

DEWETRA

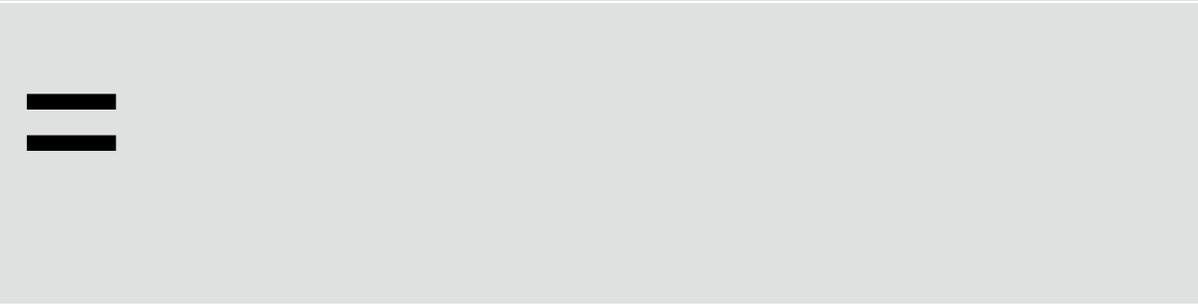
Interoperability: international case studies



Giorgio Boni

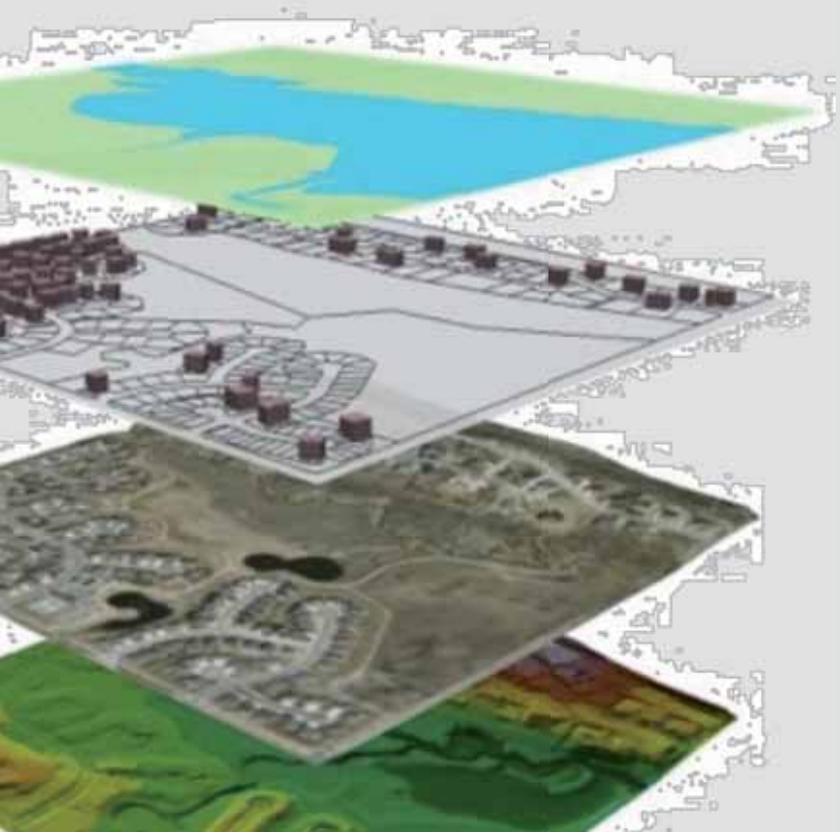
*CIMA Research Foundation
Civil Protection Department – Italy*

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

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

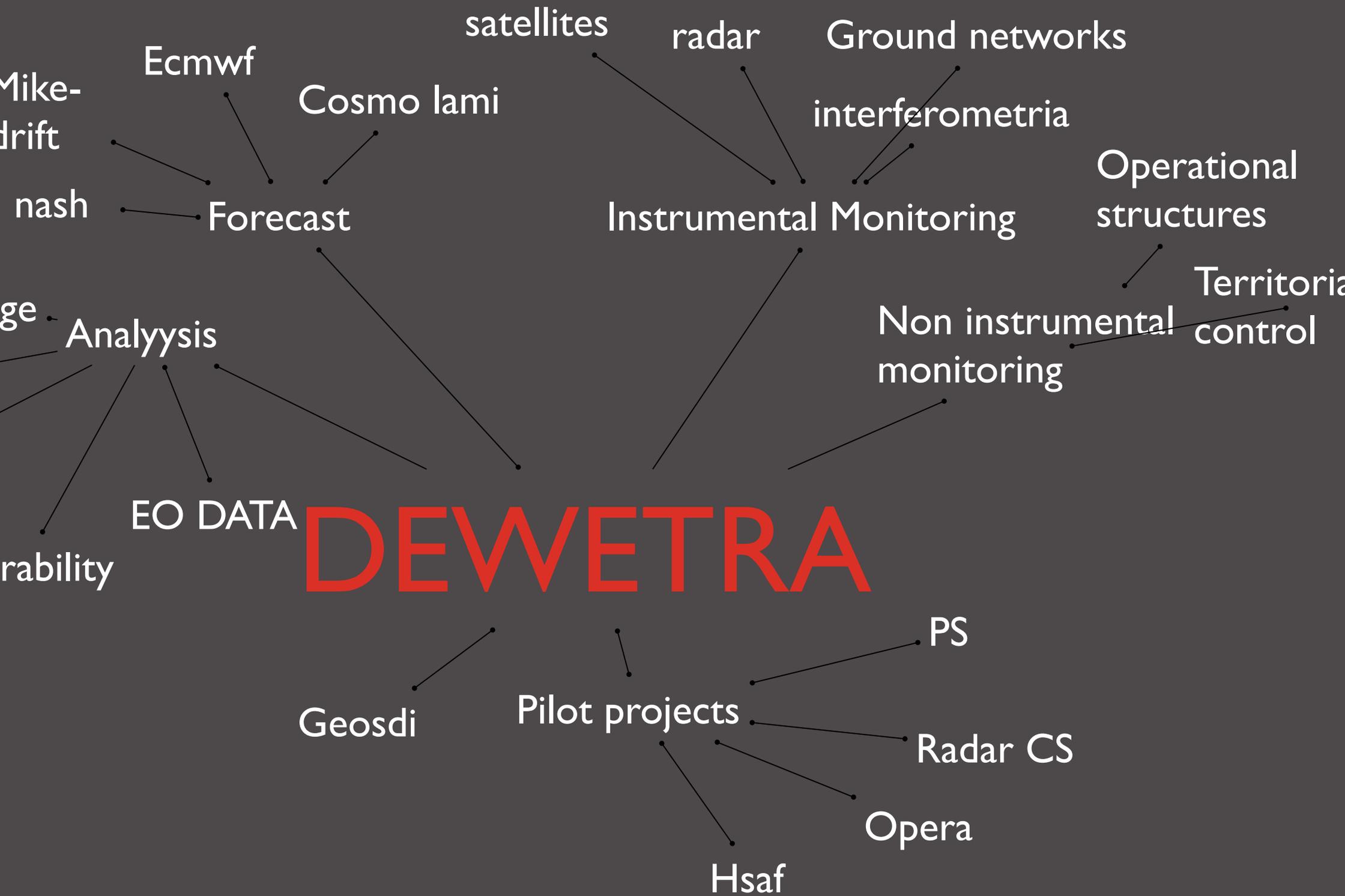


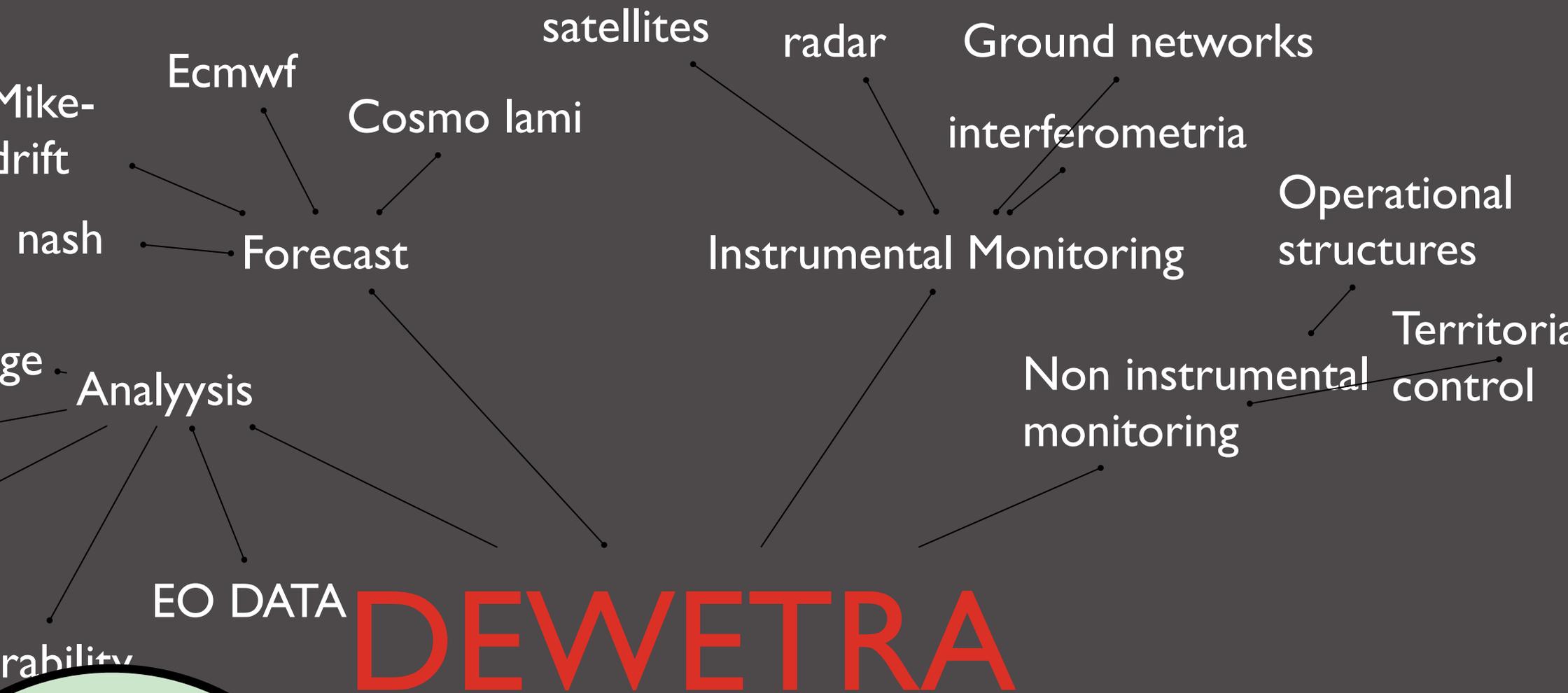
Real-time information

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

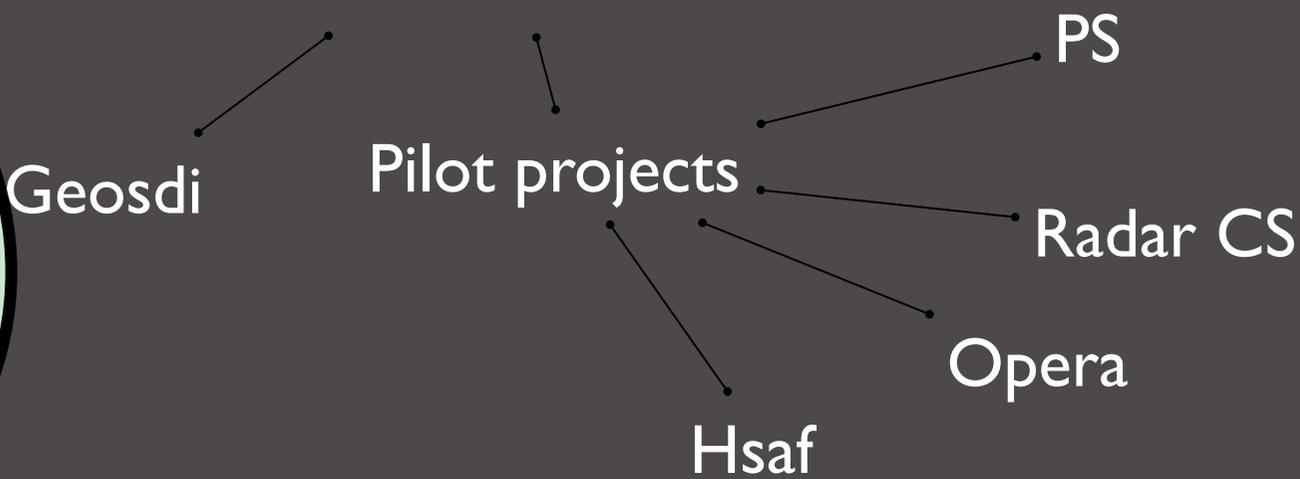
Quasi-static information

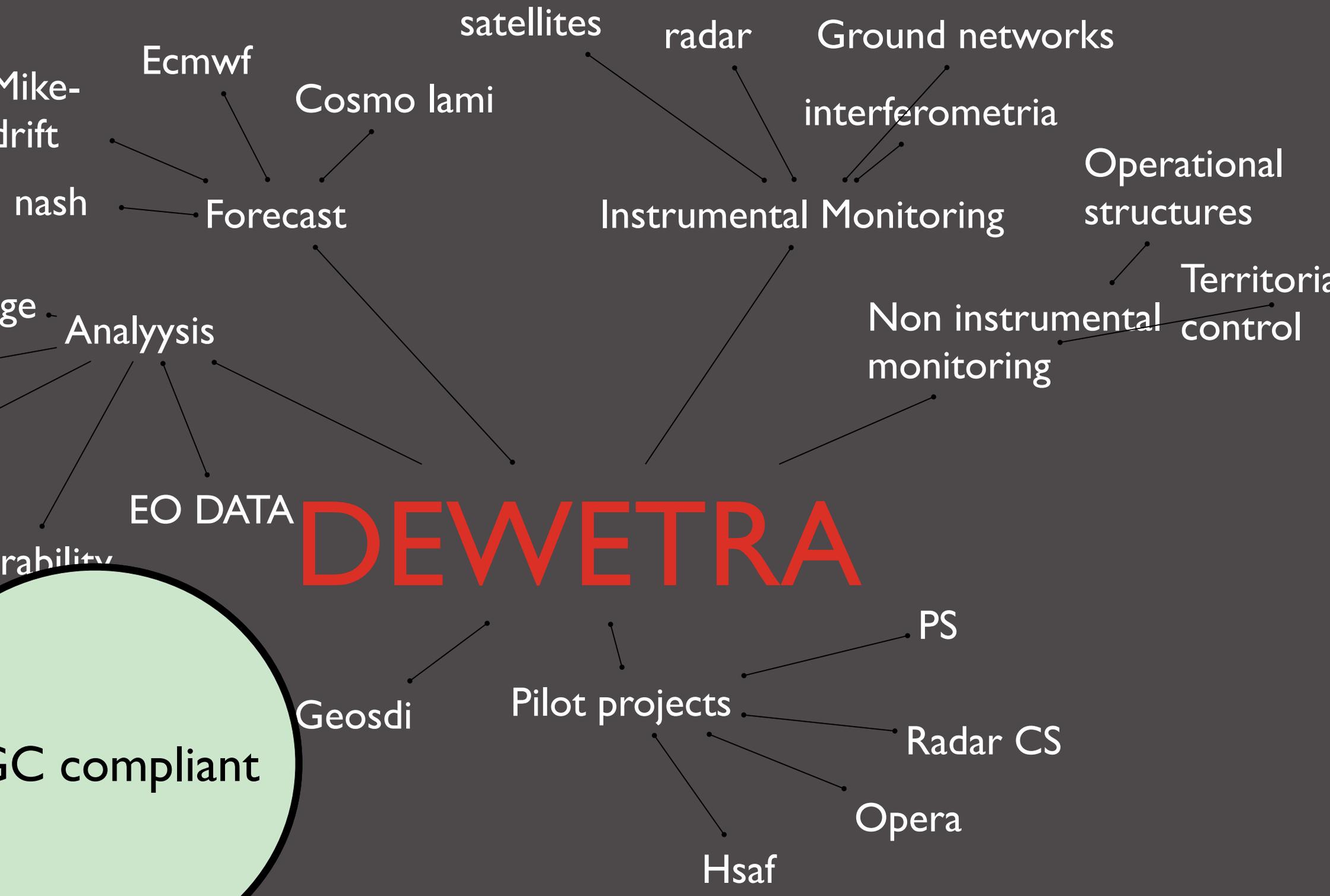
element at risks, hazard maps, ...

