



On-line visualization of the cal/val indices for the Mediterranean Monitoring and Forecasting Centre

Elena Zhuk(1), Georgios V. Kozyrakis(2), George Galanis(3), George Zodiatis(2,4), Katerina Spanoudaki(2), Nikos Kampanis(2), Dmitry Soloviev(1)



- (1)Marine Hydrophysical Institute of the Russian Academy of Science (Russia)
- (2)Foundation for Research and Technology, Institute of Applied and Computational Mathematics, Coastal & Marine Research Lab., (Greece)
- (3)Hellenic Naval Academy, Mathematical Modeling and Applications Lab., (Greece)
- (4)Oceanography Centre, University of Cyprus, (Cyprus)

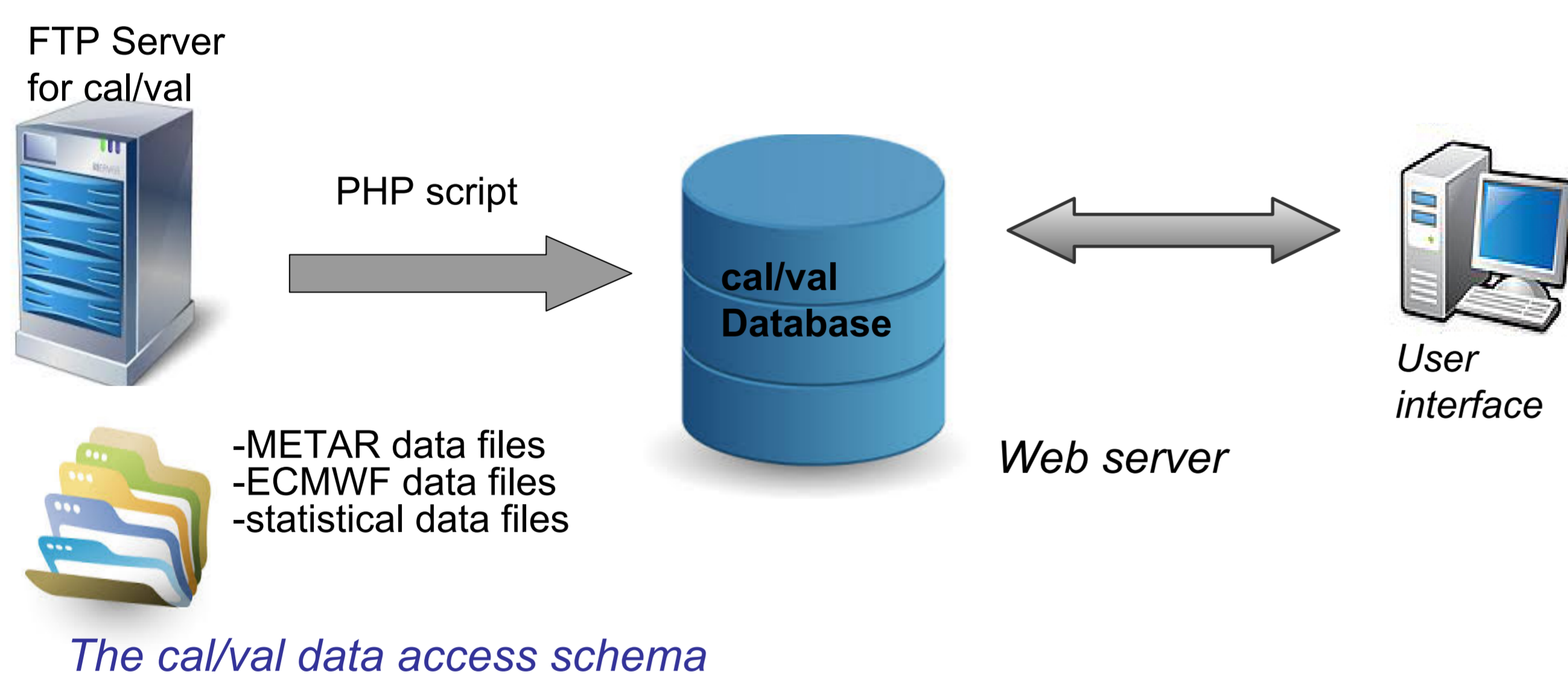
Introduction

The current study aims at the validation of the European Center of Medium Weather Forecast-ECMWF data for the cal/val developments of the Mediterranean Monitoring and Forecasting Center-Med MFC using in-situ ground observations, remote sensing data and numerical model data. Five well-established statistical indexes were selected and implemented for validating the ECMWF data used by the Med-MFC: (a) Bias, (b) RMSE, (c) the Correlation Coefficient (d) the Nash-Sutcliffe Model Efficiency Coefficient, and (e) the Precipitation Capture Rate. The current implementation lengthens the validation period to two years, thus further minimizing the statistical uncertainty of previous efforts and making the validated results more statistically significant. The aforementioned indexes provide a good correlation estimate between the sea-surface in-situ measurements and the modeled results and can be of great use for further numerical model calibration purposes.

