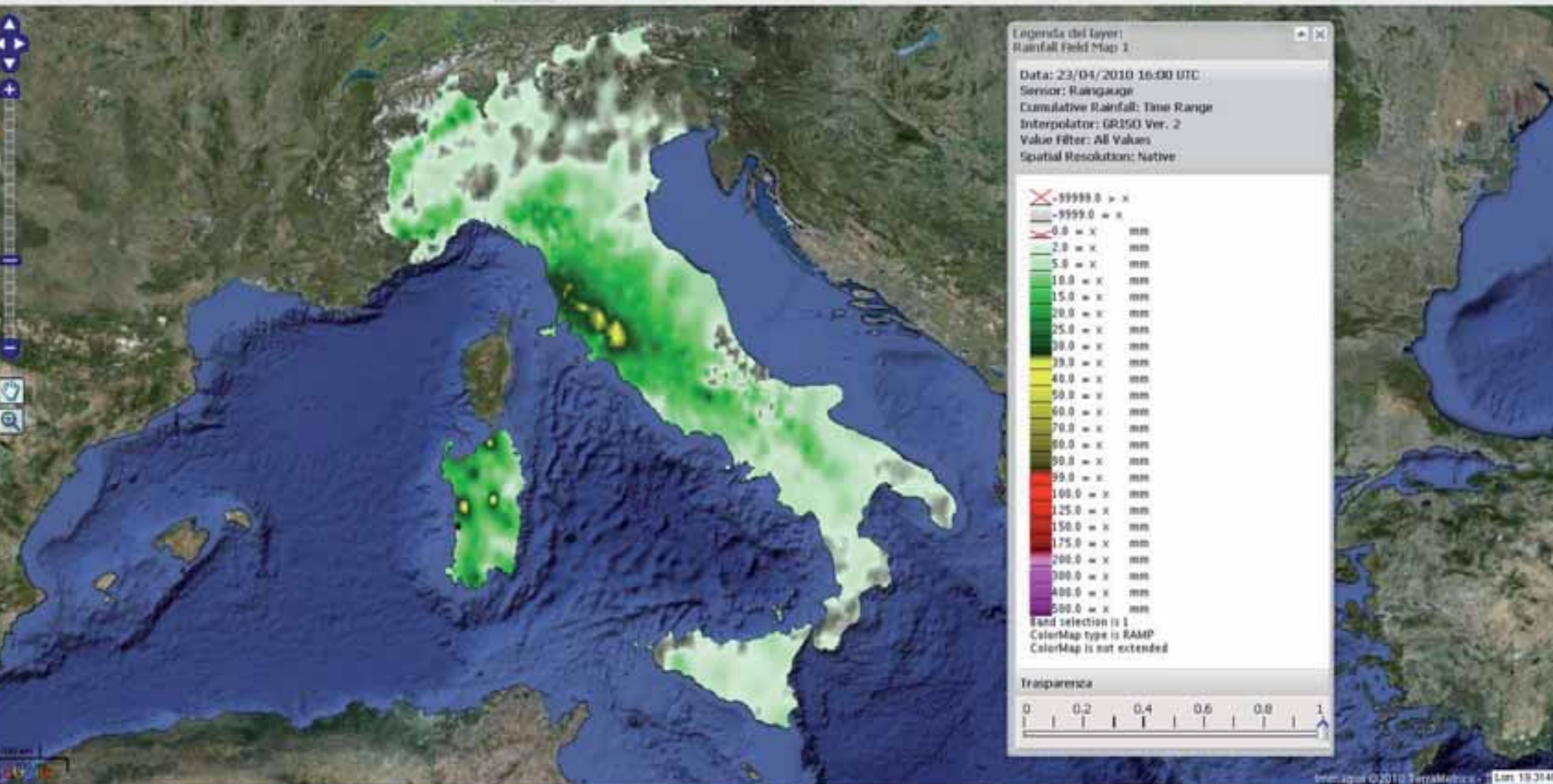
Threat map

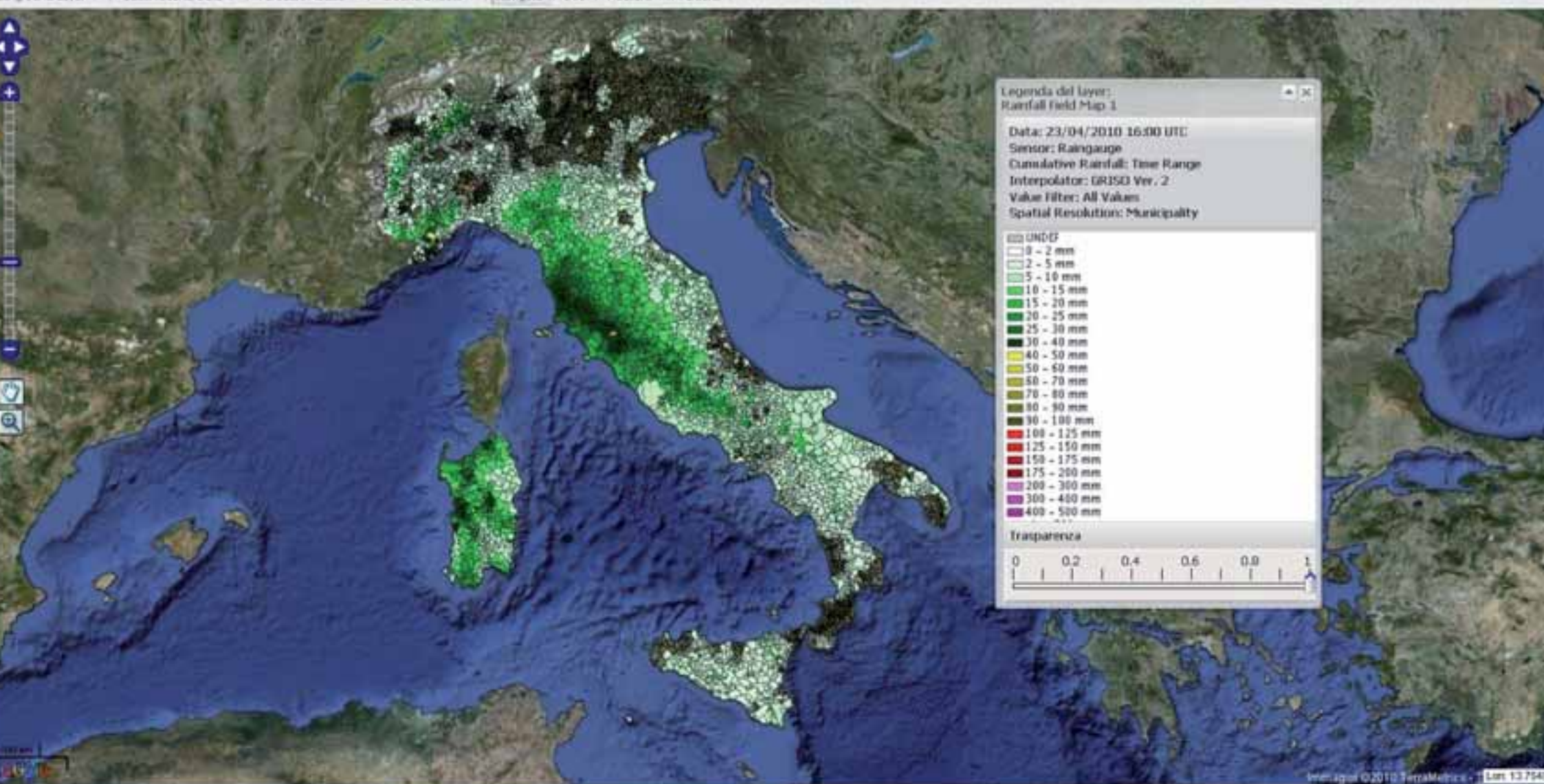
OPERA

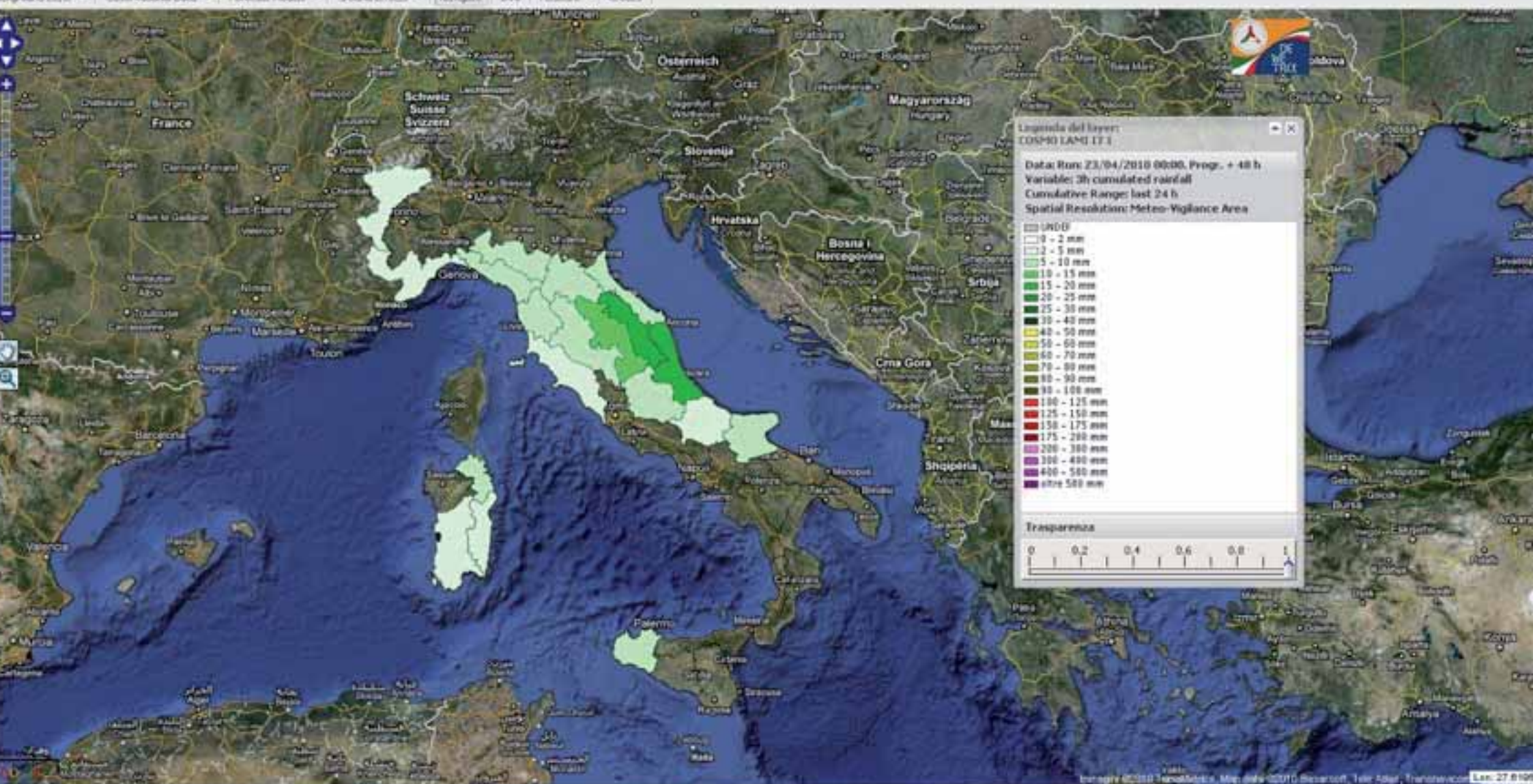
Background Layer | Observational Data | Forecast Model | Ground Effects | Navigation | Info | Mission | Credits



Aggregation of data by different spatial scales







Comprehensive System for Nationwide and Local Wildland Fire Risk Assessment



s a fully operational system for nationwide/local wildfire assessment 24/365 encompassing a set of modular sub-systems integrated in daily elaborations able to show the fire risk forecast in 3 days in the future. The system elaborations are based on spatially relevant to local meteorology and physical parameters having local effects on the state of the fuels and the fire propagation behaviour.

meteorological observations, Limited area model weather forecasts and meteorological observation are gathered and managed by a unified interface able to process a wide set of different data.

