The Finnish Environment Institute SYKE
– Open environmental information for the building of a sustainable society

SYKE produces reliable data to resolve environmental challenges and to support decision-making.

We aim to strengthen the role of citizens in the production and utilisation of environmental information.

New environmental information collection methods are developed for companies, citizens, public authorities and researchers.

citizens, companies, ministries
MAKING LAND COVER DATA AVAILABLE TO ALL

SYKE has monitored the Finnish land cover and its changes for a long time with the help of geographic data sets and satellite images. This comprehensive land cover data is utilised, for example, to model both the movement of nutrients into aquatic systems and also for the planning of electrical power grids. In addition to land cover data, the geographic data services of SYKE include information from the whole of Finland about water resources, biological diversity, environmental load and the built environment.

authorities, citizens, national and international research partners, media
REMOTE SENSING IS USED TO MONITOR THE STATE OF THE ENVIRONMENT

The satellite data produced by SYKE is used extensively to monitor the state of the environment. Authorities, citizens and the national media alike can follow the recorded daily changes in water quality in surface water areas through SYKE's TARKKA and PINTA services. One of the most eagerly followed topics is the status of the blue-green algae blooms in Finnish coastal waters and lakes during the summertime. Other popular topics include surface water temperatures, ice melting and the impact of river waters on the coastal areas. SYKE's STATUS information system is directed at authorities and is used for official evaluations of the state of the environment.

The information systems of SYKE include information from the whole of Finland concerning water resources, biological diversity, environmental load and the built environment.

The open information reserves can be studied and observed or downloaded for further processing. The interfaces allow for easy and quick use of the material.

All open environmental data can be found at
www.syke.fi/en-US/Open_information

MACHINE VISION AGAINST INVASIVE ALIEN SPECIES

Machine vision is used to identify and map invasive alien plant species by utilising a method developed by SYKE and its partners. Many alien plant species have overrun the established native species and reduced the biological diversity. Using machine vision, it is possible to save thousands of euros when alien species are detected in time and the establishment of viable populations is prevented. Furthermore, machine learning and artificial intelligence-based support methods can be utilised for decision-making in the management of green areas, the drafting of nature reports, in the assessment of town planning impacts and in environmental permit procedures.

NEW GENETICS METHODS TO IMPROVE THE MONITORING OF WATER CONDITIONS

Modern DNA techniques provide a quick, reliable and cost-effective way of identifying the biota in water courses. The DNA barcoding methods developed and tested by SYKE and its partners are used to produce high-quality monitoring data for the evaluation and classification of the state of waterways. Furthermore, valuable information is gained on species which have been arduous or impossible to identify with traditional methods. Genetic taxa identification methods also support the assessment and protection of biodiversity.

CITIZENS AS THE PRODUCERS OF ENVIRONMENTAL INFORMATION

Citizens can actively contribute to the production of environmental information by collecting, analysing and using information pertaining to the state of the environment. With the help of SYKE's CitobsDB service platform, citizens' observations can be easily collected through different websites, and the information can be flexibly turned into open datasets that can be linked to other information. For example, the Järviwiki (Lake and Sea Wiki) online service is used to gather algae and jellyfish observations and water quality data through co-operation between nature enthusiasts and the authorities. During the abundant algae blooms of summer 2018, the Järviwiki website had as many as 24,000 visitors a day. Observations of school pupils are also gathered, for example, for winter monitoring and for water quality monitoring.

WATER STATUS DATA FACILITATES THE ADAPTATION TO THE CHANGING CLIMATE

The environmental authorities of Latvia utilise the nation-wide waterway model system developed by SYKE in the drafting of flood forecasts and in preparing for flood events. The waterway model system combines hydrological observations and weather forecasts to provide real-time predictions for water levels and flows in waterways, as well as for ground water levels.

SYKE'S GEOGRAPHICAL INFORMATION SERVICE IS USED TO SECURE THE ARCHAEOLOGICAL NATIONAL RELICS OF EGYPT

The geographical information system implemented by SYKE is also used to protect valuable archaeological sites during the construction of the new metro line in Cairo. The information system serves the Egyptian authorities and also the extensive international research community in the field of Egyptology and archaeology. With the help of expertise provided by SYKE, the capacity of the Egyptian Antiquities Authority's GIS centre was improved, and the information system can be extended to cover all sites with cultural and historical value in Egypt.