open weather

Big Data Weather Database and Web Service Engine

Manage and expose your **Big Data**

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ibl weather software solutions

Your Next Generation Big Data Weather Database and Web Service Engine

Do you witness unprecedented growth in weather data sources, crowdsourced observations, IoT devices, advanced highresolution ensemble numerical weather models, and next-gen satellites? In the era of Big Data in weather, the right tool makes all the difference.

Open Weather is a platform enabling weather services and organizations to ingest, catalog and expose large volumes of weather data. It's a customizable platform empowering your organisation to make the most of the weather data and provide it to other meteorological systems or expose this data to your customers from different domains such as transportation, agriculture, emergency management, or any other industry that relies on precise weather information.

OPENGIS CONSORTIUM COMPLIANCE

With Open Weather, your data will be available in a wide variety of standard outputs and protocols, including:

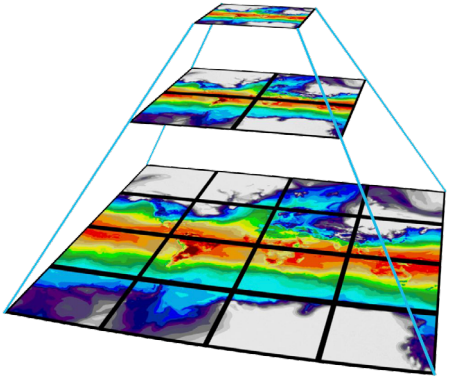
- OGC Web Map Service (WMS) 1.1.0, 1.1.1, 1.3.0 with OGC Best Practice for using Web Map Services (WMS) with Time-Dependent or Elevation-Dependent Data (1.0)
- OGC Web Coverage Service (WCS) 1.0, 2.0.1
- OGC Web Feature Service (WFS) 1.0, 1.1
- Our focus is also on providing efficient data retrieval through the OGC Environmental Data Retrieval (EDR) API, which is an OpenAPI based RESTful API 1.0.1, 1.1, 1.2

BIG DATA CHALLENGE

Open Weather is specifically designed to cope with big data challenges, with the capability to process and analyse large volumes of weather data ranging in terrabytes or to petabytes per day. This ensures that your weather data users have access to high quality, detailed and low latency weather information needed to deliver accurate forecasts or make informed decisions.

Grid Elastic Database

Gridded weather data is intelligently stored in the Grid Elastic Database (GED), which is optimised for handling and querying vast amounts of gridded data efficiently.



The Grid Elastic Database builds a pyramid of tiles from the gridded data, providing fast access to different levels of resolution. This pyramid structure enables efficient data retrieval for different zoom levels, ensuring users can access gridded weather data at various scales.

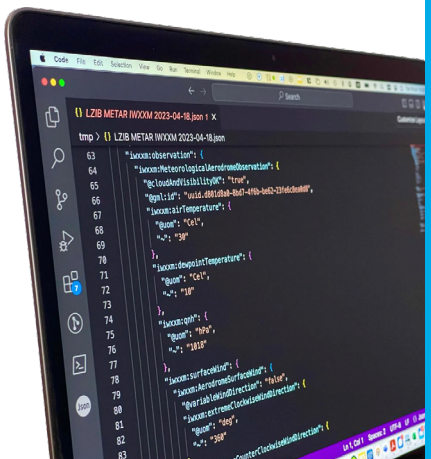
Object Elastic Database

In contrast, point observations or polygon objects, such as weather warning areas, are efficiently stored in the Object Elastic Database (OED). This database is specifically designed to handle large quantities of point-based or polygonbased weather data, allowing weather services to effectively manage and query location-specific information.

OUTPUT FORMATS

Serving diverse needs of its users, Open Weather supports a variety of output formats. This means you can receive weather data in the format that suits your requirements best, enhancing interoperability and ease of use:

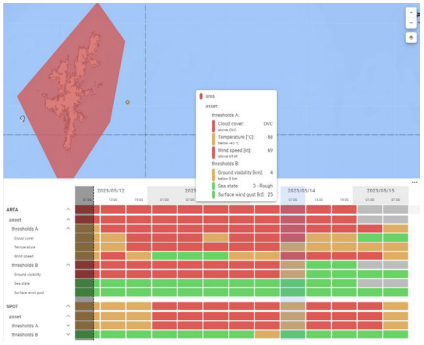
- JSON and related formats GeoJSON
- XML, IWXXM - also provides SWIM compliance for aviation CP1
- Gridded binary GRIB, NetCDF-CF, GeoTIFF
- KML