SICO algorithms are based on dynamic models able to simulate in real time the effects that local meteorology have on moisture content of vegetation (fuel) and on the potential behaviour of wild fires.

model that simulates the dynamics of the dead fine fuel moisture content;

potential fire spread model able to evaluate the behaviour of the wildfire front in terms of rate of spread (mh^{-1}) and near intensity (kWm^{-1})

The **static information** refers to topography and vegetation cover data

The major **dynamic information** are meteo observations and meteorological forecast provided by Limited Area Model (LAM)



International case studies:



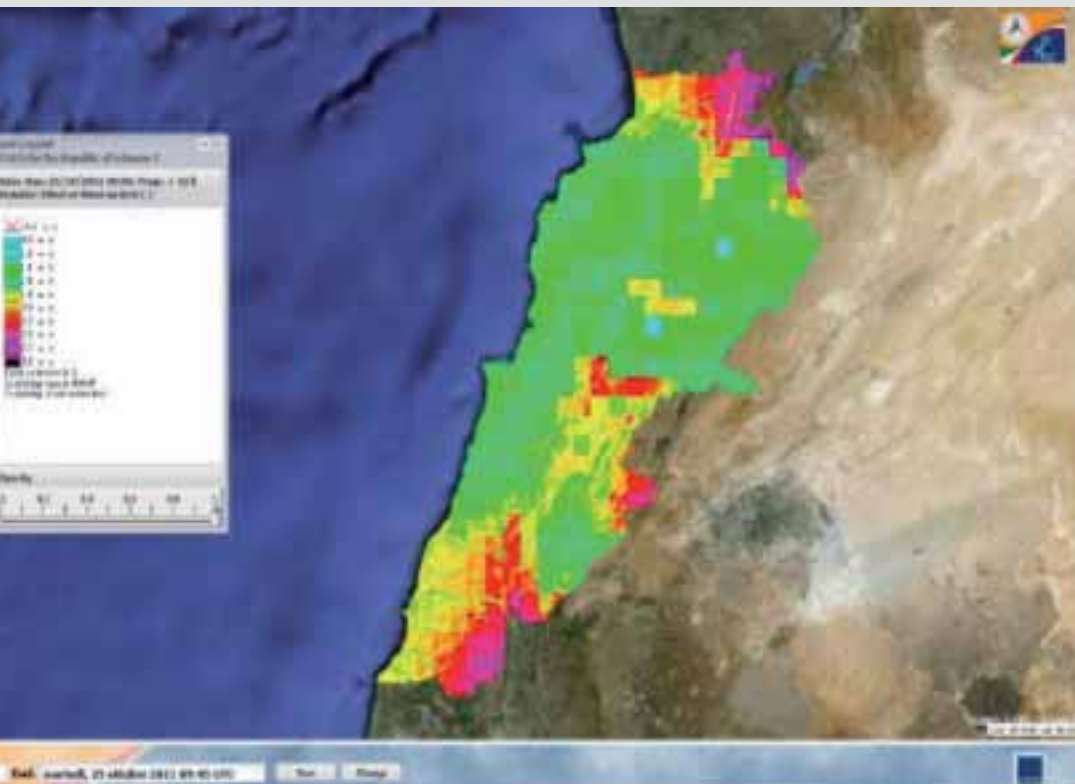
Lebanon

**Strengthening
the National Framework to mitigate Rural-Forest
Fire Risk**

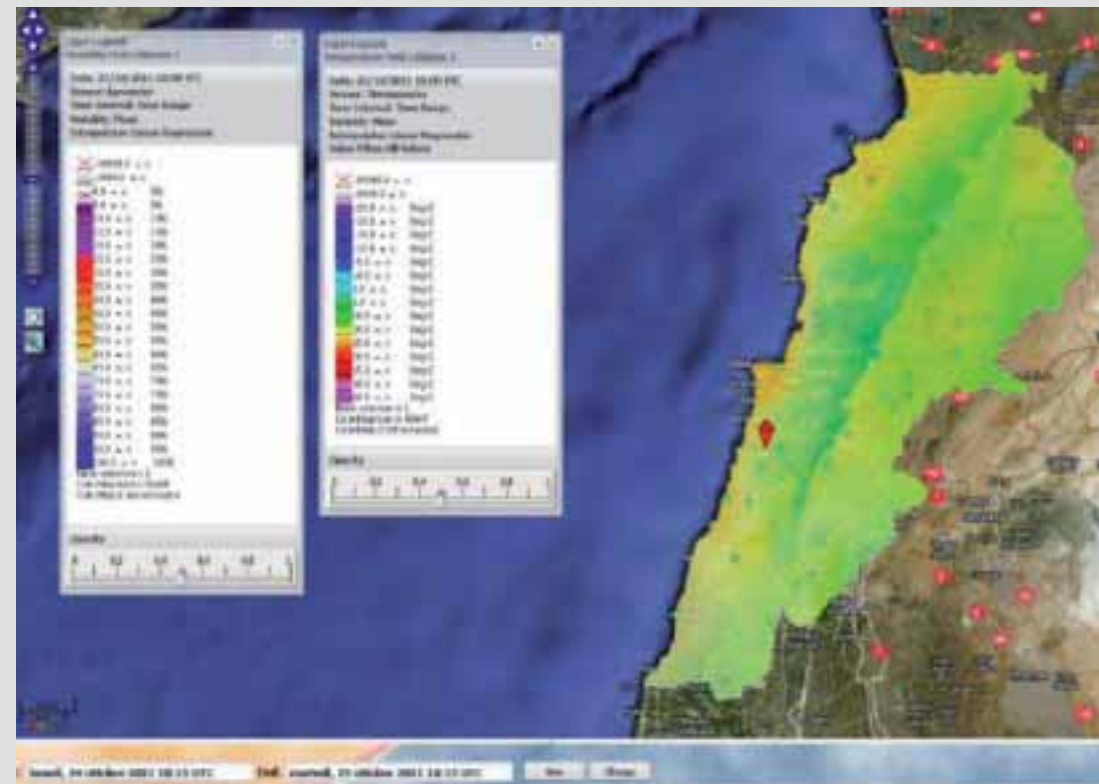
e Risk index maps

dynamic information of the current fuel state and on the potential fire behaviour. A further set of maps concerns the effect of wind, temperature and humidity on the potential fire spread

