

The Mondometeo website services for the weather predictions sharing

Michele de Rosa¹, Alessandro Staniscia¹

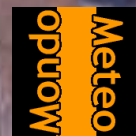
¹Mondometeo – www.mondometeo.org – info@mondometeo.org

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UCAR Software Engineering Assembly

University Corporation for Atmospheric Research



Who is speaking?

- Computer Science degree on Mar 2001
- Environmental Monitoring PhD on Feb 2011
- From 2001 to 2002 Researcher at National Institute for Nuclear Physics for the EGO project.
- From 2002 PM/Analyst Programmer at T.R.S. S.p.A.
- Poster at Eumetsat Conference 2010 (Cordoba, Spain)
- Talk at RMetS Conference 2011 (Exeter, UK)
- Seminar at NCAR on Mar 2012

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Outline

- Why Mondometeo?
- Our bow: the engine
- Our arrows: the services
 - The KMZ service
 - The Augmented Reality service
 - The Twitter service
- Our archer: our system
- Our target: conclusions

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Why Mondometeo?

Very good question.....

“If the use of a single, simplistic symbol—a sun, a cloud or a snowflake—to represent the weather for several hours over an entire city annoys you, you are not alone. Surely it ought to be possible to generate more detailed, finer-grained forecasts, neighbourhood by neighbourhood, hour by hour, which could be delivered over the web or beamed to a mobile phone? It is, and in some parts of the world such “high-resolution” weather forecasts are already available ... The resulting forecasts have obvious appeal to individuals who can use more accurate local forecasts to plan their outdoor activities, from skiing to sunbathing ... For a farmer about to spray his crops, for example, knowing how the wind speed and direction will vary from one field to another is invaluable ... Companies operating in transportation, construction, shipping, aviation, utilities, sports, media, emergency services, and a host of other areas also need to make decisions based on weather predictions. The NWS estimates that weather forecasts save America's airlines around \$500m a year: avoiding a cancellation saves \$40,000, and avoiding a diversion costs \$150,000, for example ...” From the Economist (<http://www.economist.com/node/2246180>)

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Why Mondometeo?

- The terms “social networks” and “mobile apps” belong to our common language
- The concept of “local” information
- Share the “**local**” weather information everywhere to everyone is interested in using the modern communication channels
- Use the nowcasting to accomplish the “local” concept’s needs

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Why Mondometeo?

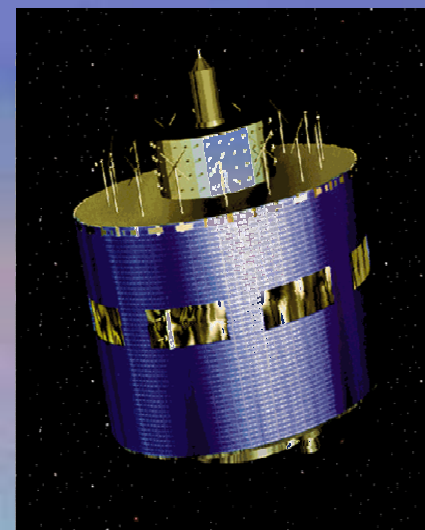
- Born in 2009
- About 7000 visits from about 30 Countries¹
- About 1800 unique visitors¹
- About 3 pages/visit¹
- About 6 mins/visit¹