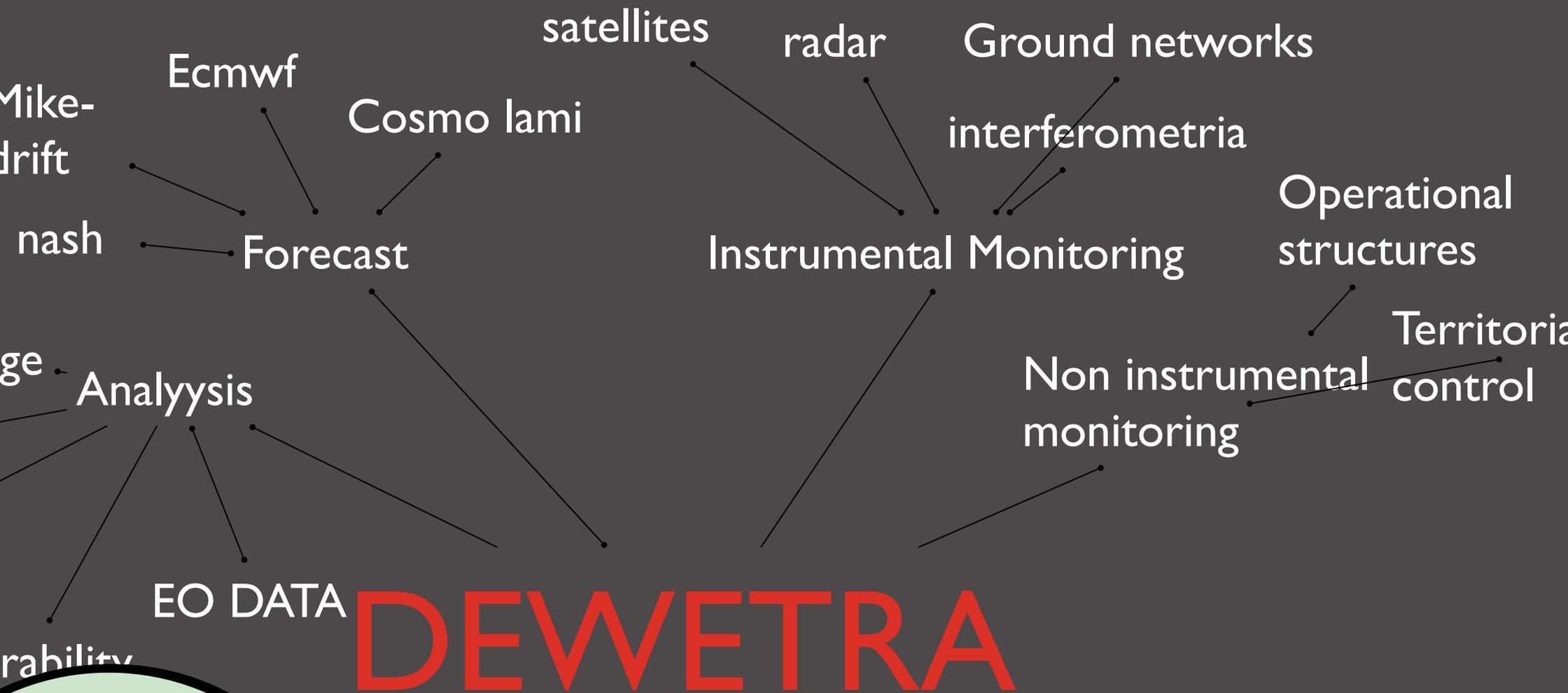




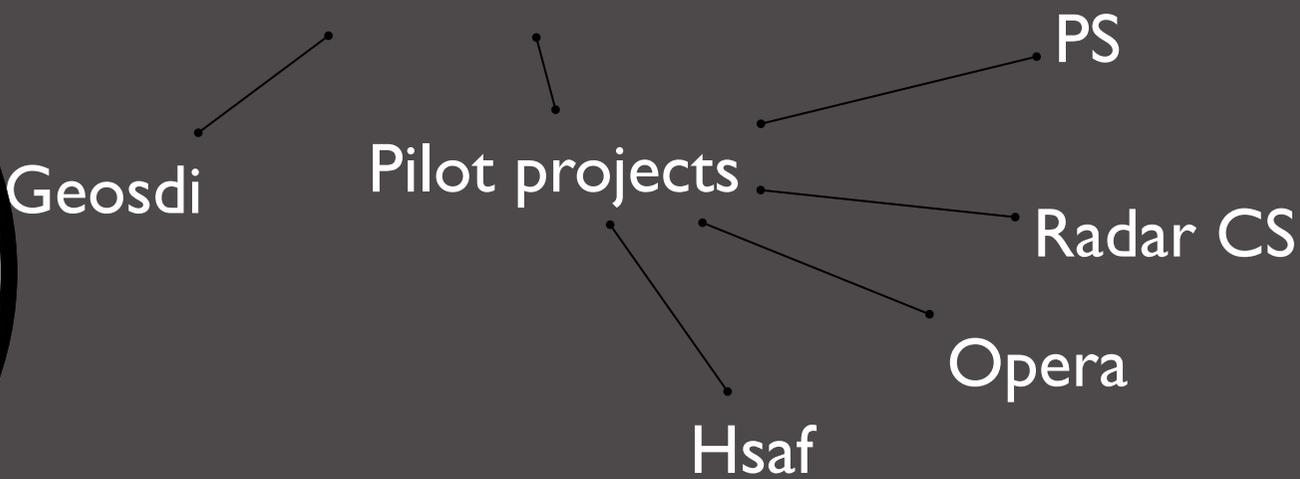
Compliant with the INSPIRE directive







Uses
 interoperability
 concepts promoted
 at national level



Credits:  

Username:

Password:

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



Username:

Password:

Login

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



Username:

Password:



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



Username:

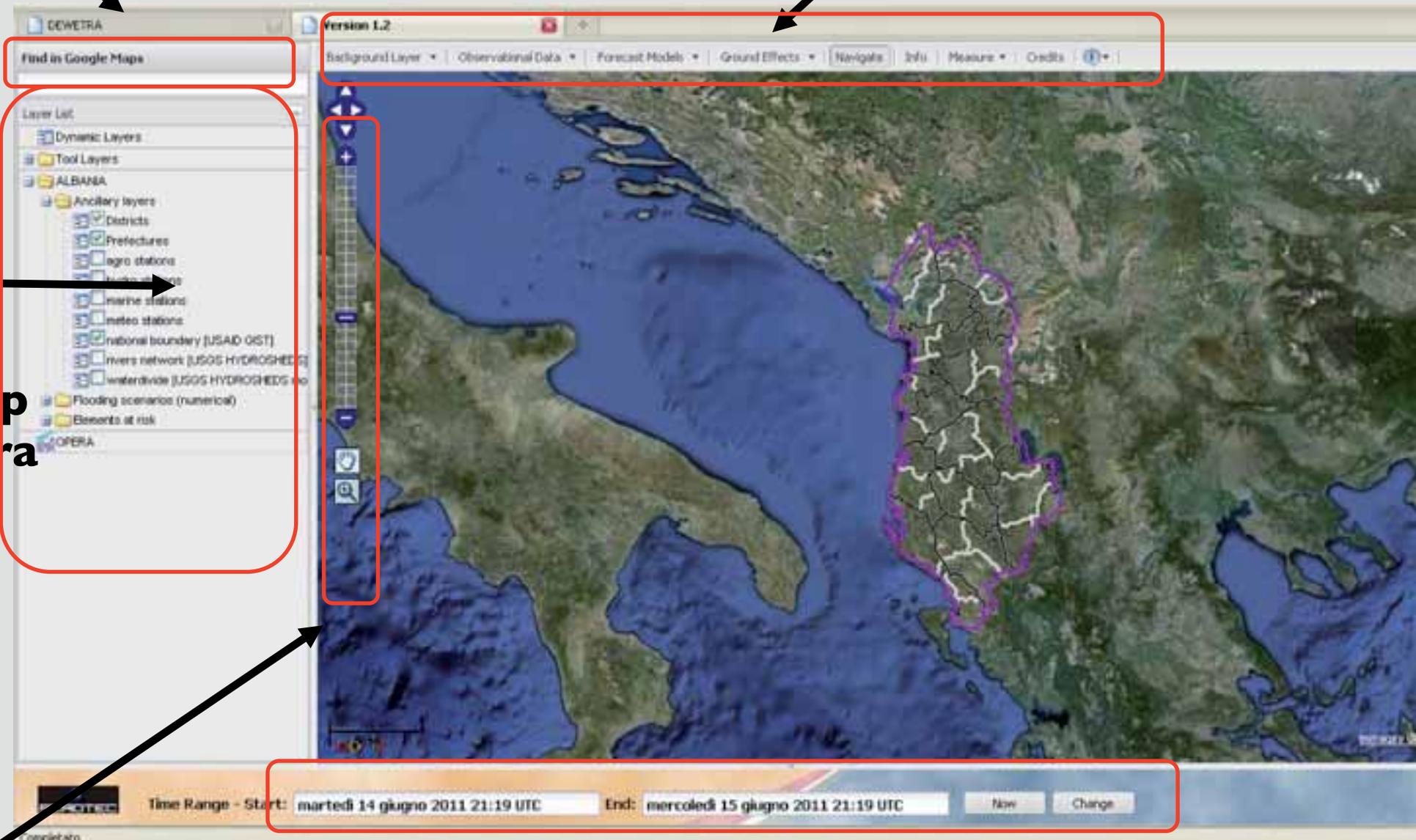
Password:

