Validation of MERIS Marine Products at Portuguese Oceanic and Coastal Sites

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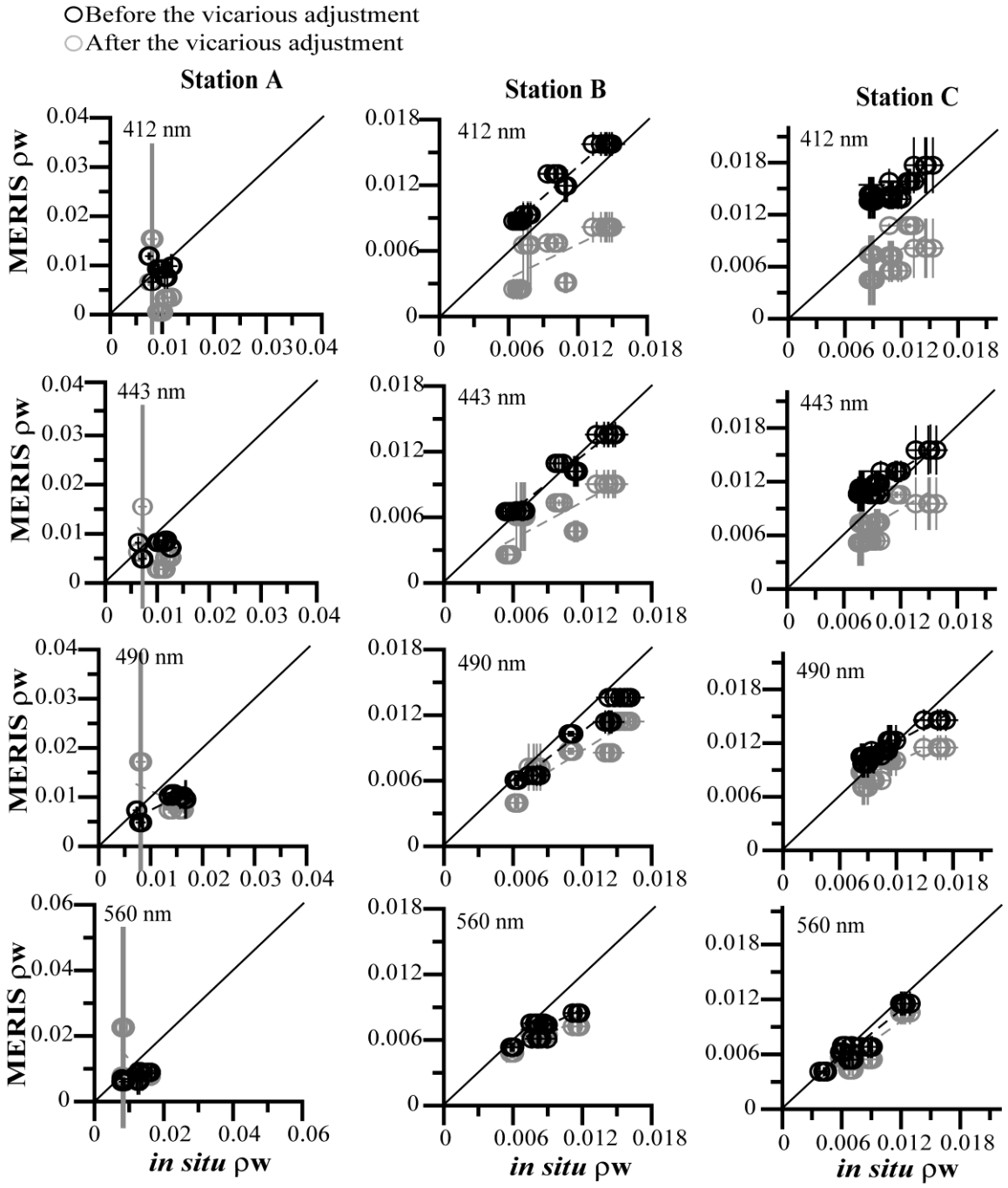
Dates for sampling campaigns by SGM between February 2010 and October 2011.

2010	
17th February 2010	TACSS Intercalibration exercise
28th May 2010	Potential match-up
31st May 2010	No match-up
16th June 2010	Potential match-up
8th July 2010	No match-up
22nd August 2010	Potential match-up
15th October 2010	Potential match-up
2011	
18th March 2011	Potential match-up
14th April 2011	No match-up
28th April 2011	Potential match-up
20th May 2011	Potential match-up
19th June 2011	Potential match-up
24th June 2011	No match-up
18th August 2011	Potential match-up
06th Sept. 2011	Potential match-up
14th Sept. 2011	Potential match-up
6th October 2011	Potential match-up
14th October 2011	Potential match-up

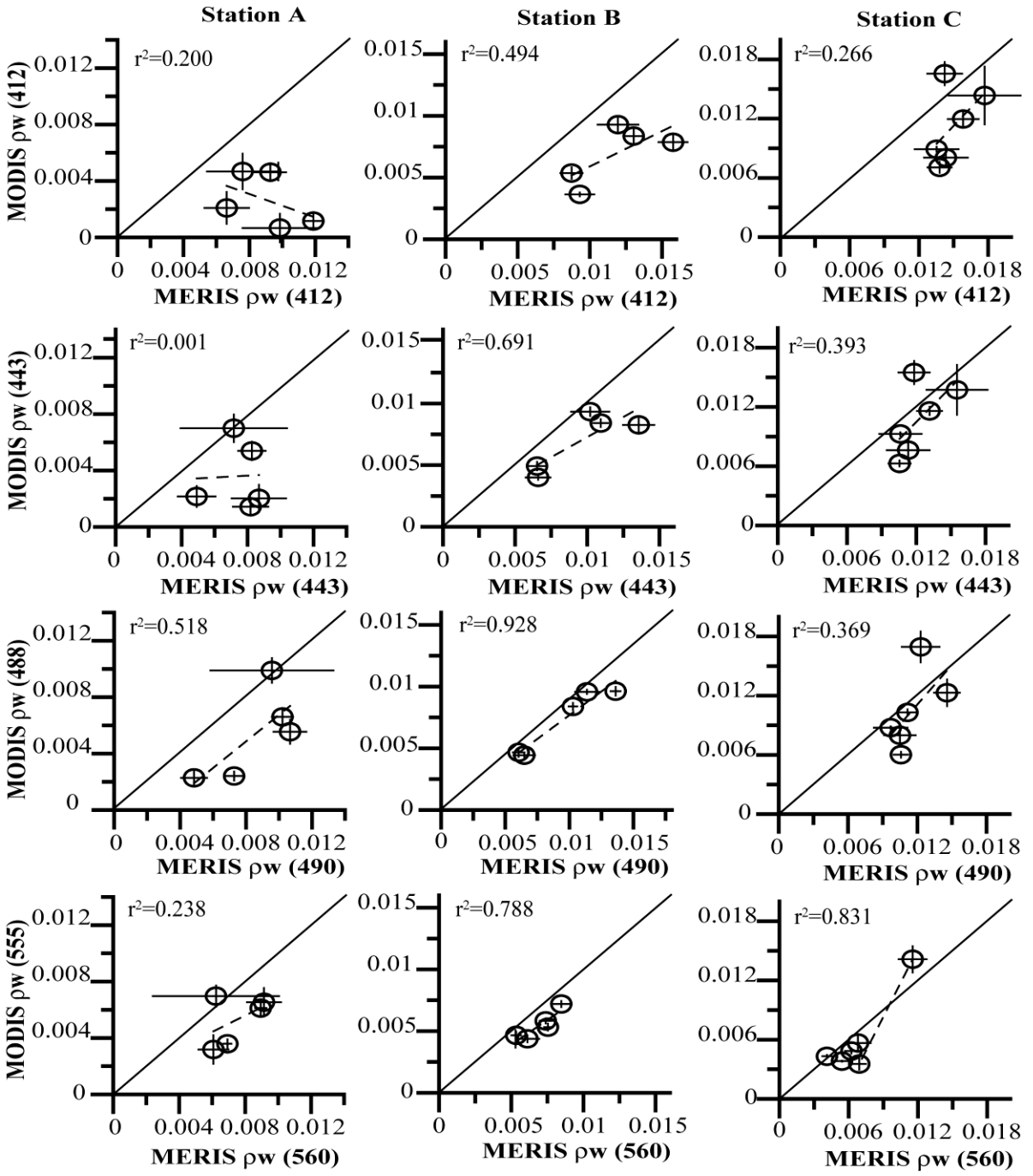
Other activities between February 2010 and October 2011

