



ECOPOTENTIAL

improving future ecosystems benefits through Earth observations

2019 calendar



This project has received funding from the *European Union's Horizon 2020 research and innovation programme* under grant agreement No 641762



This project is funded by the European Union



Image © Swiss National Park

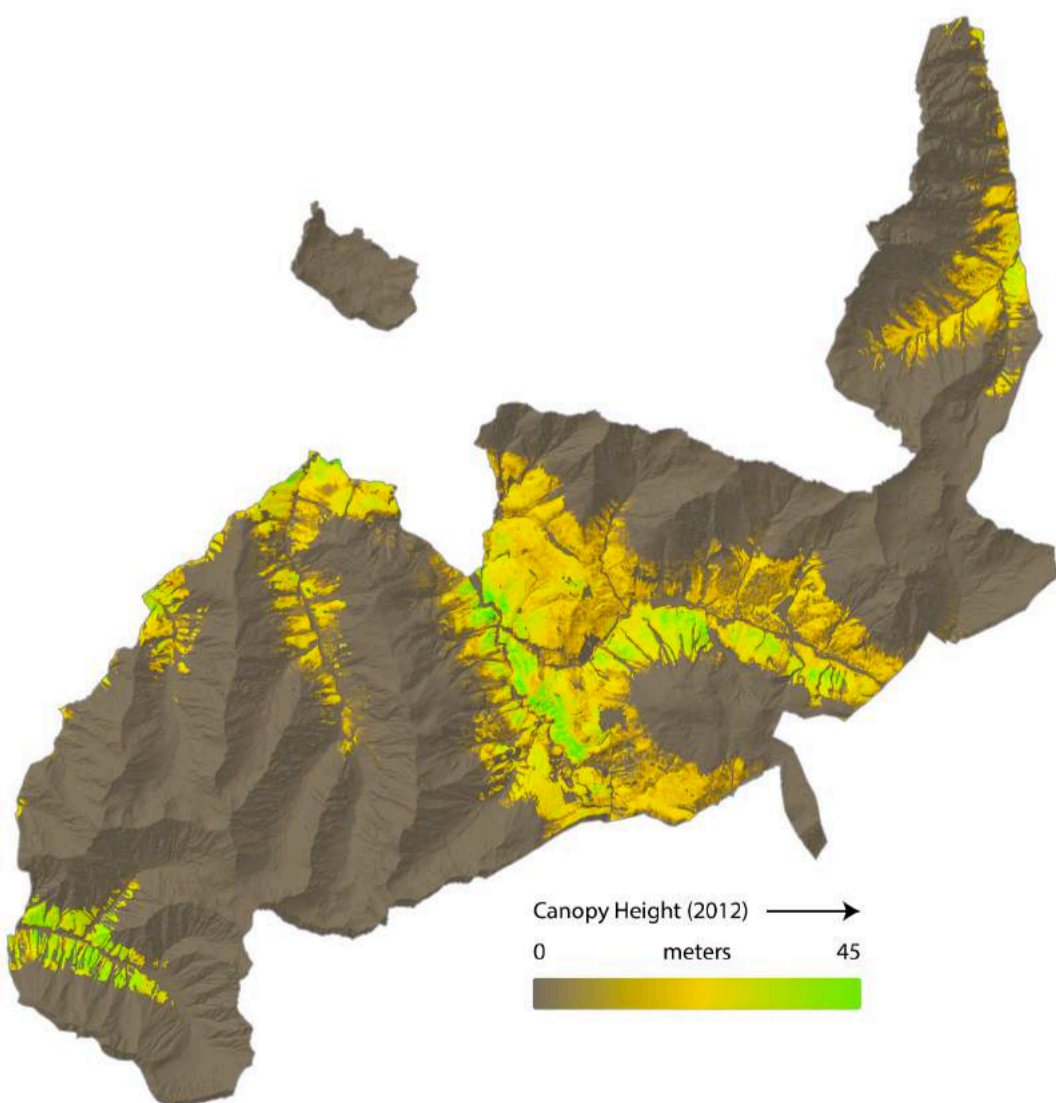
Swiss National Park - Switzerland

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January 2019



	TUE	WED	THU	FRI	SAT	SUN
	1	2	3	4	5	6
MON	TUE	WED	THU	FRI	SAT	SUN
7	8	9	10	11	12	13
MON	TUE	WED	THU	FRI	SAT	SUN
14	15	16	17	18	19	20
MON	TUE	WED	THU	FRI	SAT	SUN
21	22	23	24	25	26	27
MON	TUE	WED	THU			
28	29	30	31			

The ECOPOTENTIAL project uses Earth Observation to provide timely information covering the whole area of the park and to better understand where ecosystem services take place. For example, a combination of airborne and satellite imagery is used to distinguish different forest structures and tree species, also developing a model that allows the mapping of the forests, preventing the formation of avalanches.



Image © Ugo Mellone

Sierra Nevada - Spain

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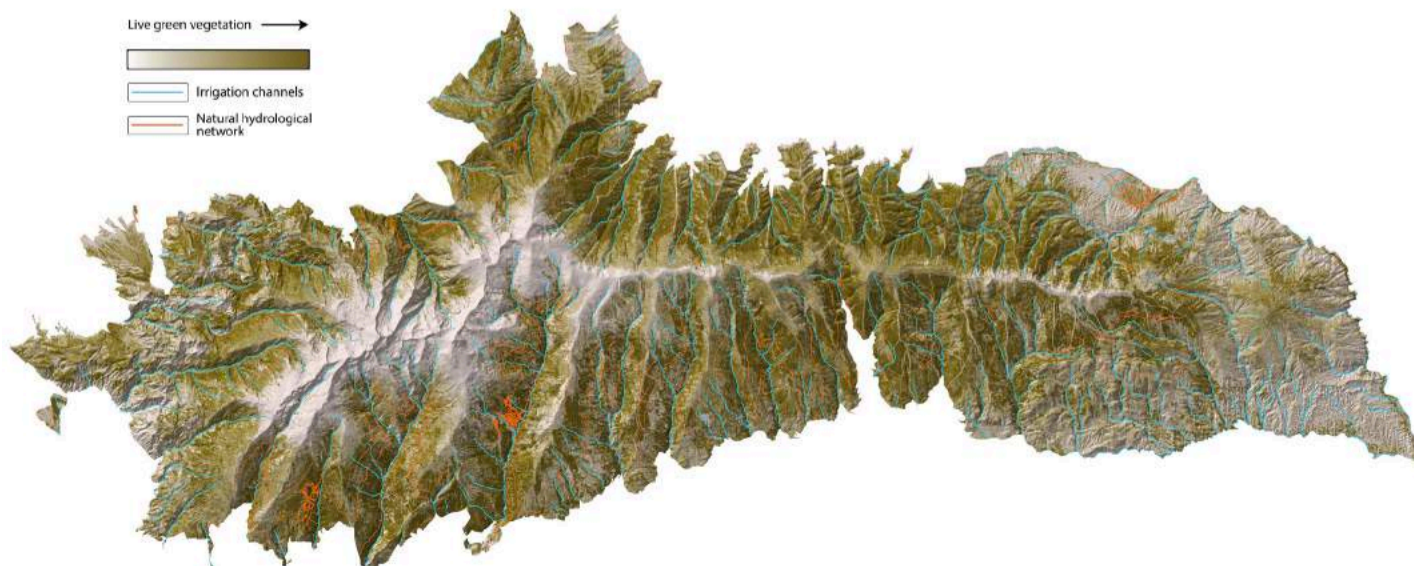


