

Article

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## Open Exchange

# Water Conditions in Europe app with Python and Dashboards

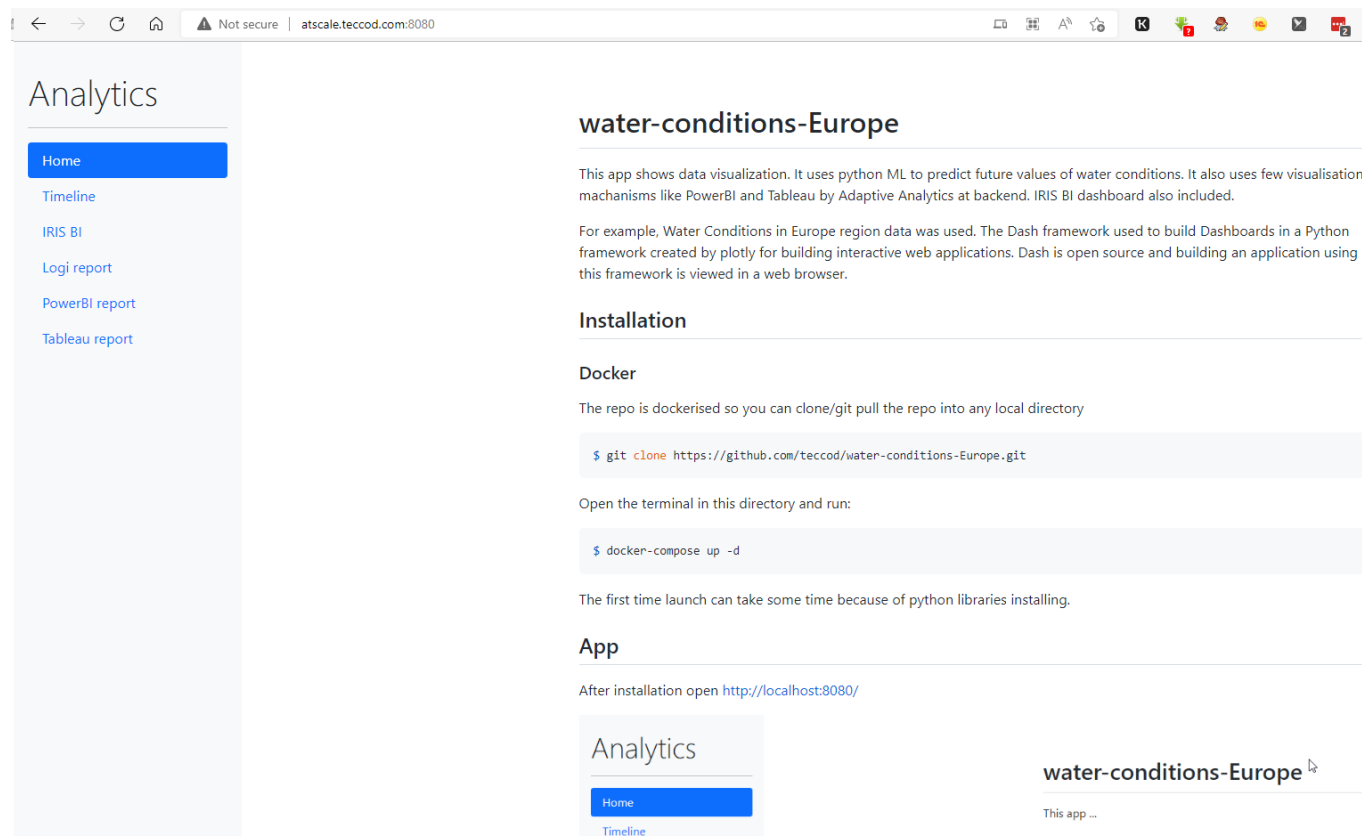
It is very interesting to compare different BI technologies. It is curious to me what the differences are in functionality, development tools, speed and usability.

For this application, I chose a dataset with water conditions in various European countries. This is an open source dataset containing observational data from 1991 to 2017.