1. Additional analysis of 2008-2009 “match-up” data including vicarious calibration, ICOL, MODIS
2. Preliminary analysis of 2010-2011 “match-up” data
3. ARC 2010 inter-calibration exercise Oceanographic Tower Venice
4. HPLC-HIP2 2010 inter-calibration exercise
5. Additional analysis of 2008-2009 data- absorption coefficients
6. Comparison of atmospheric parameters (Water vapour, Alpha, AOT) estimated from MERIS, CIMEL & Microtops data
7. Comparison between CIMEL and Microtops data to identify & correct inconsistent atmospheric data
8. Comparison between Floating Rig and TACCs

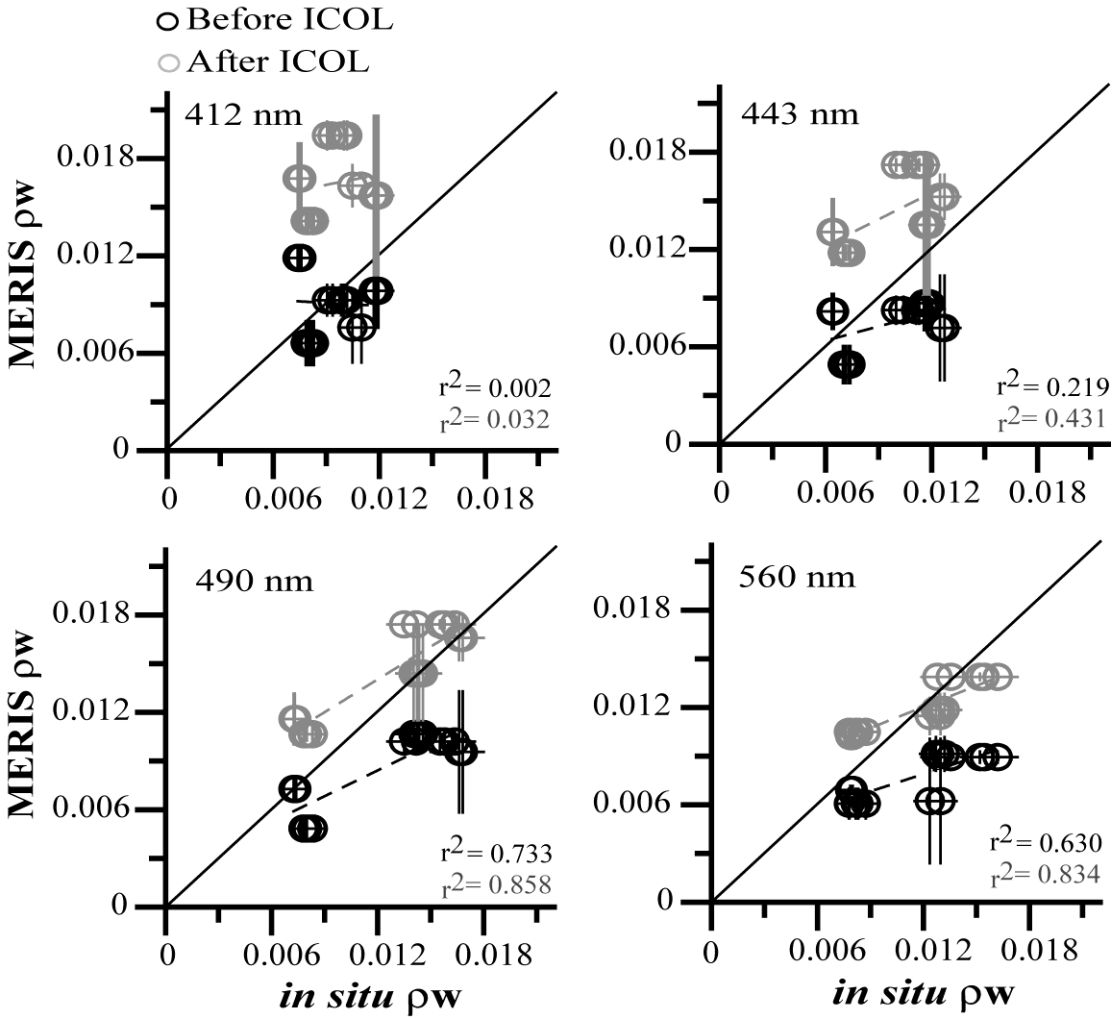
1.1 [1]


Before the vicarious adjustment
After the vicarious adjustment
Station A
Station B
Station C
412 nm
443 nm
490 nm
560 nm
MERIS ρw
in situ ρw