Furthermore, an automated daily on-line service has been developed to continually assemble and evaluate the ECMWF data and collate those to the Meteorological Terminal Aviation Routine Weather Report- METAR data network in the Mediterranean provided from NOAA network of stations and the Global L4 Sea Wind Product. Thus continuous monitoring, calibration and validation of the Long-term and Short-Term surface forcing results can be achieved.

Structure of the online cal/val data access system

The METAR observations, the ECMWF data and the cal/val indices estimates are archived in a dedicated FTP server.



For nowcast cal/val indices estimates, 4 files are generated for the last three 3 days on a daily basis. These files include hourly observations for each METAR station, ECMWF data and the statistical indices for the following parameters:

- Two-meter a.s.l. Dewpoint Temperature (in oC).
- Mean Sea-Level Pressure (in bar).
- Precipitation (occurrence and approximate duration).
- Two-meter a.s.l. Temperature (in oC).
- Ten-meter a.s.l. Wind Speed (in m/s).

These data files are processed by a PHP-script, which parses data and upload them to the cal/val database tables. The web server provides a user-friendly data access interface.

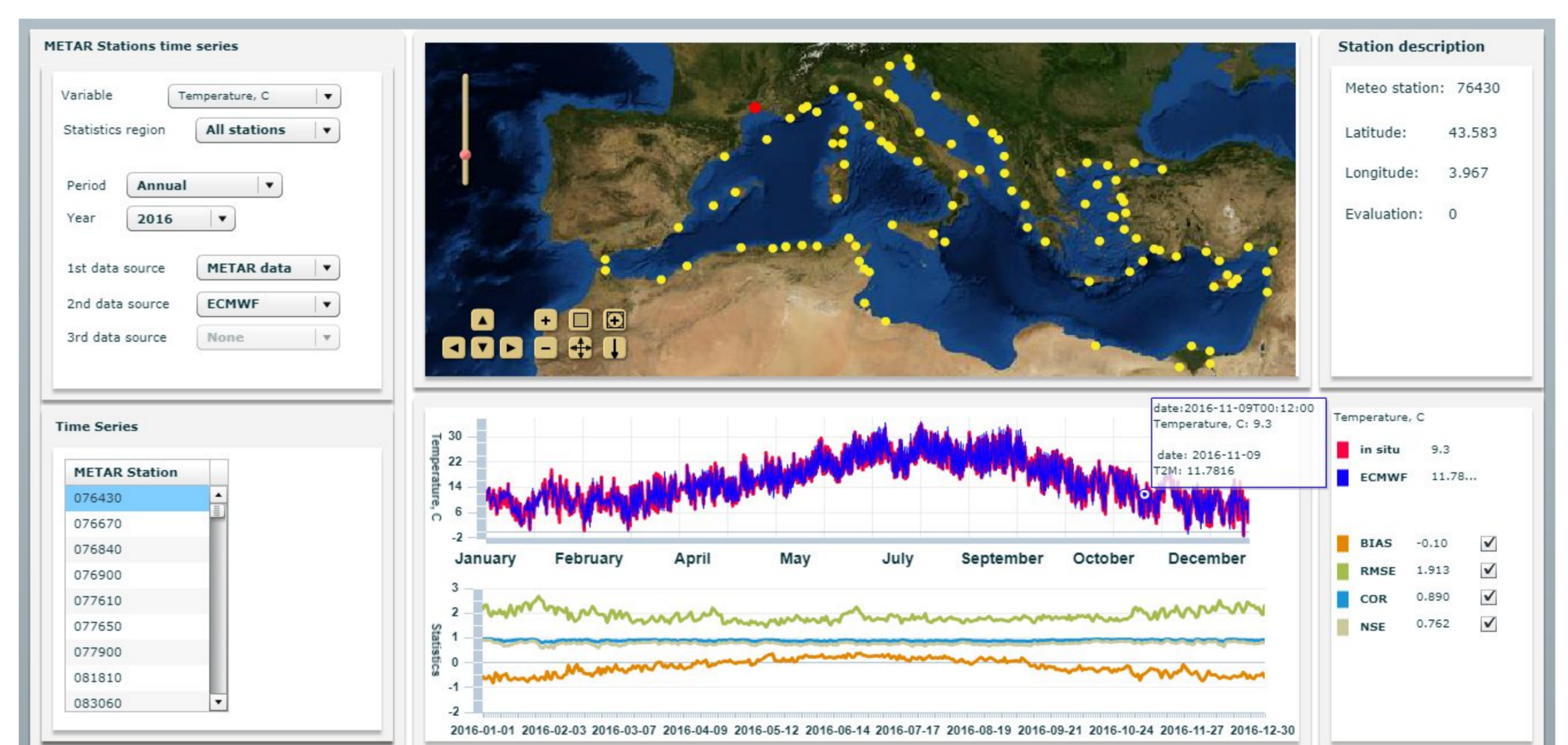
References

1. Kozyrakis George, George Galanis, Katerina Spanoudaki, Nikolaos A. Kampanis, George Zodiatis and Elena Zhuk (2018). Long - Term validation of forecasting results based on in situ ground measurements for contributing to the cal/val of the Mediterranean Monitoring and Forecasting Centre (Med-MFC). Geophysical Research Abstracts, Vol. 20, EGU2018-5341.
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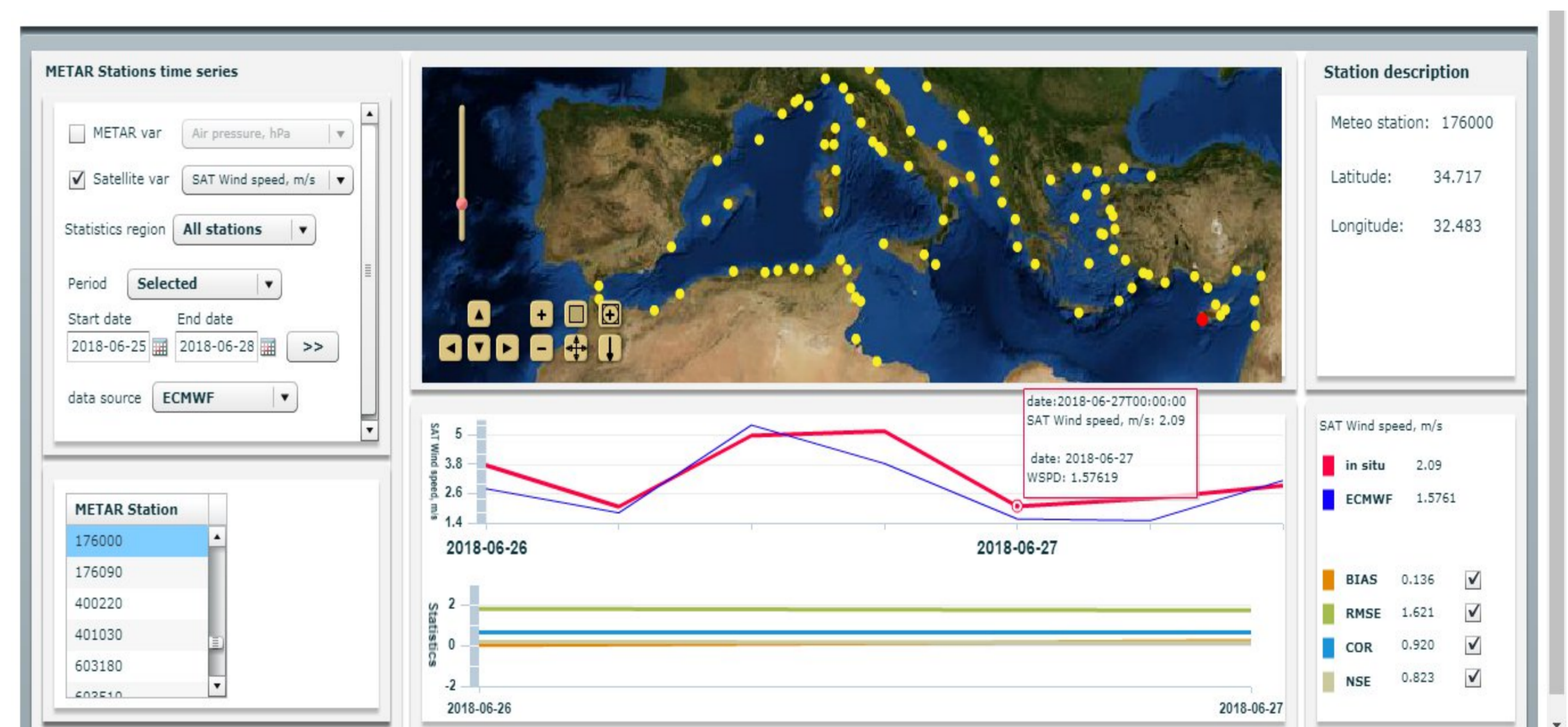
Cal/Val data access online interface

The cal/val data access online interface provides access and visualisation to the METAR observations, the ECMWF data and the five statistical indices, separately for each METAR station, as well as the mean average of all the METAR stations for the years 2016 and 2017 in the Mediterranean. METAR observations and ECMWF data can be shown simultaneously as time-series plots, while the statistical indices data are shown separately. The cal/val statistical indices for 2018 are accessible daily based on the latest three days observations. The data for each METAR station can be accessed and presented as values and plots with relevant cal/val information.