The team and I decided to make a model based on this BI dataset using IRIS BI, Tableau, PowerBI and InterSystems Reports (powered by Logi Reports).

For the frontend, we made a web interface in PythonFlask via Embedded Python.

The result, by the way, can be seen on the page <http://atscale.teccod.com:8080/>. You can look at the demo stand, because deploying a container from the repository can take up to 20 minutes. Lots of python packages, more on why later.



[Main page](#)

## Data

Actually the data seemed small, the period is only 17 years :) .

Therefore, in addition to the existing ones, I wanted to continue the data set and used a neural network for this. Using the same Embedded Python, used Tensorflow, this package occupies 511MB when downloaded, don't be surprised.

Actually, this is the reason for the long deployment of containers - a lot of packages are downloaded for the neural network, quite a lot of related packages and a long installation. But there will be a separate article about neural networks and Integrated ML, I will publish it soon.

I will also say that the result of the prediction is entered into the same database, so you can see the dataset through BI tools. But predict was made only for one river in France, take a closer look. Because there was enough power to calculate only one thing. The full prediction took a very long time.

Rows

phenomenonTimeReferenceYe...  
Drop row here

Columns

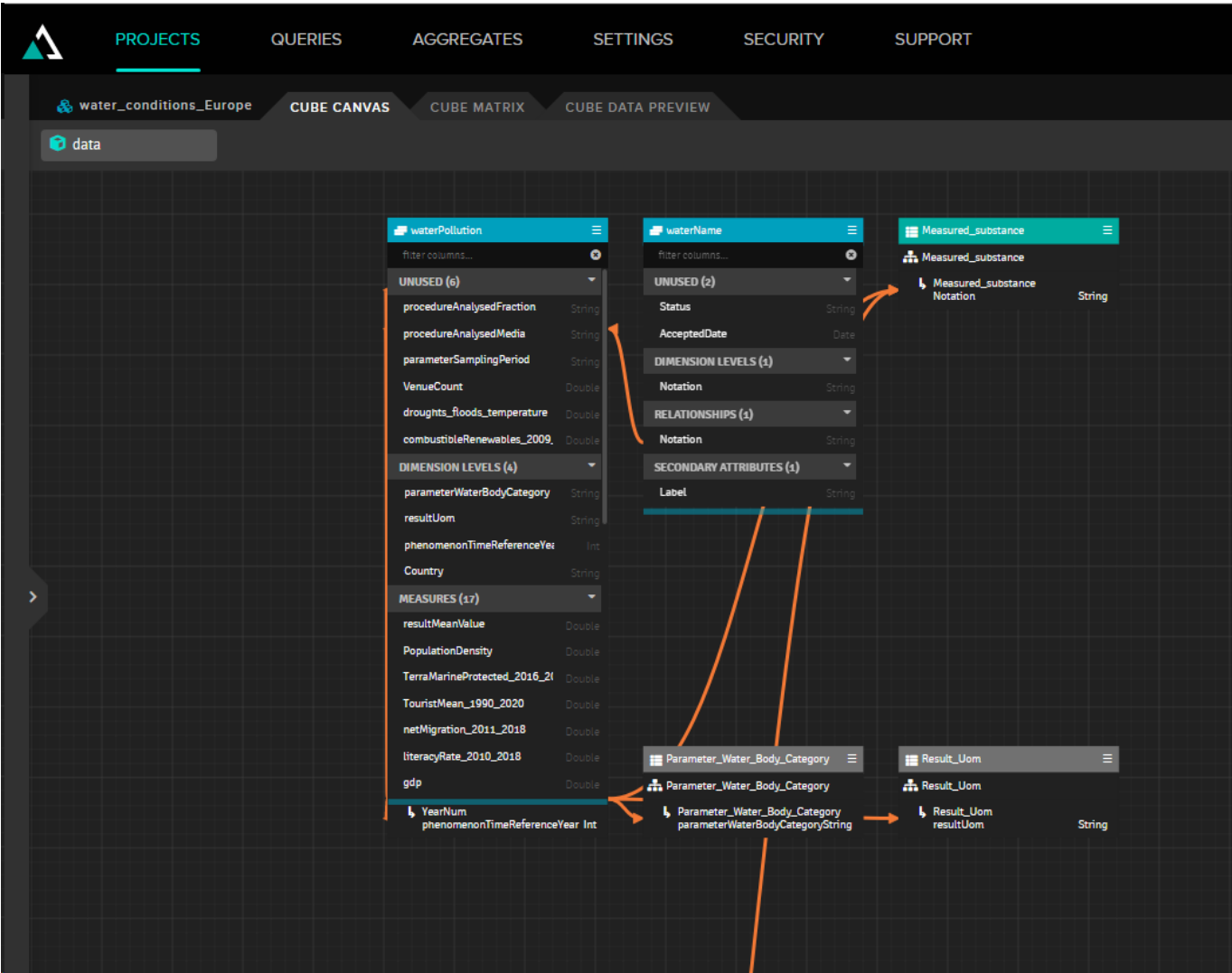
resultMeanValue  
Country  
Drop column here

