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TRACKING STORMS AND HURRICANES USING SAR IMAGES

A few years later

In the last few years, it was demonstrated that the service is working at operational level with significant improvements such as automation, format, compliancy, new information. Awareness has also been improved among end-users. The work was successively up-taken by National Oceanic and Atmospheric Administration (NOAA) of the Unites States of America (USA) that routinely relies on previous achievements for their national cyclone forecasting and warning system.

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	TIER 1: SERVICE PROVIDER	TIER 2 PRIMARY USER	TIER 3 SECONDARY USER	TIER 4 END USER BENEFICIARIES
BENEFICIARIES	CLS IFREMER GIS BreTEL MER/MORESPACE	European seas; Indian Ocean	World Meteorological Organization (WMO); Forecasters from the Regional Specialised Meteorological Centre "Tropical Cyclone Center" of Meteo-France at La Reunion	Citizens and Society
SERVICES	Sentinel-1	Kilometric-scale information on Tropical Cyclone (TC) structure such as wind radii, maximum wind, eye diameter; Near-real time (NRT) wind maps	Better estimate of hurricane intensities in complex situations; Improved accuracy of weather forecast warnings	Improved civil security

Value chain definition following SeBS Methodology - https://earsc.org/sebs

The space-based solution

This Copernicus-based solution was produced by a commercial company and by a scientific entity for Public Administration and other users such as companies, professionals, agencies, associations, single citizens.

The Usage Maturity Level

User Maturity consolidated at level 3, due to increased recognition about the effectiveness of the solution at decision making level based on the achieved results and return of experience, new funding allocated by space programmes and new expertise acquired at the end-user side."

Thematic Area: CLIMATE, WATER AND ENERGY

Region of Application: BRITTANY

Sentinel mission used: S1

Copernicus Service used: –

Usage Maturity Level: 3

Overall benefits

ECONOMIC

Reduction of risk has been registered

- Employment
- The replicability of the solution was achieved

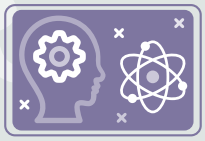
INNOVATION

- The solution has helped to introduce some innovation in the functioning of the public administration. For example, METEO FRANCE (La réunion RSMC) has become an end-user.

ENVIRONMENTAL

- Benefits in this area have not been assessed

SCIENCE



- There was an increase in technical/scientific expertise related to Copernicus/EO within the PA
- There was an increase in technical/scientific expertise related to Copernicus/EO at the service provider
- There was an increase in the research budget share of the institutions involved in the solution

REGULATORY

- There were improvements in the policy monitoring capabilities of the PA in charge

SOCIETAL

- Civil security has improved
- Strategic added value was registered for the involved actors
- There have been improvements in public awareness

Benefits classification following SeBS Methodology - https://earsc.org/sebs

Interesting facts...

From a technical perspective there were some significant improvements: the timeliness of the solution was improved, while additional information is now generated (key parameters on tropical cyclones). Furthermore, an end-user dedicated and fully CMEMS compliant format has been developed. Regarding an increase in awareness of the public administration towards Copernicus-based solutions (Regulatory domain), such attitude has led to an improved High Level Operation Planning (HLOP) regarding forecasting and hence review of policies in this domain.

Outlook to the future

For the future, the solution should replicate and adapt its functionalities to European extreme events such as extra tropical cyclones, "medicanes", polar lows etc., while additional work is planned towards the modeling community. According to authors, there is still an issue about the sustainability of this service, which prevents potential end-user to include it in their operational systems. Authors further evaluate that a dedicated framework at the high decision making levels could provide help in this direction.

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