Login

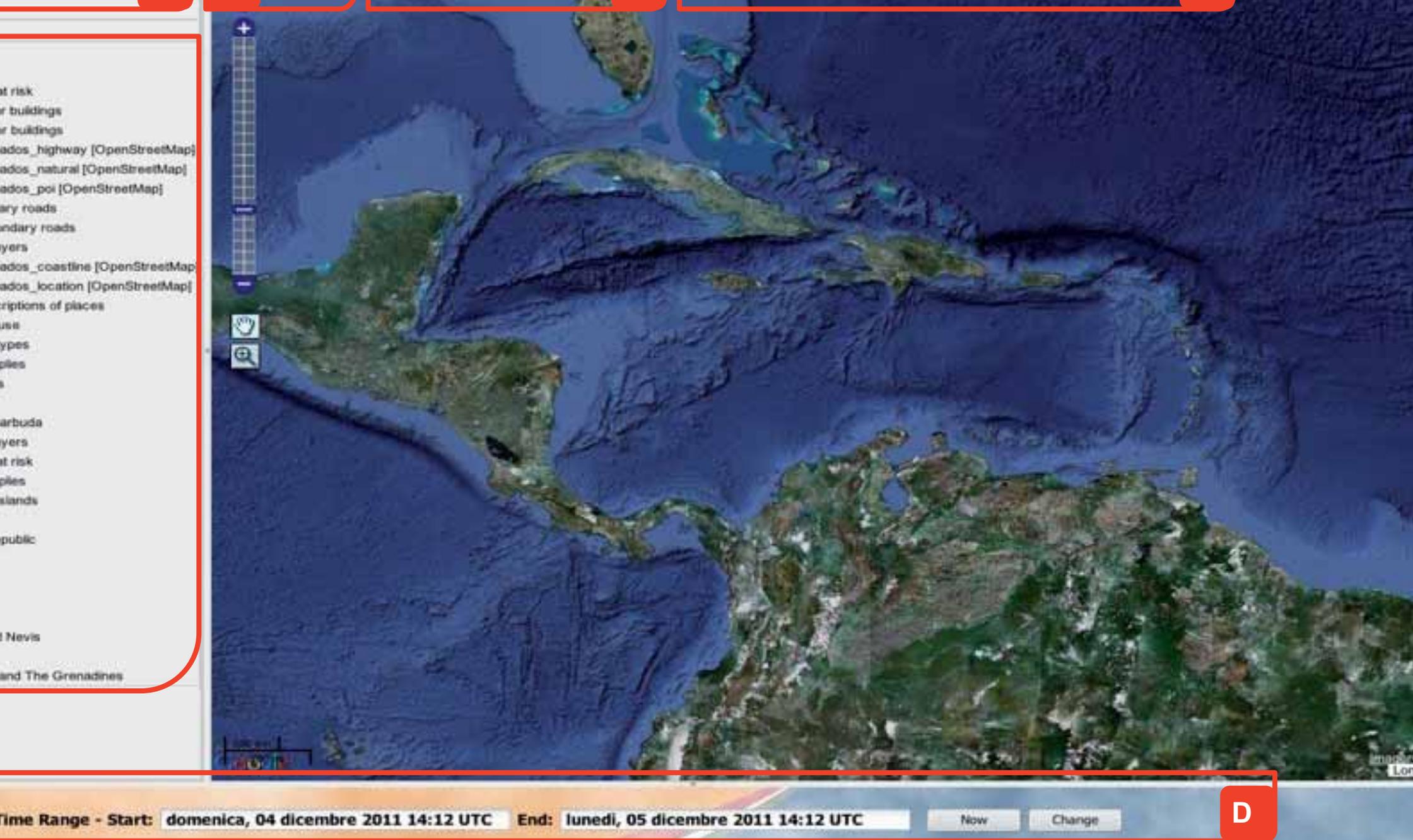
Google Maps®
e

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

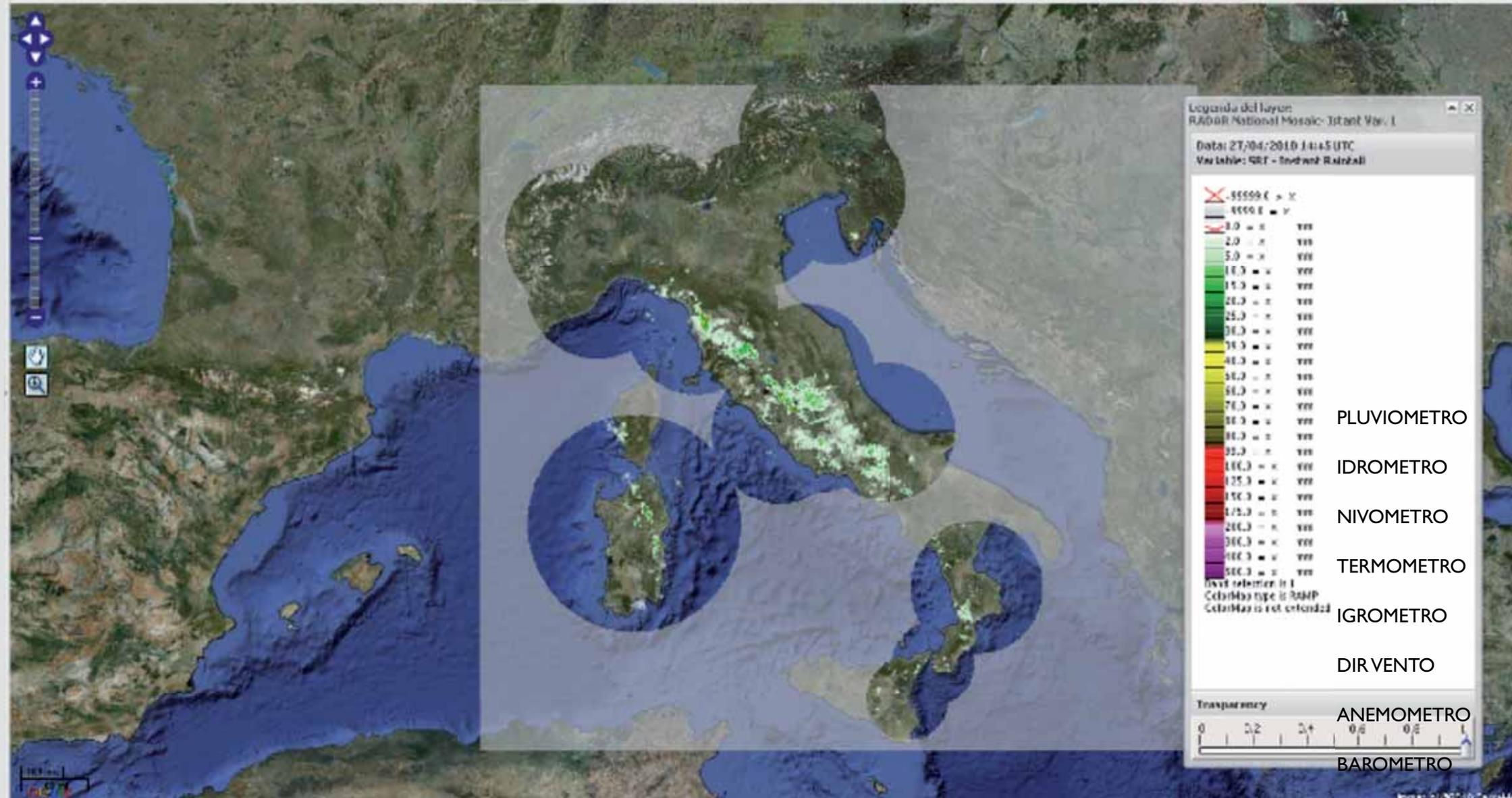
Navigation
The tree
nodes
respond to
dynamic
s in the top
of Dewetra
ow.



navigation tools - display of



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



Legenda del layer
 RADAR National Mosaic - Istant Ver. 1

Data: 27/04/2010 14:45 UTC
 Var table: GR1 - Instant Radar

0.0	0	mm
2.0	2	mm
5.0	5	mm
10.0	10	mm
15.0	15	mm
20.0	20	mm
25.0	25	mm
30.0	30	mm
35.0	35	mm
40.0	40	mm
45.0	45	mm
50.0	50	mm
55.0	55	mm

PLUVIOMETRO
 IDROMETRO
 NIVOMETRO
 TERMOMETRO
 IGROMETRO
 DIRVENTO
 ANEMOMETRO
 BAROMETRO

Transparency
 0 0.2 0.4 0.6 0.8 1



Layer Weather Stations Properties

Sensors Filters Exceeded Hydrometers Thresholds

Sensor Class	Filter Value [>=]	Unit
<input checked="" type="checkbox"/> Rain gauge:	<input type="text"/>	[mm]
<input checked="" type="checkbox"/> Hydrometer:	<input type="text"/>	[m]
<input checked="" type="checkbox"/> Hydrometer discharge:	<input type="text"/>	[m ³ /s]
<input checked="" type="checkbox"/> Snow gauge:	<input type="text"/>	[cm]
<input checked="" type="checkbox"/> Thermometer:	<input type="text"/>	[°C]
<input checked="" type="checkbox"/> Hygrometer:	<input type="text"/>	[%]
<input checked="" type="checkbox"/> Anemometer:	<input type="text"/>	[m/h]
<input checked="" type="checkbox"/> Barometer:	<input type="text"/>	[hPa]

NOTE: Rain gauge filter applies on the last hour rain fall depth. All the other filters apply on the last value available at native time resolution.

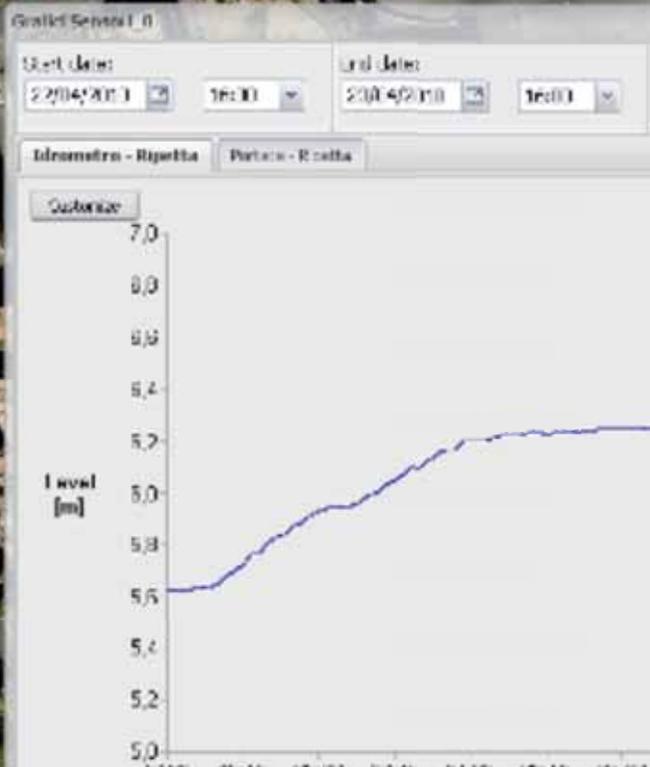
Check All Uncheck All

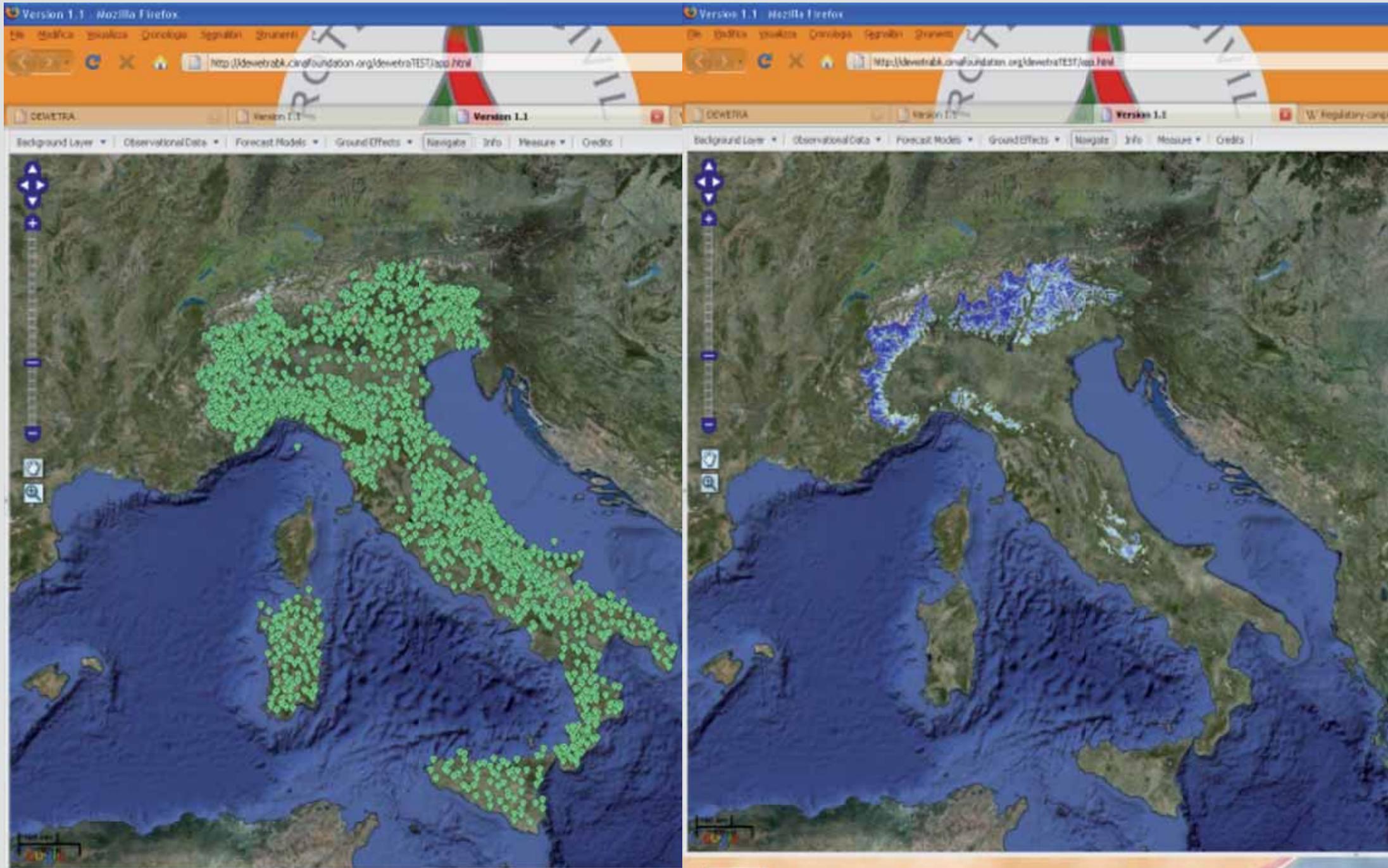
Reload Cancel

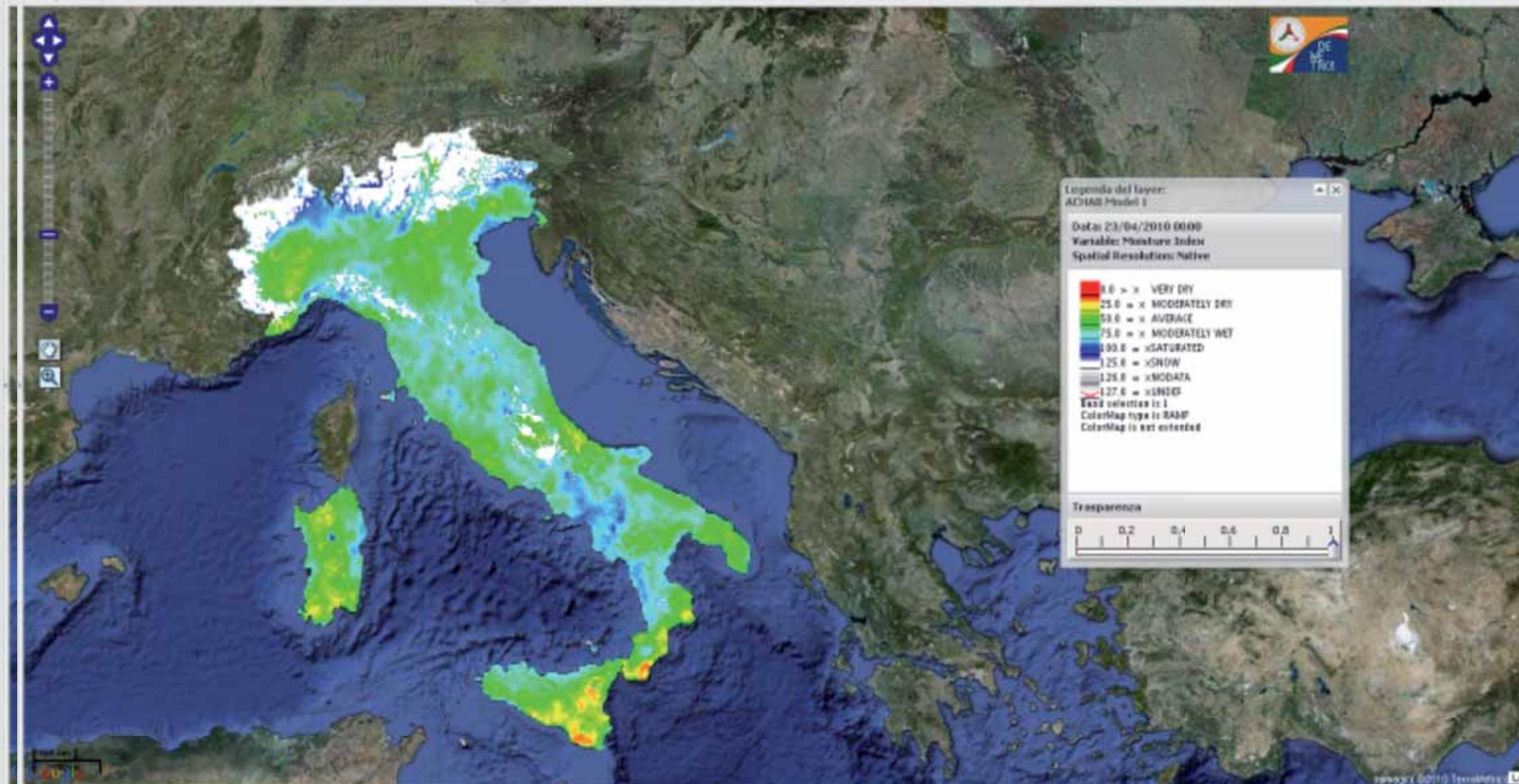
PLUVIOMETRO
 IDROMETRO
 NIVOMETRO
 TERMOMETRO
 IGROMETRO
 DIR VENTO
 ANEMOMETRO
 BAROMETRO

Seleção de Pluviômetro

Sequência	Localização	LN	Data Inicial	Data Final
1	Ilha Verde	0,0	2004/01/01 10:47	-
2	Portela	172,8	2004/01/01 10:47	-