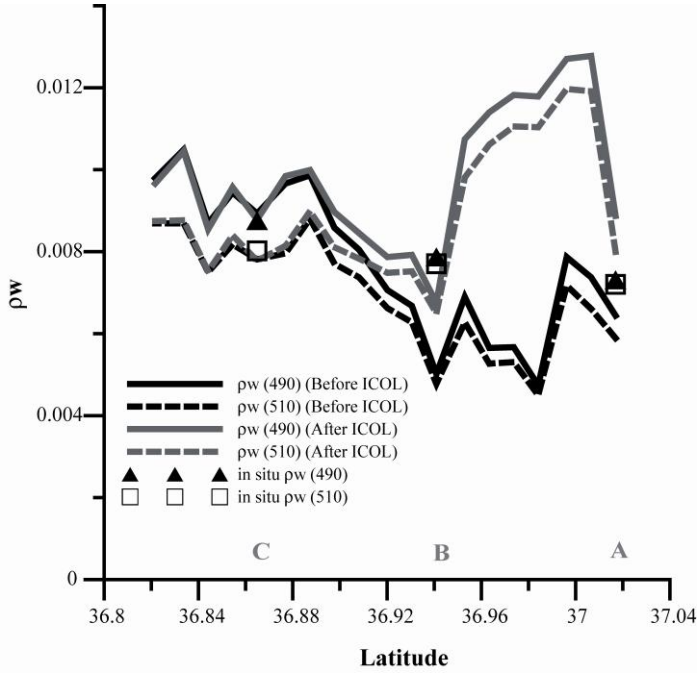
1.2 [1]

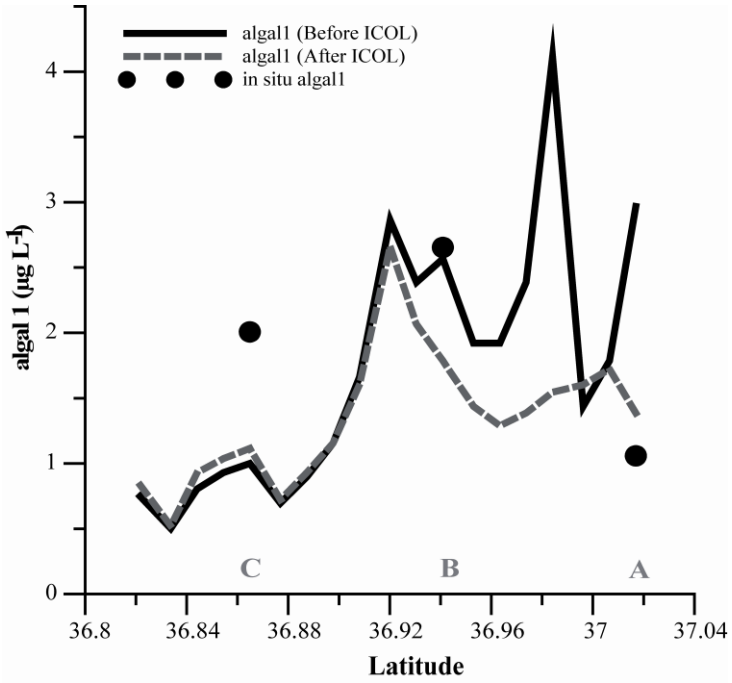

Station A
Station B
Station C
MODIS ρw (412)
MODIS ρw (443)
MODIS ρw (488)
MODIS ρw (555)
MERIS ρw (412)
MERIS ρw (443)
MERIS ρw (490)
MERIS ρw (560)
r²=0.200
r²=0.494
r²=0.266
r²=0.001
r²=0.691
r²=0.393
r²=0.518
r²=0.928
r²=0.369
r²=0.238
r²=0.788
r²=0.831

1.3 [1] Influence of ICOL on MERIS *rho* and *in situ rho* for 2010 match-up data



1.4 [1] Comparison of MERIS *rho* & algal1 with *in situ rho* & algal1- with & without ICOL (18th November 2009[2])





[2]Cristina,S., Moore,G. , Icely,J., Goela,P., Newton,A. **In situ validation of MERIS and MODIS reflectance using a coastal transect off the SW Iberian Peninsula, with corrections for the near- land adjacency effects** .(under submission to Remote Sensing of the Environment)

2.1 Reminder of changes made to treatment of radiometric data since 2009

•The direct and diffuse irradiance are calculated following Gregg and Carder (1990), using the ozone concentration, water vapour concentration and aerosol optical thickness from the **Microtops II sunphotometer** , instead of the MERIS matchup pixel;

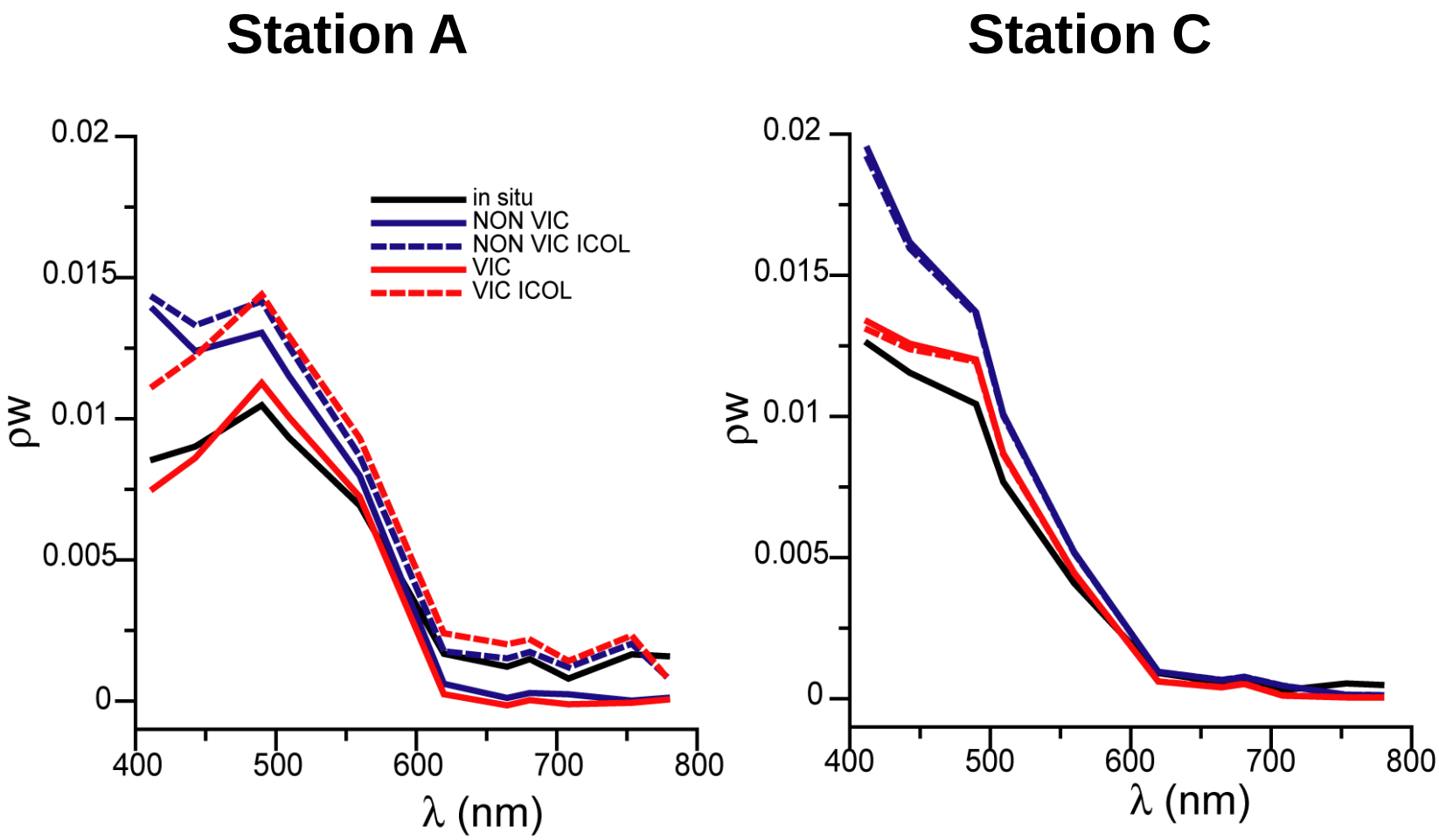
•The Kd spectra are based on all the four wavelenghts of the Ed sensor;