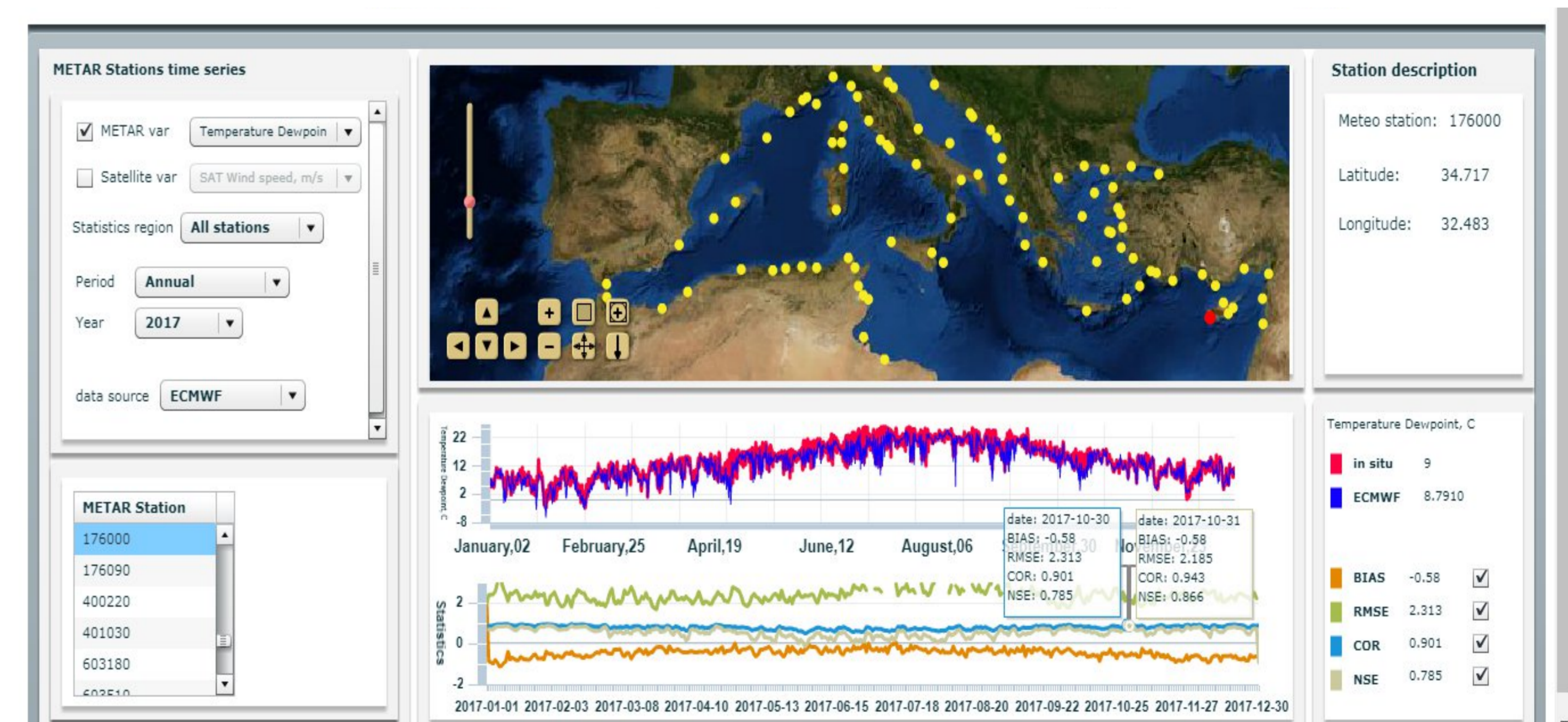
The domain temporarily accommodating the service is at:
<http://orioncyprus.org/meteoStations/meteoStations.html>



The cal/val data access interface: 2016 annual Temperature selection



The cal/val data access interface: Selected period, 25 Jun – 28 Jun 2018, SAT Wind speed



The cal/val data access interface: 2017 annual Temperature Dewpoint selection

Conclusions

A user-friendly data access web interface was demonstrated to suit the needs of the cal/val of the ECMWF surface forcing used by the Med-MFC. The online system provides access and visualization of both, archived and operational in-situ and forecasting data and cal/val indices for the Mediterranean and is used to access the quality of the surface forcing used for the Med-MFC.