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## FORESTLAND DECAY IN MARESME USING SENTINEL-2 IMAGERY

### >>> A few years later

In the last few years “Institut Cartografic i Geologic de Catalunya” (ICGC) has continued to study the decay forest of Maresme region (Catalunya, Spain). The monitoring of this kind allowed detection of the caterpillar (*Lymantria dispar*) affecting a sclerophyll forest of the area, during the years 2019 and 2020.

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BENEFICIARIES	Institut Cartografic i Geologic de Catalunya (ICGC)	Institut Cartografic i Geologic de Catalunya (ICGC); Barcelona Provincial Council (Diputació de Barcelona)	Department of Climate Action, Food and Rural Agenda (DAAC)	Citizens and society
	<b>TIER 1: SERVICE PROVIDER</b>	<b>TIER 2 PRIMARY USER</b>	<b>TIER 3 SECONDARY USER</b>	<b>TIER 4 END USER BENEFICIARIES</b>
SERVICES	Sentinel - 2	Time series of Enhanced Vegetation Index (EVI) during the spring and summer; Change detection of damage from EVI and damage severity from S2 multi-spectral classification.	Maps of affected areas illustrating the start of damage and the severity of caterpillar distribution in three levels.	Improved monitoring of areas under forests

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

### The space-based solution

This Copernicus-based solution was developed by the Public Administration for other users such as companies, professionals, agencies, associations, single citizens.

### The Usage Maturity Level

Since 2018, the technical solution remained of more or less same stage, but the solution passed to the higher User Maturity Level.

Thematic Area



AGRICULTURE,  
FOOD, FORESTRY  
AND FISHERIES

Region of Application



CATALONIA

Sentinel mission used



S2

Copernicus Service used



-

Usage Maturity Level



5

## Overall benefits

### ECONOMIC



No noticeable additional modification/impact on the functioning of the public administration nor on the lives of the citizens since 2018.

### INNOVATION



No noticeable additional modification/impact on the functioning of the public administration nor on the lives of the citizens since 2018.

### ENVIRONMENTAL



No noticeable additional modification/impact on the functioning of the public administration nor on the lives of the citizens since 2018.

### SCIENCE



No noticeable additional modification/impact on the functioning of the public administration nor on the lives of the citizens since 2018.

### REGULATORY



No noticeable additional modification/impact on the functioning of the public administration nor on the lives of the citizens since 2018.

### SOCIETAL



No noticeable additional modification/impact on the functioning of the public administration nor on the lives of the citizens since 2018.

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

## Interesting facts...

The methodology has based on the Enhanced Vegetation Index (EVI) and unsupervised classification of a number of Sentinel-2 images during the spring and summer time.

The results obtained each year have been used to assign funding to forest owners for restoration of damages by the regional administration.



## Outlook to the future

As future activities, and based on experience on forests of Maresme region, ICGC is planning to perform detection of some diseases and anomalies of trees using Sentinel-2 data. This type of studies are greatly useful when one or several years in a row are dry: this causes forest decay to appear. In some cases, the perturbation can disappear because it can be detected with Sentinel-2 time series and treated (e.g. the infection of Lymantria). However, in other cases, the drought is so strong than it can cause an irreversible consequence of trees dying, as shown by the Pinus pinea study (Maresme).

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## ABOUT COPERNICUS4REGIONS

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