TRAINING: ESA 12th Training Course of Earth Observation and seminar recordings

On 27 June - 1 July 2022, ESA held the 12th Training Course on Earth Observation (EO) in Latvia. With 35 participants and twice as many applications received, EO experts delivered practical seminars on EO data and information (SAR and optical) and its applications, EO missions and EO Open Platform. In the article, you will find recording of the seminars.

Training material: https://eo4society.esa.int/resources/12th-esa-training-eo-2022/

Aim: The training is designed to promote and disseminate Earth Observation (EO) data and information-based solutions in a variety of scientific and industrial fields by providing theoretical information followed by practical computer exercises using EO data, primarily, Copernicus Sentinel data.

Target audience: The course is intended for researchers, students, PhD students and young professionals who use EO technology within their research or work and want to improve their knowledge of remote sensing. Preference will be given to applicants from Latvia and from other Baltic countries.

Required level of pre-existing knowledge in EO: basic skills in remote sensing and/or Geographical Information Systems.

Concept: The five-day course, taught by ESA experts will combine theory and practice. Participants will learn about optical and radar satellite data applications with a focus on real-world applications in sectors relevant to Latvia's geography and needs, such as land use, agriculture, forestry and ground motion. Nonetheless, the participants will be able to apply their knowledge and skills in other EO target sectors such as marine environment monitoring, emergency management, smart cities and many others.

Organisers: Ministry of Education and Science of the Republic of Latvia, European Space Agency, Institute of Environmental Solutions and Riga Technical University.

Topics covered:

- introduction to ESA EO missions;
- SAR & optical data for land cover applications, including climate change impact;
- SAR & optical data for forestry, including climate change impact;
- SAR & optical data for agriculture, including climate change impact;
- InSAR data, including terrain motion due to gas;
- SAR Marine applications and intro to Open EO Platform.

About the Copernicus programme and Earth Observation: Copernicus is a European Union Earth Observation program. It provides information services based on satellite Earth Observation and in-situ (non-space) data. The Copernicus program is managed by the European Commission, and the European Space Agency plays a key role in its implementation.

Earth Observation data enables efficient monitoring of the Earth from a distance and can deliver information that is not visible to the naked eye – a capacity enabled by radars and optical sensors onboard satellites. EO solutions can incorporate and reinforce digital technologies such as the Internet of Things (IoT), Big Data analytics, fifth-generation (5G) mobile electronic communications networks, Artificial Intelligence (AI), High-Performance Computing (HPC), Digital Twins and so on.

These space-borne data are actively used not only by professionals but also by members of the general public who lack niche specialisation or education in the space

sector. Satellite data and information can be used for analysis, monitoring and informed decision-making in the following areas:

- air quality and chemical composition of the atmosphere;
- forest and marine environment;
- state of the forests and ice coverage;
- climate change;
- energy and energy efficiency;
- smart agriculture and farming;
- land movement and evaluation of its hazards;
- emergency response and disaster risk management;
- road, maritime and air transport;
- smart logistics;
- smart cities;
- safety, security and defense;
- etc.

Companies within various industries, in collaboration with researchers, use space data and technologies to innovate and respond to global challenges as well as to invent solutions and improve our conventional approaches in all economic spheres for efficiency, productivity and quality.

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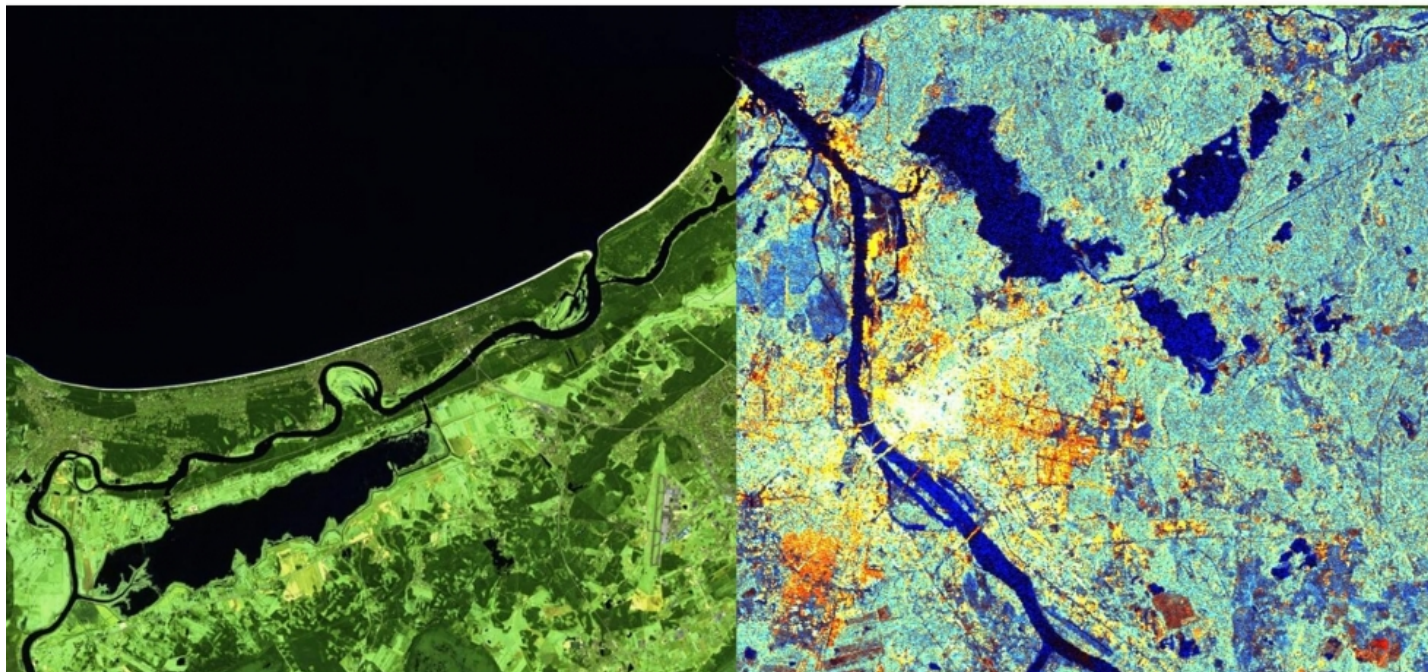
Featured image: Riga, Latvia. Contains modified Copernicus Sentinel data (2022) processed by ESA with Sentinel Hub EO Browser