

# **Nowcasting System Concept - IPET-SUP-4/Doc. 10.2**

*This document presents a new innovative procedure to help weather services to have their own nowcasting service. This document proposes the development of a nowcasting system, only based on satellite data, that can be easily implemented in weather services by using the concept of web services and geographical information system.*

# Nowcasting System Concept

## ACTION PROPOSED

- (a) Discuss the proposed contribution with a view to start an effort toward a satellite-based nowcasting system implementation;
- (b) Discuss how to evolve in this matter, and if this should be an action inside SCOPE-Nowcasting or as a specific action of IPET-SUP;
- (c) Raise with Space Agencies the possibility to provide web services for nowcasting.

# Nowcasting System Concept

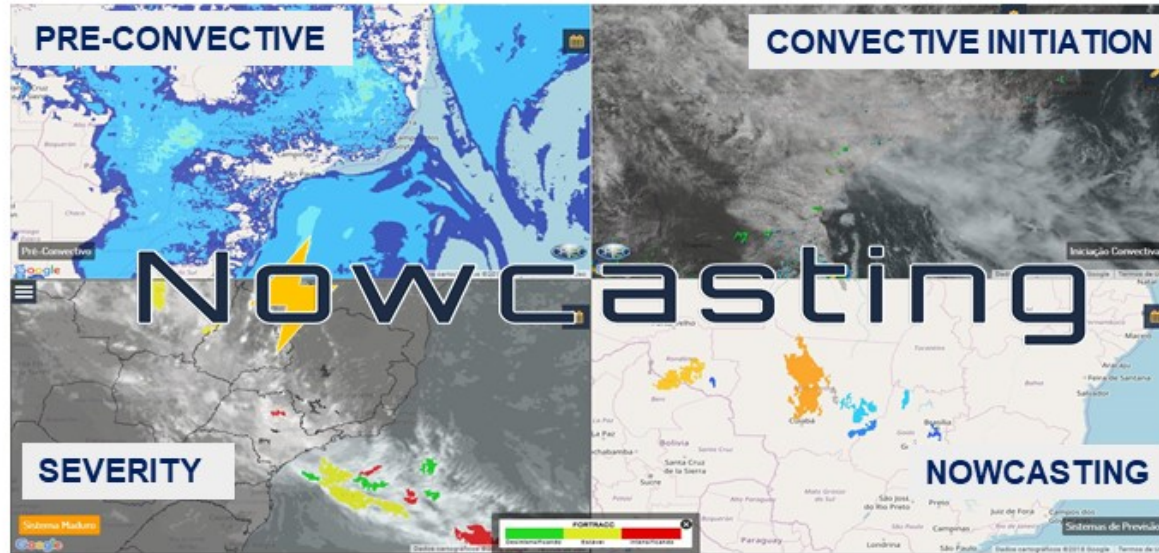
- A nowcasting webpage conceived by space agencies will not provide the services each region needs, because the high-resolution data, the specific needs of each service, and the combination of local information poses challenges. In addition, a general web page will never build local knowledge and capacity on nowcasting.
- This document proposes a system based on the development of the basic application and the development of a nowcasting webservice hosted by Space Agencies to provide data for local users.

## ***The new satellite generation and the potential products for Nowcasting***

The new satellite generation provides **high spatio-temporal** data resolution for a large range of channels. Several algorithms were already developed for different products retrievals. The new channels in the near infrared band provide information about ice water cloud, ice amount, ice size. The **multiple channels** can also provide information about the humidity in different levels, the instability indexes. The **lighting sensor** provides new information in near-real time which is very useful information for nowcasting such as lighting jumps and lighting densities, which are very well correlated to intense weather events. Rainfall estimation can provide precipitation integration in 24, 36 and 48 hours to define vulnerable areas.