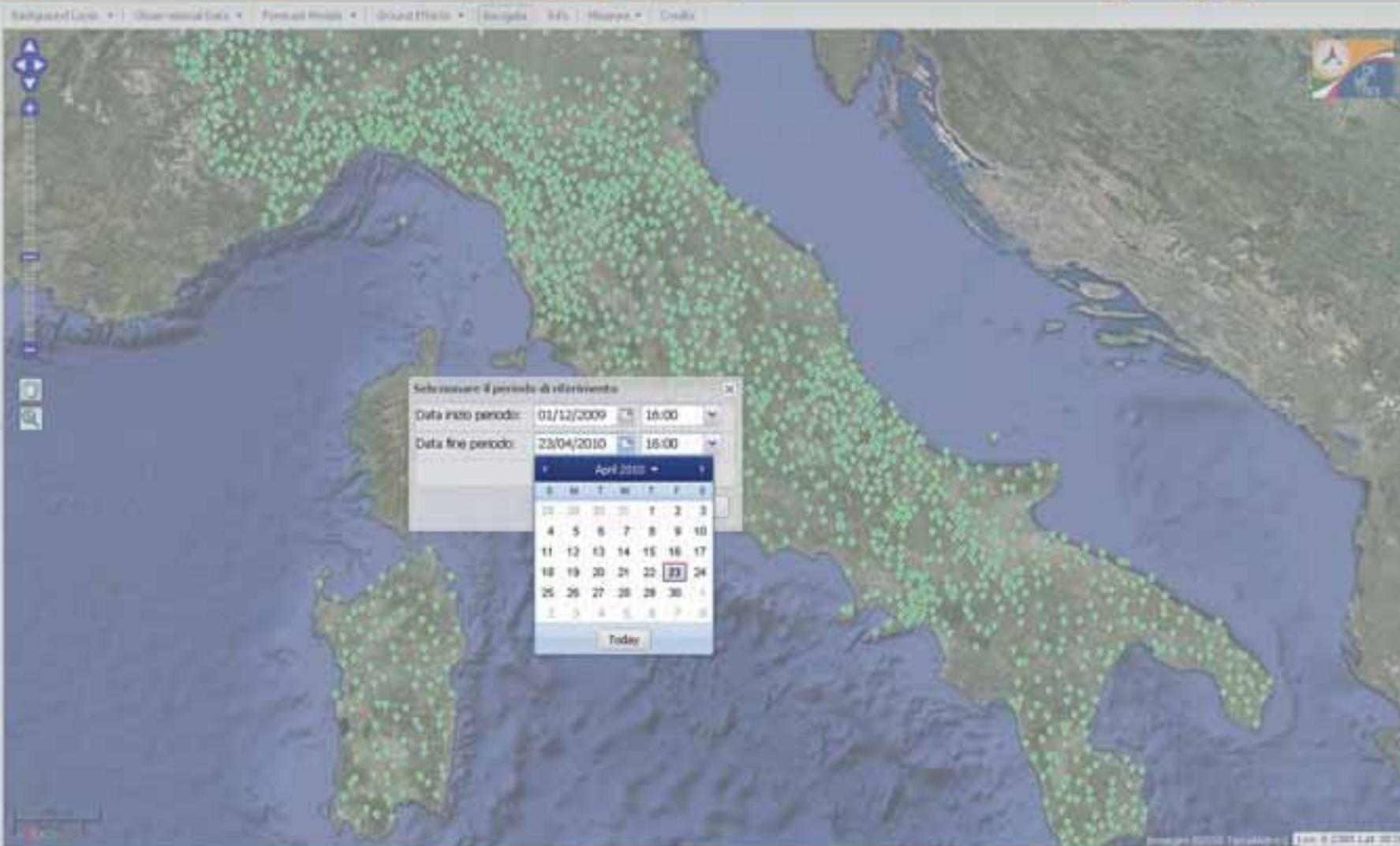




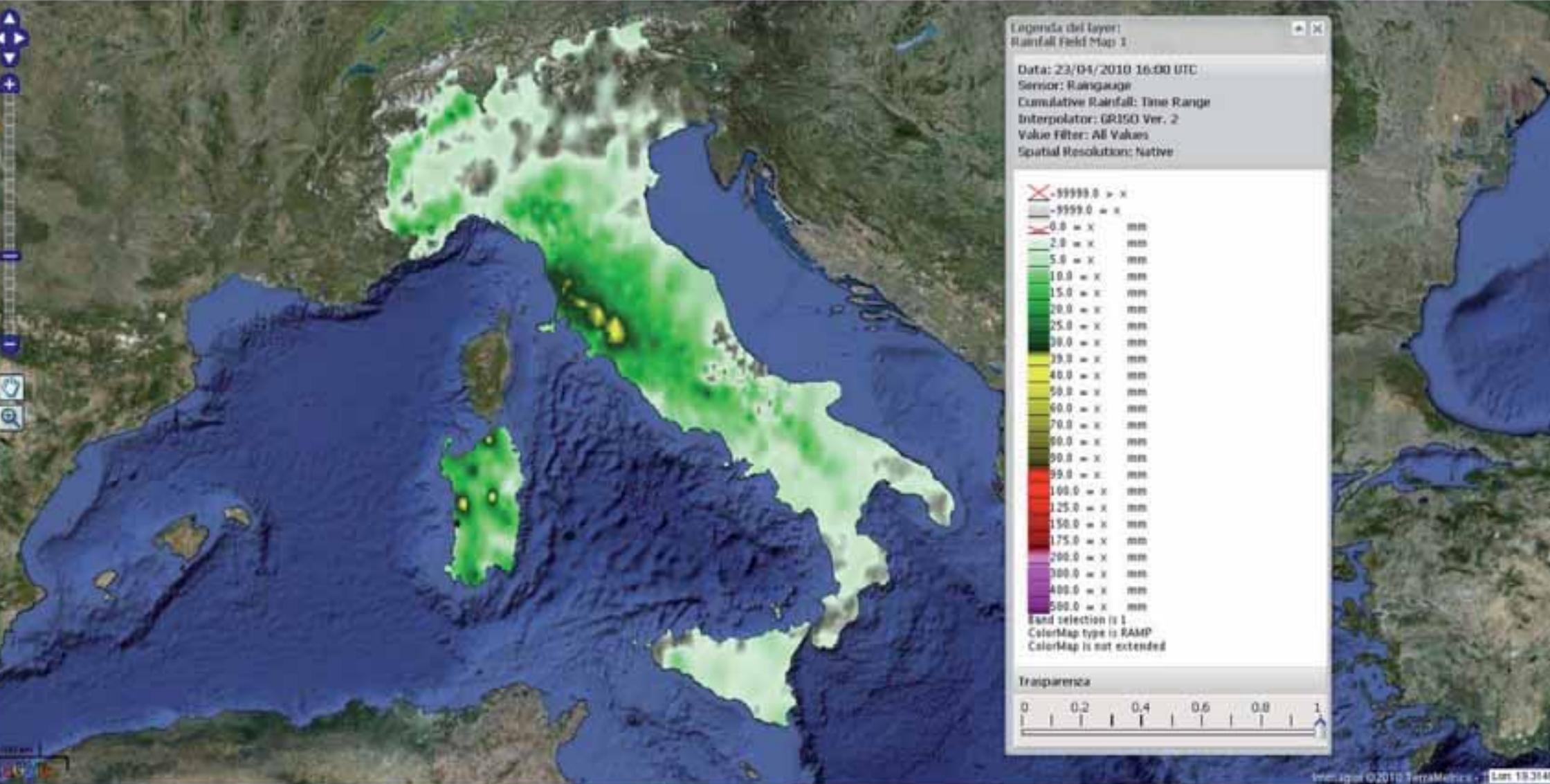


Find on Google Maps

- Ripetta
- Layer List
- Dynamic Layers
 - RAOAR National Model - Periodic TC
 - Legend
 - RAOAR National Model - DR Derivative 1
 - Legend
 - RAOAR National Model - Inter Var 2
 - Legend
 - Temperature Field Map 1
 - Legend
 - RAOAR Model 1
 - Legend
 - OSM - Open Mapbox Mapping and More
 - Legend
 - RAOAR National Model - Interpage 10 Con
 - Legend
 - Thermal Inertia Map 1
 - Legend
 - COSMO LAM 0.1
 - Legend
 - ECMWF 1
 - Legend
- Total Layers
 - Measure
 - Search Result
 - Weather Station
- Arbitrary layers
- REST Layers
- Elements at risk
- Damage graph
- Free map
- Related maps
- OPERA



Aggregation of data by different spatial scales



Legenda del layer:
Rainfall Field Map 1

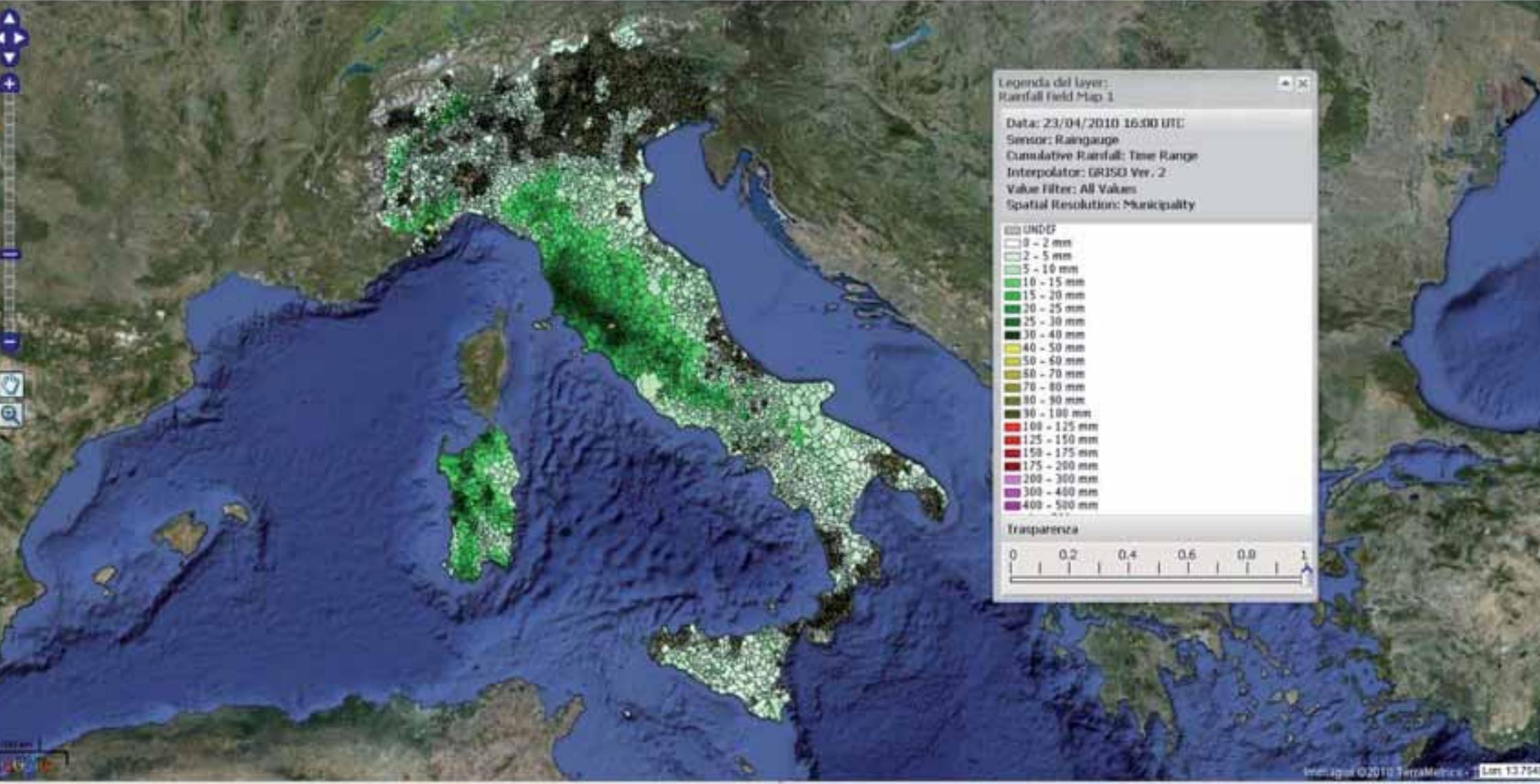
Data: 23/04/2010 16:00 UTC
Service: Rainsgauge
Cumulative Rainfall: Time Range
Interpolator: GR150 Ver. 2
Value Filter: All Values
Spatial Resolution: Native

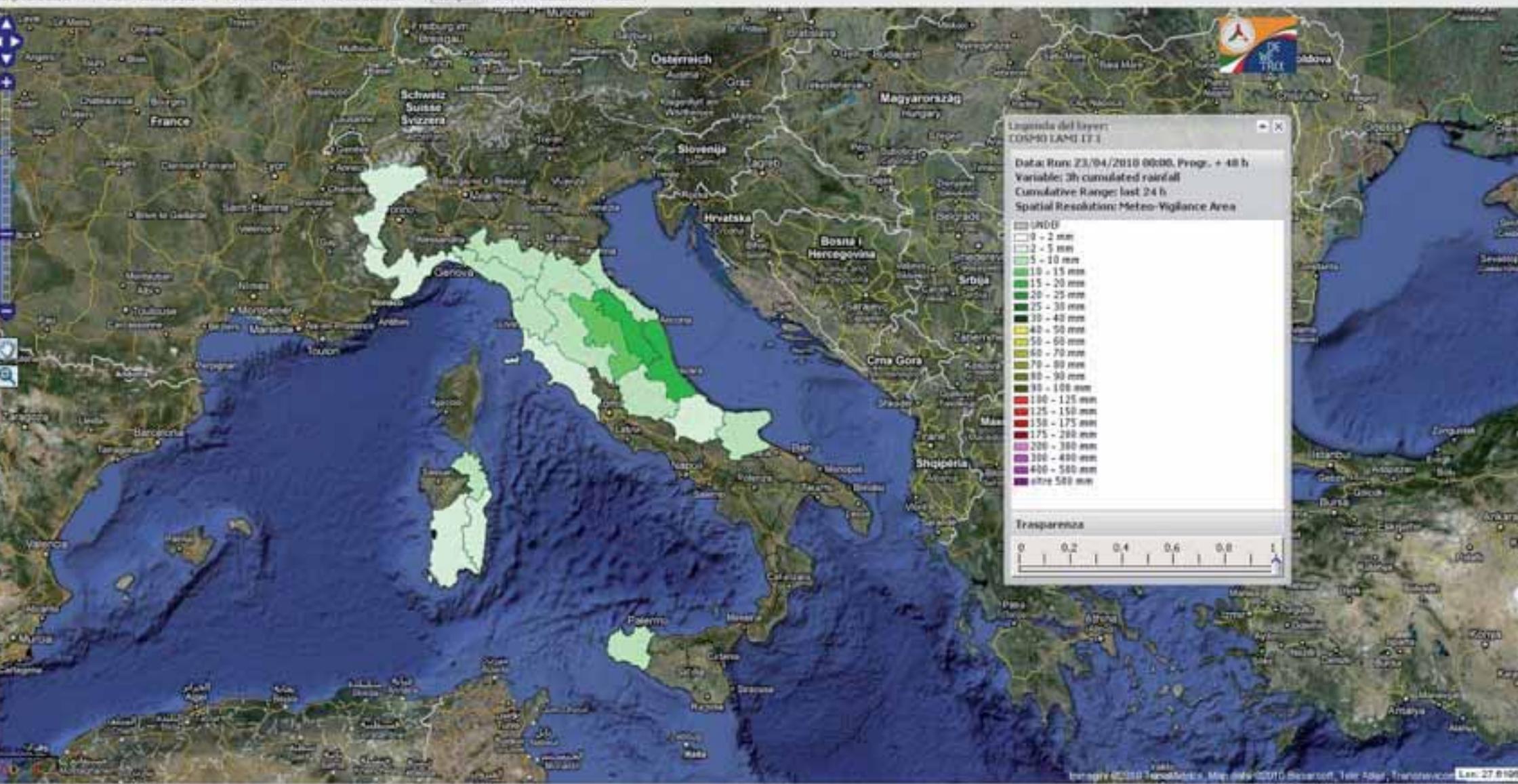
X	-99999.0	> x
X	-9999.0	= x
X	0.0	= x mm
X	2.0	= x mm
X	5.0	= x mm
X	10.0	= x mm
X	15.0	= x mm
X	20.0	= x mm
X	25.0	= x mm
X	30.0	= x mm
X	35.0	= x mm
X	40.0	= x mm
X	50.0	= x mm
X	60.0	= x mm
X	70.0	= x mm
X	80.0	= x mm
X	90.0	= x mm
X	95.0	= x mm
X	100.0	= x mm
X	125.0	= x mm
X	150.0	= x mm
X	175.0	= x mm
X	200.0	= x mm
X	300.0	= x mm
X	400.0	= x mm
X	500.0	= x mm

Band selection is 1
ColorMap type is RAMP
ColorMap is not extended

Transparencia

0 0.2 0.4 0.6 0.8 1







Comprehensive System for Nationwide and Local Wildland Fire Risk Assessment

Time Range - Start: domenica, 06 maggio 2012 18:00 UTC End: lunedì, 07 maggio 2012 18:00 UTC Now Change

is 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 user interface able to process a wide set of different data.

