DOM DYNAMICS IN THE MEDITERRANEAN SEA.
Can a new fluorescence SENSOR contribute to its understanding?

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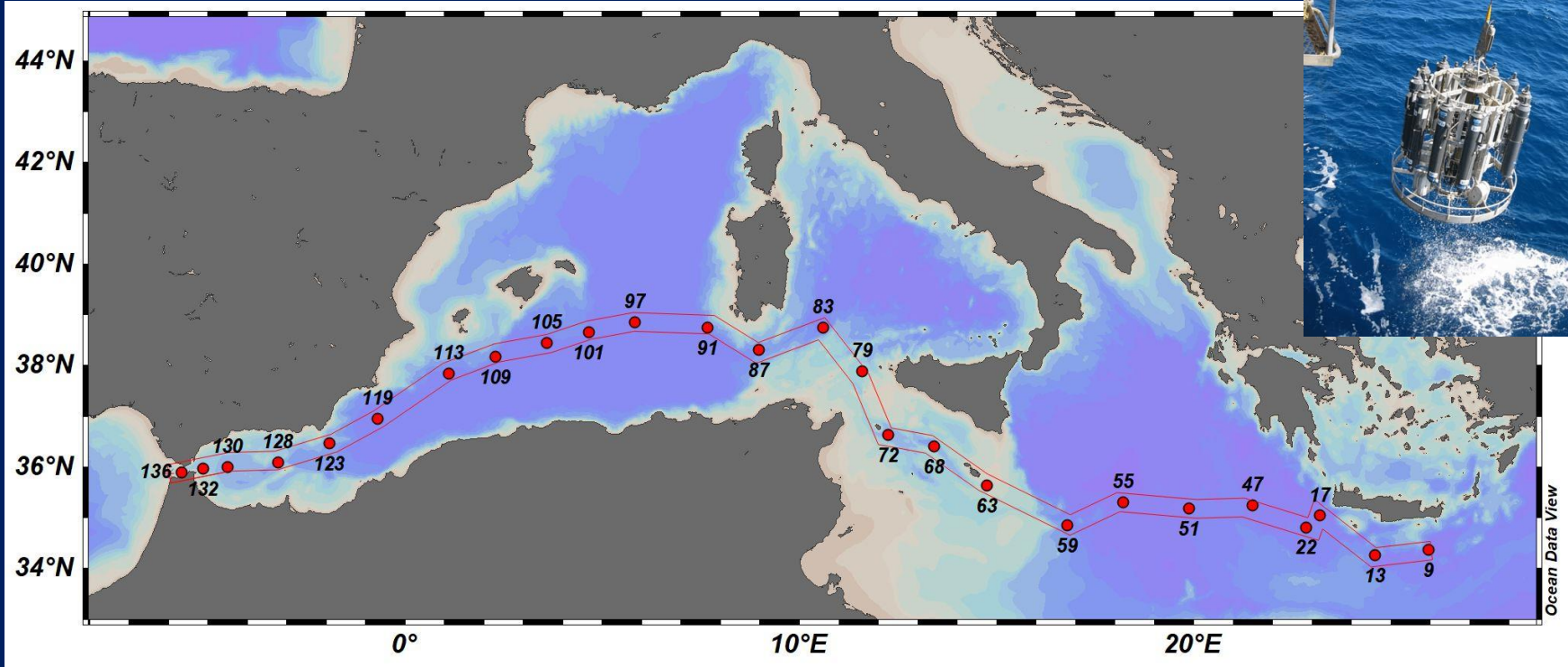[2] Stazione Zoologica A. Dohrn, Napoli - Italy
[3] OGS Trieste - Italy
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[5] GEOMAR Kiel - Germany

Sens⊙r

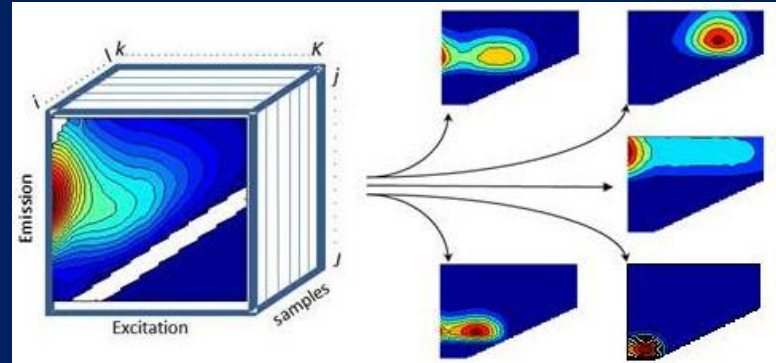# MSM72 CRUISE (March 2 – April 3 2018)