¹ Source **Google analytics**

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Our bow: the engine

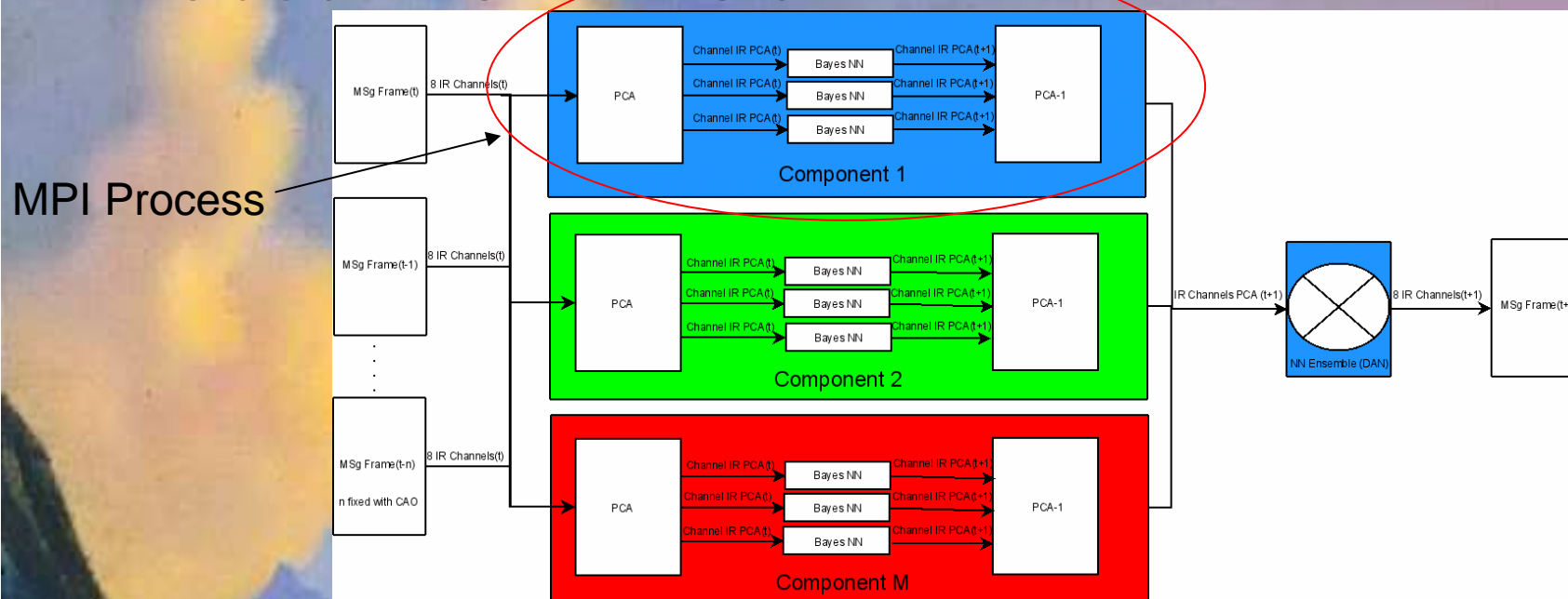
- Meteosat Second Generation
- Geostationary satellite
- First mission 1977 (Meteosat 1)
- 12 Channels (3 Vis, 8 IR, 1 HRis)
- Vis and IR resolution 3712x3712
- HRis resolution 11136x5568
- 15 minutes observation period
- About 3 x 3 Km of resolution



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Our bow: the engine

- A model based on the MSG frames to make nowcasts (from 30 MINs to 60 MINs) about the rainfield.