•The Satlantic darks are changed to nearest neighbor, rather than averages.

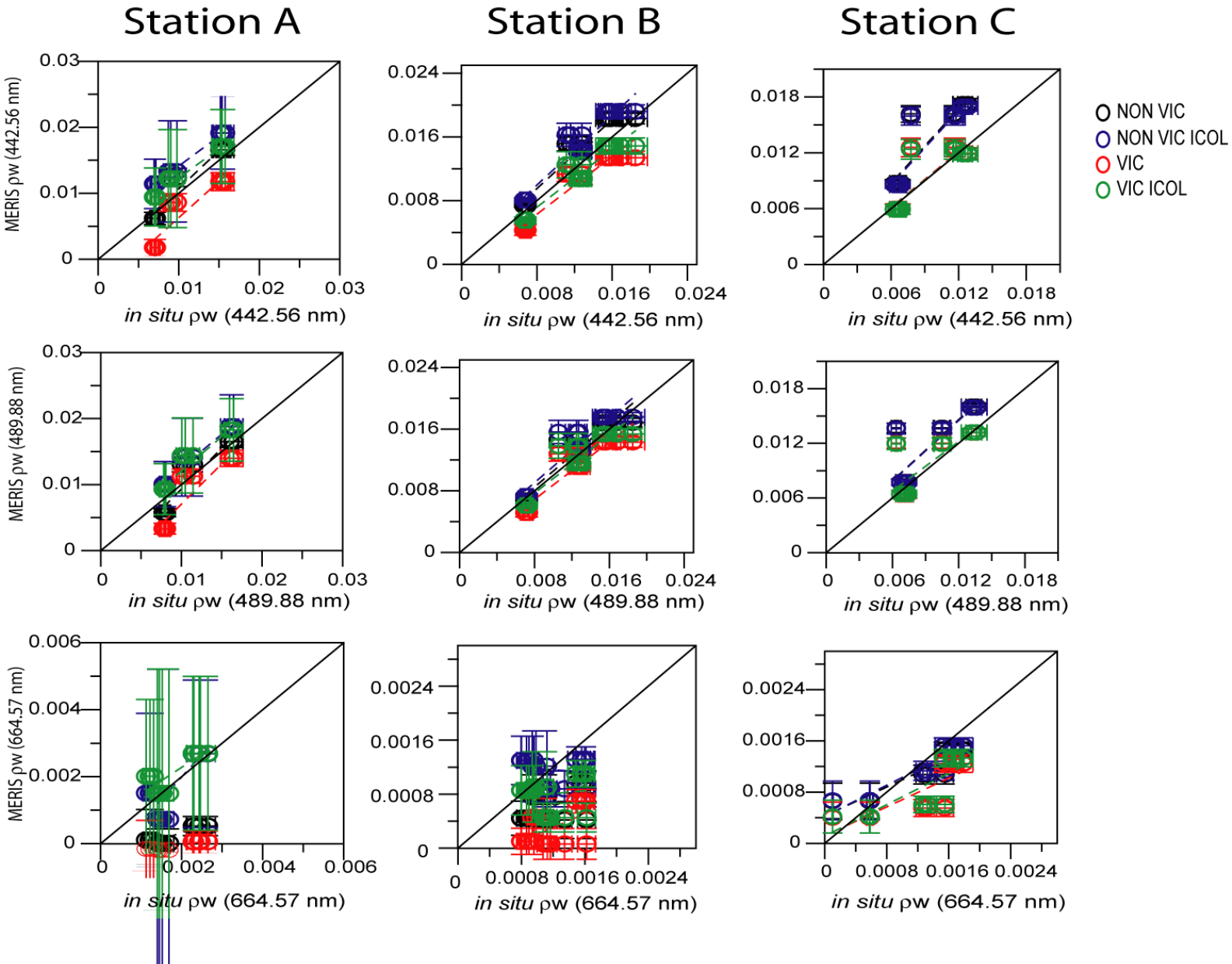
• There are 3 approaches to estimating surface irradiance - a point estimate when pitch / roll is at a minimum (necessary for rough Sagres weather), - an estimate based on the K-chain,- and an estimate based on the pitch / roll and compass sensor (this correction can be updated to use MEROS).