SICO algorithms are based on dynamic models able to simulate in real time and time the effects that local meteorology have on moisture content (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 forecast provided by Limited Area Model (LAM)



International case studies:



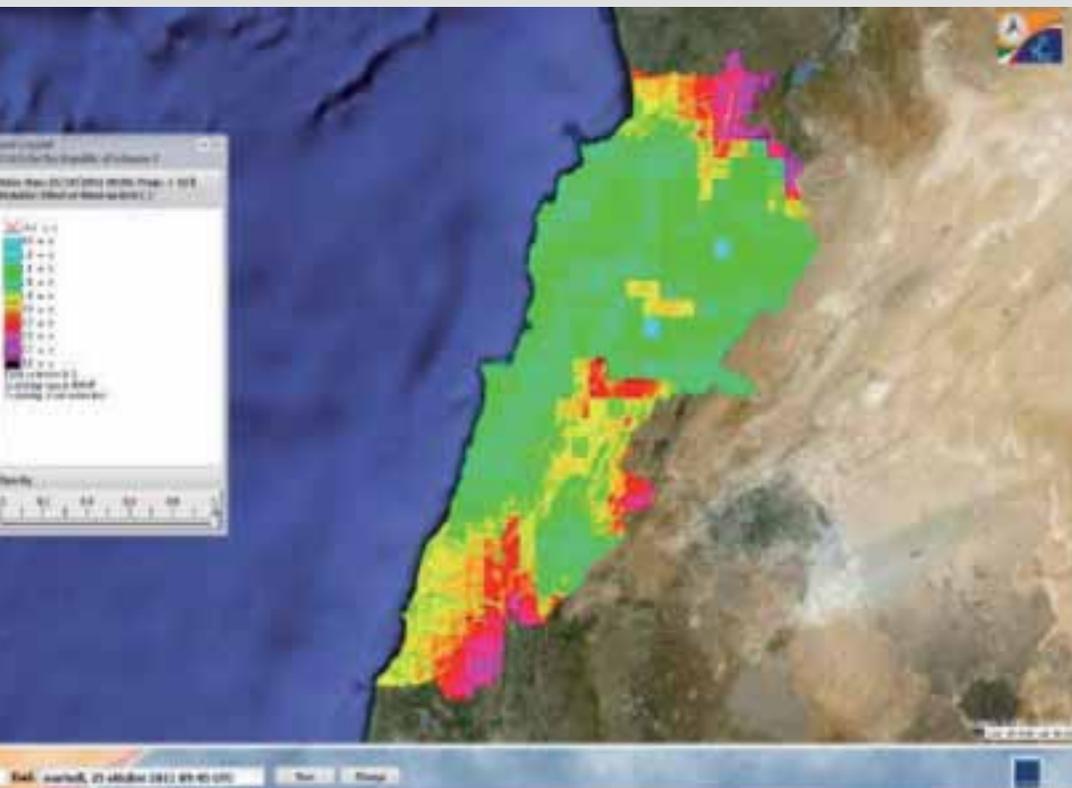
Lebanon

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

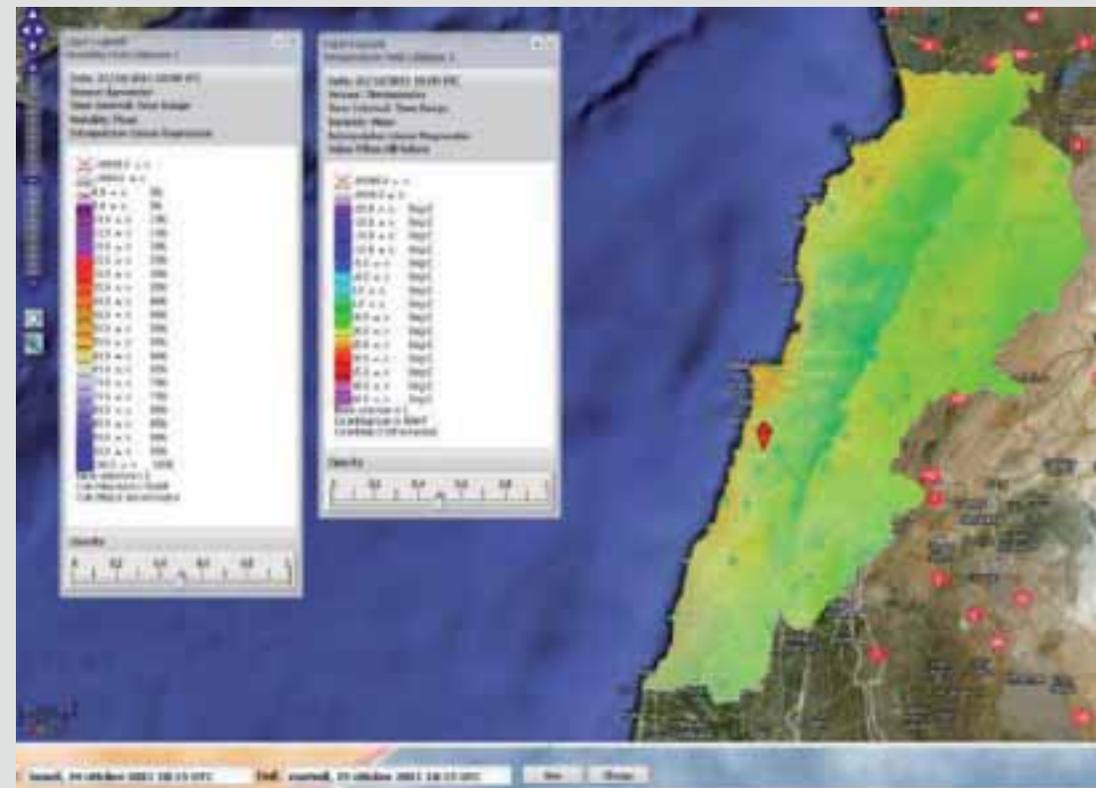
Dynamic Risk index maps

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



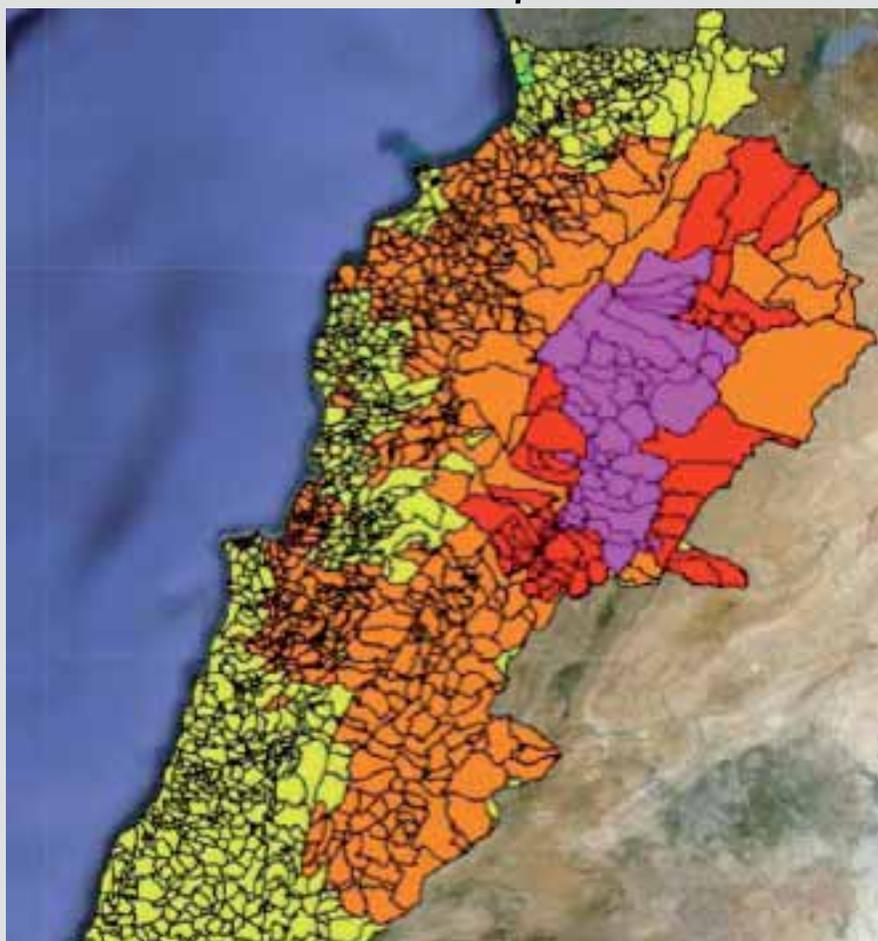
Humidity & Temperature Map



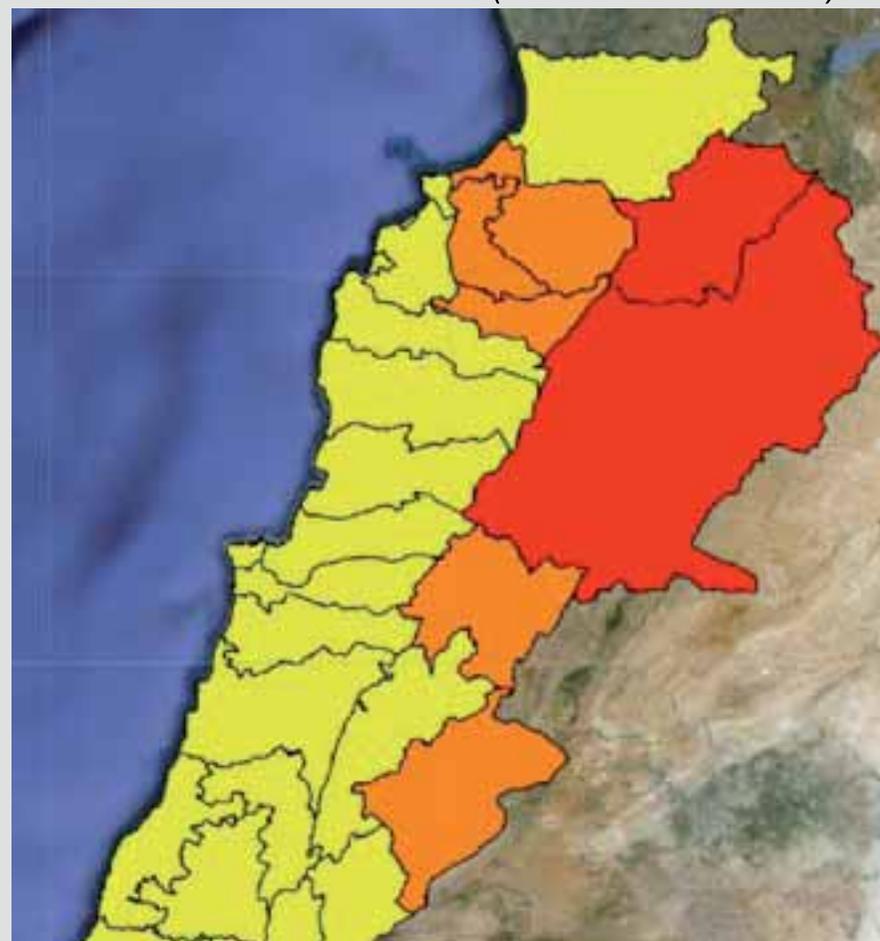
Forest Fire Risk index

...ed 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 which the forecast information is available.

Municipal Level



Provincial Level (CAZA, Lebanon)



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

Lebanon Fire Risk Bulletin

CIVIL DEFEENCE

Refer to cadast condition.

General description of potential fire risk situation

Label	Level of risk	Meaning and actions
Very low	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	Low fire risk. Controlled burning operations can be executed with a reasonable degree of safety.
Medium-low	Medium-low	Medium-low fire risk. Controlled burning operations can be executed in safety conditions. All the fires need to be extinguished.
Medium	Medium	Medium fire risk. Controlled burning operations would be avoided. All the fires need to be very well extinguished.
Medium-high	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	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	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, law patrolling and fire-use restrictions;**

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



9 May



Forecast for 11
of Lebanon

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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



