

Urban TEP City Data Cube service

Urban TEP sets up, hosts, and serves a city data cube for the area of a city and its surrounding with a number of thematic variables ranging from RGB to WSF and a certain temporal extent. The City Cube is extended daily with new data and keeps a constant period (one year) available all the time. The data cube can be used to combine it with other urban data. Native data cube tools and interfaces like the viewer and the API are available.

A city cube service comprises layers Sentinel-2 RGB, Sentinel-2 false colour, Sentinel-2 NDVI (all 10m), Landsat-8 RGB (pan-sharpened, 15m), Landsat-8 false colour (30m), WSF (8m), WSF Density, WSF Evolution (yearly), 5 variables from ERA5 or CAMS (interpolated, 250m), Land cover from Copernicus Land Monitoring service (100m). The cube has a spatial coverage of up to 60 km x 60 km, a temporal extent of one year, up to daily resolution, updated daily with deletion of old data (rolling archive). The cube is hosted in the cloud. It can be accessed with the data cube viewer and data cube API (web service and Python SDK). In the future, the data can also be accessed as layers in Urban-TEP VISAT. Analytic tools include the xcube API, xcube viewer, and an option for Jupyter Lab.

In addition, a subscription to City Data Cube comes with up to 400000 processing units per month of the Sentinel Hub for data cube layers served on-the-fly as well as six support cases.

Cities may have their own data from heterogeneous sources. A data cube is the way to combine them into one service. Optional services by Urban-TEP are provided to create and maintain customised cubes with:

- Tailored integration of vector or point data, e.g. administrative units or sensor data
- Additional layers, in particular layers provided by the customer for a specific city, but also e.g. additional high-resolution layers from Copernicus Land Monitoring Service
- Customised integration, e.g. to ensure frictionless functioning within existing systems and processes
- Extended time series, enlarged spatial area

- Virtual Processing Environment (pre-configured Jupyter Lab environment, pay-per use)
- Training

These activities can be requested in addition to the city cube service.

Urban TEP VISAT

VISAT is the visualisation and analytical component of the Urban TEP platform. The framework enables integration, visualisation and analysis of various datasets from various sources including OGC compliant web services (WMS, WFS, WCS, WPS, WCPS, etc.). In this context it will also provide integration to the products stored in data cubes.

Data are categorized based upon the available context – thematic, geographic and temporal - provided by metadata, which simplifies the usage for non-expert while providing more complex tools for expert users and coupled with visualisation and analytical functionalities. Technically, the platform is an integration of multiple tools and applications, deployed in a single container together with underlying infrastructure.

VISAT supports user-specific views. The concept of user templates is introduced to adapt the VISAT service offer. A template is a type of user interface with predefined data connections and tools to meet the objective of a specific VISAT application.

A VISAT service is comprised of:

- Access to various data sources including data cubes
- Access to user-defined data
- Access to existing Urban TEP functionalities
- Access to existing Urban TEP templates
- and what is included in the chosen package below

Following activities can be requested in addition to the VISAT service:

- Service design concept support
- Tailored integration into user environment
- Webinars
- Training