phenomenonTimeReferenceYear	resultMeanValue	Austria	Belarus	Belgium	Bulgaria	Croatia	Czech Republic	Denmark	Finland	France	Ge
2029	17.46									24	
2030	17.47									24	
2031	17.50									24	
2032	17.53									24	
2033	17.57									24	
2034	17.60									24	
2035	17.64									24	
2036	17.66									24	
2037	17.68									24	
2038	17.68									24	
2039	17.67									24	
2040	17.66									24	
2041	17.64									24	
2042	17.62									24	
2043	17.59									24	
2044	17.58									24	
2045	17.57									24	
2046	17.57									24	
2047	17.58									24	
2048	17.60									24	
2049	17.62									24	
2050	17.63									24	

Cells: 1,680 Total: 23,493.82

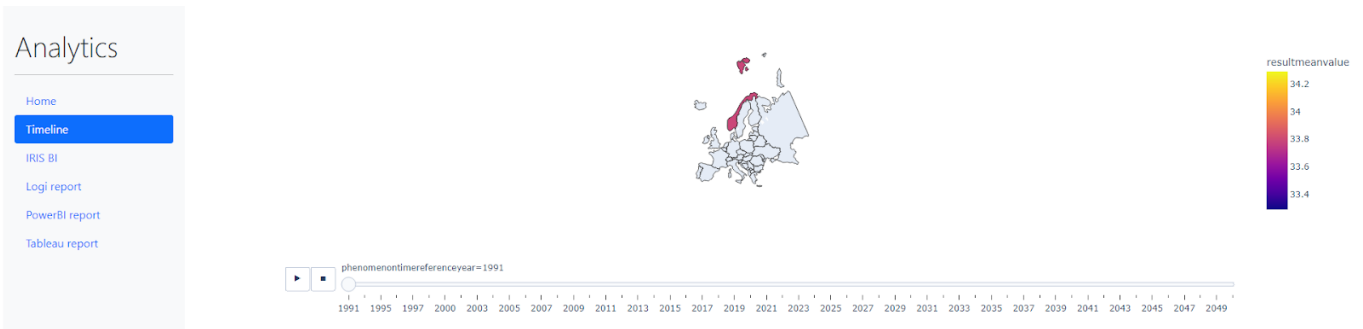
## Cubes

Data cubes are made in IRIS and also cubes are made in Adaptive Analytics (powered by AtScale). Thus, IRIS BI dashboards were built on IRIS, and the rest of the tools (Logi, PowerBI, Tableau) took data from AtScale.