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MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
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11	12	13	14	15	16	17	18	19	20	21	22	23	24
25	26	27	28										

February 2019

Climate change has already altered the hydrology of Sierra Nevada, impacting both ecosystems and communities. At the same time, land-use change is another key driver of ecosystem structure and functioning. The park is exploring how to use the ancient irrigation network to buffer the impacts of global change. To test this hypothesis, ECOPOTENTIAL is supporting the Sierra Nevada Global Change Observatory in the use of Earth Observation.



Natural hydrological network in Sierra Nevada (blue) compared with the network of ancient irrigation channels (orange). USGS/NASA Landsat 5 TM image (19 June 2011). Irrigation channel data courtesy of EU F7 MEMOLA project.



Image © Carl Beirkuhnlein

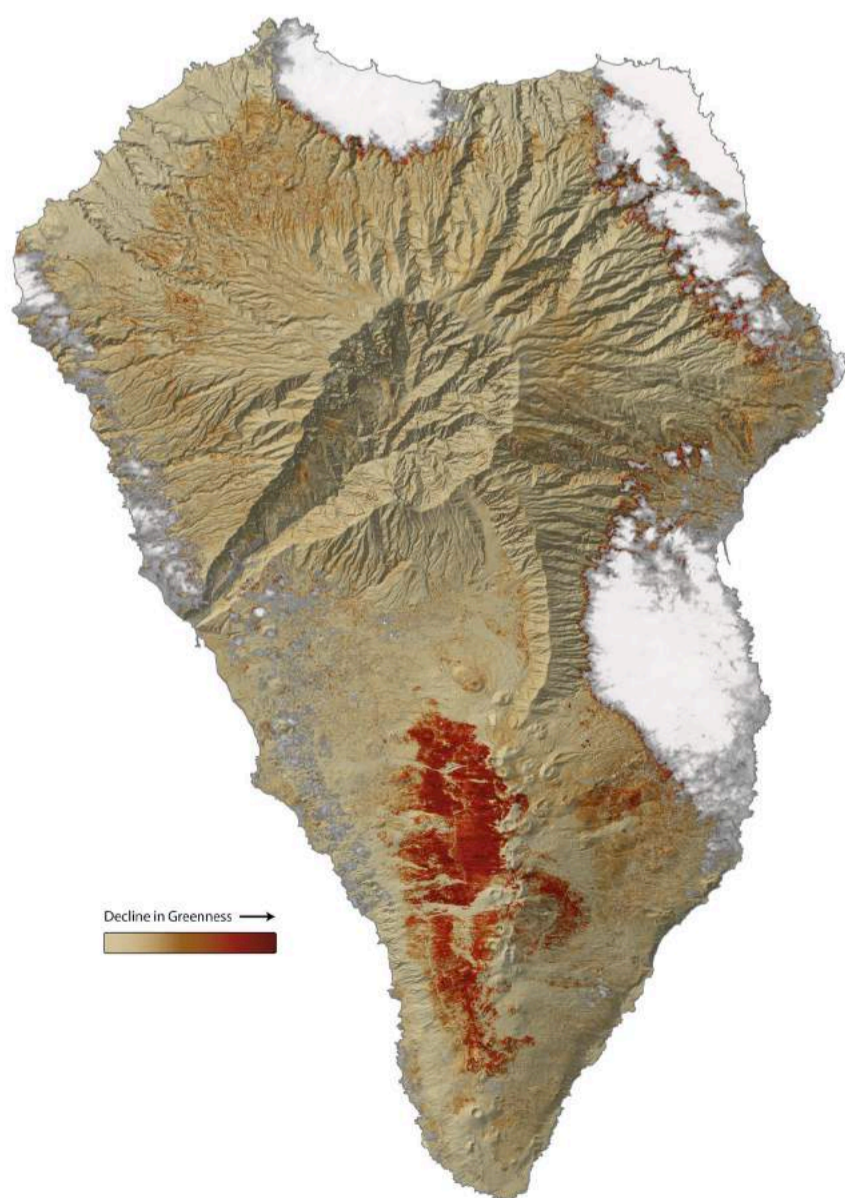
La Palma Biosphere Reserve, Canary Islands - Spain

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March 2019



				FRI	SAT	SUN
				1	2	3
MON	TUE	WED	THU	FRI	SAT	SUN
4	5	6	7	8	9	10
MON	TUE	WED	THU	FRI	SAT	SUN
11	12	13	14	15	16	17
MON	TUE	WED	THU	FRI	SAT	SUN
18	19	20	21	22	23	24
MON	TUE	WED	THU	FRI	SAT	SUN
25	26	27	28	29	30	31

Under the ECOPOTENTIAL project, threats and disturbances to biodiversity in La Palma Island are being studied with the help of Earth Observations. Satellite imagery is used to study the health of ecosystems and how they change over time. The extent and intensity of forest fires can also be recorded. The results from this work are being shared with the local managers and used for capacity-building in scientific field courses.