2.2 Comparison between MERIS *rho* and in situ *rho*.

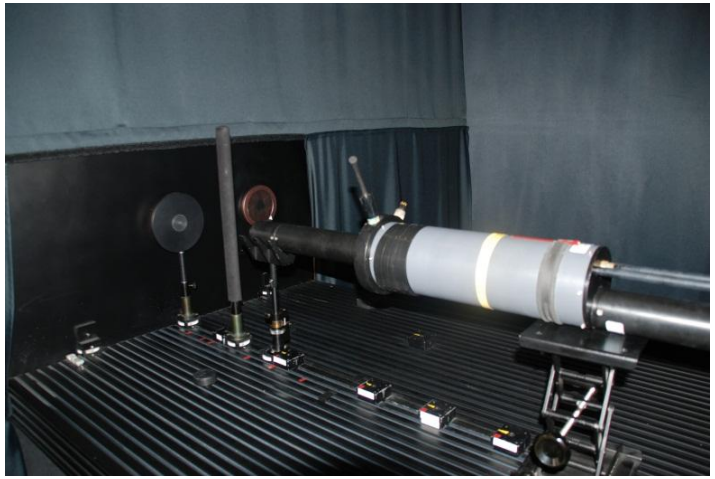
Data from Portuguese validation site 15-10-2010

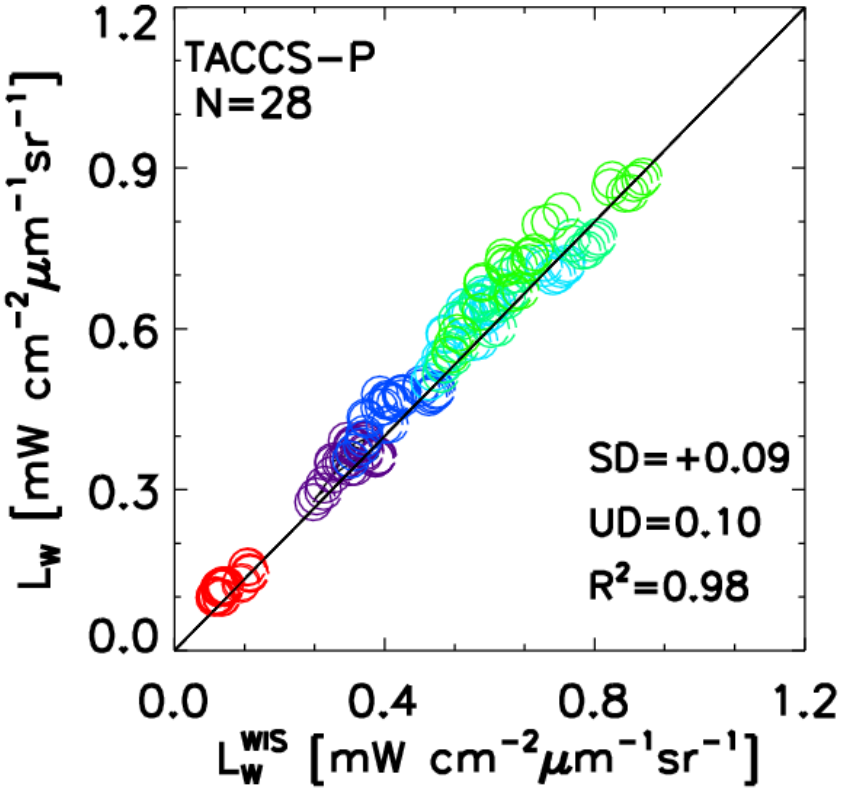


2.3 Influence of Vicarious Calibration and ICOL on MERIS *rho* and *in situ rho* for 2010 match-up data



3.1 ARC 2010 at AAOT,Venice and JRC, Ispra





4.1 JRC HPLC_HIP2 intercalibration exercise 2009-2010.

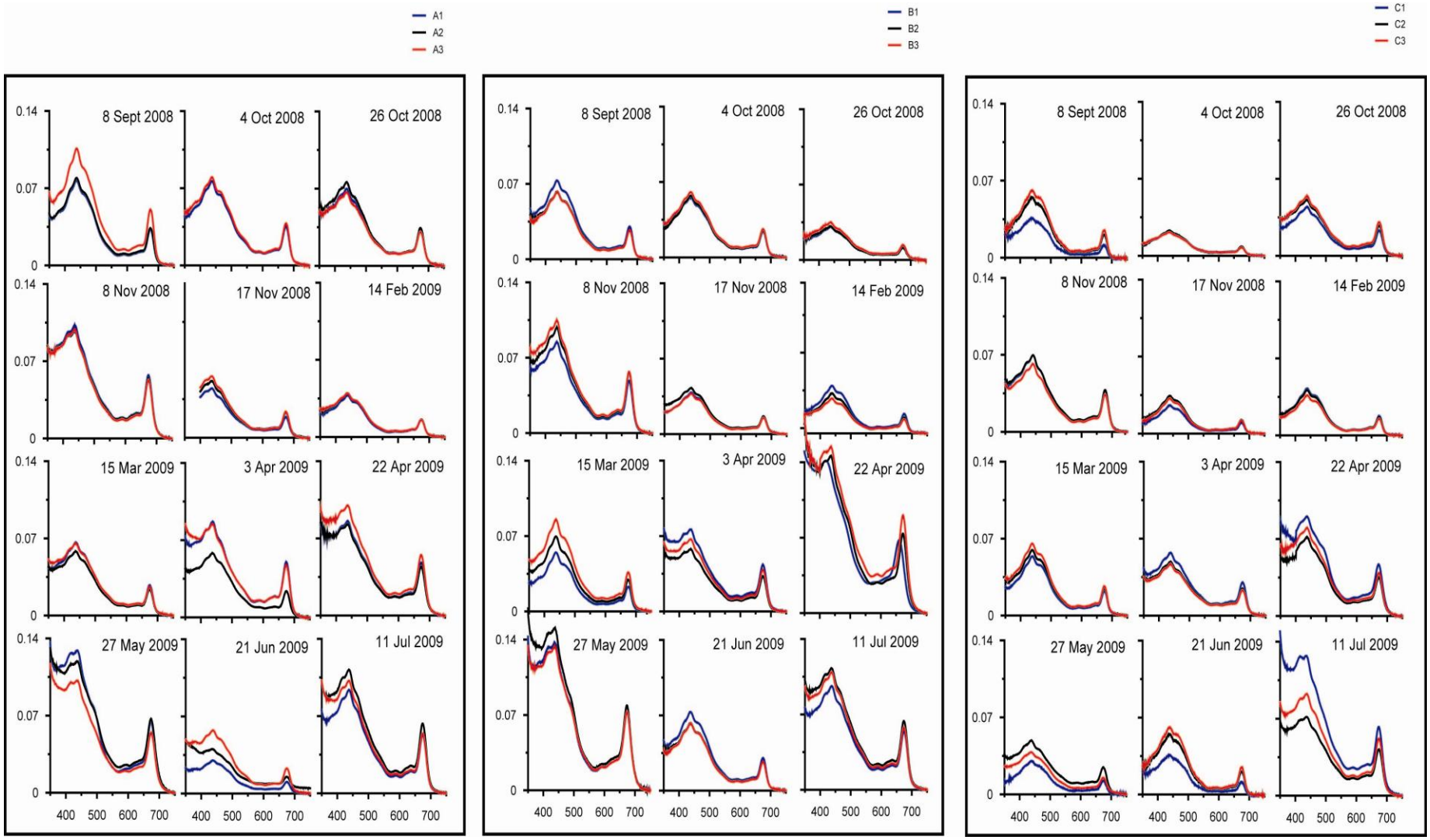
Performance metrics for Chromatographic parameters