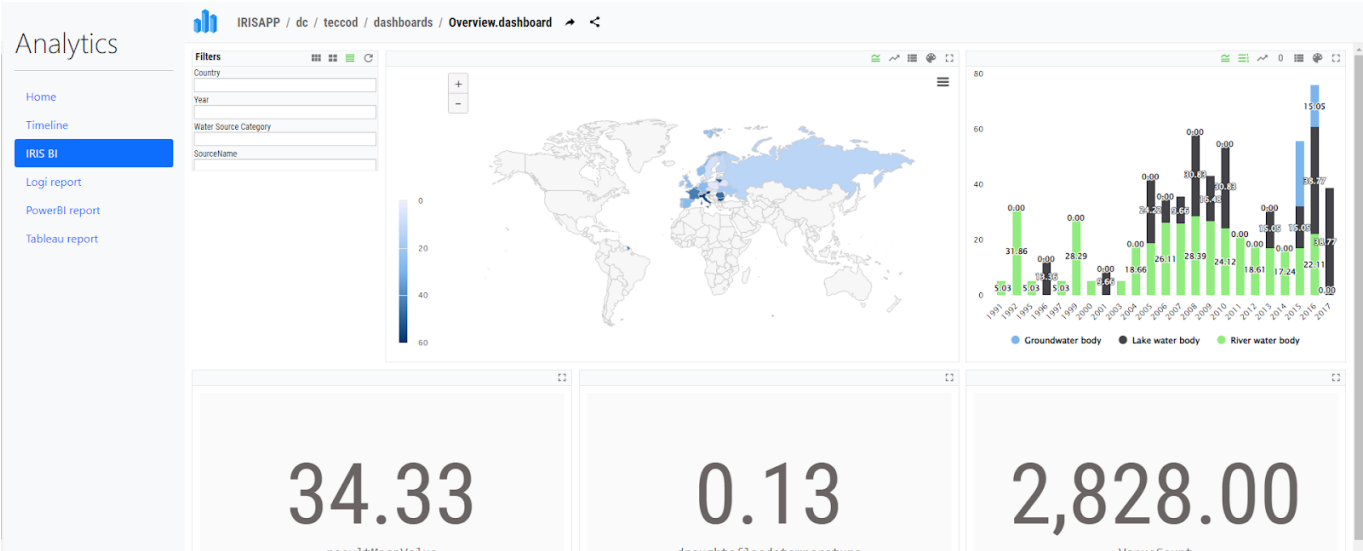


## Dashboards

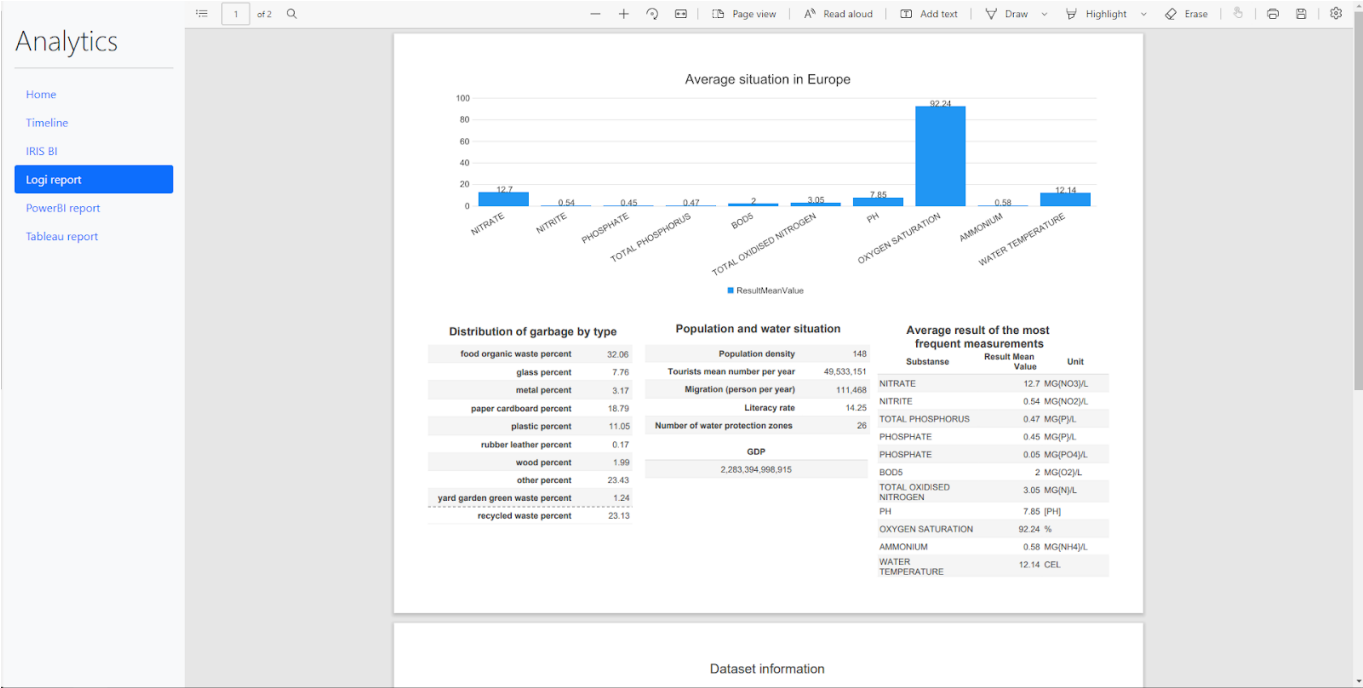
Actually BI systems are presented in a variety.