Image © ADERE Peneda-Gerês

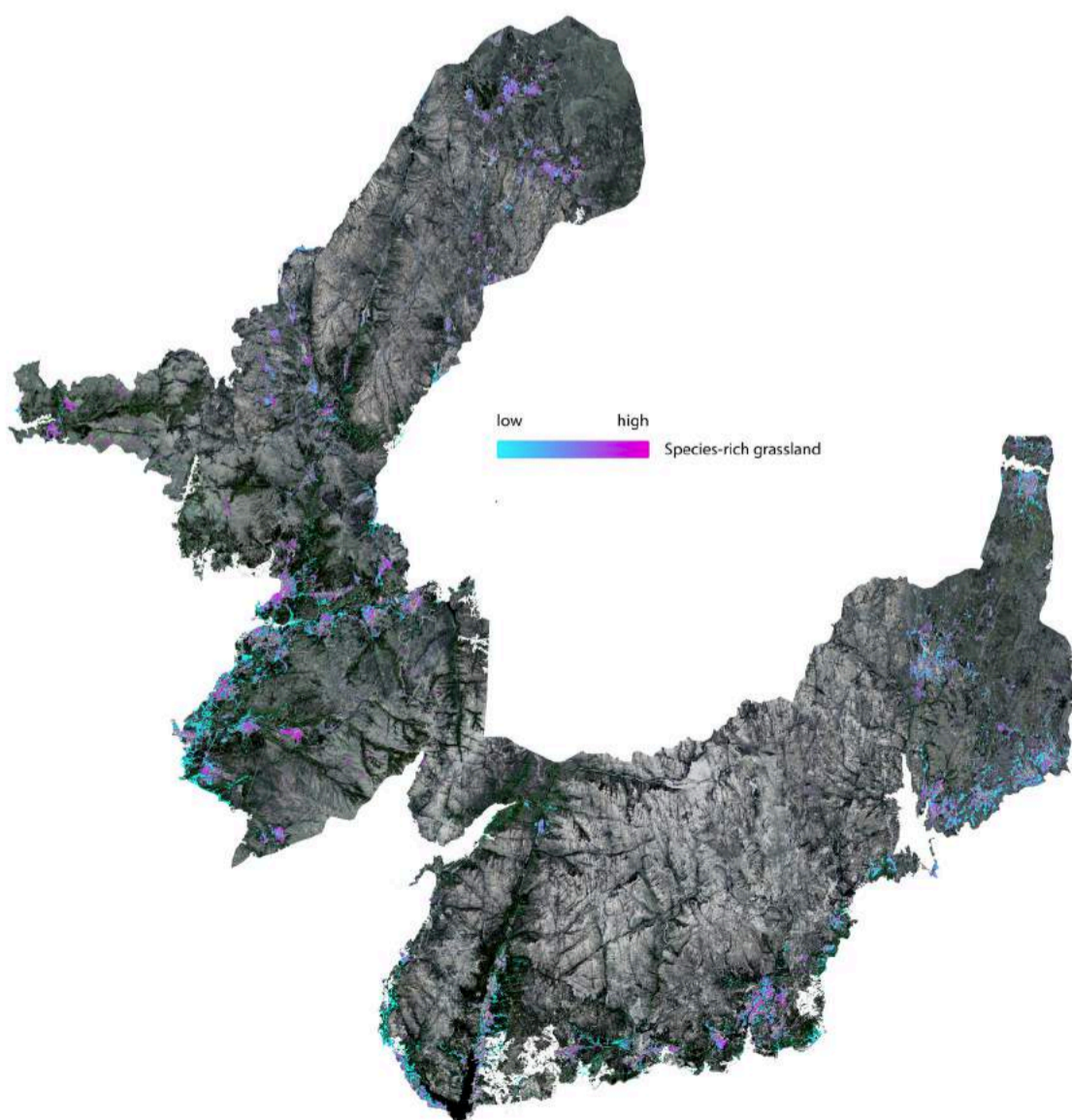
Peneda-Gerês National Park - Portugal

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April 2019



MON	TUE	WED	THU	FRI	SAT	SUN
1	2	3	4	5	6	7
MON	TUE	WED	THU	FRI	SAT	SUN
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MON	TUE	WED	THU	FRI	SAT	SUN
15	16	17	18	19	20	21
MON	TUE	WED	THU	FRI	SAT	SUN
22	23	24	25	26	27	28
MON	TUE					
29	30					

Earth Observation products are used by ECOPOTENTIAL scientists to produce a time series of grassland habitat maps in Peneda-Gerês National Park. Data on plant diversity collected in the field are used to develop a biodiversity model that assigns values of plant-species richness to mapped grasslands. This allows park managers to manage biodiverse grasslands, which have highest conservation priority in the EU. This approach can also track changes over time and anticipate future shifts under global change.

Species richness in the grasslands of Peneda-Gerês National Park, obtained combining habitat detection and modelling with ESA Sentinel-2 data by ICETA, CIBIO-InBIO, Portugal.