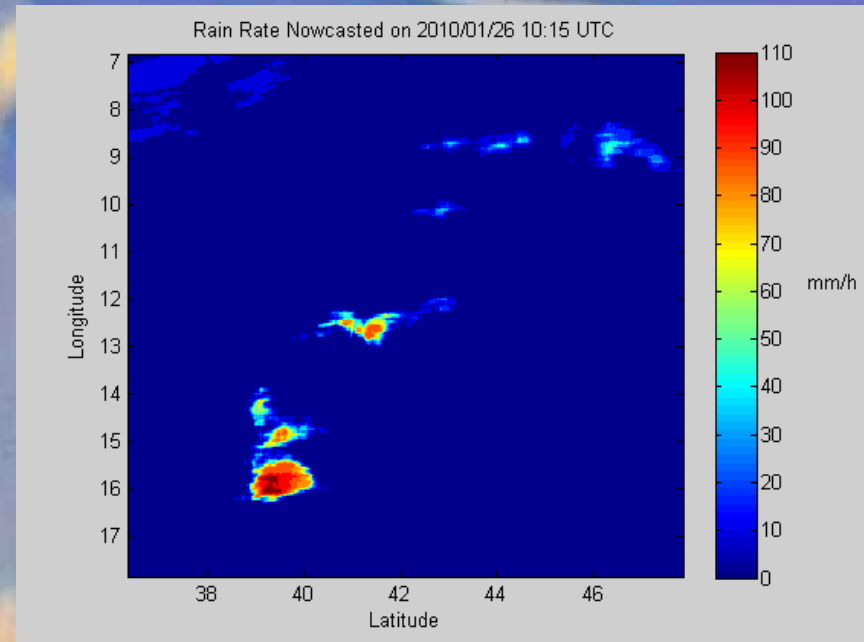
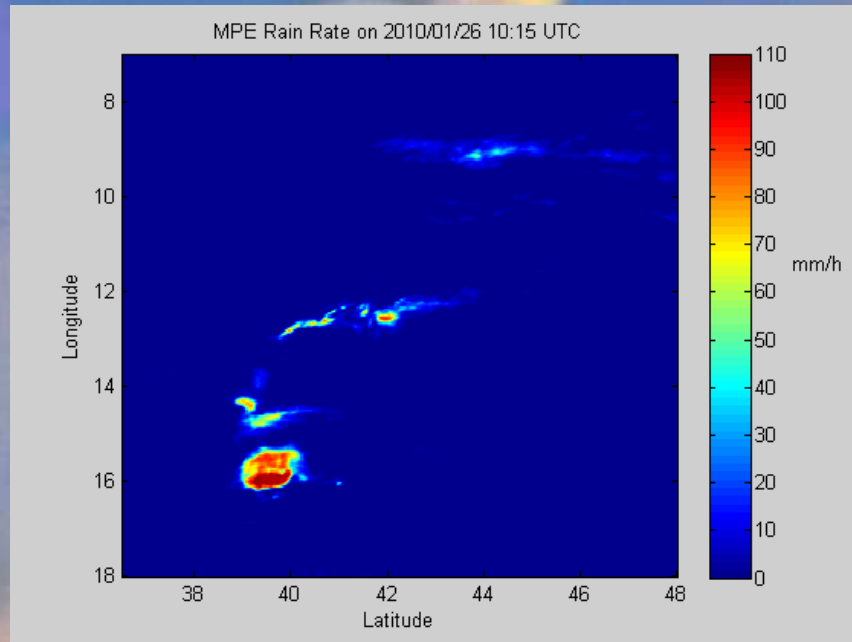
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Our bow: the engine

- Available products
 - Cloud Mask
 - Rainfield
 - Land Surface Temperature
- “Work In Progress” products
 - Cloud Type
 - Air Temperature

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Our bow: the engine



Performance Indexes 60 Min

BIAS	1.33	mm/h
RMSE	9.05	mm/h
Correlation	68.47	%

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Our arrows: the services

- The KMZ service
- The Augmented Reality service
- The Twitter service
- Covered countries: Italy, UK (suspended for now) and Brazil (Sao Paulo region).

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Our arrows: the services

- A REST-Like approach
 - Light
 - Modular
 - Scalable
- PHP implementation of the services

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Our arrows : The KMZ service

Link
to external kml

Overall Region Box

```
<Region>
  <LatLonAltBox>
    <north>-18.0</north>
    <south>-26.0</south>
    <east>-43.0</east>
    <west>-54.0</west>
    <minAltitude>0.0</minAltitude>
    <maxAltitude>0.0</maxAltitude>
    <altitudeMode>absolute</altitudeMode>
  </LatLonAltBox>
  <Lod>
    <minLodPixels>-1.0</minLodPixels>
    <maxLodPixels>16384.0</maxLodPixels>
    <minFadeExtent>0.0</minFadeExtent>
    <maxFadeExtent>0.0</maxFadeExtent>
  </Lod>
</Region>
```

Level of Detail

<NetworkLink>

<name>19_19</name>

<Region>

<LatLonAltBox>

<north>-25.599999999999973</north>

<south>-25.99999999999997</south>

<east>-53.449999999999946</east>

<west>-53.99999999999994</west>

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</LatLonAltBox>

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<maxFadeExtent>0.0</maxFadeExtent>