Wind map



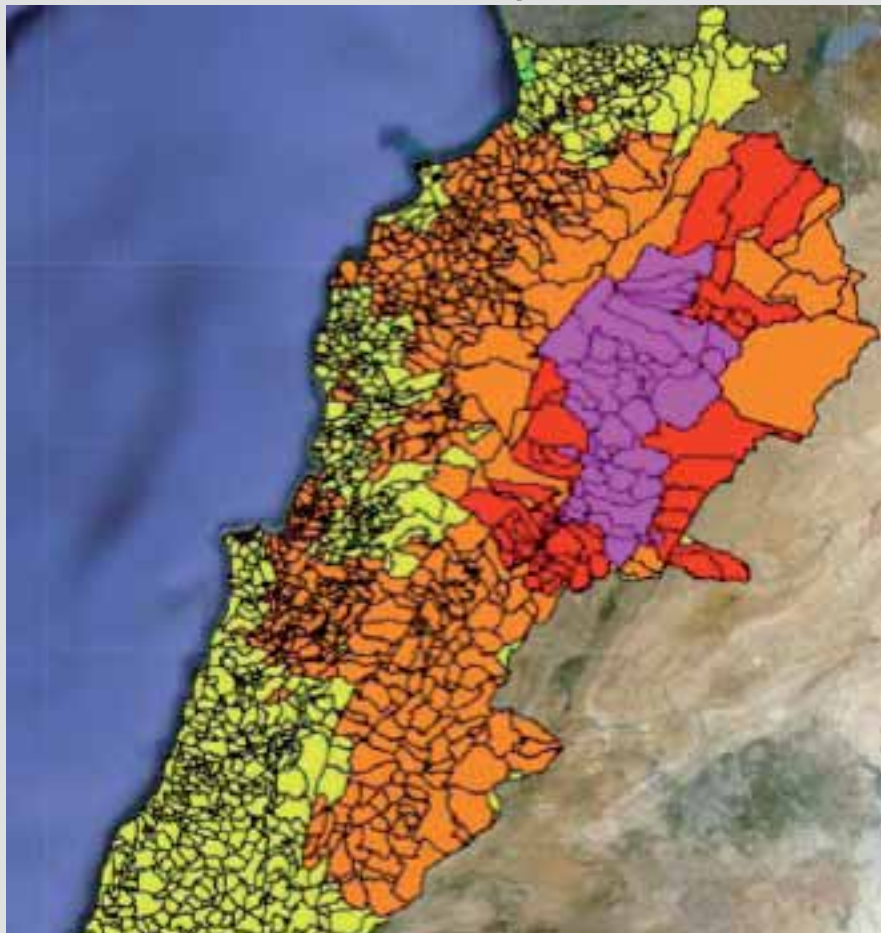
Humidity&Temperature Map



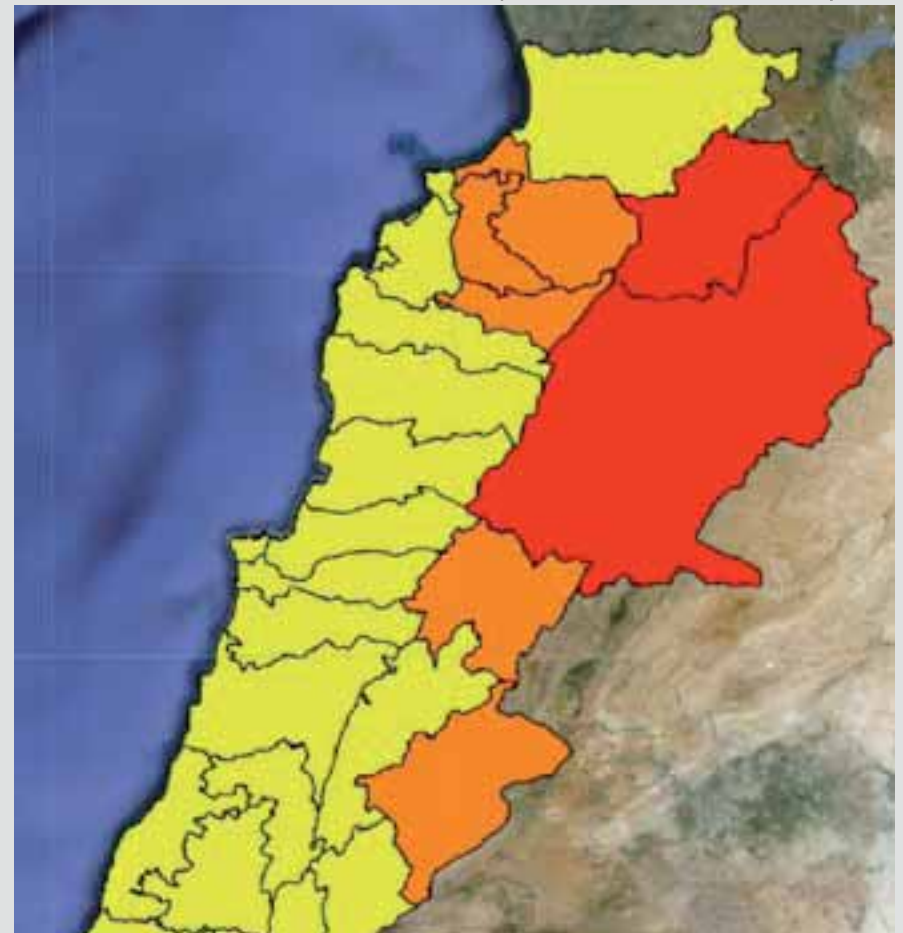
Forest Fire Risk index

Based by aggregation in space and time of the potential linear density, the risk index is defined for each administrative area selected by the user, and is relevant to each of the three days in which the forecast information is available.

Municipal Level



Provincial Level (CAZA, Lebanon)



	Level of risk	Meaning and actions
	Very low	Very low fire risk. Controlled burning operations can be hardly executed due to high fuel moisture content. Wildfires self-extinguish.
	Low	Low fire risk. Controlled burning operations can be executed with a reasonable degree of safety.
	Medium low	Medium-low fire risk. Controlled burning operations can be executed in safety conditions. All the fires must be extinguished.
	Medium	Medium fire risk. Controlled burning operations would be avoided. All the fires need to be very well extinguished.
	Medium high	Controlled burning is avoided. Open flame will start fires. Cured grasslands and forest litter will burn readily and moderately in forests and fast in exposed areas. Patrolling and monitoring is suggested. Fight fires with direct attack using available resources.
	High	Ignition can occur easily with fast spread in grass, shrubs and forests. Fires will be very hot with crowning and medium spotting. Direct attack on the head may not be possible requiring indirect methods on flanks. Patrolling and monitoring the territory is highly suggested.
	Extreme	Ignition can occur also from sparks. Fires will be extremely hot with fast rate of spread. Control may not be possible due to long range spotting and crowning. Suppression forces should limit efforts to limiting lateral spread and potential total. Patrolling and monitoring the territory is highly suggested.



CIVIL DEFEENCE

Lebanon Fire Risk Bulletin

Refer to cadast condition.

General description of potential fire risk situation

Level of risk	Meaning and actions
Very low	Very low fire risk. Controlled burning operations can be hardly executed due to high fuel moisture content. Normally wildfires self-extinguish.
Low	Low fire risk. Controlled burning operations can be executed with a reasonable degree of safety.
Medium-low	Medium-low fire risk. Controlled burning operations can be executed in safety conditions. All the fires need to be extinguished.
Medium	Medium fire risk. Controlled burning operations would be avoided. All the fires need to be very well extinguished.
Medium-high	Controlled burning is not recommended. Open flame will start fires. Cured grasslands and forest litter will burn readily. Spread is moderate in forests and fast in exposed areas. Patrolling and monitoring is suggested. Fight fires with direct attack and all available resources.
High	Ignition can occur easily with fast spread in grass, shrubs and forests. Fires will be very hot with crowning and short to medium spotting. Direct attack on the head may not be possible requiring indirect methods on flanks. Patrolling and monitoring the territory is highly suggested.
Extreme	Ignition can occur easily with fast spread in grass, shrubs and forests. Fires will be extremely hot with fast rate of spread. Control may not be possible during day due to long range spotting and crowning. Suppression forces should limit efforts to limiting lateral spread. Damage potential total. Patrolling and monitoring the territory is highly suggested.

- **At local scale the system can support the alert distribution, land patrolling and fire-use restrictions;**

The data provided by the system currently helps in organizing and alerting local resources, relocating men and means in the areas denoted by high risk, recalls day-off resources which can intervene in short time. Based on the forecast, a fire risk bulletin can be sent to local authorities and fire services in order to plan a reliable response to the



9 May



FIGURE 1
1. Forecast for 11
11.11.11
11.11.11

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The data provided by the system currently helps in organizing and alerting local resources, relocating men and means to the areas denoted by high risk, recalls day-off resources which can intervene in short time. Based on the forecast a fire risk bulletin can be sent to local authorities and fire services in order to plan a reliable response to the

International case studies:

Albania

*International Cooperation between
Italian Department of Civil Protection – Italian Prime
Minister Office*

and

*General Directorate for Civil Emergency, Ministry of
Interior – Republic of Albania*