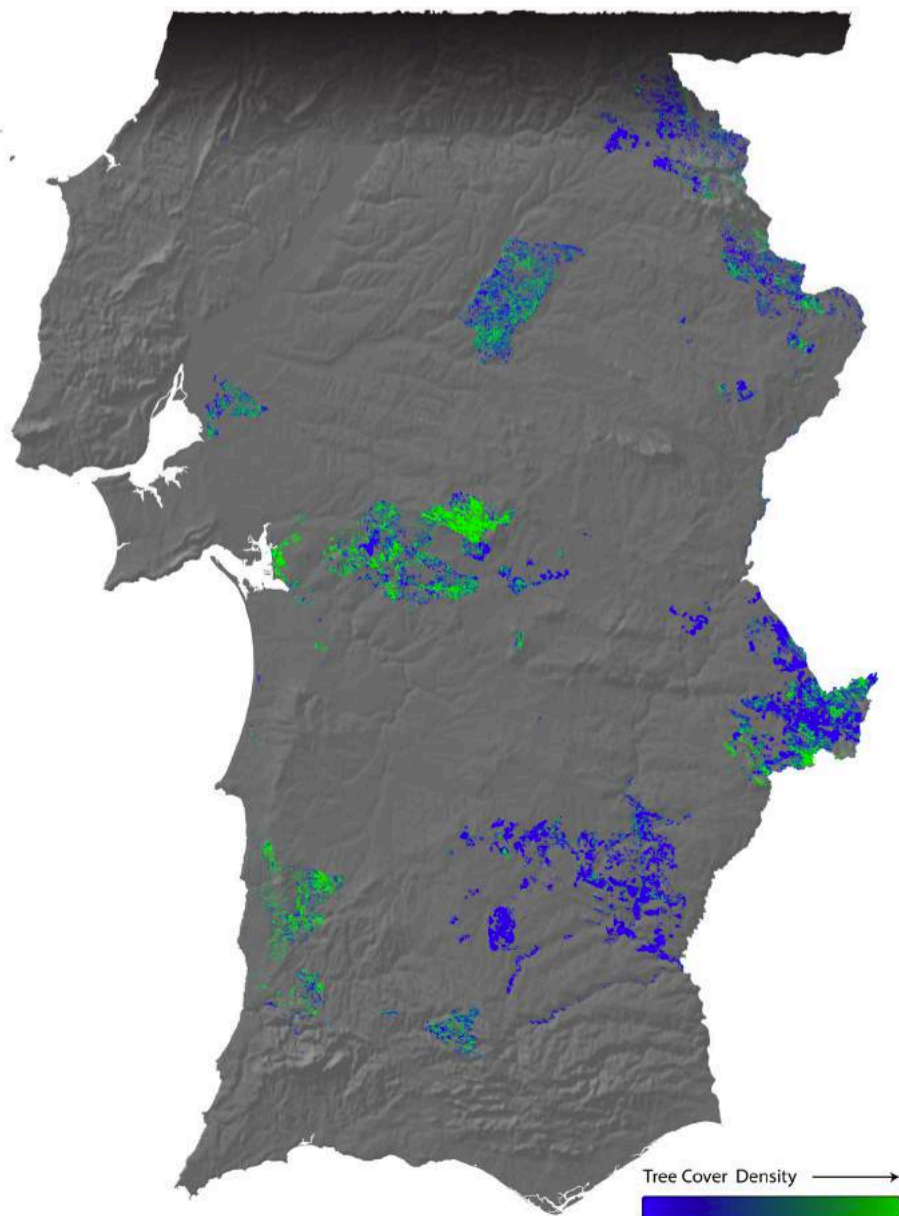
Image © Rui Cunha

Montado - Portugal

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May 2019

		WED	THU	FRI	SAT	SUN
		1	2	3	4	5
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MON	TUE	WED	THU	FRI	SAT	SUN
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MON	TUE	WED	THU	FRI	SAT	SUN
20	21	22	23	24	25	26
MON	TUE	WED	THU	FRI		
27	28	29	30	31		

The ECOPOTENTIAL project is using indicators, such as Tree Cover Density or Leaf Area Index, to monitor changes in tree cover and to track tree mortality and weakening. This information, combined with field data, allows researchers to assess the age structure of montados, pasture growth, and soil and water dynamics, allowing the regular assessment of the state of large areas and improving management practices.

Tree cover density within Montados listed under the Natura 2000 Sites of Community Importance (SIC) of the Alentejo region, southern Portugal. ESA Sentinel-2 data processed by UPS-CESBIO.

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Image © Dimitris Pourssanidis

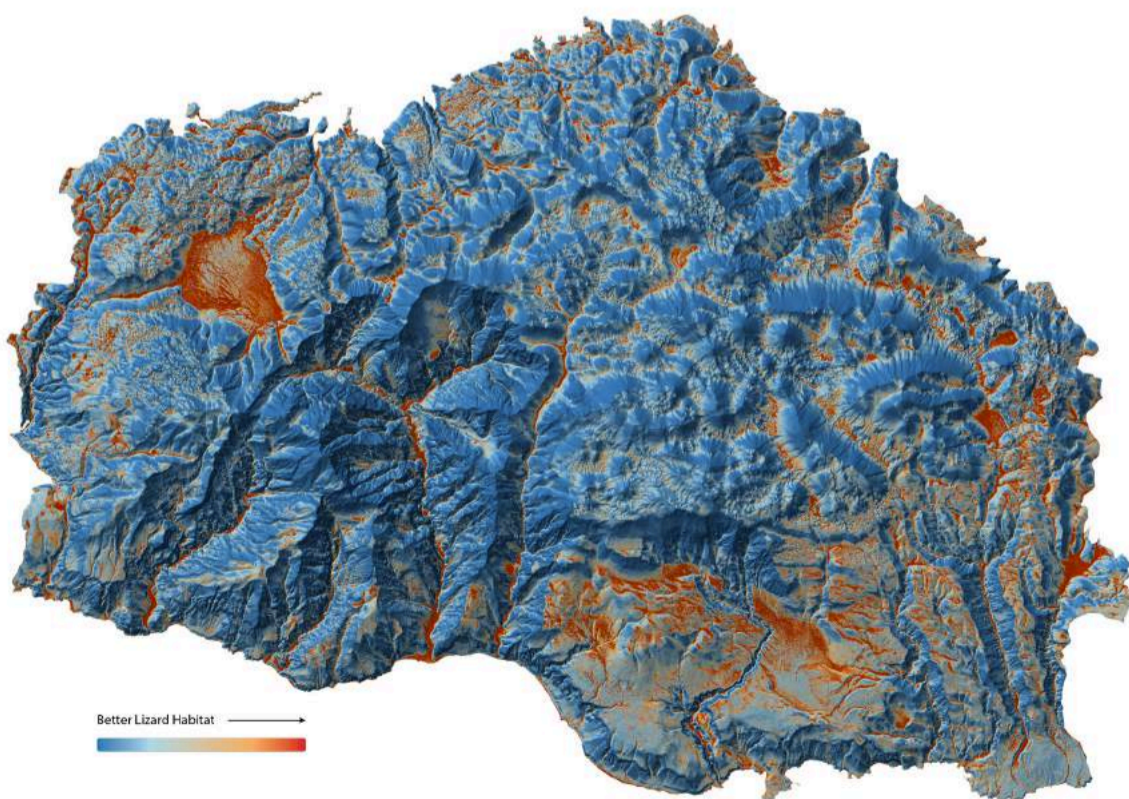
Samaria National Park - Crete, Greece

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June 2019



					SAT	SUN
					1	2
MON	TUE	WED	THU	FRI	SAT	SUN
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MON	TUE	WED	THU	FRI	SAT	SUN
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MON	TUE	WED	THU	FRI	SAT	SUN
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MON	TUE	WED	THU	FRI	SAT	SUN
24	25	26	27	28	29	30

The Samaria National Park is located in Western Crete. It is home to six species of lizards, including the endemic Cretan lizard (*Podarcis cretensis*), whose habitat is studied by ECOPOTENTIAL scientists by means of Earth Observations, Digital Surface Models, future climate projections and mathematical models. Their combined use allows to predict the spatial distribution of lizards and their future locations.



