

AEGIS

AEGIS is the new **web based platform** by CAE, a powerful decision-making support tool for emergencies, which combines, in real time, updated information from field sensors and the fundamental landscape information required to protect the population.

AEGIS is symbolised by a shield, meaning prevention and protection from multiple natural risks.

It is software that allows the **geo-spatial display of information coming from the monitoring and early warning system**, allowing data to be displayed on geo-referenced maps and to make “**Selective**” calls to the single elements to receive real-time data. AEGIS has been developed to be managed on the move by means of the most common web browsers (desktop, tablet and smartphone display) and to better support all innovations included in the UDB geo-database, i.e. the core of information received by DATALIFE. The platform is developed on a **open source** architecture and is particularly suited for interoperability.

AEGIS can be offered with a user license and installed on the customer's servers or can be supplied by CAE via hosting according to the SaaS model.

The software is mainly based on open source components both for the backend and the frontend. It is created with Asp .NET Core, the recent Microsoft framework which is distinguished for being entirely open source and for multiple platforms.

The frontend part displayed in the browser is coded in Javascript with the main available open source libraries: JQuery; Bootstrap 4; Open Layers (GIS 2D); Cesium (GIS 3D).

The features of AEGIS are:

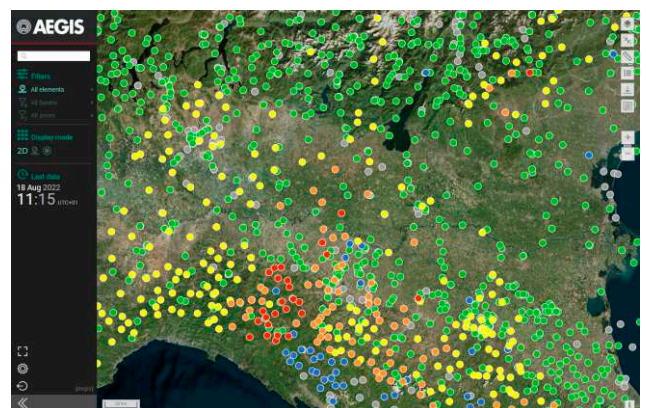
- stations displayed on a **2D map**;
- **stations** displayed in a tabular list;
- **items** displayed in a tabular list and graphical display of one or more items.

These features are enhanced by various functions (e.g. filters, summary pages, export functions, etc.).

The relevant sections are described in detail below.

MAP

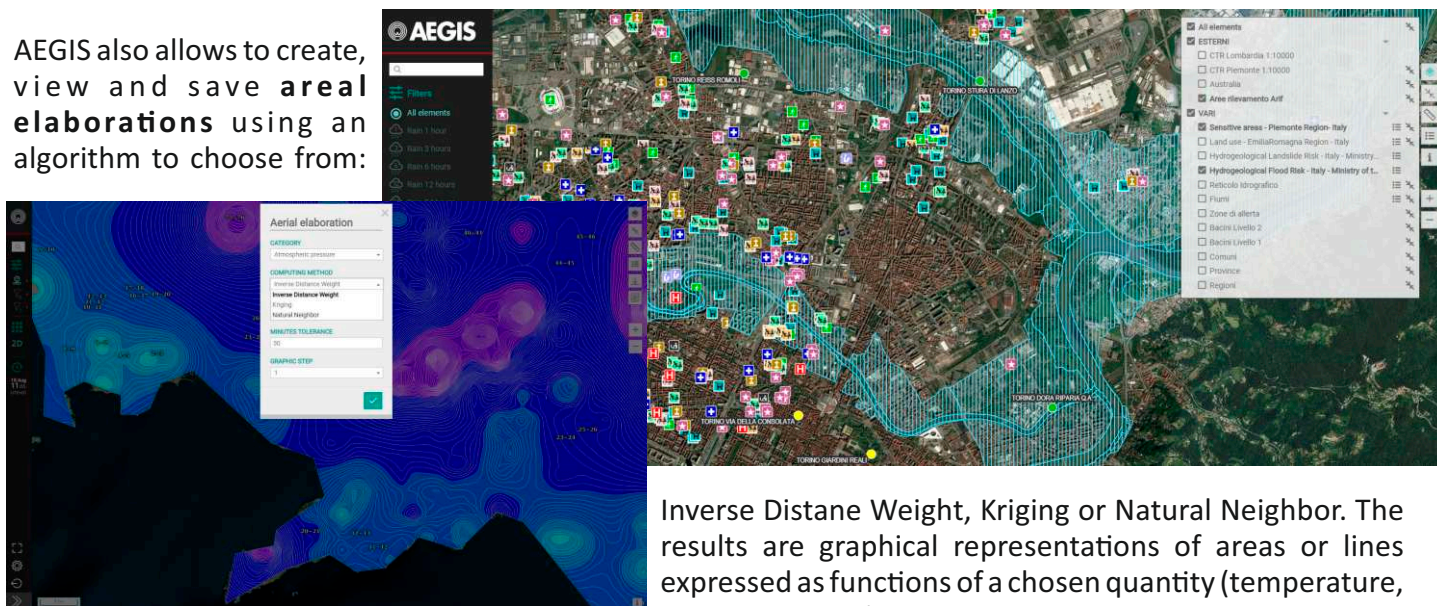
This section is used to display geographic information on a cartographic basis, allowing the real-time display of the current status of stations and items according to the measurements that are taken.