Effect of wind and slope on fire behaviour

Potential ignition

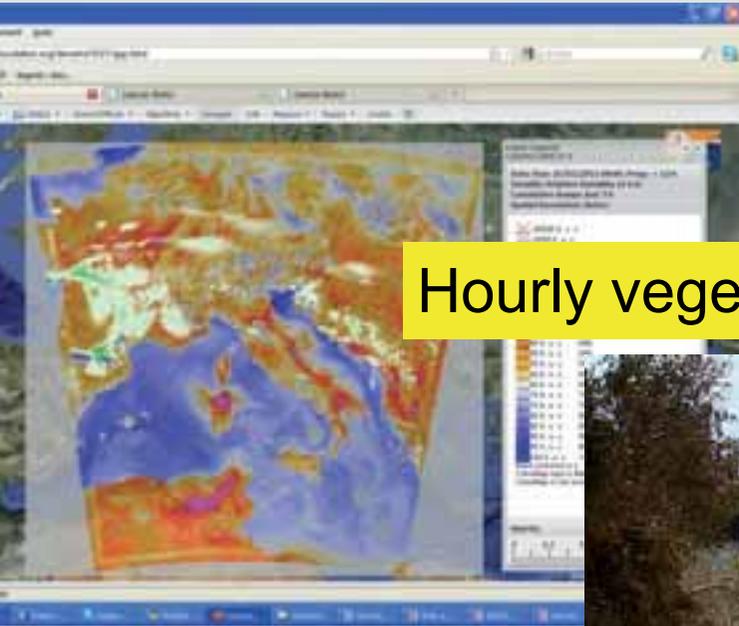


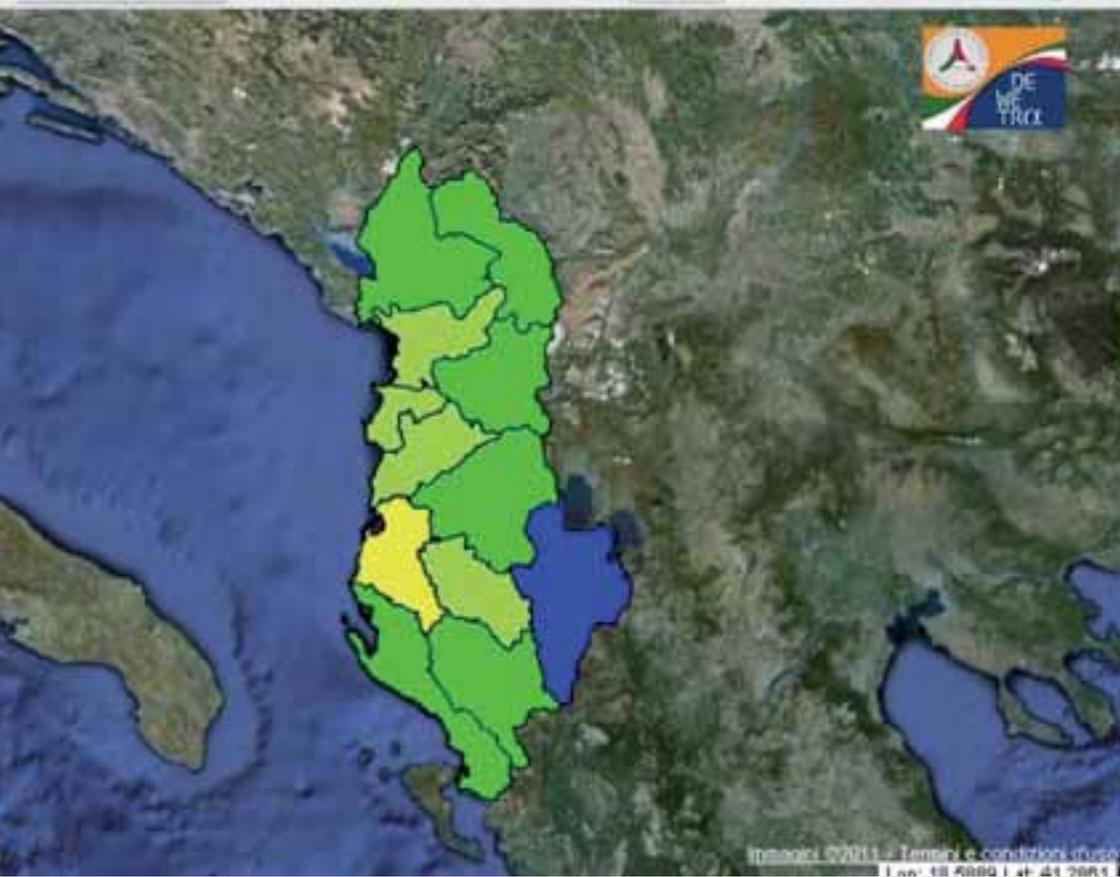
Potential fire behaviour prediction



Fireline intensity

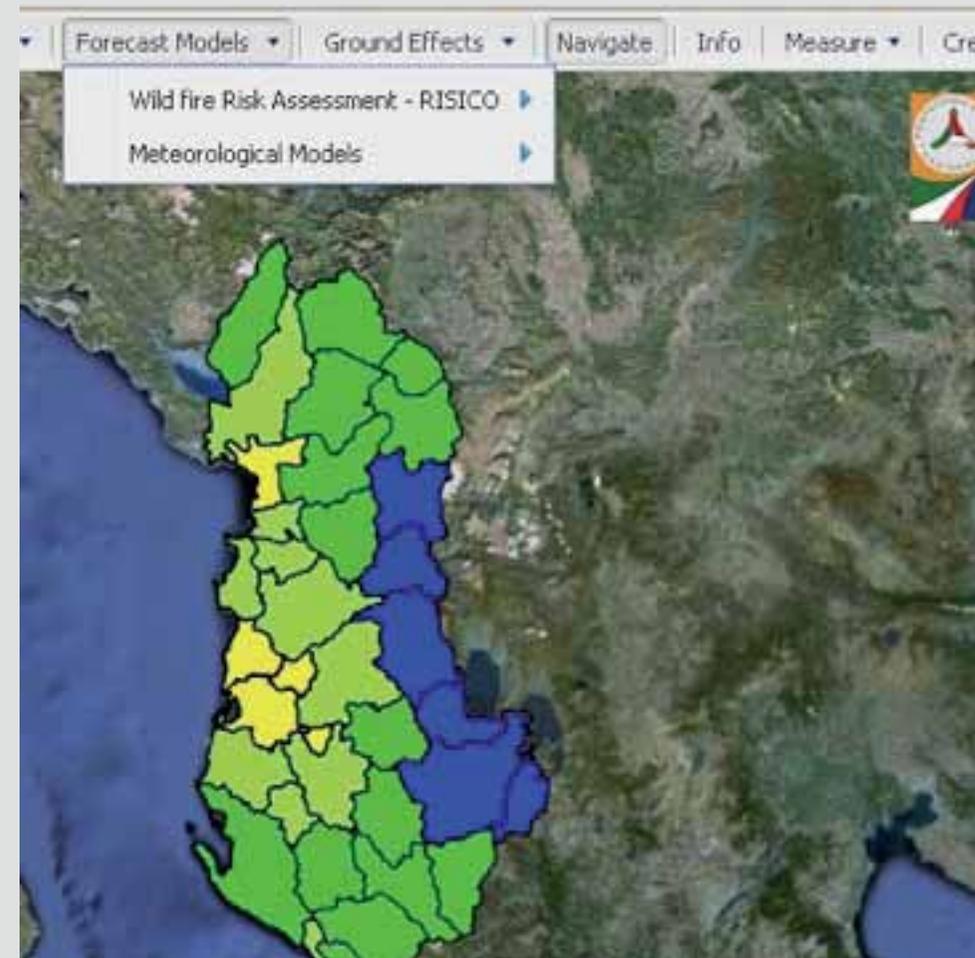
Rate of spread





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 Shkollës,
Drejtoria e Përgjithshme
e Emergjencave Civile



**BULETINI I PARASHIKIMIT PROVË
TË ZJARREVE NË PYJE**



PROTEZIONE CIVILE

Ministria e Shkollës,
Drejtoria e Përgjithshme
e Emergjencave Civile

**Qendra Eksperimentale e Parashikimit dhe Monitorimit të Rreziqeve Natyrore -
INEUM**

**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

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	GJIROKASTER	VLORE
	MESATAR	-	-	-	-	-
I LARTË	-	-	-	-	-	-
EKSTREM	-	-	-	-	-	-

Përmbledhje e gjendjes

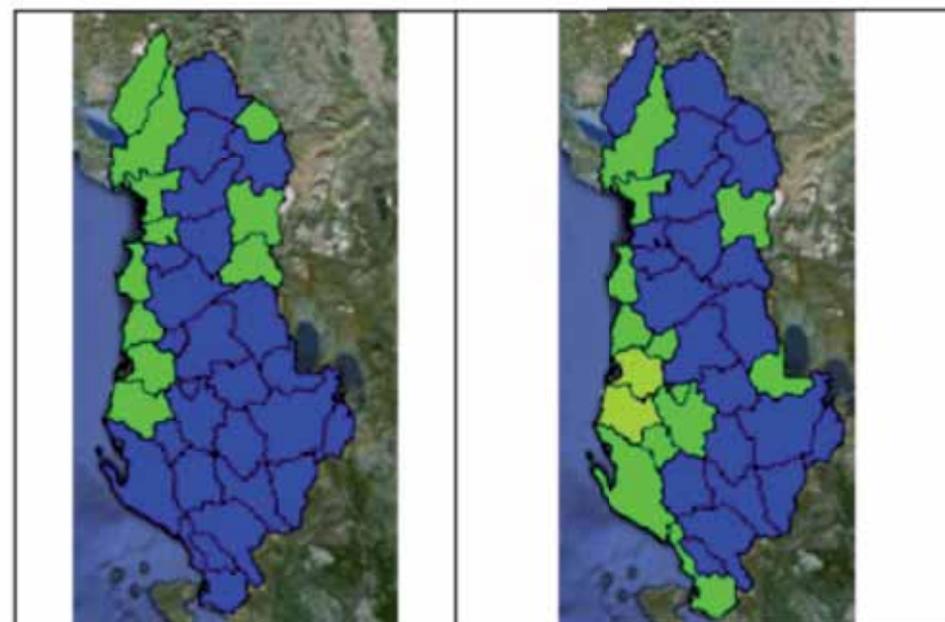
Në ASNJË prefekturë nuk parashikohet që të ketë probleme, niveli i rrezikut parashikohet të jetë nën atë mesatar.

LEGJENDA 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 Zaïmi	Metodi MARKU



Data 31.05.2011

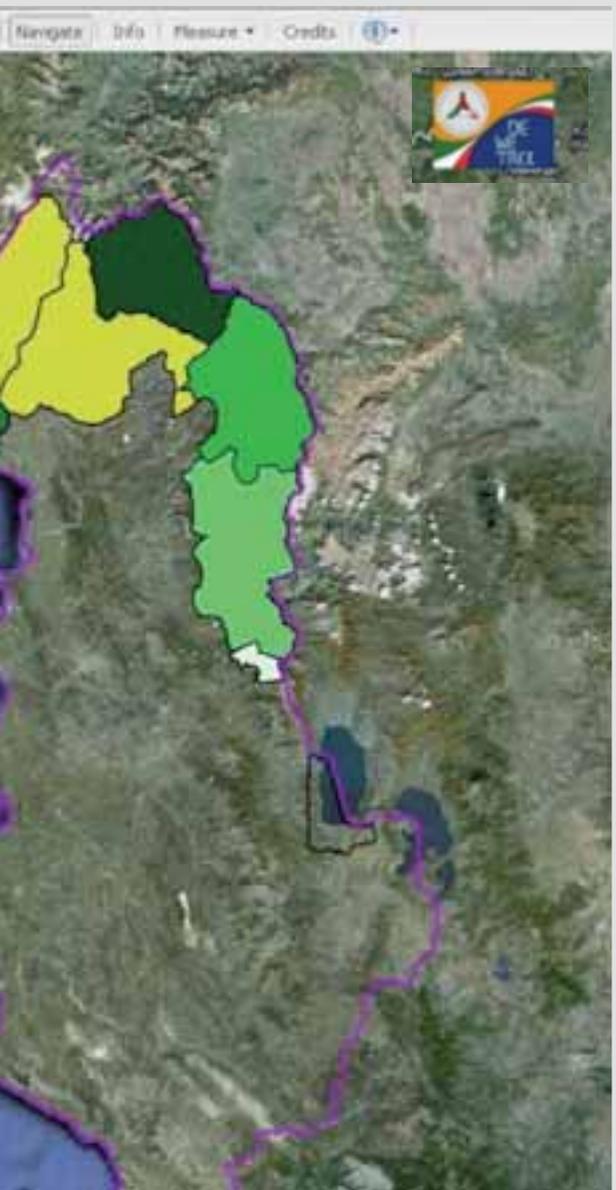
Data 01.06.2011

■ ASNJË
■ I ULËY
■ MESATAR I ULËY
■ MESATAR I MËSHM
■ MESATAR
■ I LARTË
■ EKSTREM

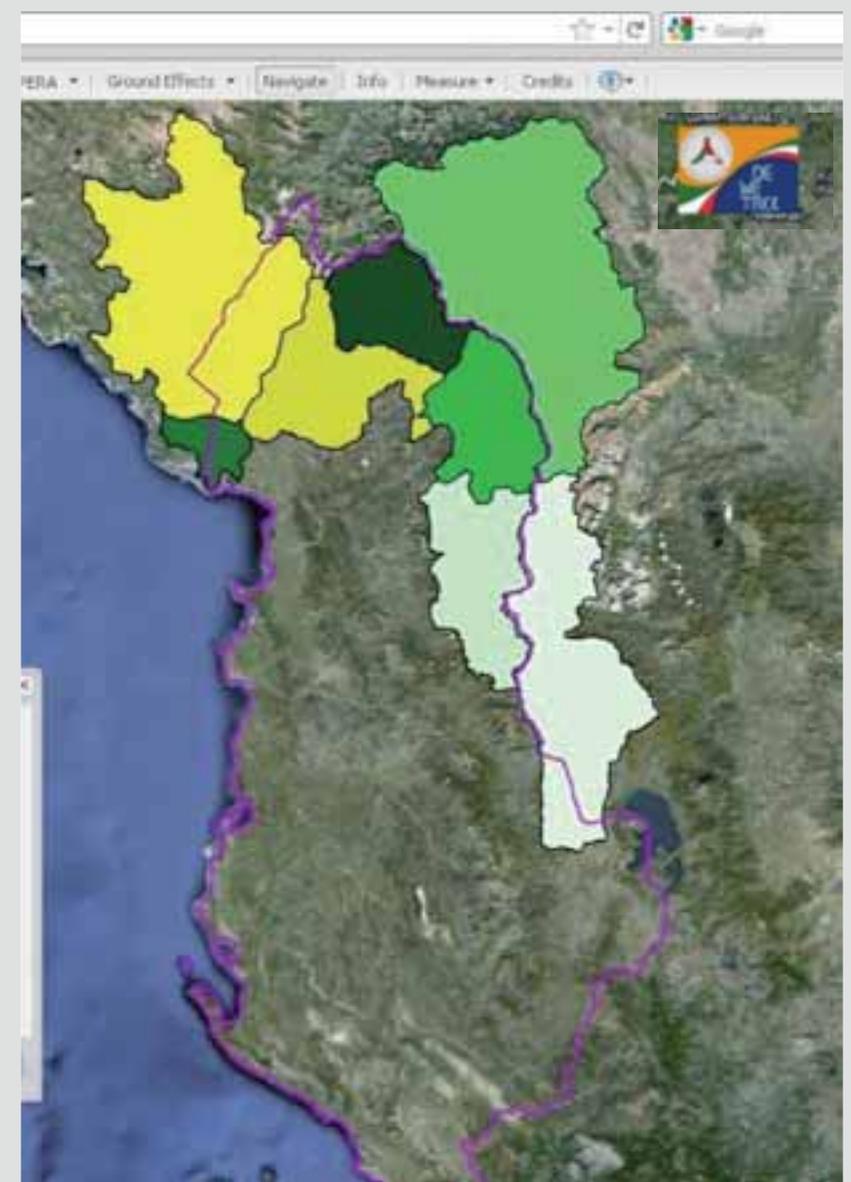
Kodi i Emergjencës	Operatori i Qendrës	Supervizori i Qendrës
0	Klodian Zaïmi	Metodi MARKU