Image © Eloy Revilla

Doñana National Park - Spain

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MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
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15	16	17	18	19	20	21	22	23	24	25	26	27	28
29	30	31											

July 2019

The ECOPOTENTIAL research in Doñana National Park combines bird monitoring data with Earth Observations to gain a better understanding of how bird occurrence is related to wetland features. Flooding variations are mapped and monitored. Satellite images, interpreted on the base of field data, are used for management and for conservation of endangered species. Modifications in the wetland structure due to sedimentation or variable flooding are assessed for estimating the future anthropic and climate change impacts.



Comparing Remote Sensing images in different seasons allows to detect changes in flooded areas. Landsat imagery Courtesy of NASA/U.S. Geological Survey. Processed by LAST-EBD (CSIC).



Image © F. Bassemayousse/WWF France

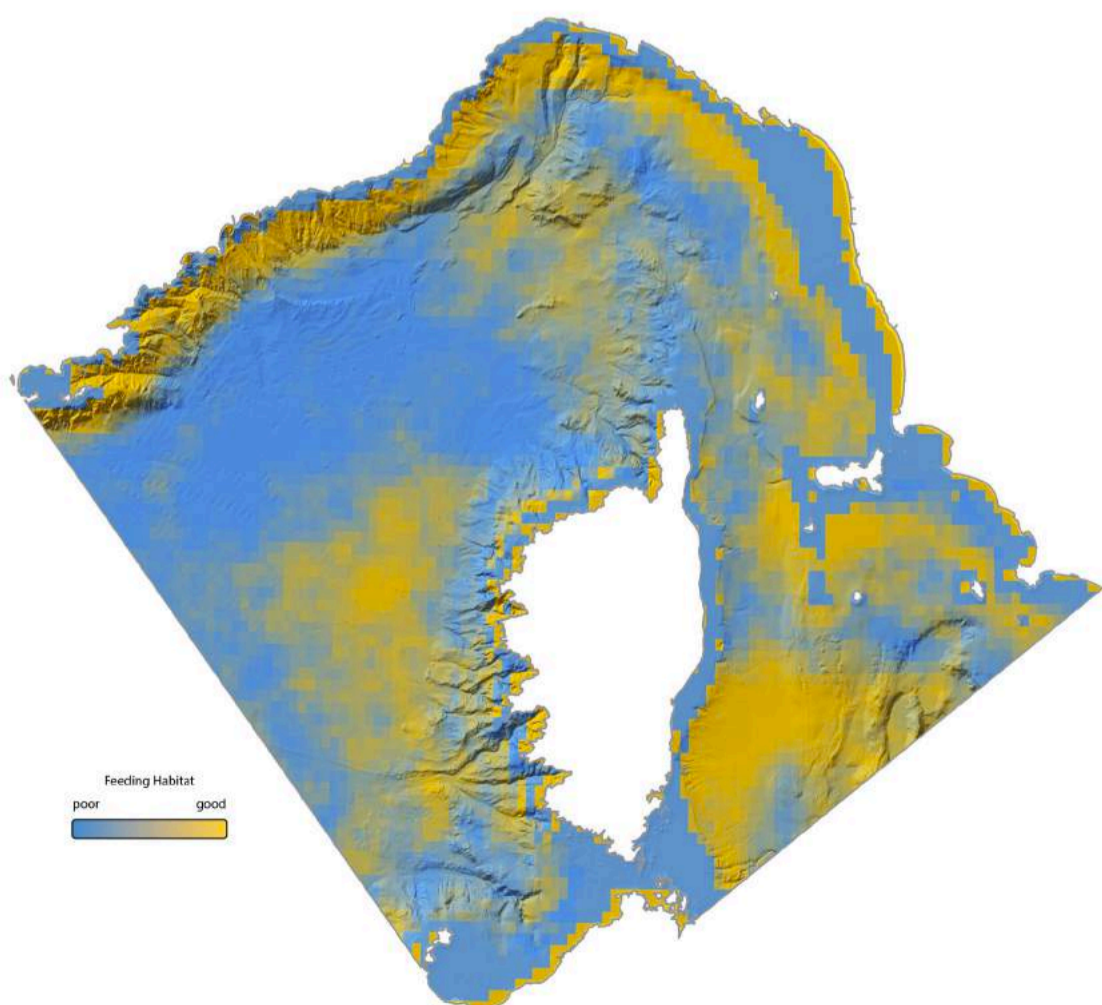
Pelagos Sanctuary - Italy, Monaco, France

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August 2019



Feeding Habitat
poor good

	MON	TUE	WED	THU	FRI	SAT	SUN
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MON	5	6	7	8	9	10	11
MON	12	13	14	15	16	17	18
MON	19	20	21	22	23	24	25
MON	26	27	28	29	30	31	

ECOPOTENTIAL is working to combine satellite imagery, in-situ observations and ecological modelling with information from whale-watching operators and shipping for improving the protection of marine mammals in the Pelagos Sanctuary for Mediterranean Marine Mammals™, an international marine protected area between mainland France, Italy and Corsica. Together with the British Antarctic Survey, ECOPOTENTIAL applies very high-resolution satellite imagery to find fin whales from space.

Quality of feeding habitats for fin whales within the Pelagos Sanctuary modelled from trends in ocean productivity (2003-2016).
Data source: European Commission, DG Joint Research Centre.

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Image © Rijkswaterstaat

Wadden Sea - Denmark, Germany, The Netherlands

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23	24	25	26	27	28	29	30						

September 2019

ECOPOTENTIAL is using 3D models to simulate how the birds' food sources, including mussels and cockles, are faring in the Wadden Sea. Satellites can detect the algae and the larger mussel and cockle colonies, as well as sand and mud bars. The model, fed by Remote Sensing data, predicts how these creatures will spread and develop across the Wadden Sea. Policy and management strategies can also be incorporated into the model to determine how future food supply may be impacted by these strategies.



Composite satellite image of the Dutch Wadden sea as outlined in the context of Natura2000 including a 20 km buffer around the edges. Produced from ESA Sentinel-2 data.