R/V S. MERIAN – (University of Hamburg)

Methods

Dissolved organic carbon (DOC)

Shimadzu Total Organic analyzer (TOC-Vcsn)
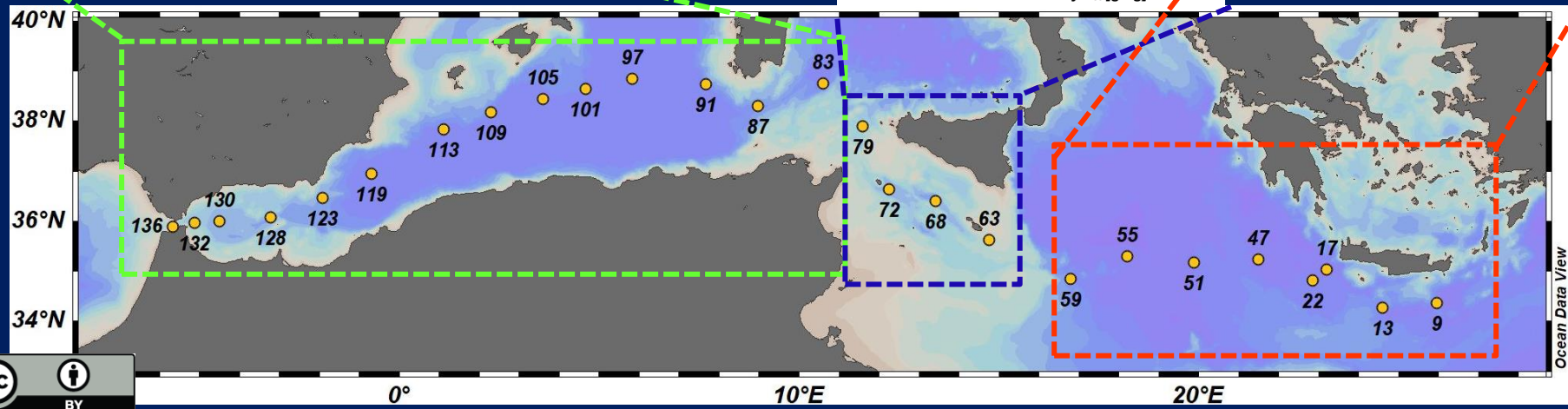
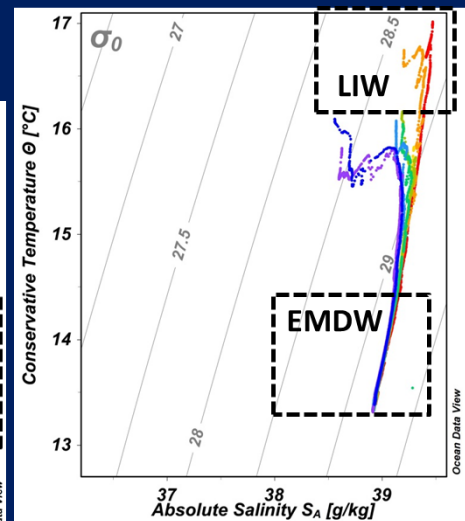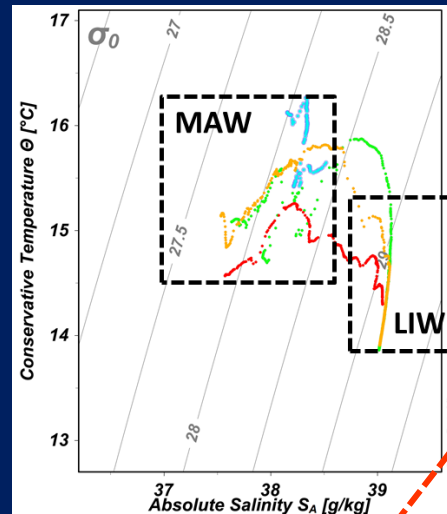## Fluorescent EEMs + PARAFAC analysis
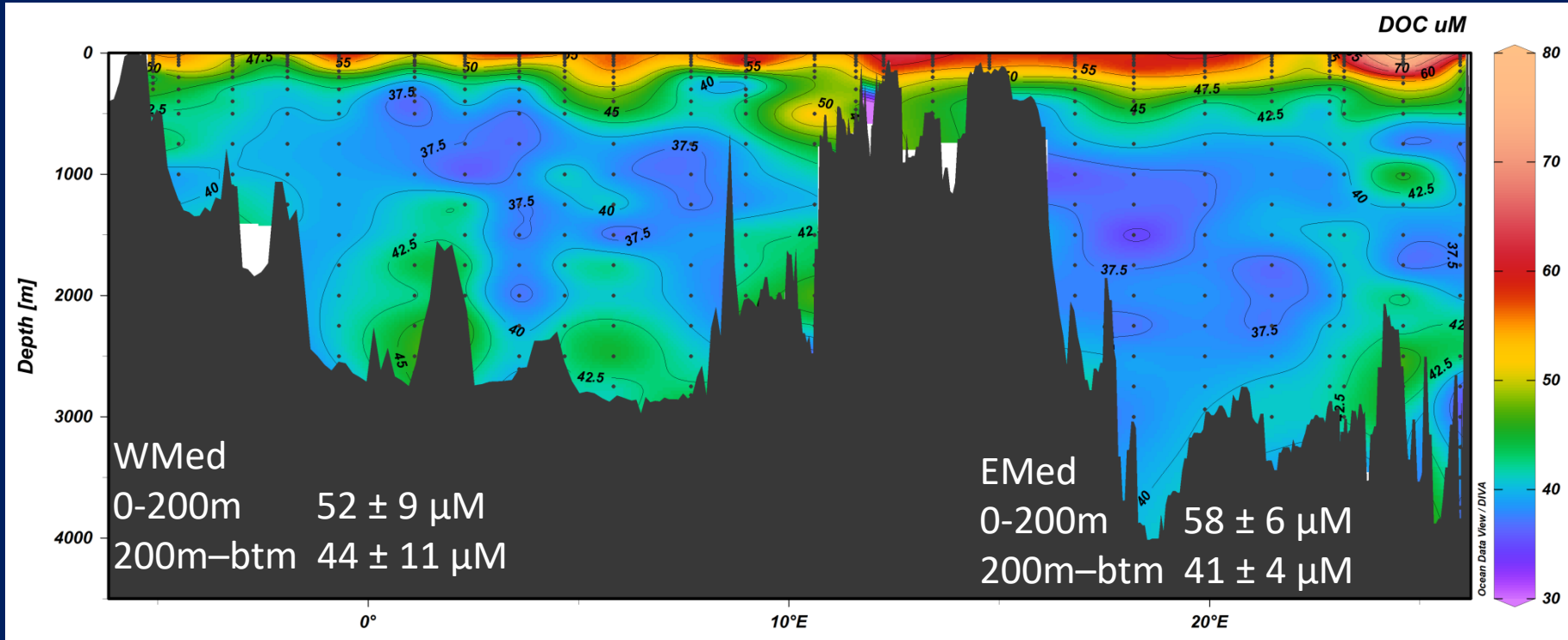

