DINEOF daily cloud-free SST for the Eastern Mediterranean and Black Sea

 Andreas Nikolaidis, ^aCyprus University of Technology Department of Civil Engineering and Geoinformatics, ^bOceanography Center of the University of Cyprus (Cyprus), andreas.nikolaidis.cut.cy@gmail.com
George Zodiatis, Oceanography Center of the University of Cyprus (Cyprus), oceanosgeos@gmail.com
Stavros Stylianou, ^aCyprus University of Technology Department of Environmental Science and Technology, ^bOceanography Center of the University of Cyprus (Cyprus), stylian@gmail.com
George Nikolaidis, Oceanography Center of the University of Cyprus (Cyprus), nikolaidis_g@hotmail.com
George Nikolaidis, Oceanography Center of the University of Cyprus (Cyprus), nikolaidis_g@hotmail.com
Elena Zhuk, Marine Hydrophysical Institute RAS (Russian Federation), alenixx@gmail.com
Evangelos Akylas, Cyprus University of Technology Department of Civil Engineering and Geoinformatics (Cyprus), evangelos.akylas@gmail.com

DINEOF (Data INterpolating Empirical Orthogonal Functions) is an EOF-based technique to reconstruct missing data in satellite images. Sea surface temperature (SST) hourly cloudy data collected by EUMETSAT organization, have been used in order to present a fully reconstructed set. DINEOF method is described with details at Alvera-Azcárate et al. (2009), Beckers et al. (2003, 2006), Beckers and Rixen (2003), Nikolaidis et al. (2014a, b) and can be downloaded separately from the GeoHydrodynamics and Environment Research Internet page of the University of Liège (GHER). DINEOF is applied and updated daily (*Figure 1*) with the latest NAR SST level 3 data. The data from the EUMETSAT Satellite Application Facility on Ocean & Sea Ice used in this study are accessible through the SAF's homepage http://www.osi-saf.org. This project was inspired by a similar GHER project for the Western Mediterranean. A major difference to currently existing projects, is the direct free products availability over the Internet in both image and binary (netCDF) format, at the https://emed-bsea-sst.github.io/Data/ web page.



Figure 1. Sample of the reconstruction of two hour SST data.

References

[1] Alvera-Azcárate, A., Barth, A., Sirjacobs, D., & Beckers, J. (2009, 07). Enhancing temporal correlations in EOF expansions for the reconstruction of missing data using DINEOF. *Ocean Sci. Discuss. Ocean cience Discussions*, *6*(2), 1547-1568. doi:10.5194/osd-6-1547-2009

[2] Alvera-Azcárate A., Barth A., Sirjacobs D., Lenartz F., Beckers J.-M.. Data Interpolating Empirical Orthogonal Functions (DINEOF): a tool for geophysical data analyses. Medit. Mar. Sci., 5-11, (2011).

[3]. DINEOF home page http://modb.oce.ulg.ac.be/mediawiki/index.php/DINEOF

[4] Daily DINEOF SST reconstruction in the Western Mediterranean. (n.d.). Retrieved May 12, 2016, from http://gher-diva.phys.ulg.ac.be/DINEOF/dineof.html

[5] Nikolaidis, A., Georgiou, G., Hadjimitsis, D., & Akylas, E. (2014, 01). Filling in missing sea-surface temperature satellite data over the Eastern Mediterranean Sea using the DINEOF algorithm. *Open Geosciences*, 6(1). doi:10.2478/s13533-012-0148-1

[6] Nikolaidis, A., Stylianou, S., Georgiou, G., Hadjimitsis, D., & Akylas, E. (2014, 08). New toolbox in ArcGIS for the reconstruction of missing satellite data using DINEOF algorithm: A case study of reconstruction of Chlorophyll-a gaps over the Mediterranean Sea. *Second International Conference on Remote Sensing and Geoinformation of the Environment (RSCy2014)*. doi:10.1117/12.2069691

[7] Rixen M., Beckers J. M., EOF Calculations and Data Filling from Incomplete Oceanographic Datasets. Journal of Atmospheric and Oceanic Technology, Vol. 20(12), pp. 1839-1856, (2003)

[8]. Network Common Data Form (NetCDF) http://www.unidata.ucar.edu/software/netcdf/