

France

An observatory for reliable monitoring of soil artificialisation

A better understanding of the phenomenon of soil degradation and promoting awareness of these issues is the dual objective of the artificialisation observatory in France.

The initiative is implemented under the supervision of the Ministry of Ecological and Solidarity Transition, to which National Institute of Geographic and Forest Information (IGN) contributes.

The national biodiversity plan of July 2018 has the unprecedented ambition of developing an inventory of the use of space and providing territories and citizens with soil degradation data under comparable territorial scales published annually. It also includes the need to define the time horizon to achieve the objective of zero net artificialisation.

Within the Plan's framework, the Ministry of Ecological and Solidarity Transition launched a national reference system in July 2019. As the display portal, the observatory of soil, managed by IGN and other national agencies, provides data to measure the consumption of natural agricultural and forest areas.



Anyone can access the information, which includes a cartographic tool displaying binary artificialisation flows (artificialised/non-artificialised), computed from the land files of the Cadastre. Large-scale land cover and land use data will provide better resolution than the current land parcel, as well as richer nomenclature (beyond the binary). These data will be available for download.

To deliver the data, IGN is first building a framework from existing data, which is updated regularly. Then, based on training data, a deep learning process is initiated on orthophotography and satellite images. The multitude of objects detected, such as forests, meadows, buildings, parking lots and vines, will be distributed by land use classes through a vectorisation and aggregation process. This benchmark data will allow stable monitoring of

artificialisation covering the entire territory with an update rate of three years, at sustainable costs, and available as open data.

Prototyping is underway in the city of Arcachon in the Gironde with a deadline of June 2020 when national implementation will be decided. The challenge is ensuring that data meets user expectations, adjusting the specifications to the definition of artificialisation, and producing data in the most automated way possible from aerial shots taken in 2015 and 2018, as well as satellite images, through deep learning to achieve a partition of the territory into homogeneous plots.