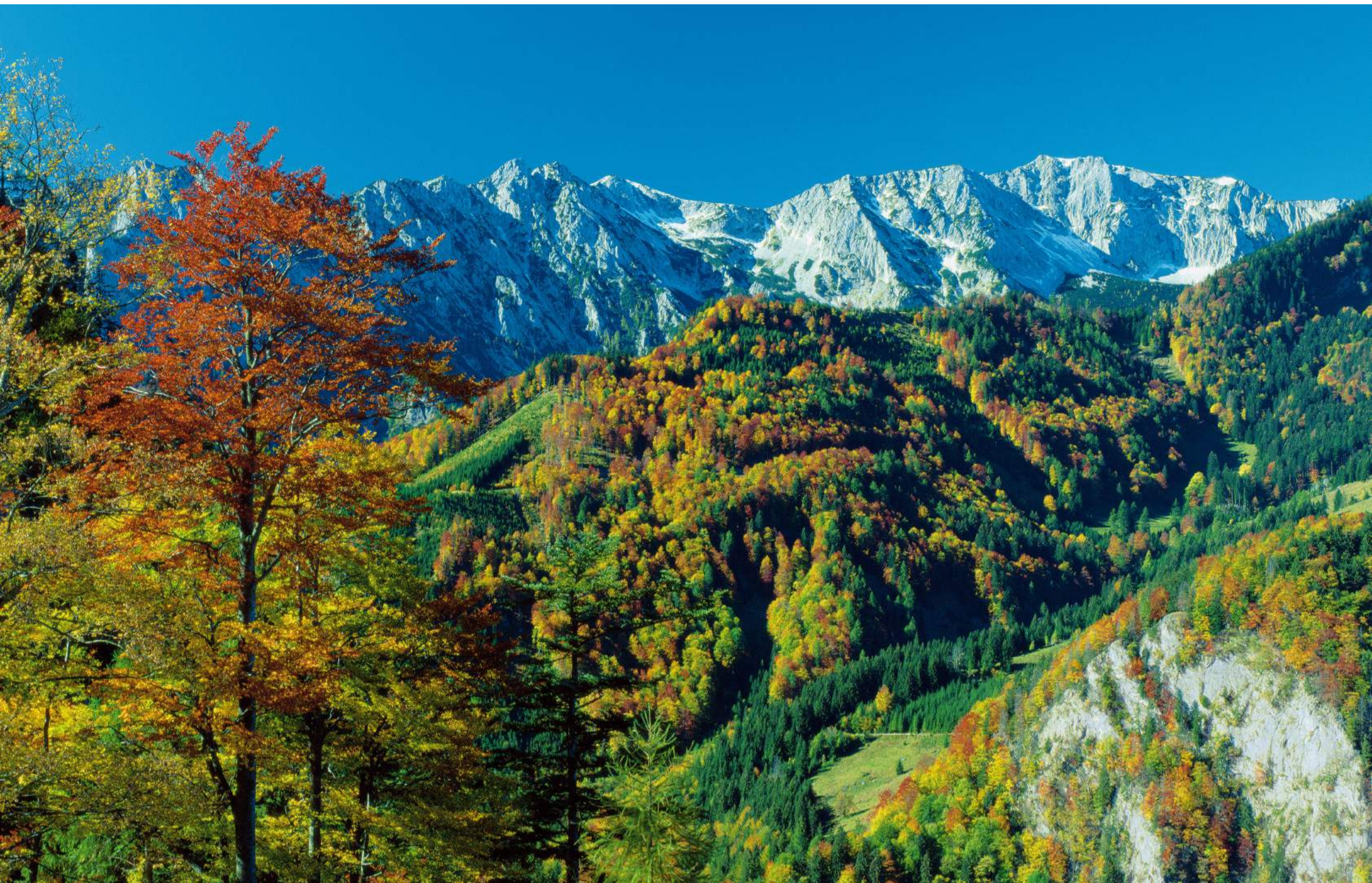


Image © Roland Mayr

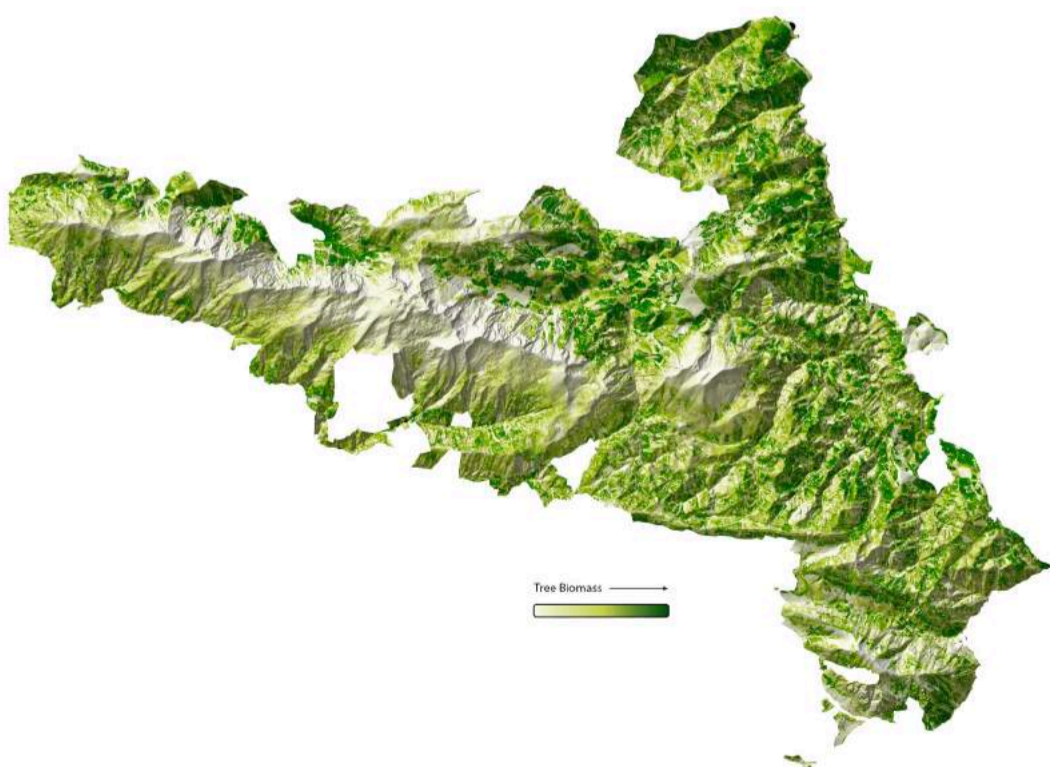
Kalkalpen National Park - Austria

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This project is funded by the European Union