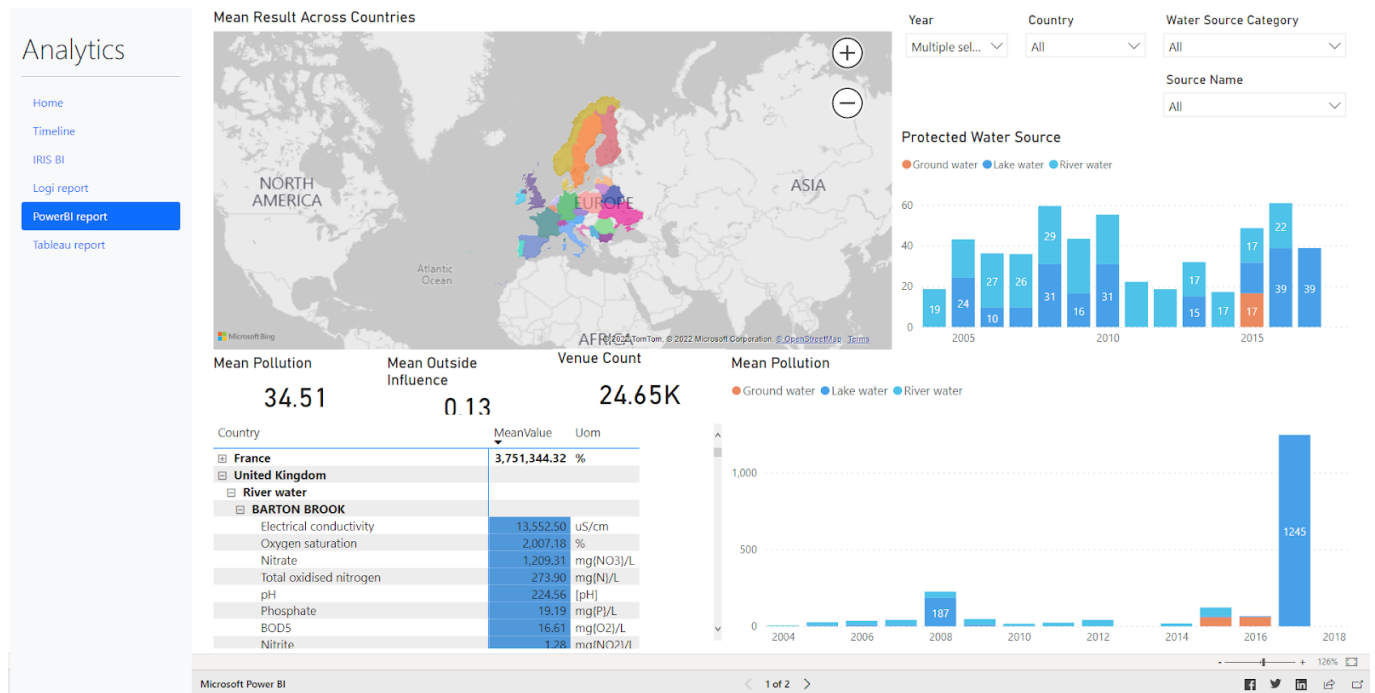
This is Dash in python.