</Lod>

</Region>

<Link>

<href>19_19.kml</href>

<refreshInterval>1.0</refreshInterval>

<viewRefreshMode>onRegion</viewRefreshMode>

<viewRefreshTime>1.1</viewRefreshTime>

<viewBoundScale>1.0</viewBoundScale>

</Link>

</NetworkLink>

Link Region Box

Reference

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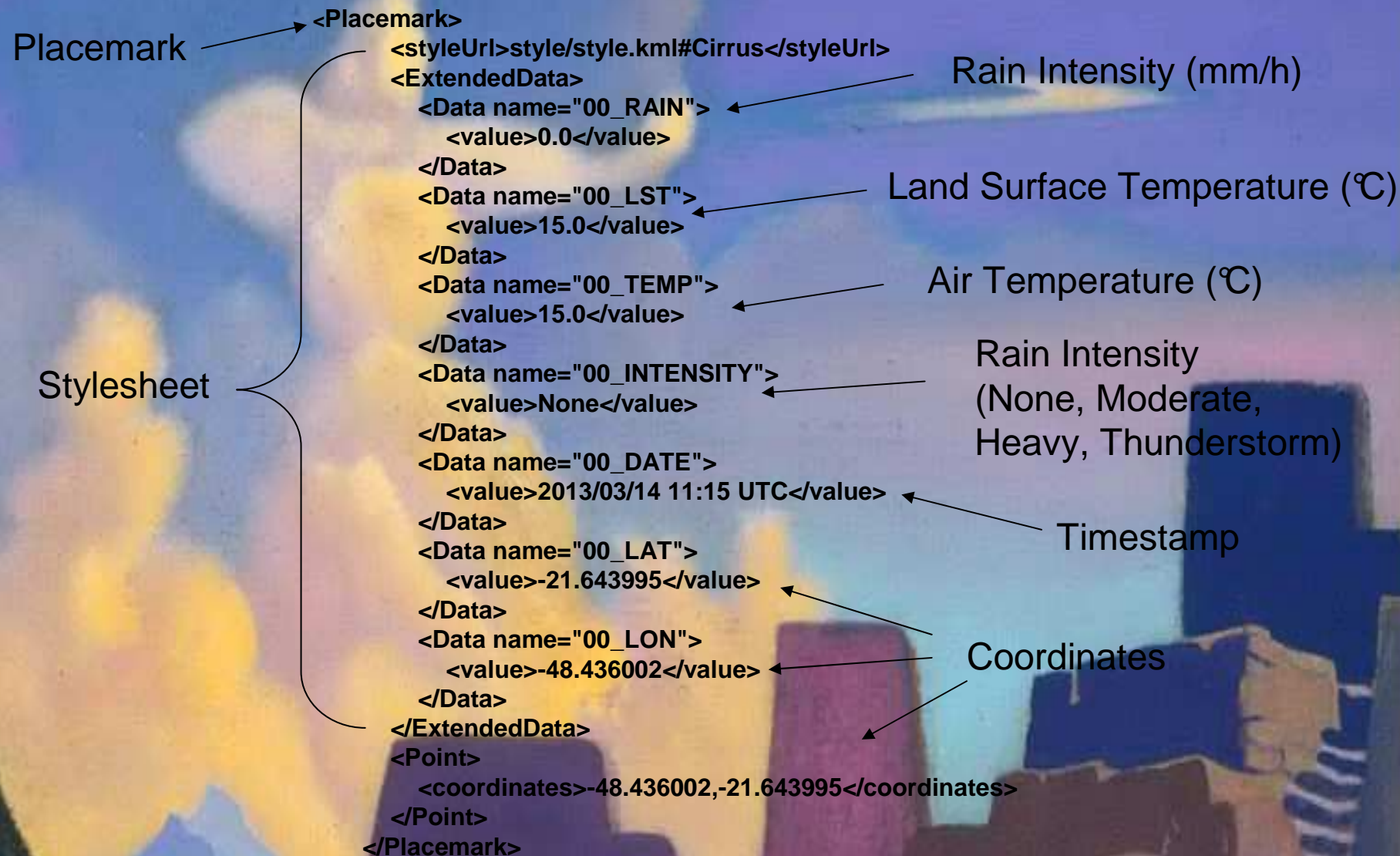