	TChla		PPig		Separation		Injection		Calibration		
	CV%	APD%	CV%	APD%	Rs	Retention	Perid	Chla	Chl Res	Pipette (prec)	Average
SeaHARRE 2 rank	1	4	4	4	4	1	4	4	4	4	3.4

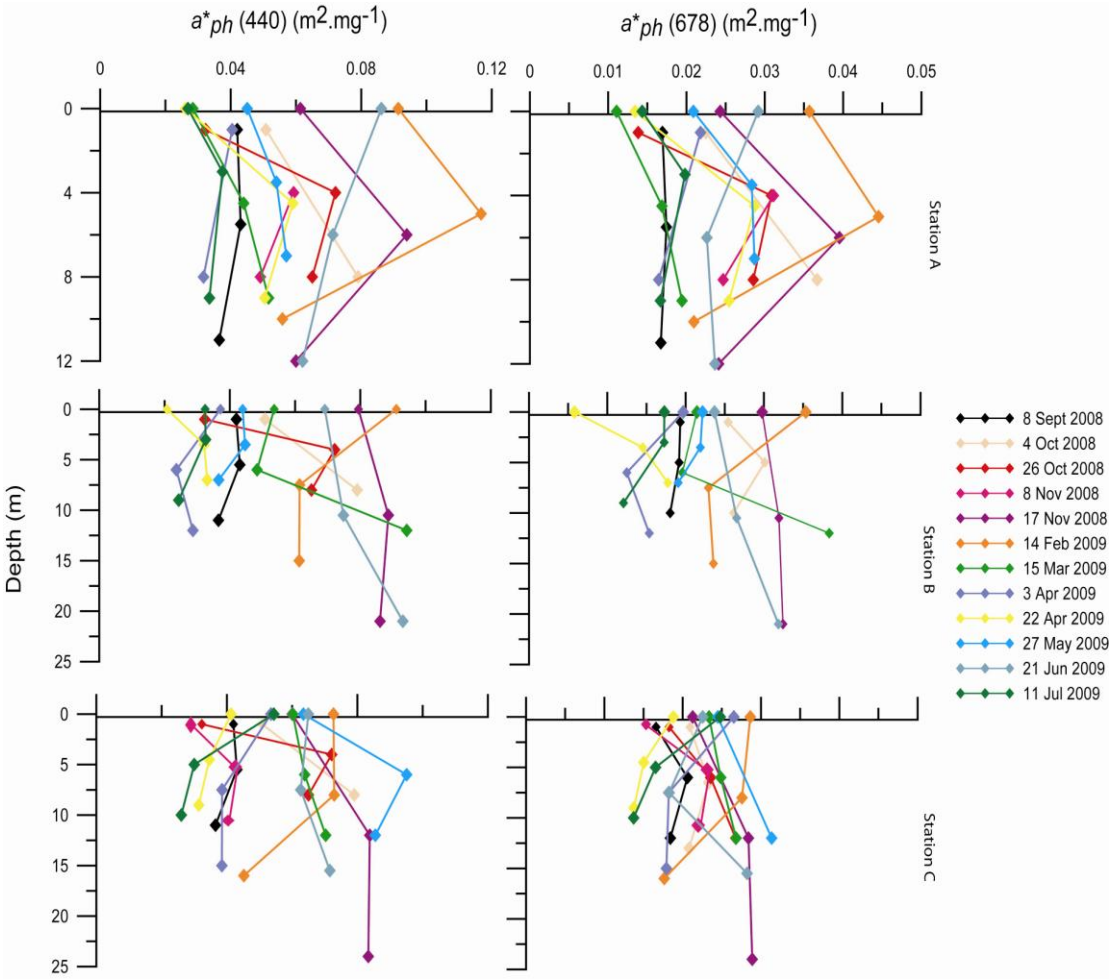
Results for the Portuguese Laboratory (SGM)

- Overall score of 3.4 represents a “quantitative” laboratory, one below the “state of the art”
- The same exercise is currently being repeated for 2011

