Citizen Science Projects (MOOC) 3.7

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Speaker: Valantis Tsiakos
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Script	Visuals
[Music]	FutureLearn opening animation
[Music]	WeObserve logo | University of Dundee logo
VALANTIS TSIAKOS: Ground Truth 2.0 is a group of six different observatories dedicated to observing different aspects of environmental monitoring. So the analysis of data is made at each observatory level. A data quality analysis approach has been developed within Ground Truth 2.0, for the whole set of observations through the project, coming from all the observatories. We developed a tool that focuses on user-generated data quality indicators for citizen science data sets from the quality email list. The tool requires that data is exposed on the web as a service, using the Open Geospatial Consortium central observation service.	
It presents a set of tests like positional accuracy, attribute consistency, confusion matrix, and so on, that can be applied to a complete data set or an area the user is visualising. A result, including an overall quality indicator for the data set and highlights on the observations that were detected as less accurate. This approach was developed by Ground Truth 2.0 in close communication with NetSense. It is included as a component in the WeObserve interoperability experiment, in cooperation with the NextGEOSS and the OGC. The approach will make it applicable to SOS services of any kind, even beyond the Citizen Science domain.	
GROW trains participants and gives them resources to help them handle, analyse, visualise, and gain insight from their own data, including a map of soil sensors and soil moisture and the soil water content tool. As	

part of GROW's online courses, we conducted a collective experiment to compare growing food crops in a monoculture and a polyculture to see which would give more vegetables. As part of this process, participants found out how to set up an experiment, collect data accurately, and analyse the results. GROW also offers resources for people collecting soil moisture data with sensors, to show them how to download and analyse the data they collect.	
Within SCENT Citizen Observatory, we have implemented different tools to analyse the citizen science data collected. For example, SCENT diligence engine uses state of the art machine learning techniques to ensure that all the available information, including in the multi-media collected by the citizen scientists, is fully utilised. The framework is set up to automatically classify and annotate images, according to existing land cover and land use information. It can also extract information about the water level and the water velocity from images and videos. A data quality system is also in place, so as to ensure that information is provided in a sufficient level of quality so that it can be used for decision making purposes.	
Once validated, the data are moved to the harmonisation platform that translates them to standardised resources, following the Open Geospatial Consortium standards. Their resources are modelled under different standards, such as the OGC's SensorThings API, aiming to ensure their operability and facilitate their integration into new models and applications. Finally, the crowdsourced data are integrated into hydrodynamic and hydrological models, resulting to improved flood risk maps and spatiotemporal flooding patterns.	
[Music]	Partner logos

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