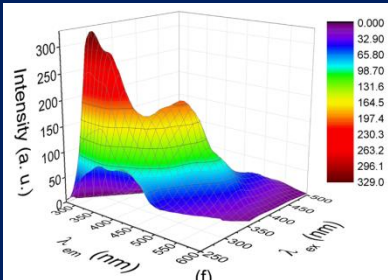*Aqualog Horiba Spectrofluorometer*

Water masses
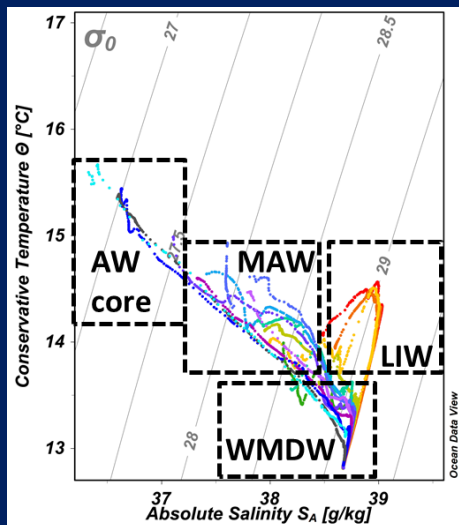
AW: Atlantic Water
MAW: Modified Atlantic Water
LIW: Levantine Intermediate Water
WMDW: Western Mediterranean Deep Water
EMDW: Eastern Mediterranean Deep Water

DOC concentration across the Med Sea

PARARAFAC components

	Ex. max (nm)	Em. max (nm)
Terrestrial Humic-like	265, 355	453
	295, 375	495
Marine Humic-like	<250, 320	413
	<250, 395	373
Protein-like	275	338
PAH-like	<250	318

The identification of the components has been done by using the OpenFluor database (https://openfluor.lablicate.com)

Humic-like fluorescence distribution (R.U.)

WMed
0-200m   0.0032 ± 0.001 R.U.
200m−btm   0.0035 ± 0.003 R.U.