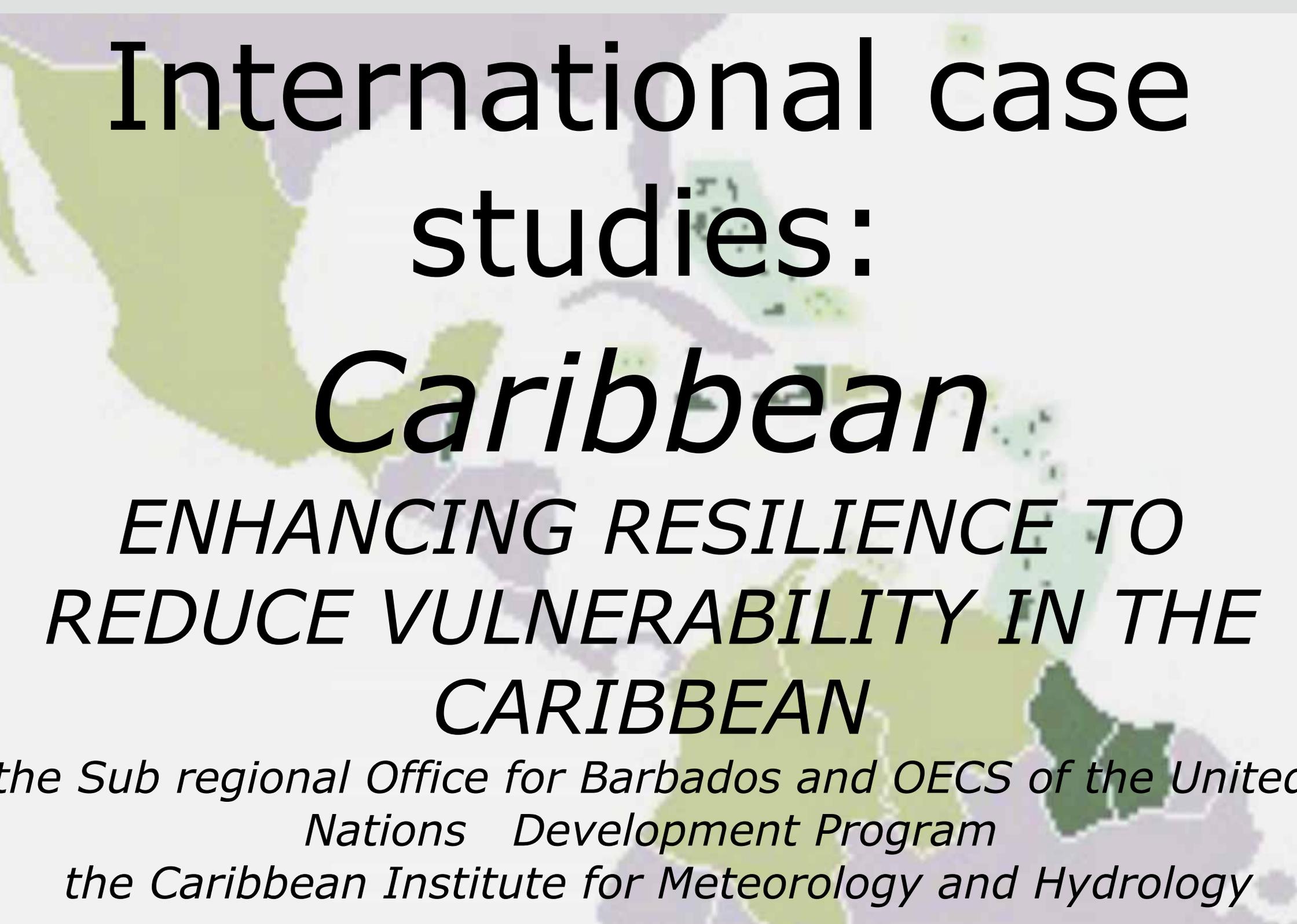
cumulated rainfall for the 30 of November 20 DRIN-BUNA basin

ings area



Meteo-vigilance area





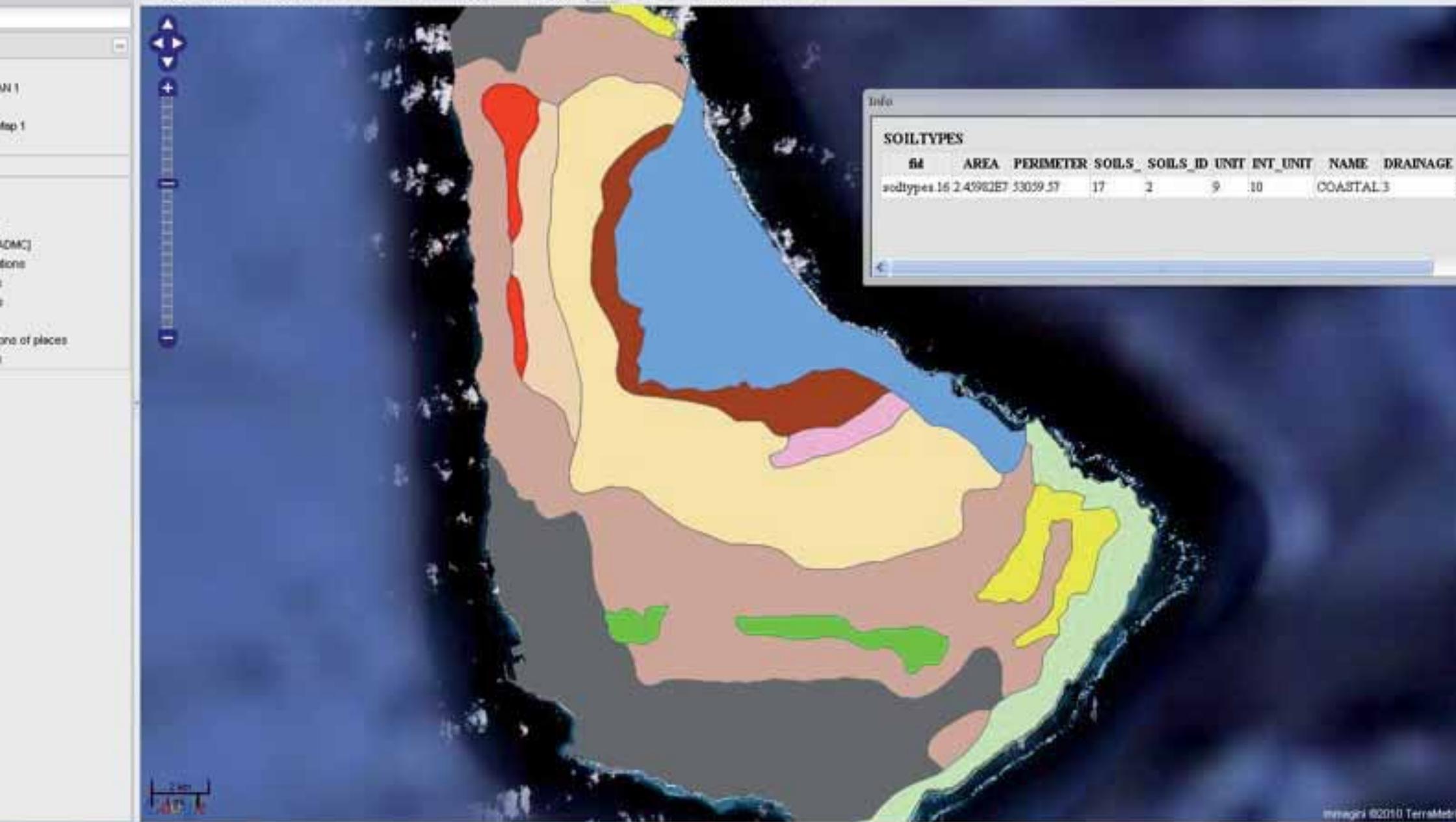
International case studies:

