

Developing a global soil data infrastructure - The Open Geospatial Consortium Soil Data Interoperability Experiment

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In 2015 agencies from Australia and New Zealand led an international soil data exchange experiment that implemented standardised web services to test the feasibility of a global soil data infrastructure.

Digital soil mapping and modelling techniques often rely on dispersed, inconsistent and difficult to access digital data that must be harmonized before use. Various initiatives in Europe and Oceania have attempted to address this by defining soil information models to support the exchange of soil data. Yet despite these endeavours, soil scientists still have a situation where they must reconcile data from multiple systems.

The International Union of Soil Sciences Working Group on Soil Information Standards (WGSIS) is working to define a single language for the exchange of globally consistent soil information. The WGSIS has advanced this work by running an Open Geospatial Consortium Interoperability Experiment. This experiment defined and implemented a simplified soil information model by consolidating core concepts and features from existing standards, and testing the result against an agreed set of use cases for the exchange and analysis of soil data.

Landcare Research and Horizons Regional Council in New Zealand and, CSIRO and Federation University in Australia deployed services and web clients that demonstrated the delivery and integration of soil sampling and sensor data. These were combined into a larger dataset that included contributions from participating agencies in Europe and North America.

The initiative, demonstrated here, showed that soil data interoperability can be achieved and that the development of a unifying soil information model has been well advanced by existing work. Future work will extend this information model into a comprehensive product that will support the implementation of harmonized soil data services and models. Applications will include the provision of data from national soil databases, and sensor systems that support digital agriculture or environmental monitoring and reporting.