EMed
0-200m   0.0025 ± 0.001 R.U.
200m−btm   0.0034 ± 0.001 R.U.
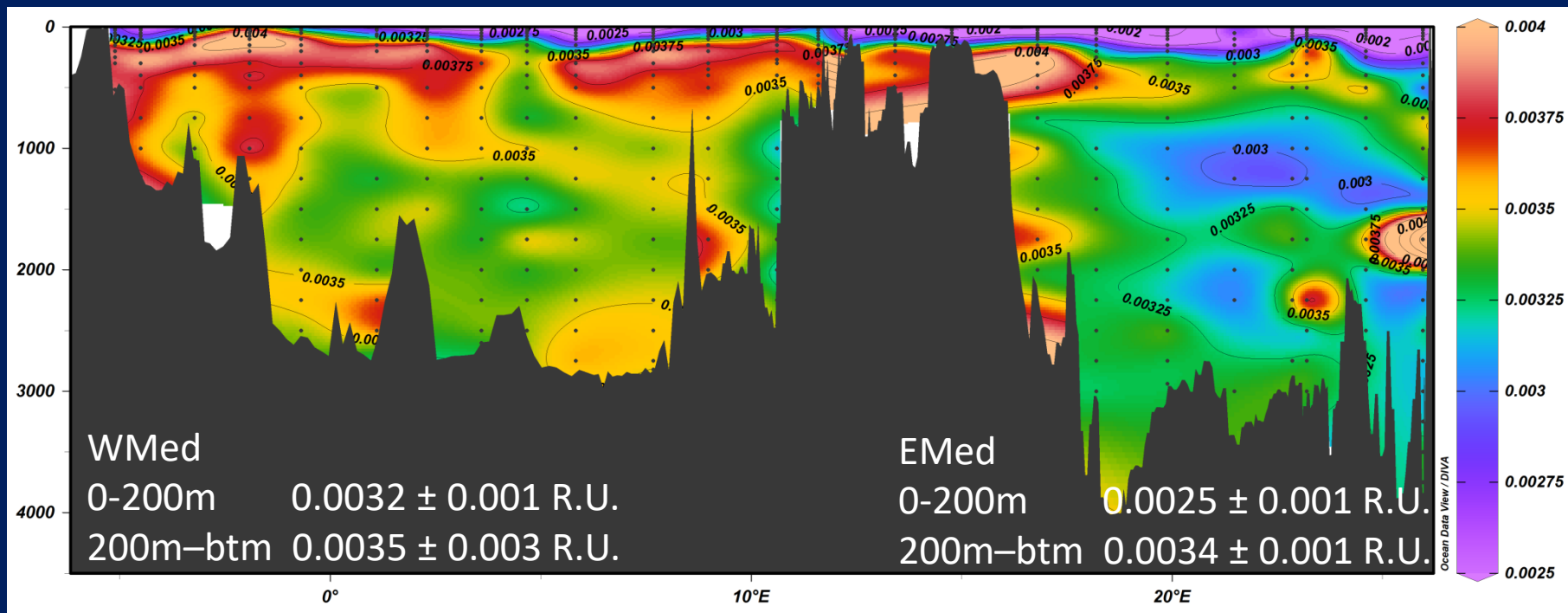
Surface photobleaching, higher in the Eastern basin

Protein-like fluorescence distribution (R.U.)

WMed
0-200m   0.0040 ± 0.001 R.U.
200m−btm   0.0002 ± 0.001 R.U.