Program for Prediction, Prevention and

**Meteorological
forecasts**

Hourly vegetation dryness simulation

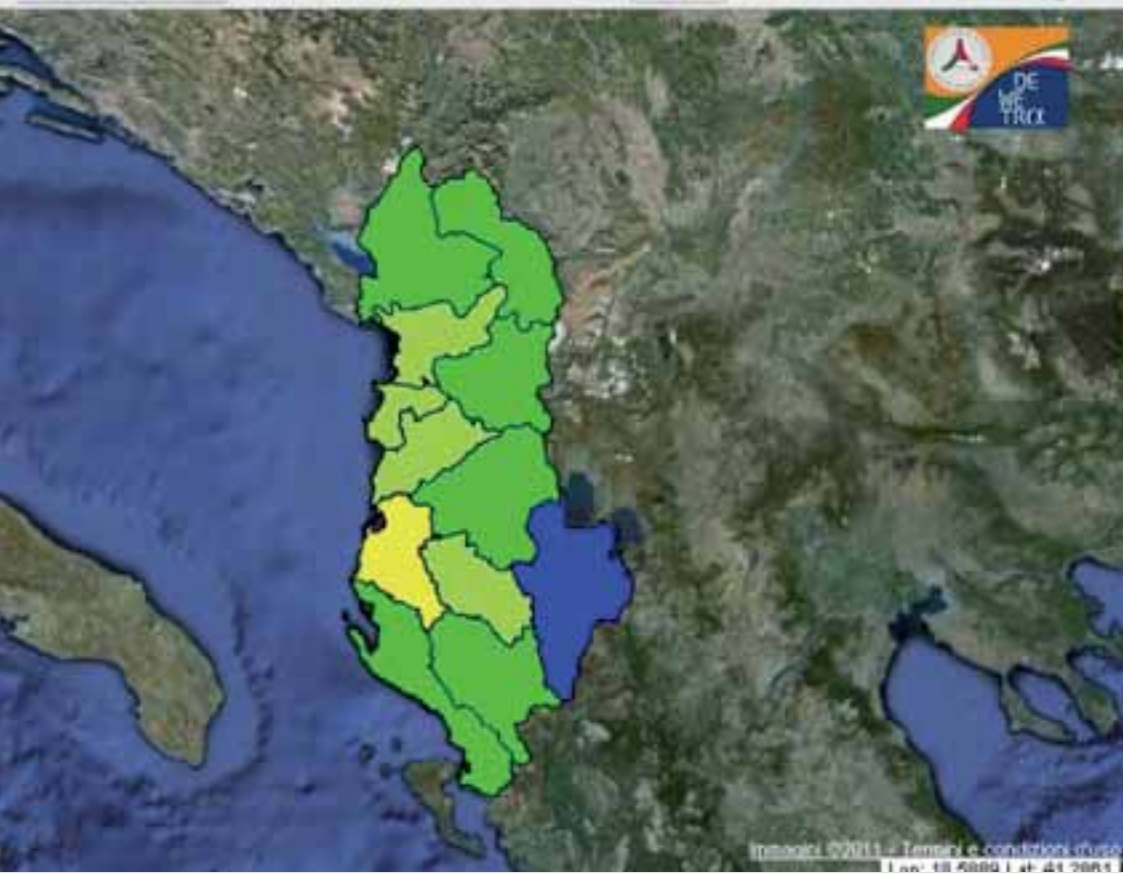
tial ignition

Effect of wind and slope on fire behaviour

**Potential fire
behaviour
prediction**

Fireline intensity

Rate of spread



Fire risk map

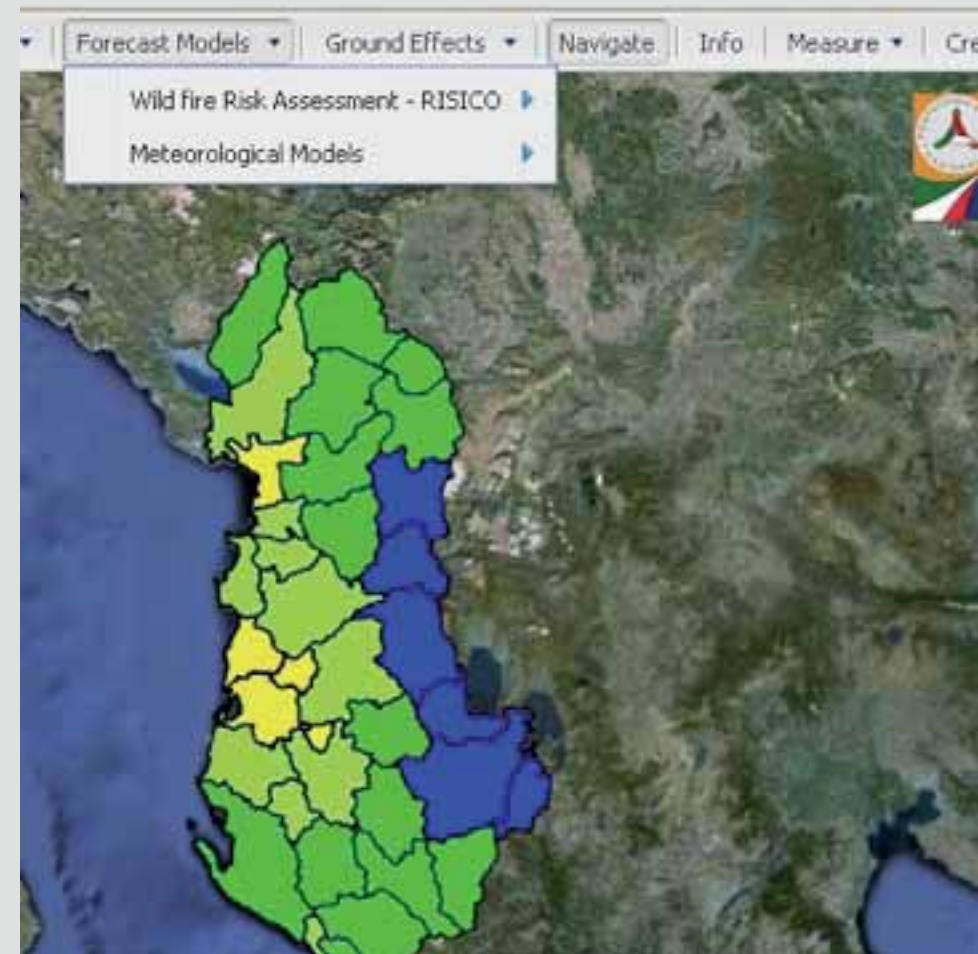
Districts

Prefectures

low-intensity, easy to control wildfires.

Ordinary intensity wildfires

Possible very intense wildfires





BULETINI I PARASHIKIMIT PROVË TË ZJARREVE NË PYJE



PROTEZIONE CIVILE

Ministria e Mbrojtjes
Drejtoria e Përgjithshme
e Emergjencave Civile

Qendra Eksperimentale e Parashikimit dhe Monitorimit të Rreziqeve Natyrore -
INEUM

Buletini 6/2011; datë 30 Maj 2011

Parashikimet për datat 31 Maj, 01 Qershor
2011

NIVELI I RREZIKUT TË ZJARREVE NË PYJE SIPAS PARASHIKIMEVE PROVË
për datën 31 Maj 2011

NIVELI i rrezikut të zjarreve	PREFEKTURAT					
	SHKODËR	KUKËS	LEZHË	DURRËS	DIBËR	TIRANË
MESATAR	-	-	-	-	-	-
I LARTË	-	-	-	-	-	-
EKSTREM	-	-	-	-	-	-

NIVELI i rrezikut të zjarreve	ELBASAN	FIER	BERAT	KORÇË	GJIROKASTËR	VLORE
MESATAR	-	-	-	-	-	-
I LARTË	-	-	-	-	-	-
EKSTREM	-	-	-	-	-	-

Përmbledhje e gjendjes

Në ASNJË prefekturë nuk parashikohet që të ketë probleme, niveli i rrezikut parashikohet të jetë nën atë mesatar.

LEGIENDA e Nivelit të rrezikut të zjarreve

MESATAR (Kodi 1 i emergjencës)	Mund të verifikohen zjarre me intensitet të lartë, por kryesisht të menaxhueshme nga skuadrat tokësore të zjarfikësve.
I LARTË (Kodi 2 i emergjencës)	Janë të mundshme zjarre me intensitet shumë të lartë. Në rast të detektimit të zjarreve, është i nevojshëm edhe përdorimi i ndihmës ajrore.
EKSTREM (Kodi 3 i emergjencës)	Janë të mundshme zjarre, që mund të rezultojnë katastrofike e të pakontrollueshme.

Niveli i Rrezikut të Zjarreve në Pyje sipas Parashikimeve Provë,
Ilustruar për të gjithë Territorin, për datat 31 Maj, 01 Qershor 2011

Kodi i Emergjencës	Operatori i Qendrës	Supervizori i Qendrës
0	Klodian Zaimi	Metodi MARKU



BULETINI I PARASHIKIMIT PROVË TË ZJARREVE NË PYJE



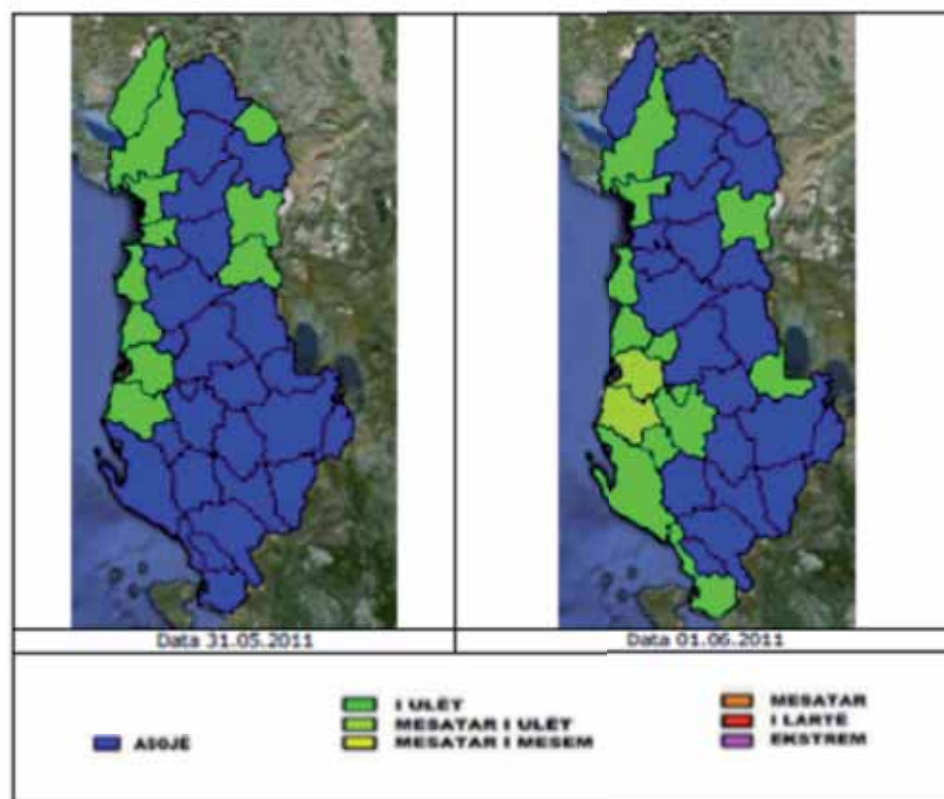
PROTEZIONE CIVILE

Ministria e Mbrojtjes
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e Emergjencave Civile