October 2019



	TUE	WED	THU	FRI	SAT	SUN
	1	2	3	4	5	6
MON	TUE	WED	THU	FRI	SAT	SUN
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MON	TUE	WED	THU	FRI	SAT	SUN
14	15	16	17	18	19	20
MON	TUE	WED	THU	FRI	SAT	SUN
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MON	TUE	WED	THU			
28	29	30	31			

In Kalkalpen National Park, ecosystem models are used to assess the effect of storms and insect infestations on carbon loss to the atmosphere and nitrate loss to groundwater. At the same time, satellite data is analysed to improve forest vegetation inputs to the model. In the future, the models will be run with climate scenarios to evaluate potential future impacts. The results will provide guidance to how bark beetle and wind disturbance areas should be managed to optimize both carbon sequestration and biodiversity.

Forest biomass (2011) derived from LiDAR metrics and field measurements.
Source: Province of Upper Austria. Processing: Mihai Tanase (CESBIO) France.



Image © MarcinBukowski.com.pl

Tatra Mountains - Poland and Slovakia

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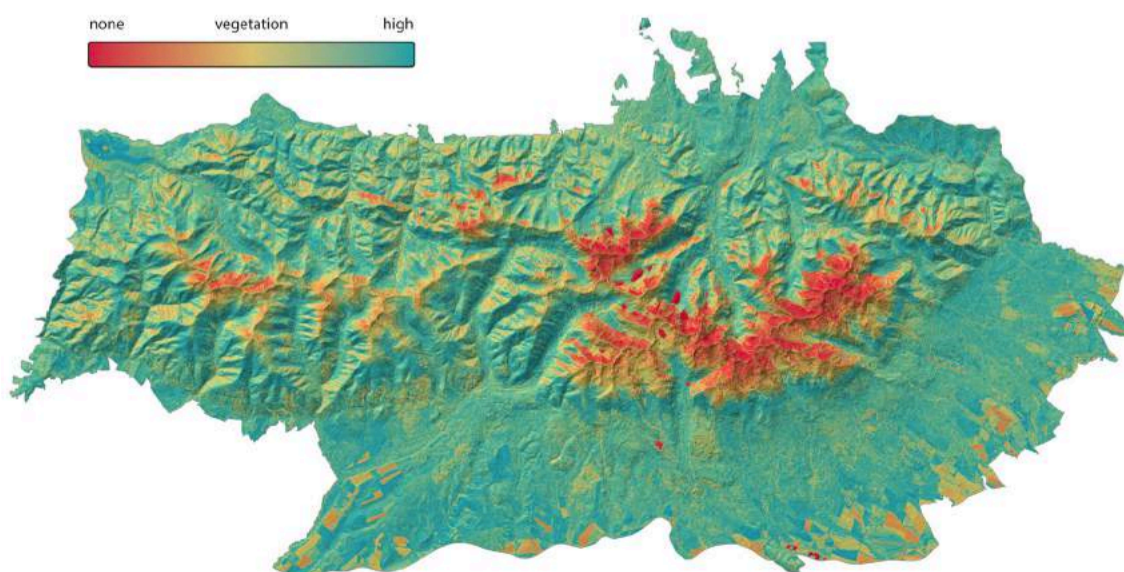


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MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
				1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	18	20	21	22	23	24
25	26	27	28	29	30								

November 2019

The Tatra Mountains have experienced events of massive dieback of Norway spruce over the past few decades. Seen as a calamity from a human perspective, such dieback nevertheless gives nature a chance to recover and return to the more natural mixed forest ecosystems. ECOPOTENTIAL studies these processes by offering remote sensing tools which, supported by aerial imagery and ground observations, enable the health of forests and the dynamics of disturbance and subsequent ecosystem recovery to be monitored.



Normalised Difference Vegetation Index (NDVI) of the two national parks which encompass the Tatra Mountains.
Produced from ESA remote sensing data (Sentinel 2) - 02/10/2017.

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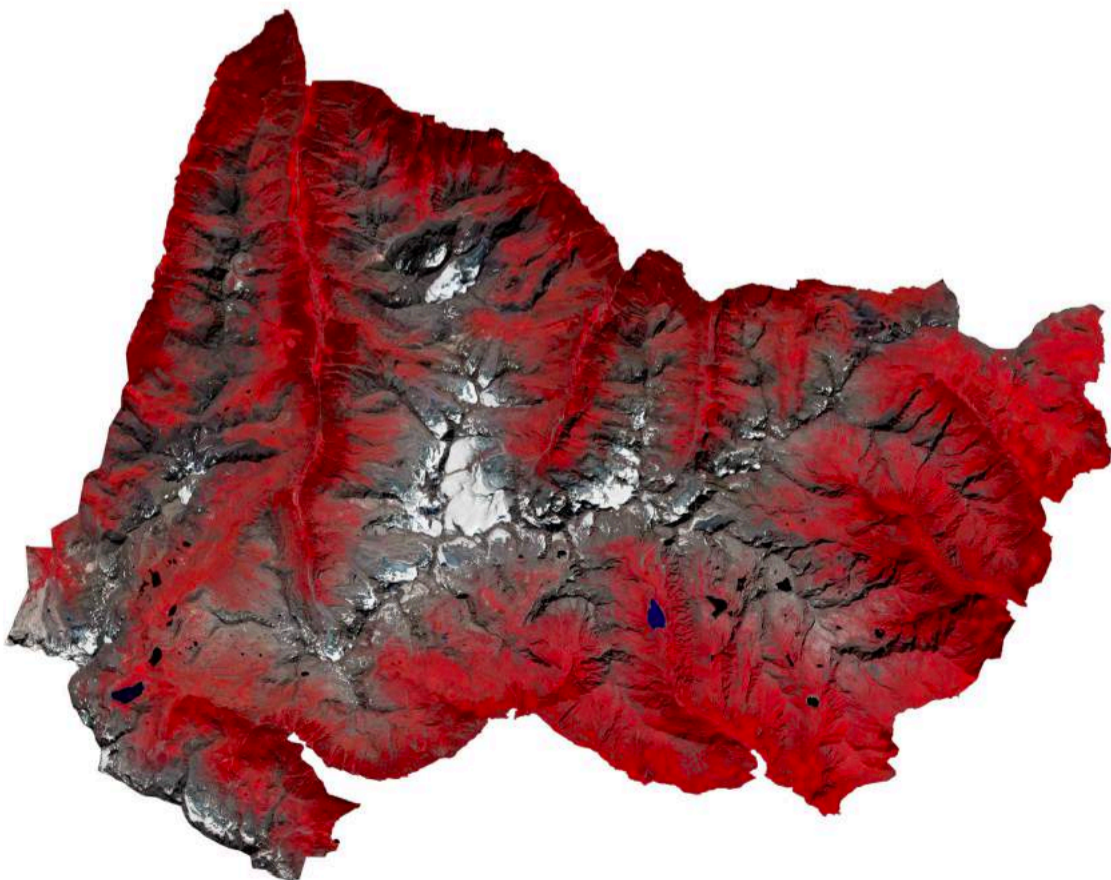
Gran Paradiso National Park - Italy