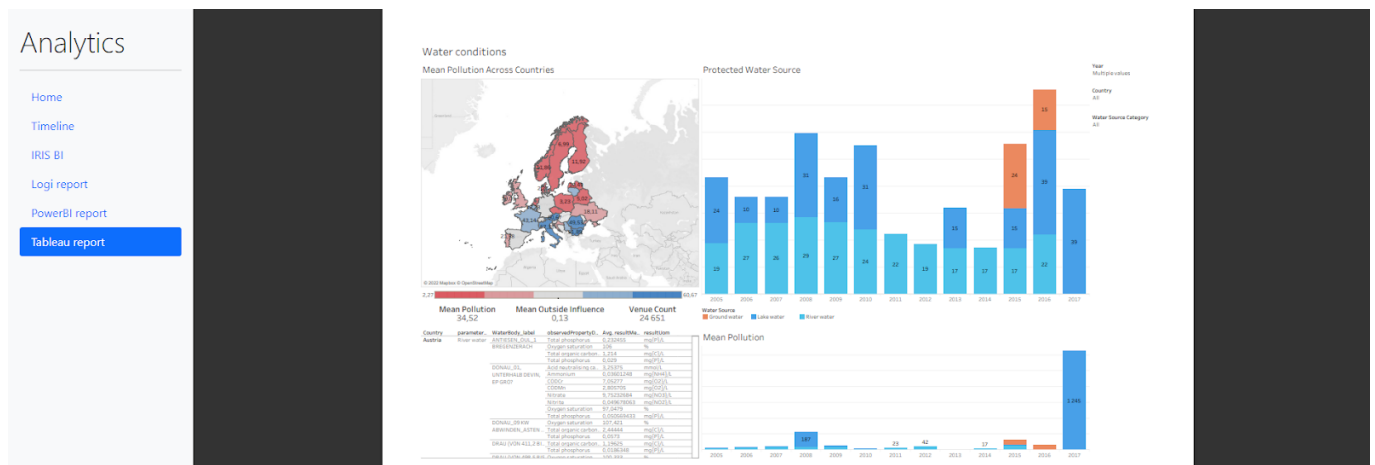
Our Favorite IRIS BI



InterSystems Reports (powered by Logi Report)



## PowerBI



## Tableau Example

### Completion

For all the BI systems presented, source files are available in the repository. You can see how the reports and dashboards work and use them for your future projects.

On them you can visually see how a particular system works, as well as understand what development tools are available in a particular system.

There was a little lack of time to make a page where you could enter various parameters and conditions in order to get a calculation of the likely value using a neural network. There are all the prerequisites for this, an example of the implementation of a neural network and predictions with its help, which is

implemented in Embedded Python. The neural network is trained, startup scripts are available, located in the folder <https://github.com/teccod/water-conditions-Europe/blob/main/iris/src/PythonFlask/pages/ml/mlrun.py>

Thank you for reading the article, I'm waiting comments and feedback. Soon there will be an article about comparing a neural network in Embedded Python and IntegratedML, I will attach it to this article.

[#Adaptive Analytics](#) [#Dashboards](#) [#Embedded Python](#) [#IntegratedML](#) [#InterSystems Reports](#) [#InterSystems IRIS](#)  
[Check the related application on InterSystems Open Exchange](#)

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Source URL: <https://community.intersystems.com/post/water-conditions-europe-app-python-and-dashboards>