Qendra Eksperimentale e Parashikimit dhe Monitorimit të Rreziqeve Natyrore -
INEUM

Buletini 6/2011; datë 30 Maj 2011

Parashikimet për datat 31 Maj, 01 Qershor
2011



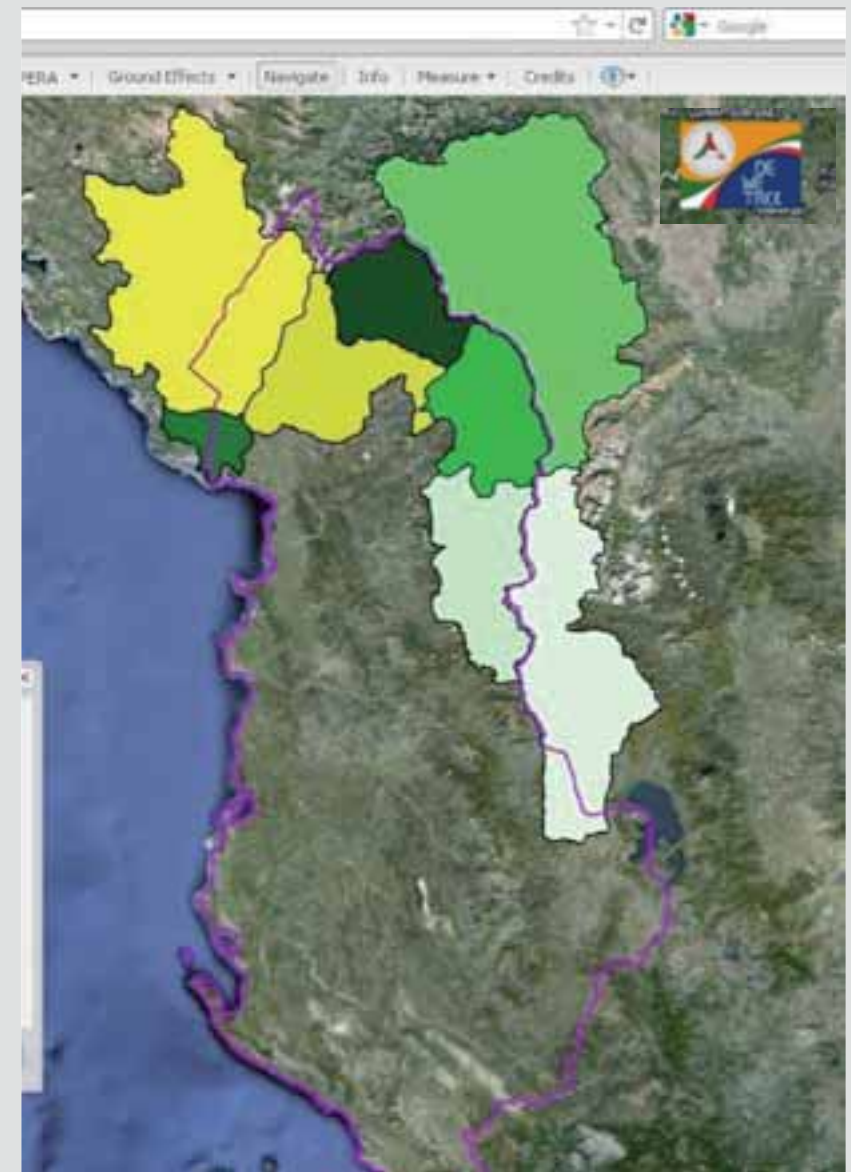
Kodi i Emergjencës	Operatori i Qendrës	Supervizori i Qendrës
0	Klodian Zaimi	Metodi MARKU

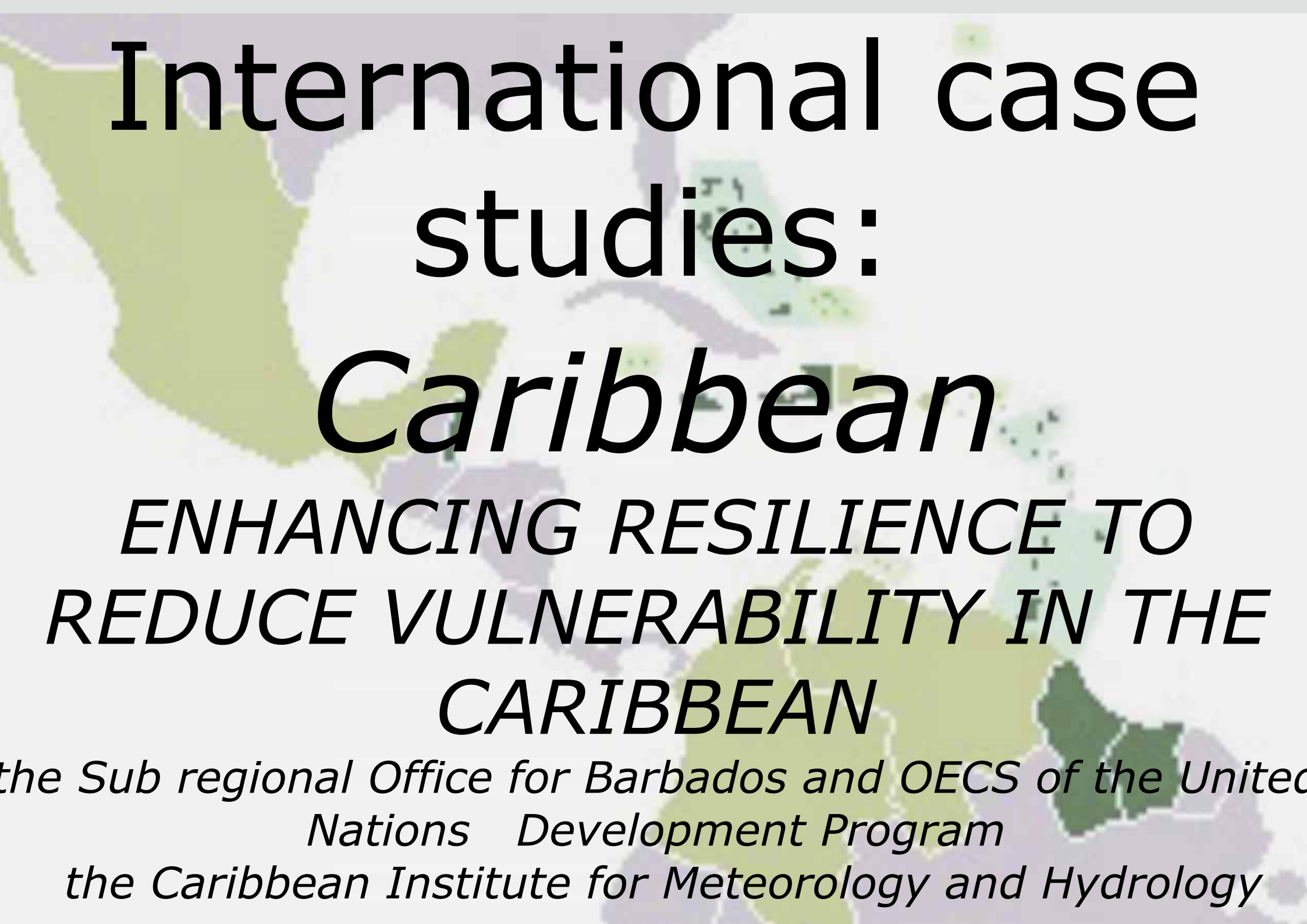
cumulated rainfall for the 30 of November 20 DRIN-BUNA basin

ings area



Meteo-vigilance area





International case studies:

