



HAL
open science

Spatio-temporal variability of SSS and SST in the western Mediterranean basin with the TRANSMED data

Jonathan Beuvier, Isabelle Taupier-Letage, Jean-Luc Fuda, Marie Drévillon, Yann Drillet

► To cite this version:

Jonathan Beuvier, Isabelle Taupier-Letage, Jean-Luc Fuda, Marie Drévillon, Yann Drillet. Spatio-temporal variability of SSS and SST in the western Mediterranean basin with the TRANSMED data. CIESM. 42nd CIESM CONGRESS PROCEEDINGS, Oct 2019, cascais, Portugal. , 42 (42), pp.65, 2019, Rapp. Comm. int. Mer Médit. hal-03082955

HAL Id: hal-03082955

<https://cnrs.hal.science/hal-03082955>

Submitted on 18 Dec 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Spatio-temporal variability of SSS and SST in the western Mediterranean basin with the TRANSMED data

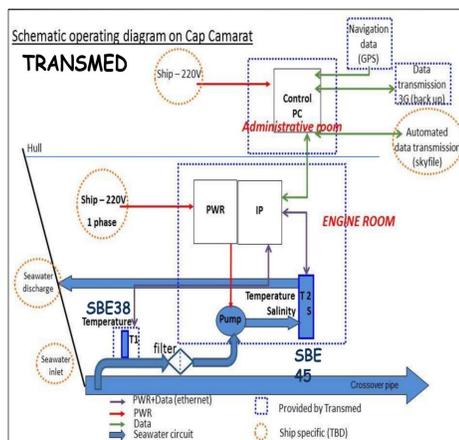
Jonathan Beuvier⁽¹⁾ (jonathan.beuvier@mercator-ocean.fr), Isabelle Taupier-Letage⁽²⁾, Jean-Luc Fuda⁽²⁾, Marie Drévillon⁽¹⁾, Yann Drillet⁽¹⁾

¹ Mercator Ocean International, Ramonville-Saint-Agne, France; ² Mediterranean Institute of Oceanography, La Seyne-sur-Mer, France

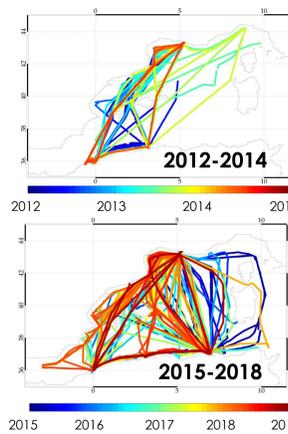
Initiated by the CIESM and upgraded to the operational status within the HyMeX/MISTRALS program, the TRANSMED initiative aimed at developing an autonomous and low-cost thermosalinometer system to record SSS (Sea Surface Salinity) and SST (Sea Surface Temperature) while underway. The seven-year time series recorded from February 2012 to November 2018 between France and Algeria yield an unprecedented insight in the basin-wide seasonal evolution of the Western Basin, up to mesoscale features, and will be used to validate the Copernicus Marine Service global operational system in the area.

The TRANSMED data

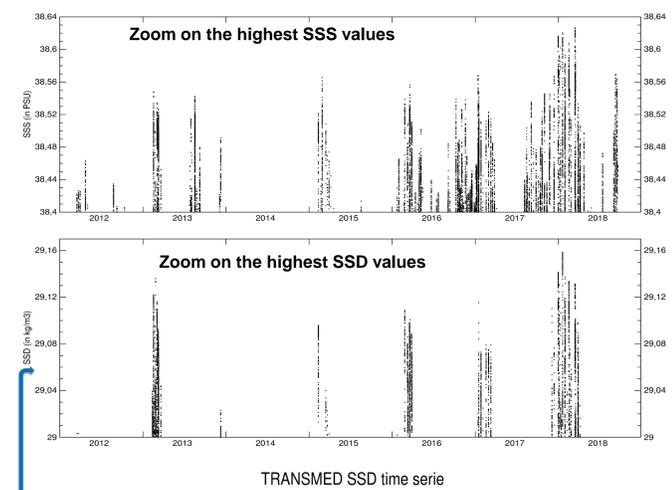
- Autonomous thermosalinometer recording SST and SSS every 10 seconds, ~1 round trip/10days, all year round.
- Data sent to Coriolis data center in near real-time : median over 2 minutes => spatial resolution < 1km.
- Data from ship Marret Niolon (MN) from February 2012 to July 2014.
- Data from ship Cap Camarat (CC) from February 2015 to November 2018.
- ~ 600000 SST and SSS values spanning 7 years (~95% good « as is »).