Layer

AEGIS allows **displaying different overlapping geographic information layers**, including: monitoring stations, rivers, watersheds, alert zones, countries, regions, roads, buildings in the city context (schools, hospitals...), emergency vehicles deployed permanently in the territory, branches of the main authorities in charge of rescue in case of critical issues in the territorial surveillance (civil protection, firefighters, police, forestry department, municipal police). The geographic information layers can be imported in **open formats such as WMS (Web Map Service)**.

AEGIS also allows to create, view and save **areal elaborations** using an algorithm to choose from:



Inverse Distance Weight, Kriging or Natural Neighbor. The results are graphical representations of areas or lines expressed as functions of a chosen quantity (temperature, pressure, rain ...).

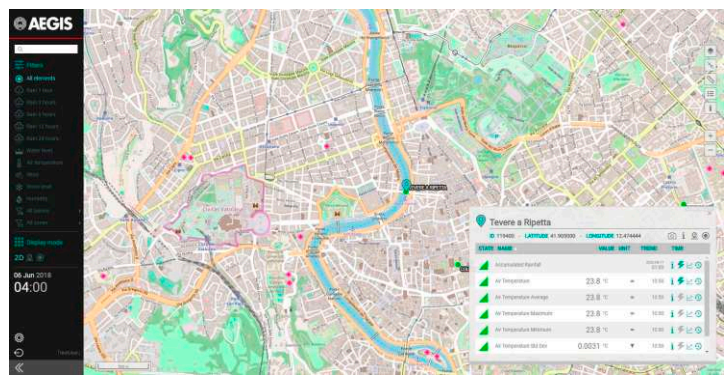
Normally the monitoring stations are shown as a dot with **different colors according to the status** of the sensors on the station, according to **alarm** thresholds that can be set. If at a small scale the station and its sensors can be effectively shown by a single symbol, when items are distributed in the landscape over distances of a few kms, it's possible to **distinguish the precise position of single sensor modules** comprising the stations at larger scales, and to check the relevant states. This function is particularly useful in installations to monitor landslides, river embankments or water works such as dams or expansion boxes.

By applying **filters**, the symbols take different shapes and directly show a preview of the last recorded data and the trend. The symbols used for the icons showing the wind speed and direction are those of the **Beaufort scale**.

When the symbol of a **station** is clicked, the ID, name and coordinates of the stations are shown together with the **list of sensors**, their status, last acquired value, timestamp and trend. Furthermore, this section allows displaying images and more detailed information about the stations and their items. If there are several stations on the point on the map that has been clicked, a popup window will be displayed with a tab for each station, containing the relevant information.