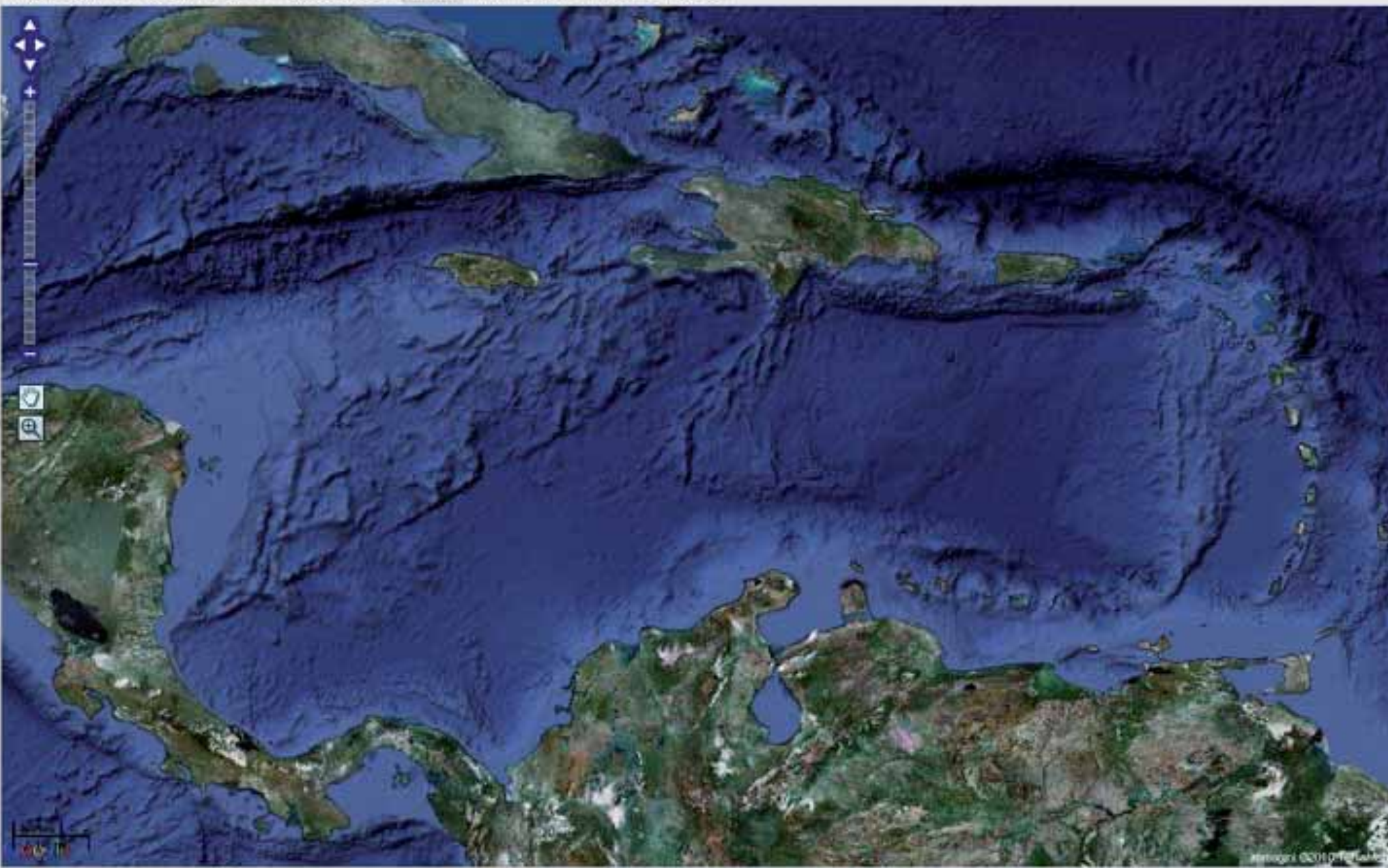
Caribbean

ENHANCING RESILIENCE TO REDUCE VULNERABILITY IN THE CARIBBEAN

*the Sub regional Office for Barbados and OECS of the United
Nations Development Program
the Caribbean Institute for Meteorology and Hydrology*

N 2

N 1



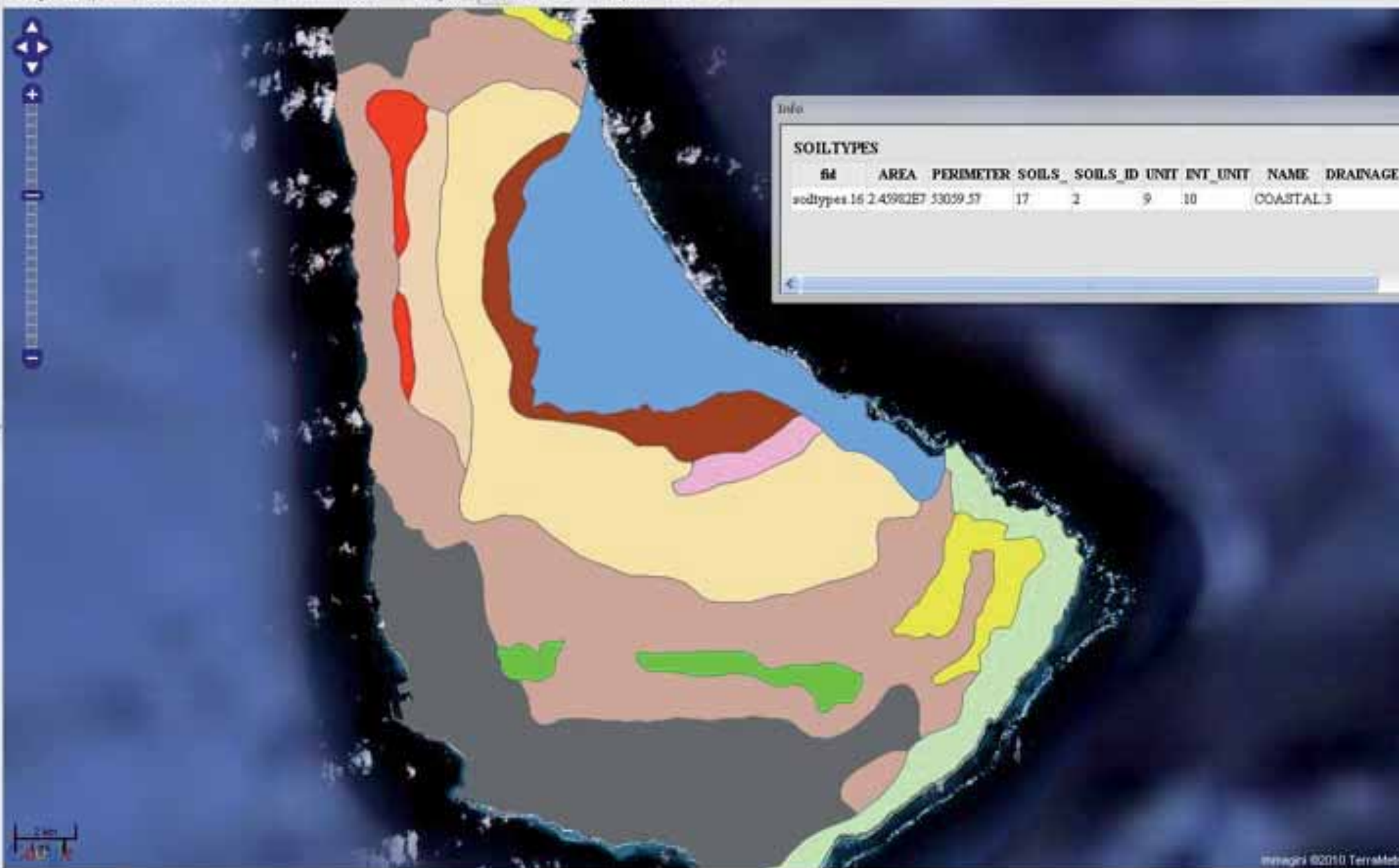
AN 1

top 1

ADMIC

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one of places



Info

LANDUSE

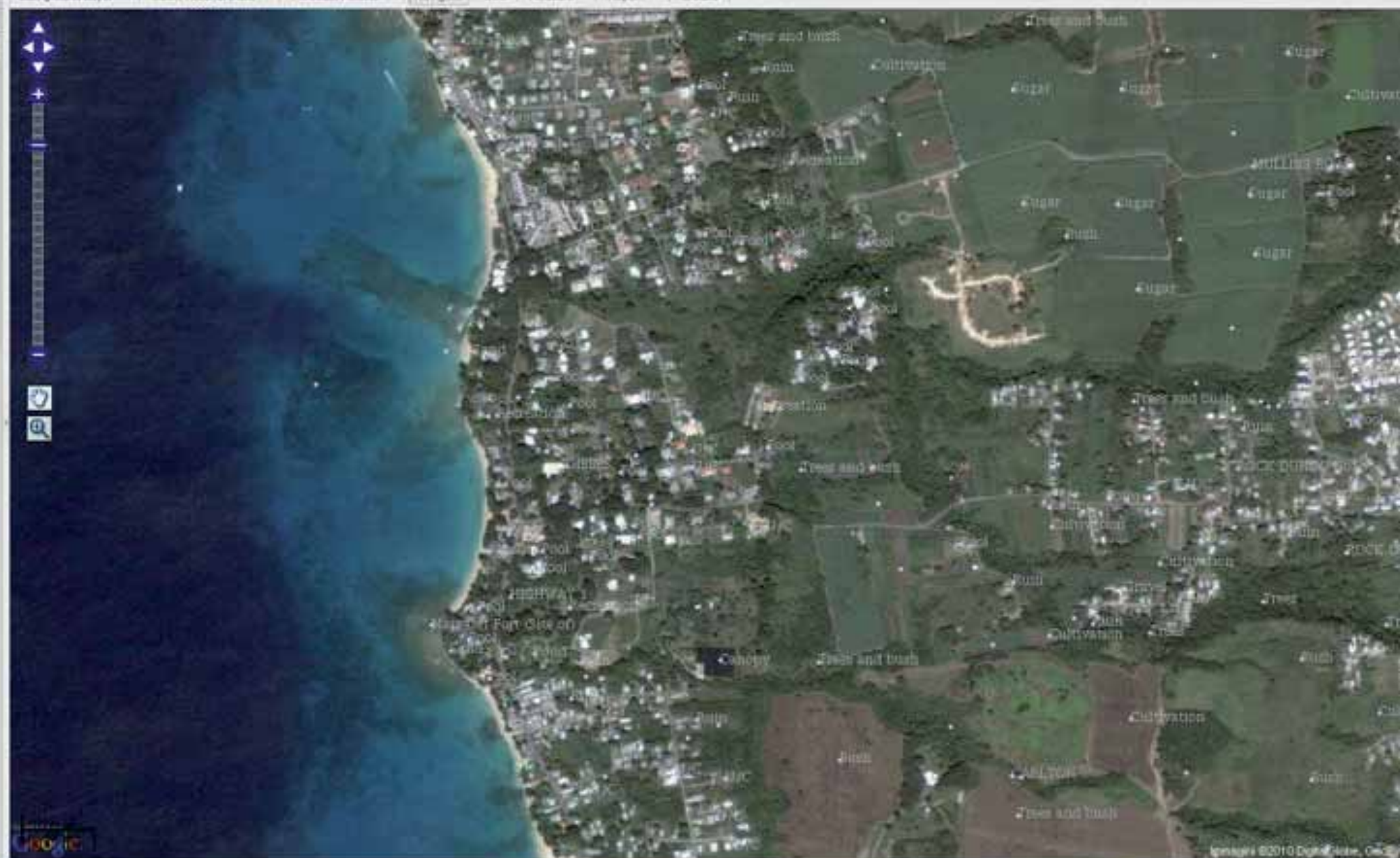
64	AREA	PERIMETER	LU_CHCH	LU_CHCH_ID	CLASS	THEAREA	DESCRIPTIO	GROUP	GENERAL	SIRIS
Insediame. 4823	112556.6	2006.031	0	0	A82	28555.147578	Sugar Cane	Sugar Cane	Agriculture	Sugar Cane