INTELLIGENT DATA SERVICES

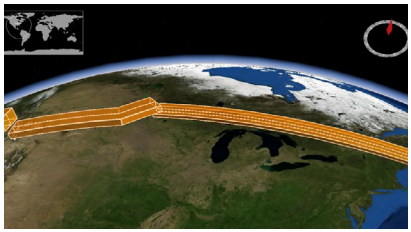
Intelligent Data Services™ in Open Weather elevate the platform to a new level of sophistication, empowering users with advanced capabilities to extract and condense valuable insights from meteorological data. IDS go beyond basic data retrieval, offering users a set of postprocessing algorithms to enhance their weather services and improve forecasting accuracy.

For instance, IDS can efficiently compute the probability of wind exceeding 80 knots within a specified polygon, for a designated window of opportunity, and within a provided area of interest - all this is a single web service request. In higher resolution models this requires a lot of information. IDS performs complex calculations close to the source data and provides condensed results such as simple probability figure.



IDS also allows users to plug in their own algorithms for tailored diagnostics, identifying optimal windows of opportunity, and deriving unique weather insights.

INTERPOLATION AND DATA SAMPLING



EDR API powers Open Weather with the ability to slice and dice data across varying geographic ranges, facilitating polygonal extractions and even complex 4D (space and time) trajectory extractions.

Moreover, EDR API amplifies the software's capability to perform intelligent data resampling and vertical and temporal interpolations. This ensures that weather data isn't just comprehensive, but is also finely tuned to user's precise needs and context.

CLOUD-NATIVE OR ON PREMISE

Open Weather is a product for the cloud era, thus achieving scalability using technologies such as autoscaling groups and serverless lambda functions. At the same time, its design also allows for scaling down, enabling efficient operation in a more traditional on-premise environment.

But Open Weather's reach extends beyond a single cloud environment. It's cloud-agnostic, capable of functioning optimally within AWS, Azure, or even private data centers powered by OpenStack.

Open Weather's architecture is specifically designed to process immense volumes of data and meanwhile capable of scaling up to meet the needs of millions of users.

ENHANCING ENSEMBLE MODELS

Grid Elastic Database offers advanced itterogation tools for ensemble models, placing the power of cutting-edge weather forecasting in the hands of skilled users. With these features, users can effectively analyze and modify ensemble datasets, paving the way for more accurate and insightful predictions. As ensemble models continue to shape the future of weather forecasting, Open Weather equips users with the necessary tools to stay at the forefront of meteorological advancements.

Power users of Open Weather can take advantage of these advanced features, and reveal valuable details from ensemble models:

- explore ensemble fields statistical distribution
- apply custom data diagnostics
- create virtual models
- create lagged ensembles
- rank subsets of ensembles
- collate super ensembles of ensembles

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IBL Software Engineering builds its reputation on 45 years of tradition in the field of Meteorological IT development. Dating from its first Automated Meteorological Message Switching Systems, the branch in Frankfurt, Germany, was established in 1988, while the branch in Bratislava, Slovakia was opened in 1997. IBL Software Engineering is employing IT specialists working exclusively in the Meteorological IT Environment with a high level of professional expertise.

IBL Software Engineering is ISO 9001:2015, ISO 27001:2013, and ISO 14001:2015 certified in the scope of development, supplying, installation, and maintenance of software for meteorological information systems. As a representative of Hydro-Meteorological Equipment Industry it is recognized by WMO and IBL's experts are participating in the number of WMO Expert Teams. IBL pays close attention to the advancements in BUFR, IWXXM, Amendment 81, GRIB3, etc. and its products fully comply to the following standards:

- WMO Manuals on Codes 306, on Global Telecommunication System 386, on Global Data Processing System 485
- ICAO Annex 3 up to Amendment 81 and ICAO Regional SIGMET Guides as of 2023
- SADIS workstation requirements 1.1 April 2021

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PRODUCT PORTFOLIO

If the integration of all meteorological data processing systems is the key factor for the effective operation of your business, then with the IBL product portfolio your integration efforts are minimized, because IBL systems are designed to closely cooperate to provide the desired synergy

Integrate all data, products and services

visual weather

numeric weather

climate weather

aero weather

online weather

recode weather

open weather

moving weather