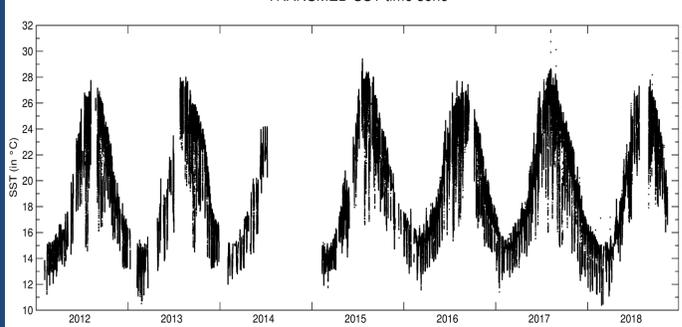
Time and localisations of the TRANSMED data



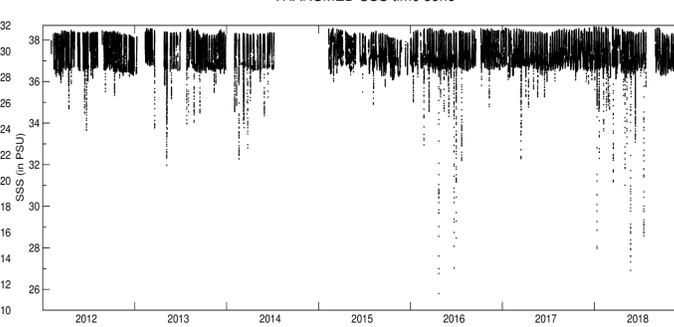
www.ifremer.fr/transmed



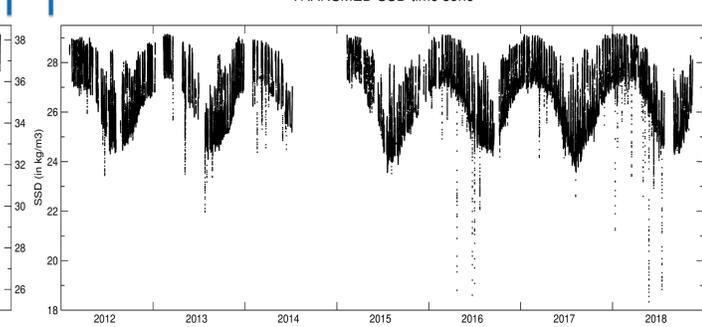
TRANSMED SST time serie



TRANSMED SSS time serie



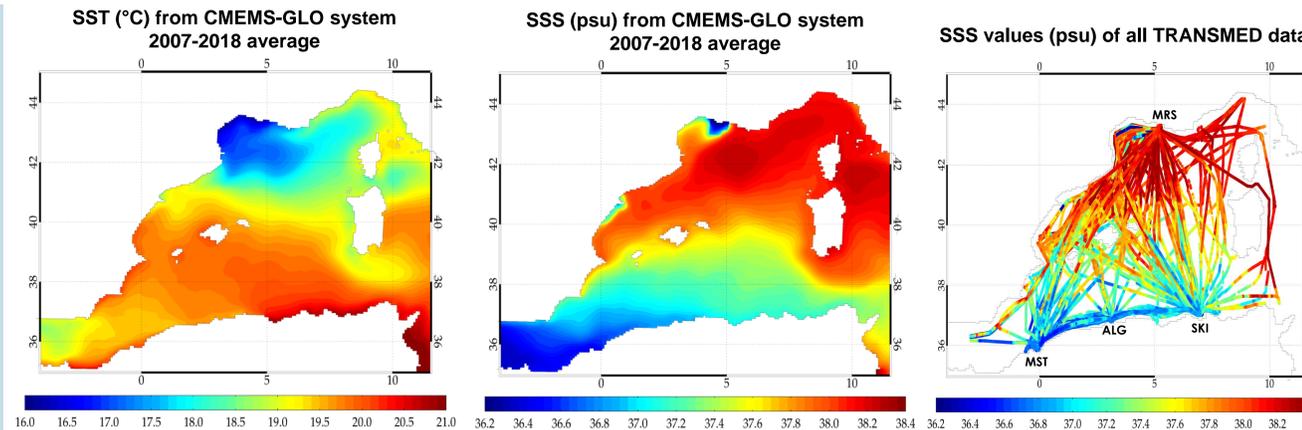
TRANSMED SSD time serie



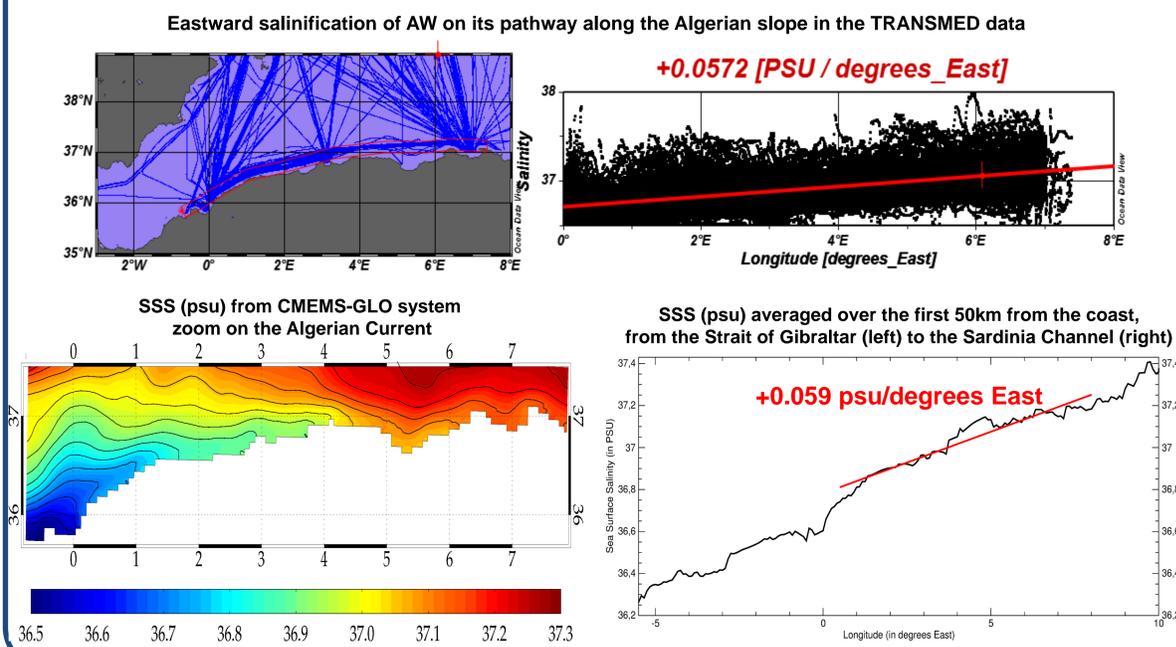
The CMEMS global operational system

- Copernicus Marine Environment Monitoring Service (CMEMS) Global operational system (Lellouche et al. 2018) :
 - global 1/12° high-resolution (~7km in the Western Mediterranean),
 - weekly analyses and real-time daily services with forecasts up to 10 days,
 - data available from January 2007 onwards, with the same configuration.
- TRANSMED brings a huge input of new data, especially for SSS (see Figure on the right), which will be useful for validation and assimilation.

<https://marine.copernicus.eu>



The Atlantic Water in the Algerian Current



The CMEMS-GLO system reproduces quite well on average the increase of the AW salinity on its pathway along the Algerian coasts (see Figures and charts above), in comparison with the salinification rate given by the TRANSMED data. But improvements have to be made on the modelling of the low salinity areas in the vicinity of the main river mouths (see Figures on the right regarding the plumes of the Rhône and Ebro rivers).

The Rhône and Ebro river plumes