5.1[2] Phytoplankton absorption spectra for 2008-2009 match up data

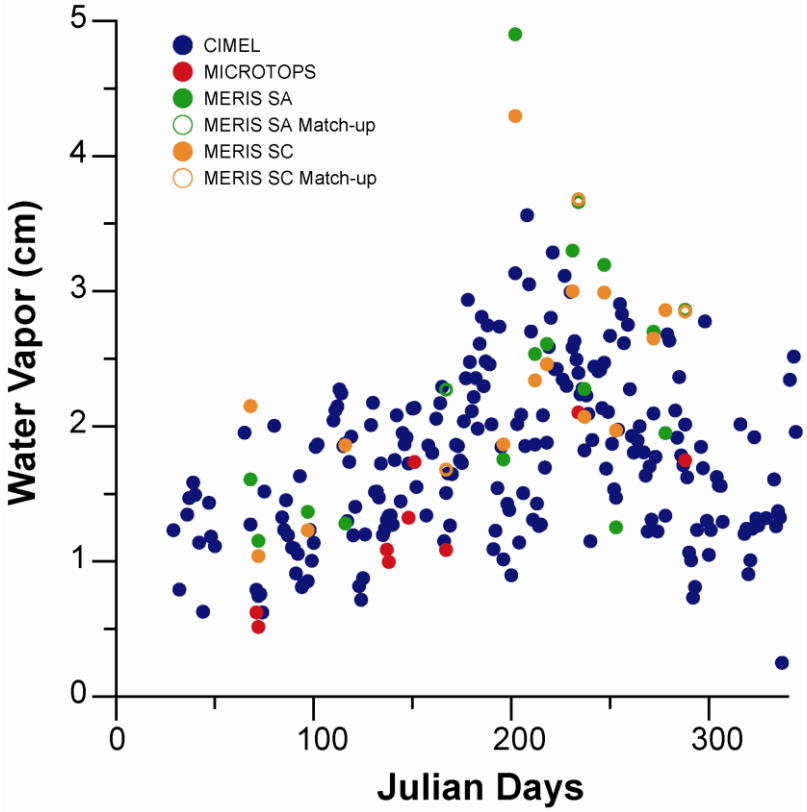


5.2 [2]Specific phytoplankton absorption spectra for 2008-2009 "match up" data

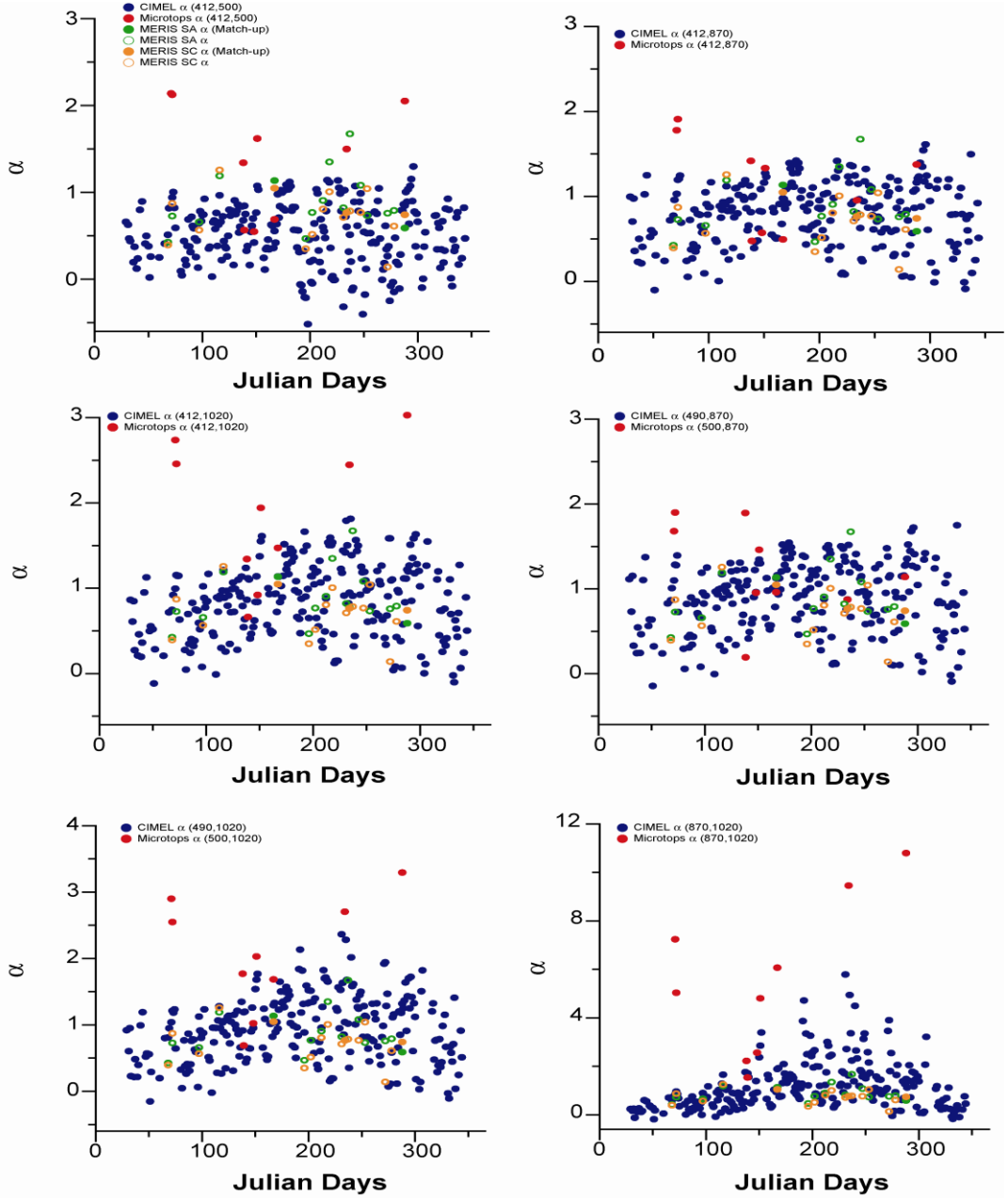


[2]Goela,P., Icely,J., Cristina,S., Newton, A. **Specific absorption coefficient of phytoplankton off the Southwest coast of the Iberian Peninsula: A contribution to algorithm development for ocean colour remote sensing.** (under submission to Continental Shelf Research)

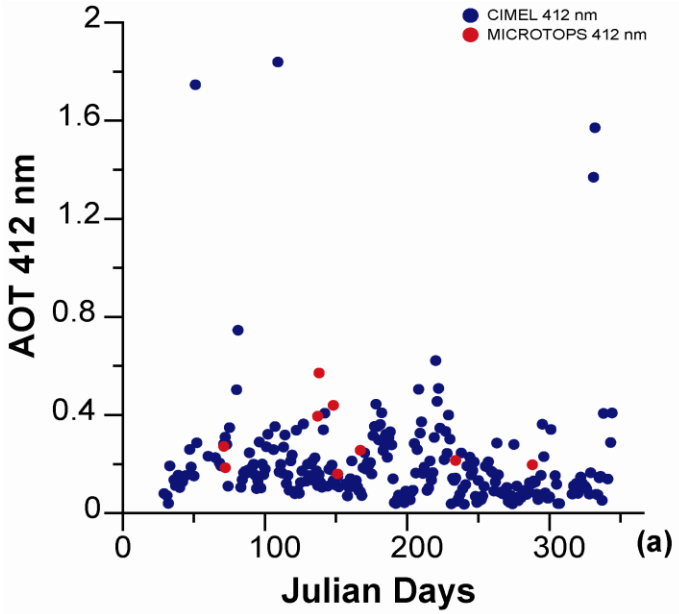
6.1 Comparison of atmospheric parameters estimated by MERIS, CIMEL & MICROTOPS II during 2010