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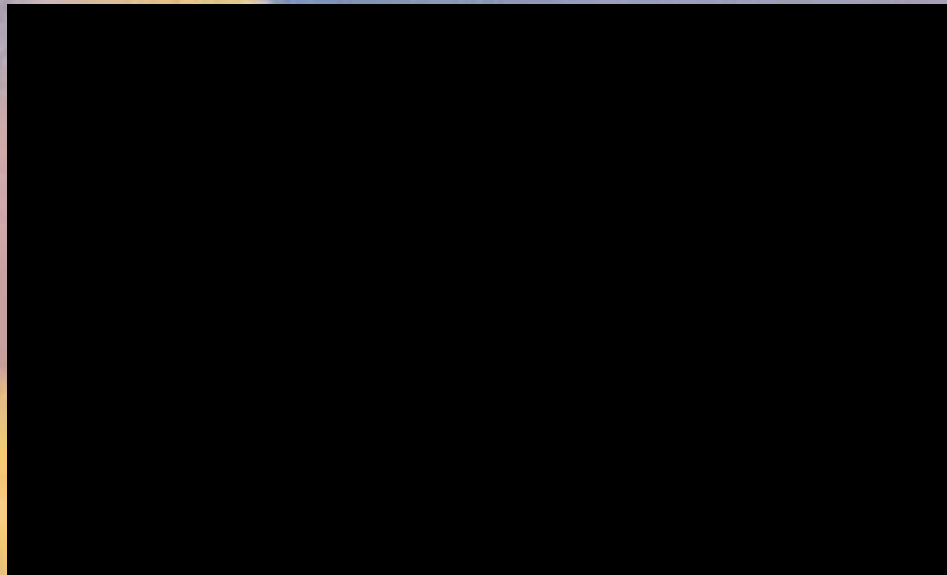
Our arrows : The KMZ service



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Our arrows: the Augmented Reality service

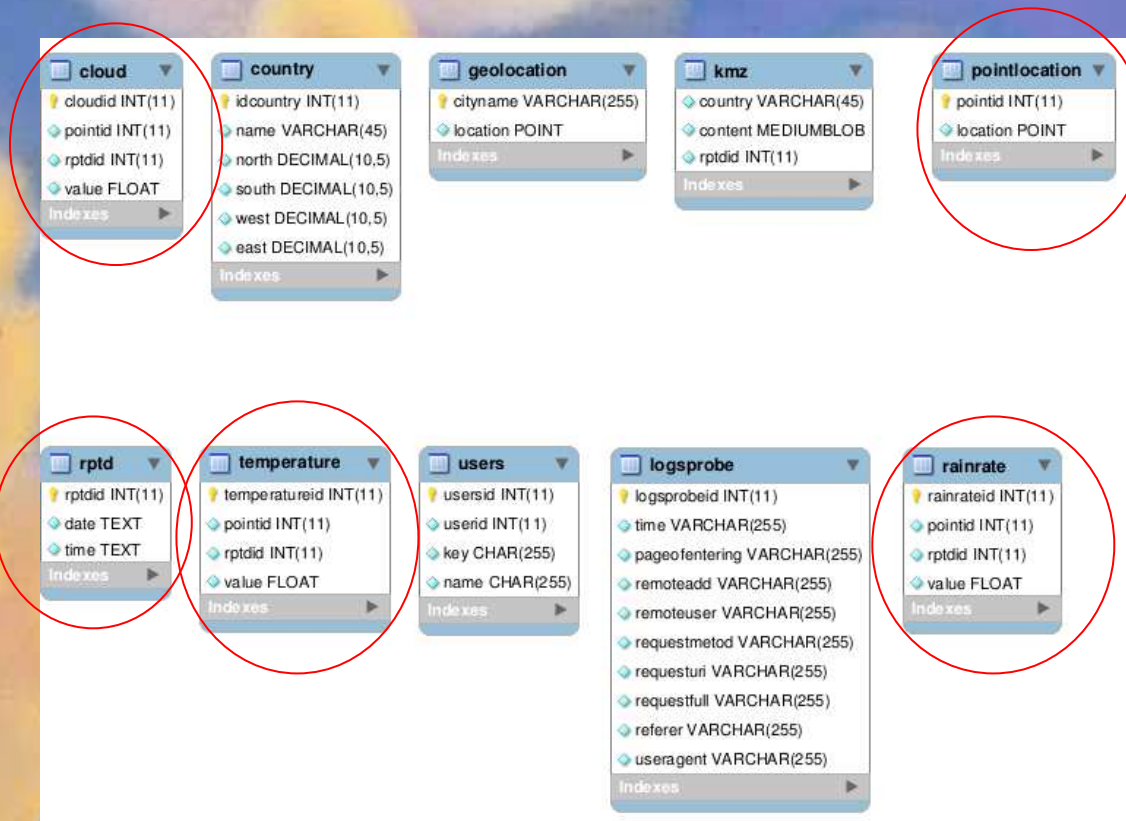
- Output: json string
 - <http://www.mondometeo.org/datashow/RvMeteo.php>
- Engine: Mixare app 



