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A Sensor Observation Service Extension for the GeoServices REST API

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This presentation demonstrates an extension for the GeoServices REST API implemented on the ArcGIS server platform to provide near real time environmental data. The software has been developed by 52°North in context of a project with the European Environment Agency (EEA). The EEA collects huge amounts of environmental data from various agencies of the different EU member states and needs to redistribute them to decision makers as well as the general public. The key element of EEA's strategy to distribute these data is the compliancy to open standards. Relevant standards are developed and governed by the Open Geospatial Consortium (OGC); on the one hand the GeoServices REST API, currently making its way through the standardization process, and on the other hand the Sensor Observation Service (SOS), a web service interface specialized for the retrieval of sensor observations.

In this work, we have combined these two standards. Therefore, we have extended the GeoServices REST API to support the provision of sensor observations, by resembling the functionality of the SOS 2.0 interface. The defined extension for the GeoServices REST API offers a simple request and response encoding of the SOS 2.0. It is aligned with the abstract service model of the SOS 2.0 specification, but provides a new implementation of this standard which complies to the GeoServices REST API. The SOS extension allows querying of observations, metadata about sensors, as well as descriptions of features observed by the sensors. These data sets are made available as resources. Either all available resource instances can be queried or the resources can be filtered with powerful query operations.

The software is implemented as a so-called Server Object Extension, or short SOE, for ArcGIS Server 10.1. This presentation will demonstrate the SOE deployed for air quality observations measured from a network of over 1.500 stations all across Europe. In the coming weeks, the SOS Extension will be further enhanced so that also fully SOS 2.0 compliant requests can be sent to the service and SOS compliant responses are returned.