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ADAGUC Open source visualization for atmospheric data

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ADAGUC is an Open Source geographical information system to visualize atmospheric data over the web. Supported data types are model grids (structured and curvilinear grids), gridded data from satellite and radar observations, full color satellite imagery, satellite swath data, point observations, point time series and polygons. These data types can be stored in NetCDF, HDF5, GeoJSON or CSV files or be accessed through an OPeNDAP service. The software consists of a server-side C++ application and a client-side JavaScript application. It uses OGC Web Mapping (WMS) and Web Coverage (WCS) standards for data dissemination and OGC Web Processing (WPS) for data analytics.

ADAGUC has a number of data converters and data post processors to support various data conventions. Datasets consisting of several netCDF files can be aggregated into a single dataset and are offered over WMS, WCS and OPeNDAP. Any number of dimensions are supported (e.g. time, elevation, ensemble member, threshold, reference times) , and it can update and aggregate data on an operational webservice. ADAGUC can be used as a component for Web Processing Services to subset data and convert GeoJSON to grids. Data tiling of large satellite imagery like HIMAWARI and NOAA GOES-16 can be used to provide interactive zooming and panning while running an animation loop.

ADAGUC provides it's own web-based viewer for the web services, but generally available web clients like Google Maps, OpenLayers and Leaflet can also directly access the exposed web services. The viewer component, written in Javascript, can also be embedded as a component in other Javascript frameworks, like React. The viewer component is for example used in building the KNMI GeoWeb system.

ADAGUC server and viewer are being applied internationally in numerous projects like KNMI GeoWeb, KNMI Data Centre, IS-ENES Climate4impact, CLIPC and C3S-34a lot 2 Magic.

ADAGUC components are easily deployable by means of Docker containers. The ADAGUC software packages are available as open source software on GitHub.
New developments and lessons learned will be presented at the conference.