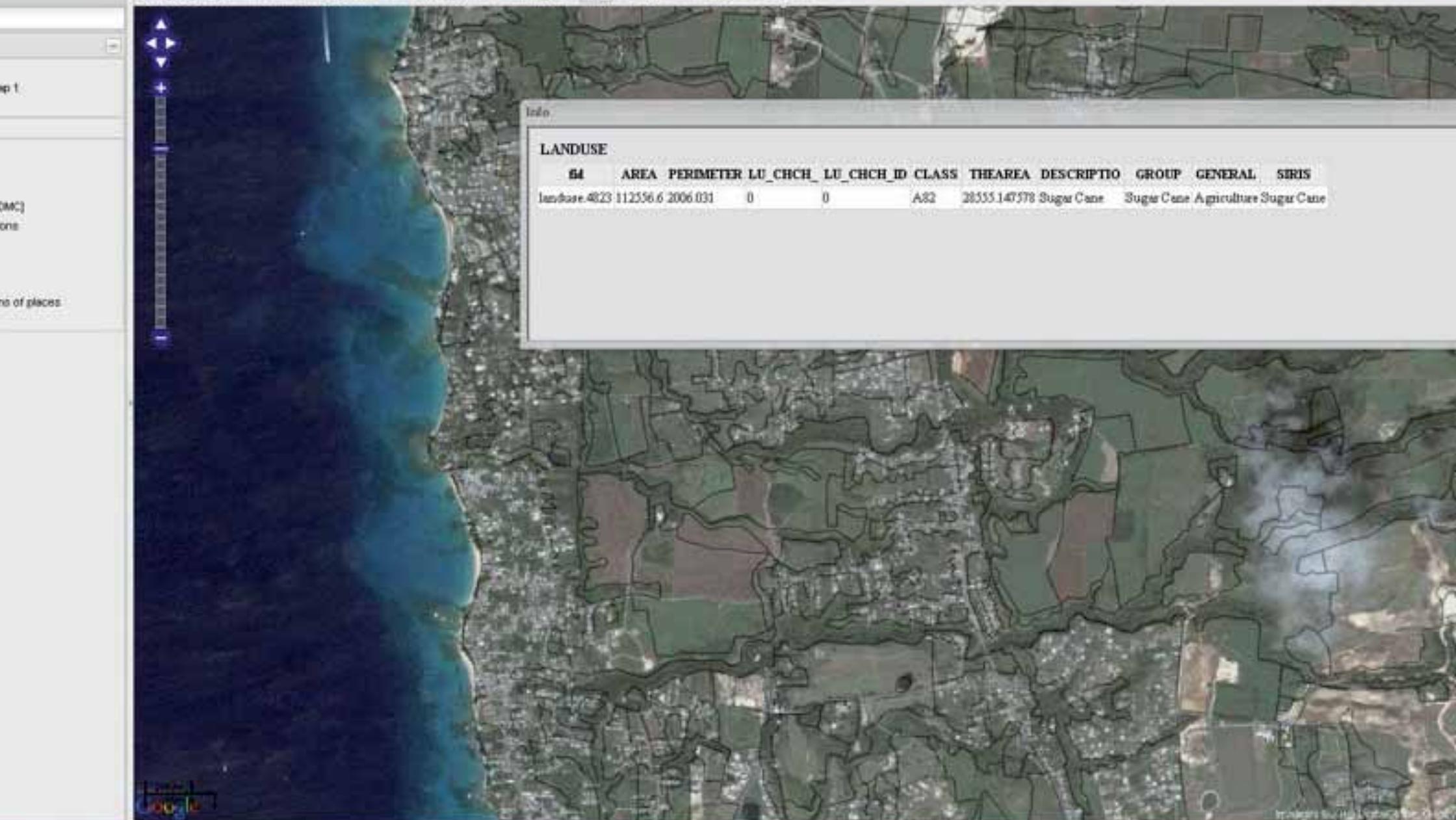
Caribbean

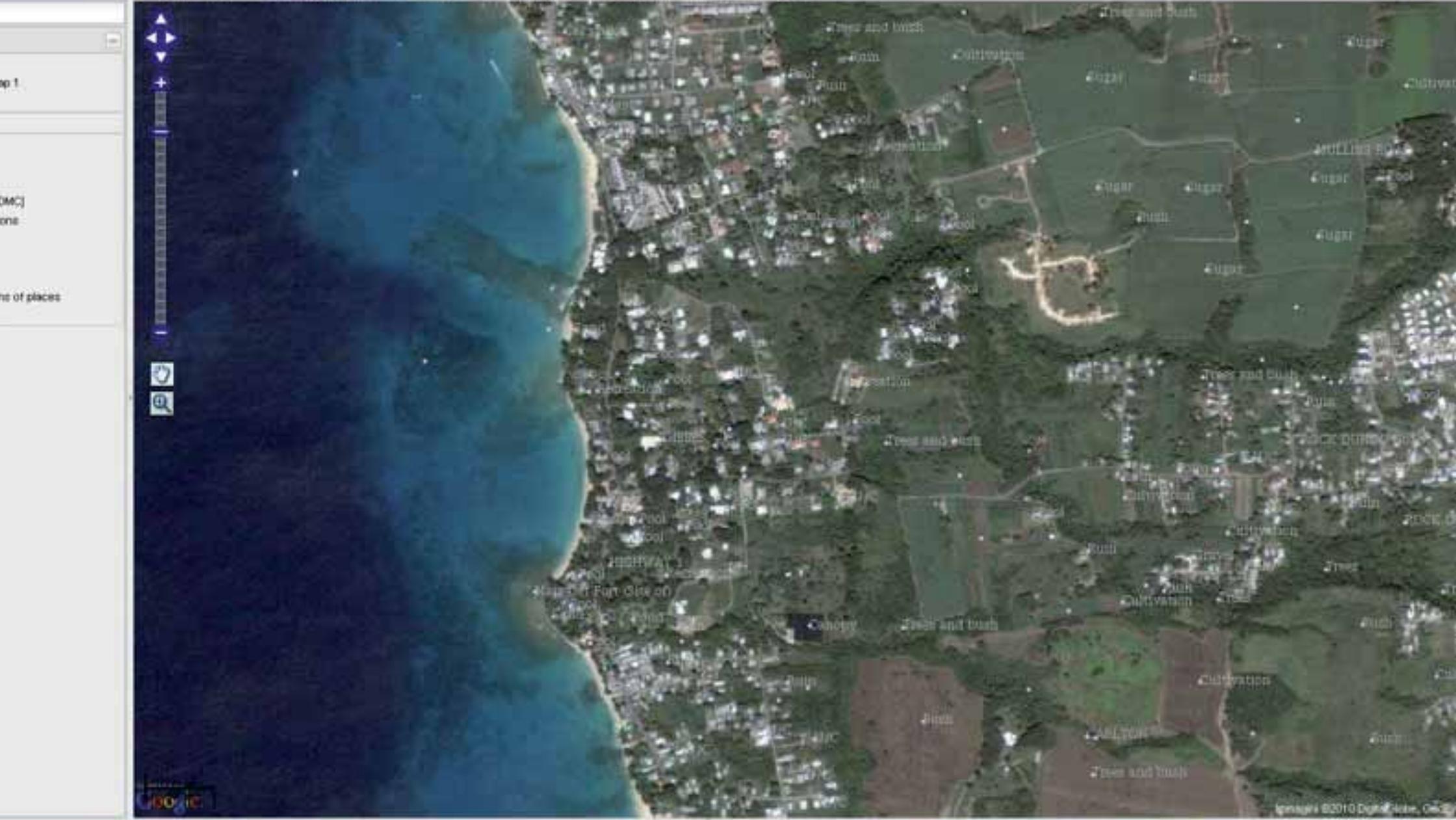
ENHANCING RESILIENCE TO REDUCE VULNERABILITY IN THE CARIBBEAN

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









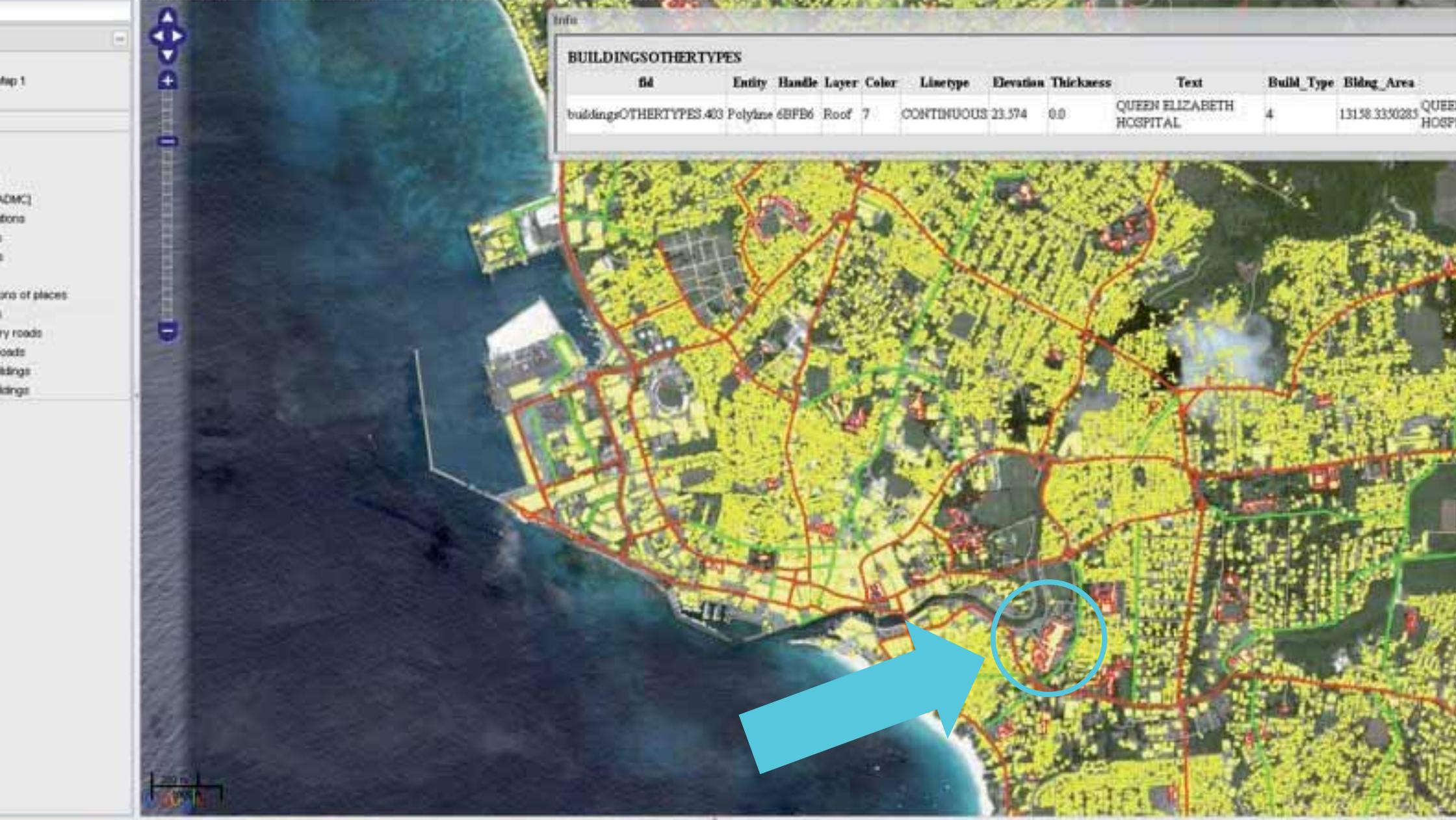
op 1

(OMC)
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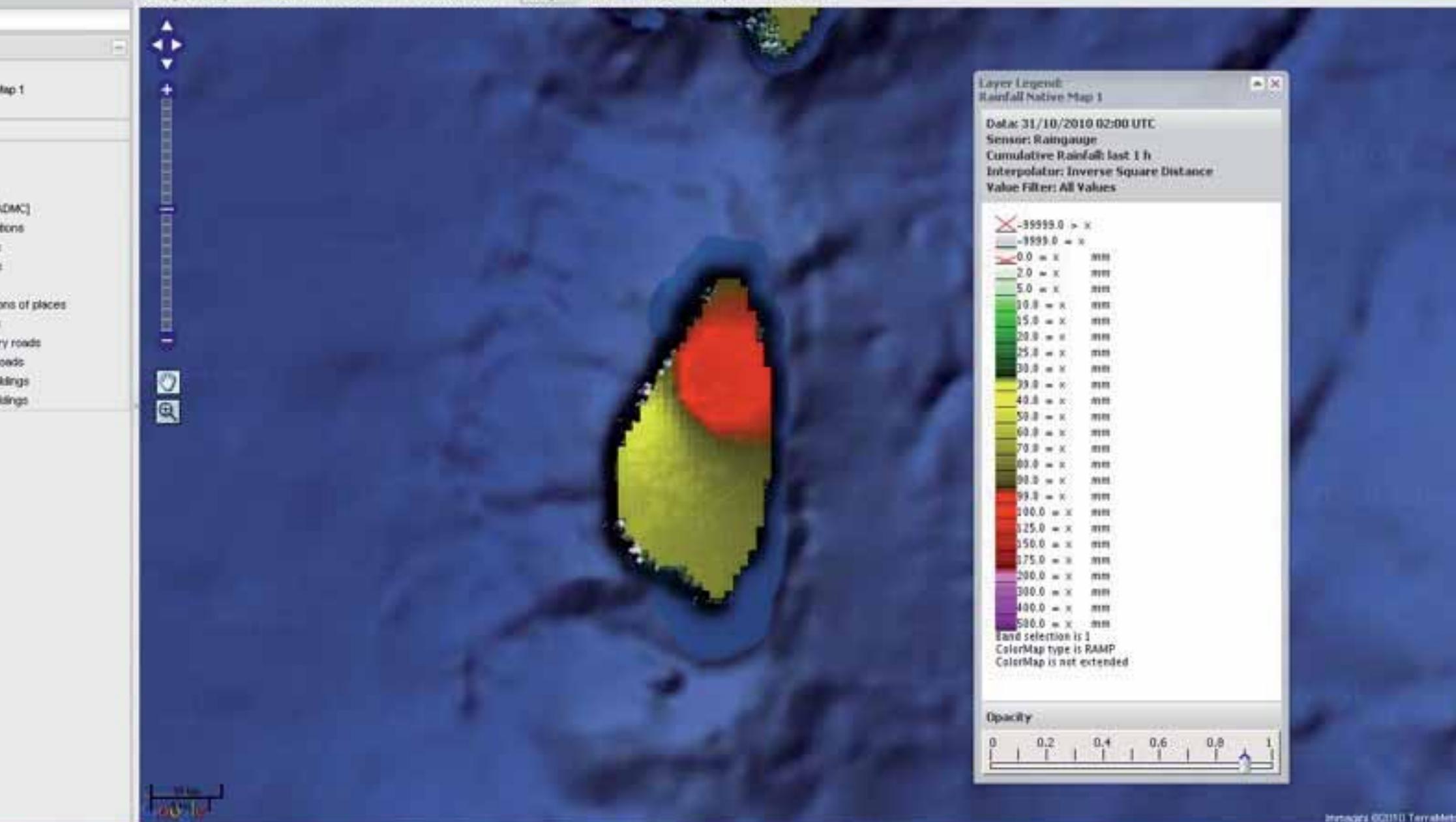




Info

BUILDINGSOTHERTYPES

id	Entity	Handle	Layer	Color	Linetype	Elevation	Thickness	Text	Build_Type	Blng_Area	
buildingsOTHERTYPES.403	Polyline	6BFB6	Roof	7	CONTINUOUS	23.574	0.0	QUEEN ELIZABETH HOSPITAL	4	131.58.3350283	QUEEN HOSPITAL



Map 1



Layer Legend:
Rainfall Native Map 1

Data: 31/10/2010 02:00 UTC
Sensor: Rain gauge
Cumulative Rainfall: last 1 h
Interpolator: Inverse Square Distance
Value Filter: All Values

X	-99995.0	> x
	-9999.0	= x
X	0.0	= x mm
	2.0	= x mm
	5.0	= x mm
	10.0	= x mm
	15.0	= x mm
	20.0	= x mm
	25.0	= x mm
	30.0	= x mm
	35.0	= x mm
	40.0	= x mm
	50.0	= x mm
	60.0	= x mm
	70.0	= x mm
	80.0	= x mm
	90.0	= x mm
	95.0	= x mm
	100.0	= x mm
	125.0	= x mm
	150.0	= x mm
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	200.0	= x mm
	300.0	= x mm
	400.0	= x mm
	500.0	= x mm

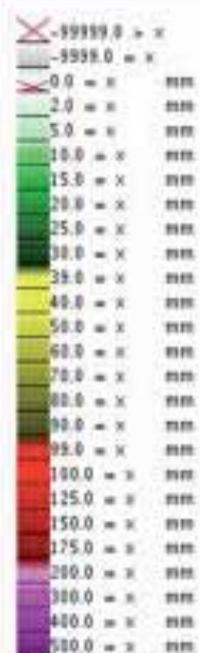
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ColorMap type is RAMP
ColorMap is not extended

Opacity

0 0.2 0.4 0.6 0.8 1

Layer Legend

WRF CARIBBEAN 2

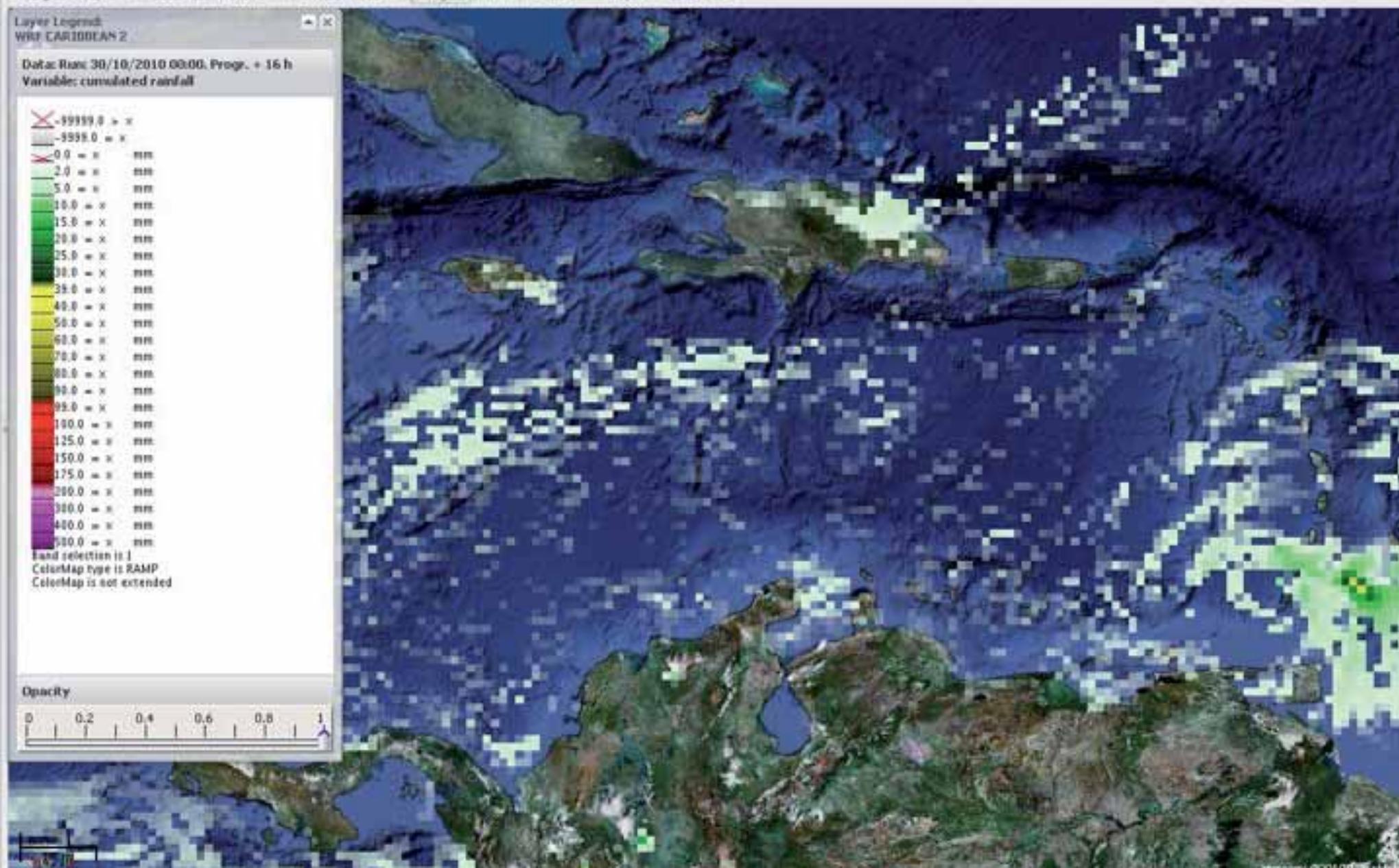
Data: Run: 30/10/2010 00:00, Progr. + 16 h
Variable: cumulated rainfall

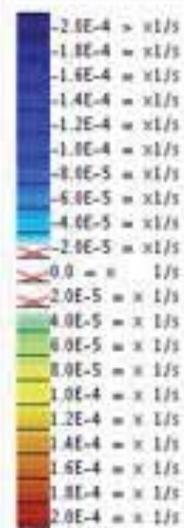
Band selection is 1

ColorMap type is RAMP

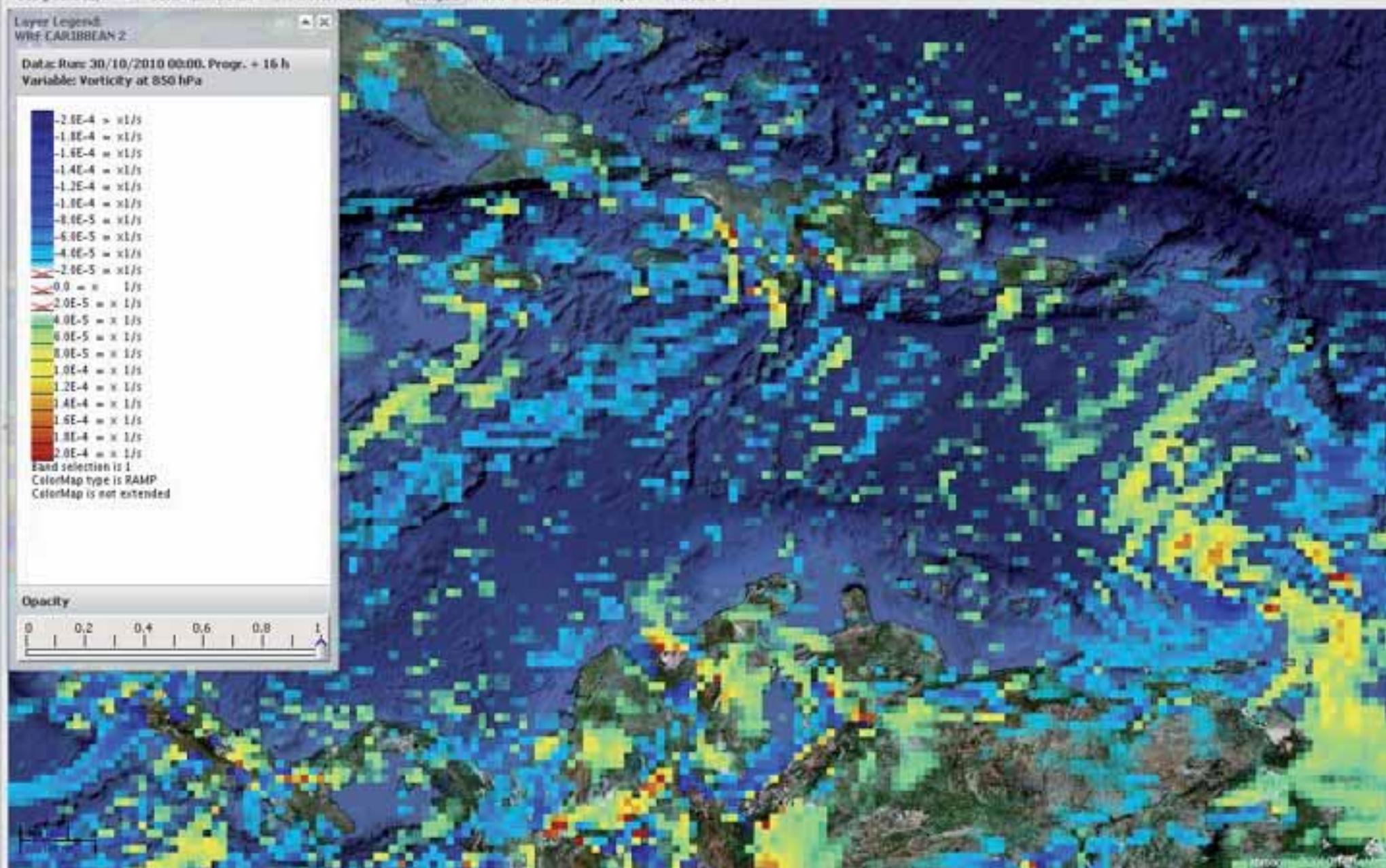
ColorMap is not extended

Opacity



Layer Legend
WRF-CARIBBEAN-2Data: Run: 30/10/2010 00:00. Progr. + 16 h
Variable: Vorticity at 850 hPaband selection is 1
ColorMap type is RAMP
ColorMap is not extended

Opacity



Thank you!