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December 2019



MON	TUE	WED	THU	FRI	SAT	SUN
2	3	4	5	6	7	1
9	10	11	12	13	14	8
16	17	18	19	20	21	15
23	24	25	26	27	28	22
30	31					29

ECOPOTENTIAL scientists are working to assess the status of the mountain grasslands in Gran Paradiso National Park, Italy, by investigating the ongoing and expected changes in rainfall, plant productivity, biodiversity and carbon cycling in meadows under different climatic and land-use regimes. Special attention is being paid to the changes affecting the Earth Critical Zone, the layer between the undisturbed rocky matrix below and the top of the vegetation, that represents the life support system for all terrestrial organisms.

False colour image of Gran Paradiso National Park (23/08/2016). Red and brown areas: active vegetation; grey and white areas: rocks and snows. ESA Sentinel-2 data (produced by CREAM for ECOPOTENTIAL).

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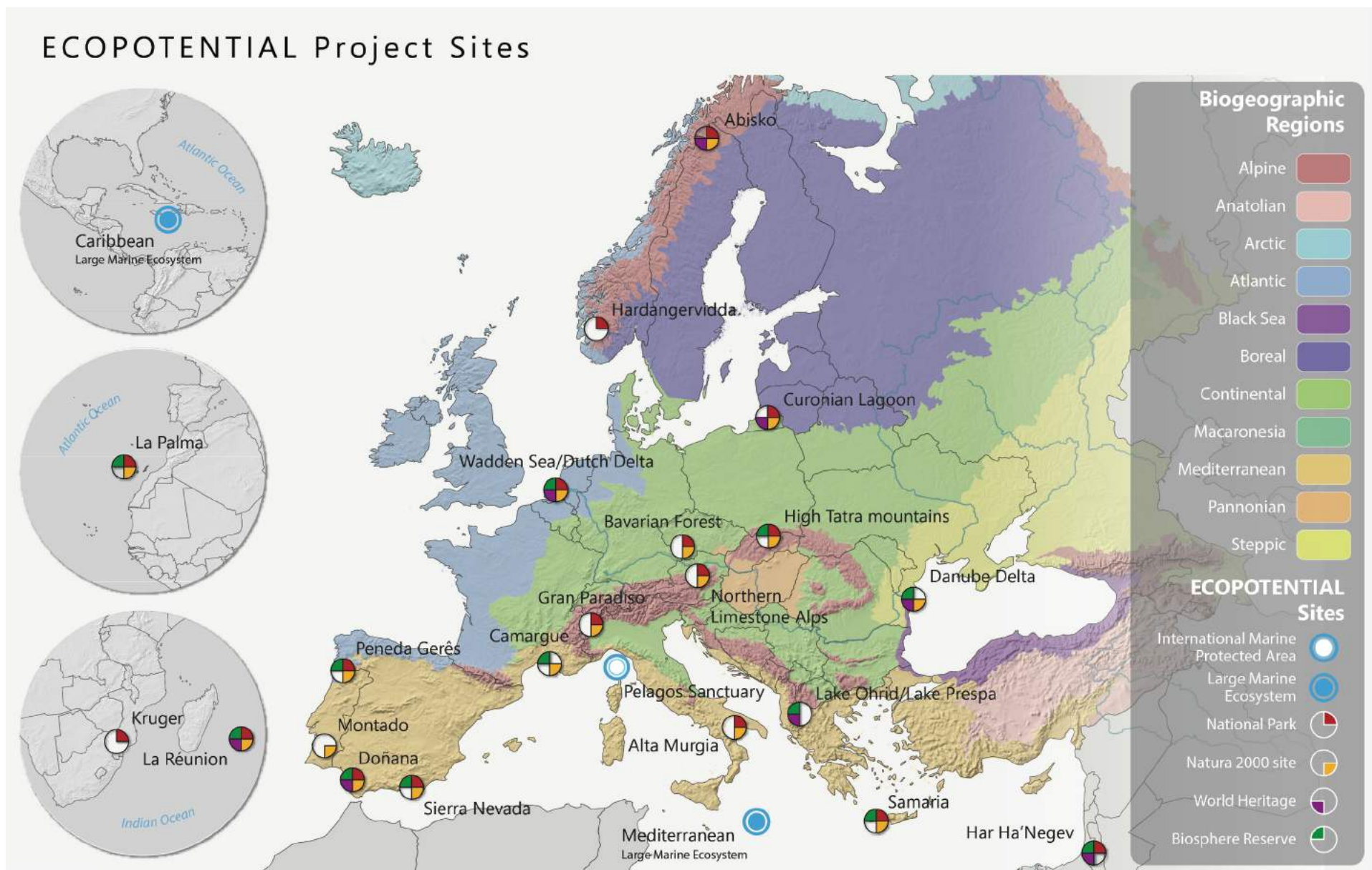
ECOPOENTIAL

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ECOPOENTIAL is a large European-funded H2020 research and innovation project that focuses its activities on a targeted set of internationally recognised Protected Areas, blending Earth Observations from remote sensing and field measurements, data analysis and modelling of current and future ecosystem conditions and services. ECOPOENTIAL contributes to improving knowledge-based ecosystem conservation and management strategies and identifies the needs of future protected areas.



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Cover: Gran Paradiso National Park, Italy © Antonello Provenzale