Raster Map

The map onto which the layers are displayed can be chosen freely by the customer, since AEGIS is designed to be flexible, allowing use of the most common web maps, even if open source (Google, Bing, OpenStreetMap, etc.) or other maps owned by the customer.



Since the software is aimed to be used for emergency services, an alternative system has been included, to be used when connection to the Internet is not available. For this reason, AEGIS also includes internal maps that allow the software to continue to display the station data on the map even when there is no Internet connection.

It is possible to use any zoom level; entering more into detail in the geographical area of interest, the map changes dynamically, displaying more details and facilitating the operator in finding the relevant stations. Furthermore, a tool is also available to easily measure distances and surface areas.

STATIONS

This section lists all stations included in the data base, sorted and filtered by the operator, if necessary, for each of them it is possible to **upload** and **download** documents. In addition to the **information** contained in the database (such as: station name, ID, position, relevant basin, owner, manager and maintenance technician, date and time the last value was measured and of course the status of the station), images of the station are shown: the list shows a preview of the first image; click it to enable a user-friendly browser to display the entire archive of the selected site and to export the images. This page can also be used to **automatically access the published web site for the individual stations of the network**, by means of the in-built web server.

SITE PHOTO	STATE	NAME	ADDRESS	BASIN	ALERT_ZONE	LAST DATA	SEL.
	●	200400 Abbadia S. Salvatore	La Splenata Abbadia San Salvatore (SI) Toscana	Paglia	Tosc-F4	03:15	
	●	420100 Abbasanta	Serbatolo Esaf Sena Ruja Abbasanta (OR) Sardinia	Tirso	Sard-E	03:03	
	●	571100 Abbazia Trisulti	Civita (Chiesa S. Nicola) Collepario (FR) Lazio	Gangliano	Lazi-G	01:15	
	●	378900 Abbeveratoia	Idrovara Abbeveratoia Parma (PR) Emilia-Romagna	Parma	Emil-H	03:30	
	●	653100 Abricella e Sella Piferone	Sella Abricella (PZ) Basilicata	Basento	Basi-B	03:30	

ELEMENTS

STATE	ID	STATION NAME	NAME	VALUE	UNIT	TRE.	TIME
▲	60015	AA. Thoddoo	Air Temperature	35.3	°C	▬	09:40
▲	15202	Abbadia S.Salvatore	Air Temperature	25.7	°C	▼	09:30
▲	30490	Abbasanta RF	Air Temperature	29.2	°C	▲	09:30
▲	44198	Abbazia Trisulti	Air Temperature	30.6	°C	▲	09:30
▲	48803	Abriola a Sellata Pierfaone	Air Temperature	27.0	°C	▲	09:45
▲	67696	Acate [X]	Air Temperature	36.6	°C	▲	09:50
▲	10631	Acceglio	Air Temperature	12.1	°C	▲	09:30
▲	27715	Acceglio Collet	Air Temperature	9.5	°C	▼	09:30
▲	65034	Aci Castello [X]	Air Temperature	30.5	°C	▲	09:50
▲	64734	Aci San Filippo [X]	Air Temperature	29.8	°C	▲	09:50
▲	62351	Acqualagna	Air Temperature	27.2	°C	▲	09:00
▲	48892	Acquapendente	Air Temperature	29.5	°C	▲	09:15

This page allows the customer to display **all** available **elements**, sorting them and filtering them if necessary. AEGIS allows selecting desired elements, processing, displaying and exporting multiple year **historical series** and to display them in graphical format (which can be exported in .pdf and .jpg) or in table format (which can be exported in .csv format). In particular, **charts** of absolute or derived values are generated, allowing the display of trends over time for one or more elements selected by the operator with the relevant alarm thresholds, even at the same time. The reference time interval can be set by the customer according to his needs, without any limits. Each individual element included in the chart can be "turned on or off" temporarily to facilitate reading, without being deleted from the selection.



The software is continuously being developed and further releases will be available shortly, which will enhance its features in response to more specific needs of the customers.