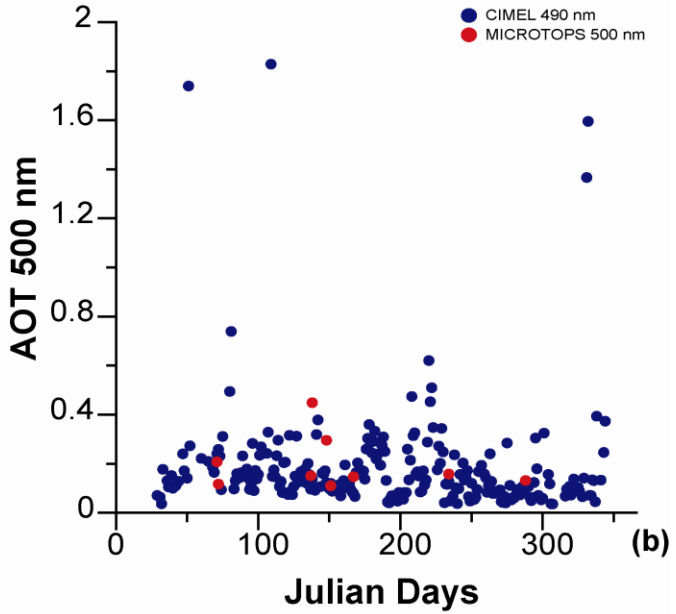


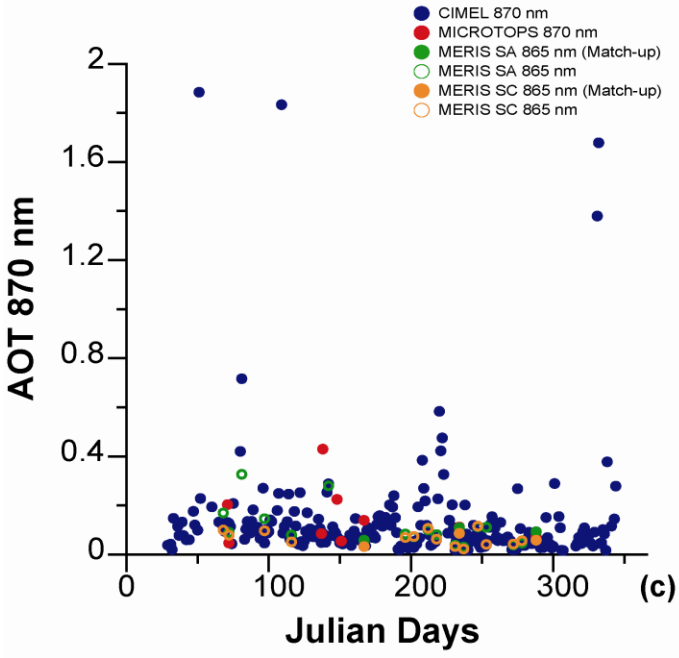
6.2 Alpha

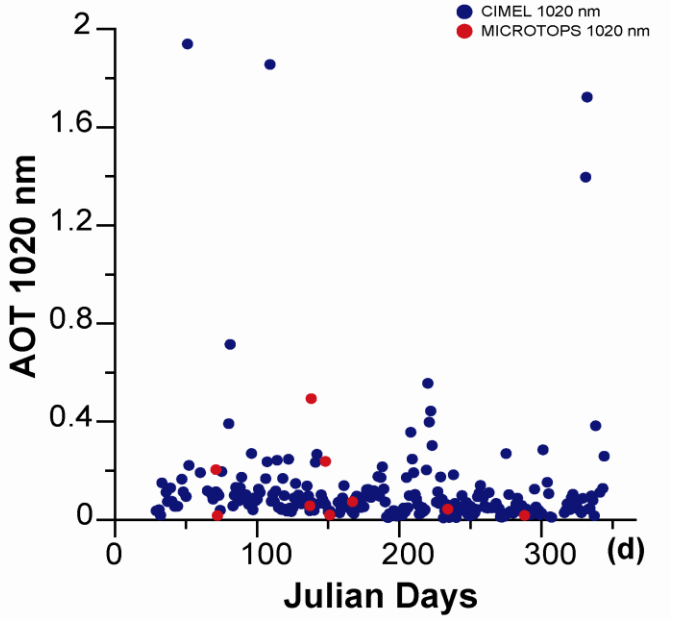

CIMEL α (412,500)
Microtops α (412,500)
MERIS SA α (Match-up)
MERIS SA α
MERIS SC α (Match-up)
MERIS SC α
CIMEL α (412,870)
Microtops α (412,870)
CIMEL α (412,1020)
Microtops α (412,1020)
CIMEL α (490,870)
Microtops α (500,870)
CIMEL α (490,1020)
Microtops α (500,1020)
CIMEL α (870,1020)
Microtops α (870,1020)
α
Julian Days

6.3 AOT

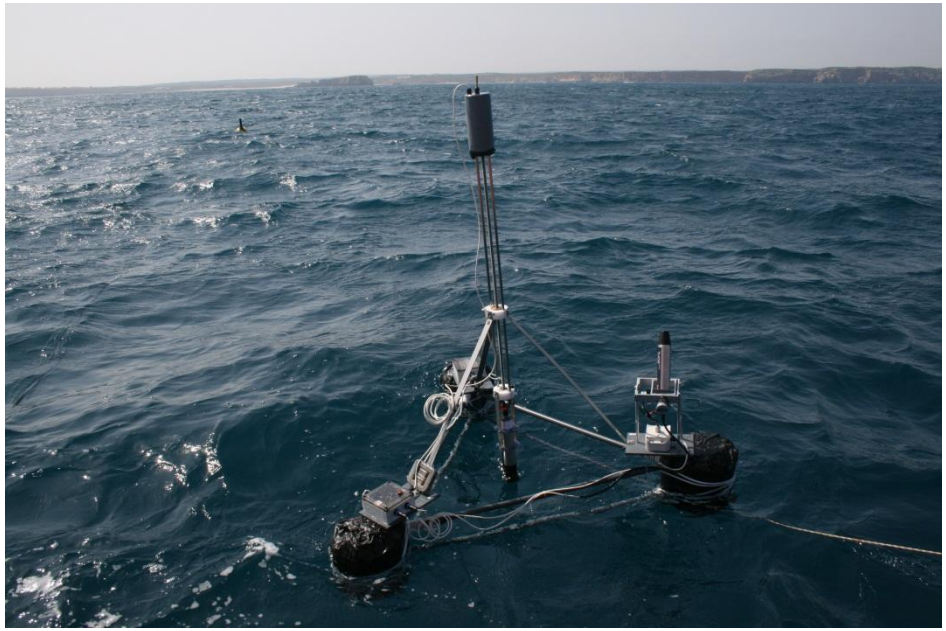

CIMEL 412 nm
MICROTOPS 412 nm
AOT 412 nm
Julian Days
(a)


CIMEL 490 nm
MICROTOPS 500 nm
AOT 500 nm
Julian Days
(b)


CIMEL 870 nm
MICROTOPS 870 nm
MERIS SA 865 nm (Match-up)
MERIS SA 865 nm
MERIS SC 865 nm (Match-up)
MERIS SC 865 nm
AOT 870 nm
Julian Days
(c)


CIMEL 1020 nm
MICROTOPS 1020 nm
AOT 1020 nm
Julian Days
(d)

8.1 Comparisons between Gerald´sFloating Rig and the SagresTACCs



Acknowledgements

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- José Paulo Silva of FCT University of Algarve for instrumental help on HPLC analysis;
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- HPLC HIP 2010 Elisabetta Canuti;
- Susanne Kratzer from University of Stockholm -the other half of the TACCs community
- Ricardo and Sara Magalhães for their boat support.
- Rodrigo Climaco and Sergei Danchenko for assistance with field work