# Nowcasting and the Phases

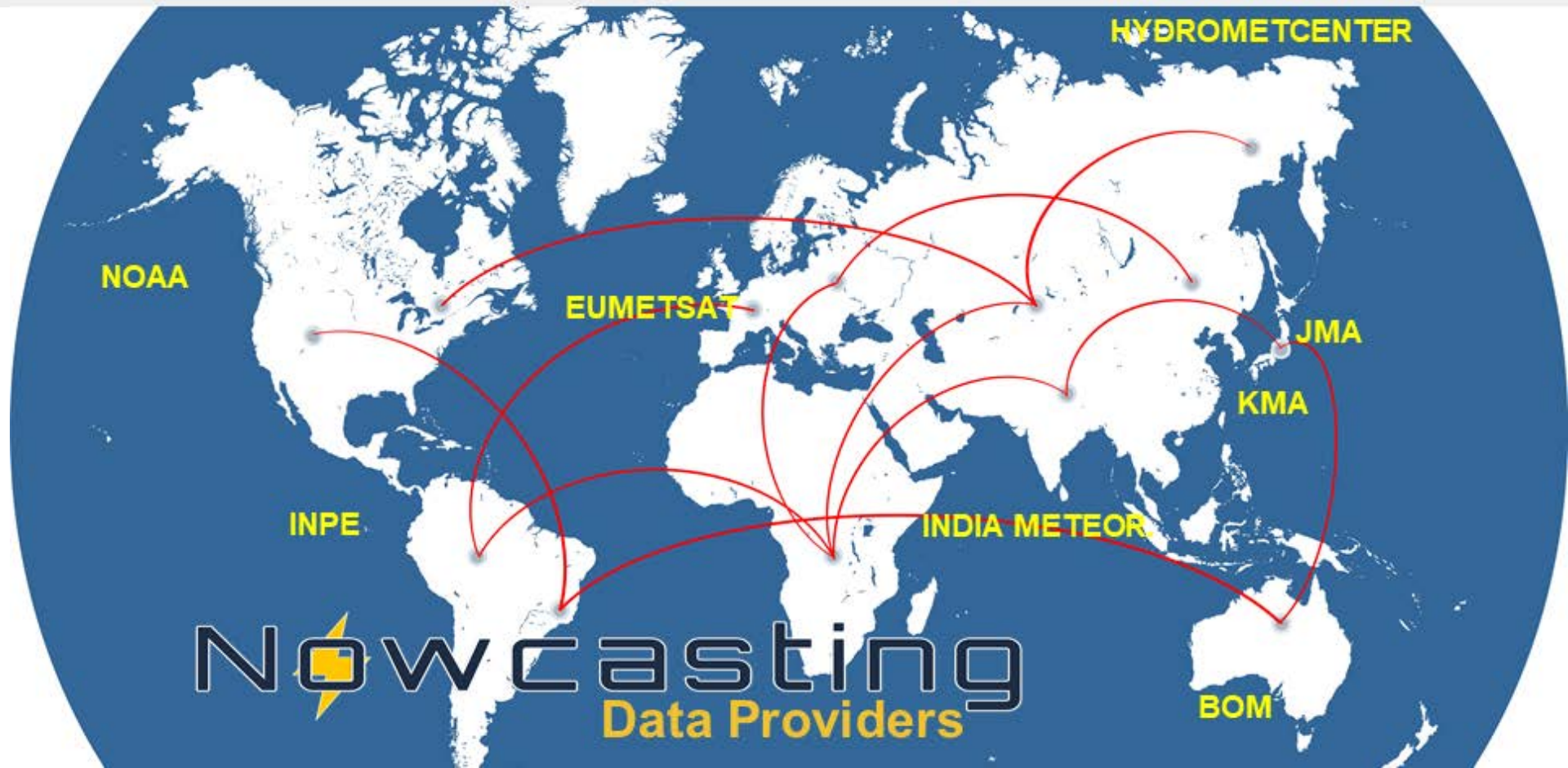
## Nowcasting



### Nowcasting Software

- Web Platform
- OGC Standard's
- XML Configurations
- Work with json, csv, jpeg, netCDF, GeoTiff or Grib files
- Geospatial Data Capabilities
- Regionalization Products
- Support WMS and WCS products

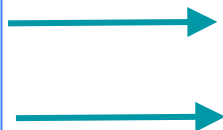
# WORLD DATA PROVIDERS



**Nowcasting**  
Data Providers

## Data Providers

NOAA, EUMETSAT,  
KMA, JMA, CMA,  
BOM, INPE,  
Hydrometcenter,  
India Meteor., etc



Nowcasting



Nowcasting



### Advantages of Data Providers:

- Larger resolution on regional products;
- Shorter delivery time of results;
- Setting specific limits for each region, allowing customization of thresholds in the interpretation of the products;
- Product customization for monitoring specific regions;
- Exchange of experiences and knowledge in studies and product generation;



## ***Suggestion - First Actions.***

The design of this system should be discussed with **the nowcasting experts** to define the specific products in each nowcasting step, as for instance the resolution, timeliness and formats. A discussion with the **Space Agencies** would contribute to provide the list of products as well as the possibilities to have new products and the web service. The discussion with experts in geographical information systems would be another step to design the application. It is suggested to start from the SigmaCast software that is an open-source based and ready to assimilate data from GeonetCast.

A working group including people from IPET-SUP and the WMO Nowcasting group would be a first action to discuss and prepare this project.