op 1.

[OMC]

one

ns of places





Info

BUILDINGSOTHERTYPES

id	Entity	Handle	Layer	Color	Linetype	Elevation	Thickness	Text	Build_Type	Blndg_Area	
buildingsOTHERTYPES.403	Polyline	6BFB6	Roof	7	CONTINUOUS	23.574	0.0	QUEEN ELIZABETH HOSPITAL	4	13158.3350283	QUEEN HOSP

Map 1

ADMIC

tions

ors of places

ry roads

roads

idings

idings



Map 1

(DMC)

tions

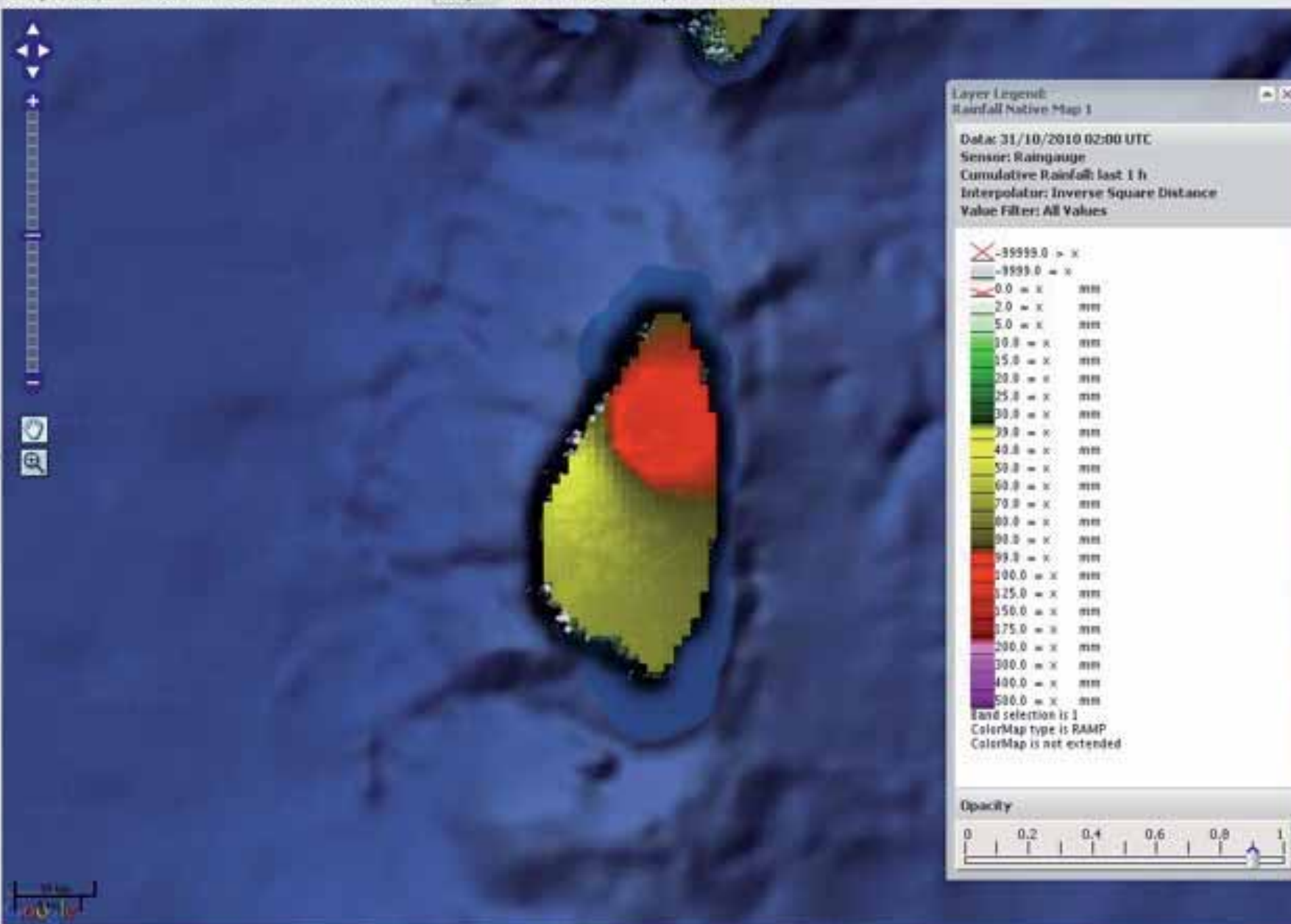
ons of places

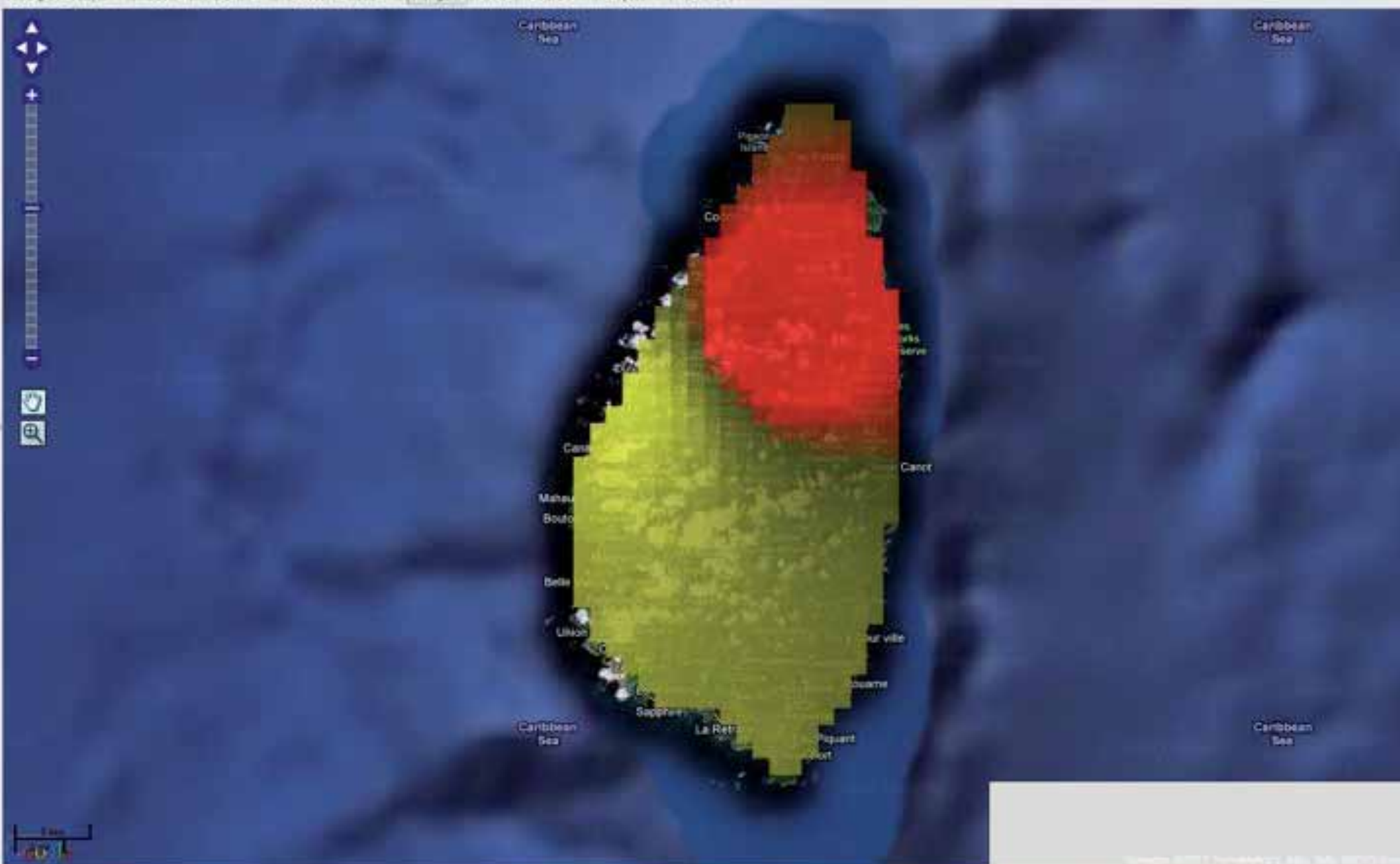
roads

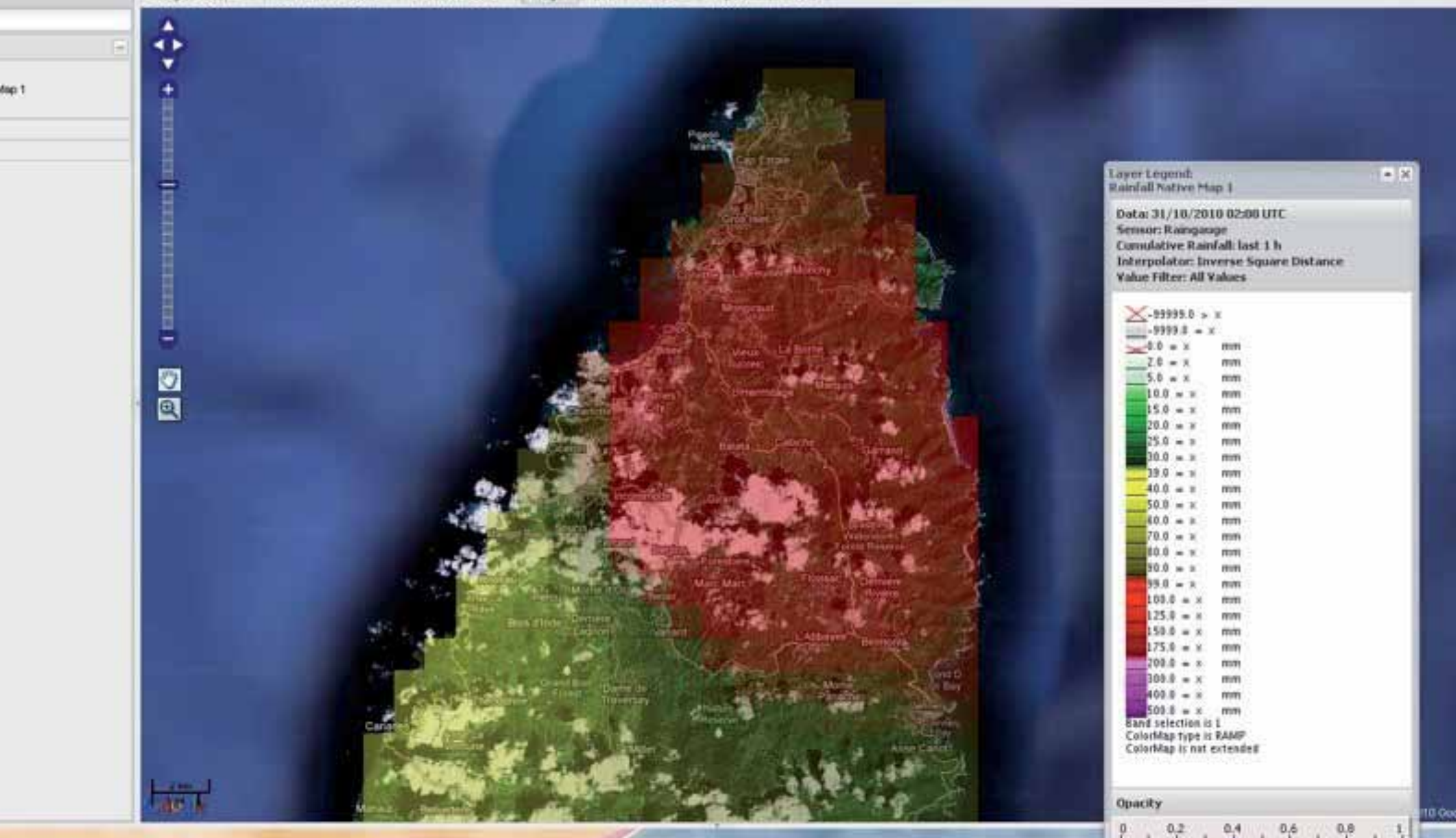