EMed
0-200m   0.0045 ± 0.001 R.U.
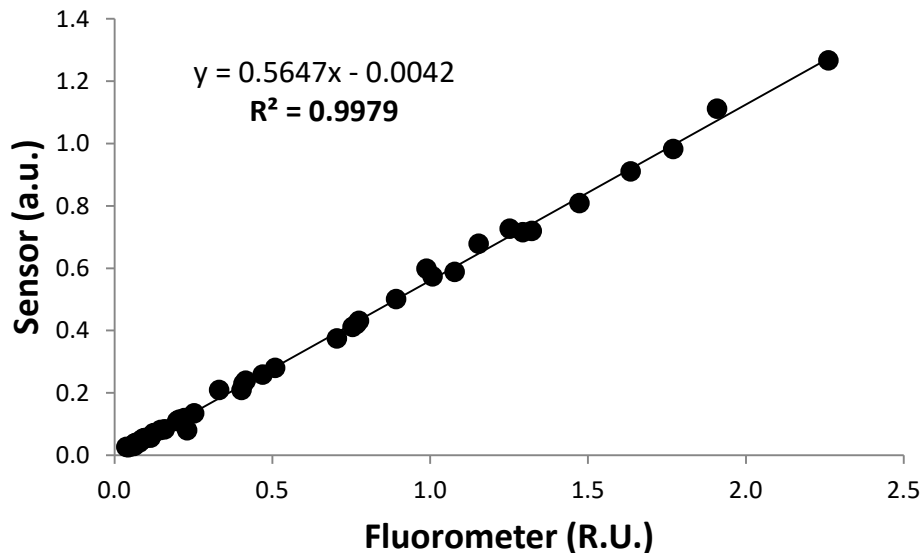200m−btm   0.0035 ± 0.002 R.U.
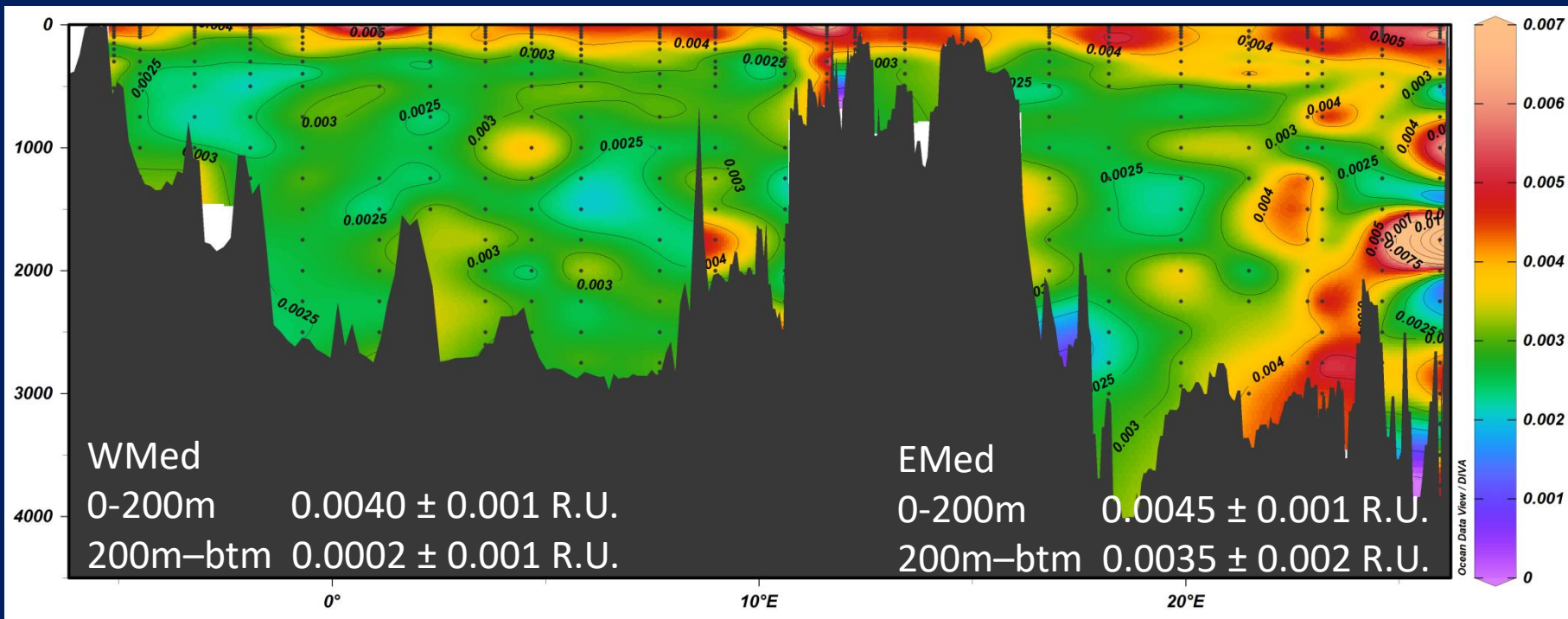
Surface accumulation increasing moving eastward

Coming Soon…
Measurements with a new Fluorescence Sensor

A new fluorescence sensor based on UV-LED (285 and 340 nm) and IF filters is under development. Unfortunately, due to the COVID-19 our lab was closed before we were able to measure the samples with this new sensor. We therefore report here the correlation between the sensor and the fluorometer fluorescence in some test samples.

Protein-like

$y = 0.5647x - 0.0042$
$R^2 = 0.9979$

Sensor (a.u.)

Fluorometer (R.U.)

Humic-like

$y = 0.7888x - 0.0364$
$R^2 = 0.9992$

Sensor (a.u.)

Fluorometer (R.U.)