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Our arrows: the Augmented Reality service

- Data source: MySQL database



cloud	country	geolocation	kmz	pointlocation
cloudid INT(11)	idcountry INT(11)	cityname VARCHAR(255)	country VARCHAR(45)	pointid INT(11)
pointid INT(11)	name VARCHAR(45)	location POINT	content MEDIUMBLOB	location POINT
rptdid INT(11)	north DECIMAL(10,5)		rptdid INT(11)	
value FLOAT	south DECIMAL(10,5)			
	west DECIMAL(10,5)			
	east DECIMAL(10,5)			

rptd	temperature	users	logsprobe	rainrate
rptdid INT(11)	temperatureid INT(11)	userid INT(11)	logsprobeid INT(11)	rainrateid INT(11)
date TEXT	pointid INT(11)	userid INT(11)	time VARCHAR(255)	pointid INT(11)
time TEXT	rptdid INT(11)	key CHAR(255)	pageofentering VARCHAR(255)	rptdid INT(11)
	value FLOAT	name CHAR(255)	remoteadd VARCHAR(255)	value FLOAT
			remoteuser VARCHAR(255)	
			requestmetod VARCHAR(255)	
			requesturi VARCHAR(255)	
			requestfull VARCHAR(255)	
			referer VARCHAR(255)	
			useragent VARCHAR(255)	

XML-RPC calls
to store the forecasts

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Our arrows: The Twitter service

- Send to the Mondometeo followers a very short message (tweet) about the weather forecast.
- The tweet's content contains the weather forecast regarding the place of each follower.
- The tweet is sent on change.
- Use the AR service together with a geocoder service.

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Our arrows: The Twitter service

The screenshot shows a Mozilla Firefox browser window displaying the Twitter profile of MondoMeteo.org. The browser's address bar shows the URL <https://twitter.com/MondoMeteo>. The page features a sidebar on the left with navigation links: Home, @ Connetti, # Scopri, and Account. The main content area displays a list of tweets. A 'Messaggi diretti' (Direct Messages) modal window is open in the center, showing a list of messages from users including Marco Speranza, Daniele Gobbetti, Veronica Casaburi, Michele de Rosa, Alessandro Staniscia, and Marco Sciarroni. A green arrow points from the 'Follower' label to the 'Following' link in the sidebar. Another green arrow points from the 'Tweet' label to a tweet by Daniele Gobbetti. The browser's status bar at the bottom indicates the date and time: Mon Mar 18, 11:48.

Follower

Tweet

Messaggi diretti

Nuovo messaggio

Marco Speranza @marco_speranza 22m
L'AQUILA 2013 mar 18 lun 10:45 AM UTC Cold Rainy Moderate rain

Daniele Gobbetti @daniele_360 22m
BOLZANO, ITALY 2013 mar 18 lun 10:45 AM UTC Warm Cloudy

Veronica Casaburi @Veronica72 23m
SIRACUSA, ITALIA 2013 mar 18 lun 10:45 AM UTC Warm Rainy Moderate rain

Michele de Rosa @mic_der 46m
MONTEROTONDO 2013 mar 18 lun 10:15 AM UTC Warm Cloudy

Alessandro Staniscia @alexstani 1h
ROMA 2013 mar 18 lun 10:00 AM UTC Warm Cloudy

Marco Sciarroni @marcos82000 1h
ROMA 2013 mar 18 lun 10:00 AM UTC Warm Cloudy

Suggerimento: puoi inviare un messaggio a chiunque ti segue. [Per saperne di più](#)

Mondometeo.org @MondoMeteo 4 Mar
We have added the #Brazil (#SaoPaulo region) to our services!!! On the contrary the UK services are suspended for the moment. Espandi

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Meteo
opuow

Our archer: our system

- 4 PCs
- Italy system
- Brazil system
- SAF
- Reception station

Cloud is our dream!!!



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Our target: conclusions

- Our engine is experimental yet, but it is a very good starting point
- We have accomplished the requirements of the “local” concept
- Two services: AR engine and Twitter
- Our wish list: Weatty, Tweatty, extend the services to other countries (extend to other Satellites)
- Makes our services more professional and less for amateurs.

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Thank you very much

Questions?

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opnow