roads

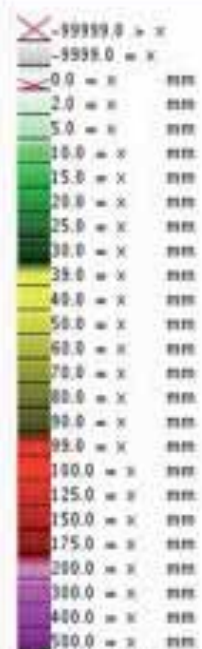
buildings

buildings







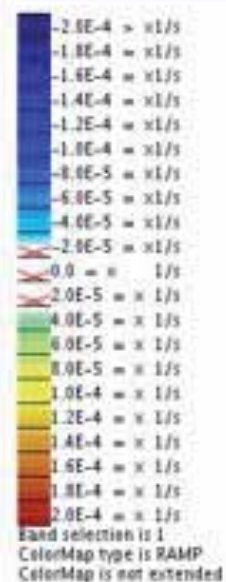
Layer Legend
WRF CARIBBEAN 2Data: Run: 30/10/2010 00:00, Prog.: + 16 h
Variable: cumulated rainfallBand selection is 1
ColorMap type is RAMP
ColorMap is not extended

Opacity

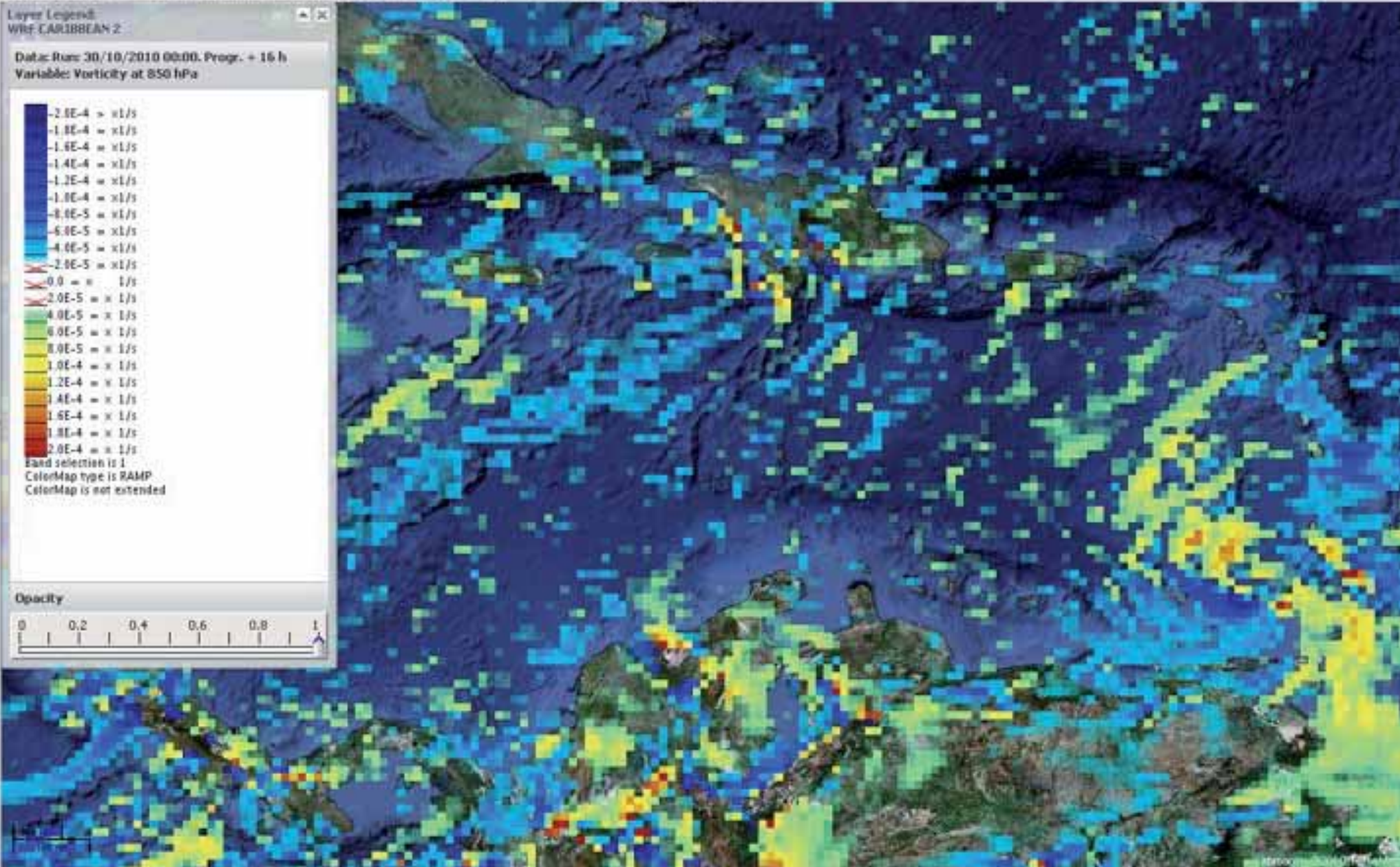


N2

N1

Layer Legend:
WRF-CARIBBEAN-2Data: Run 30/10/2010 00:00. Progr. + 16 h
Variable: Vorticity at 850 hPa

Opacity



Thank you!