POLYMER validation update

François Steinmetz, Pierre-Yves Deschamps and Didier Ramon

HYGEOS

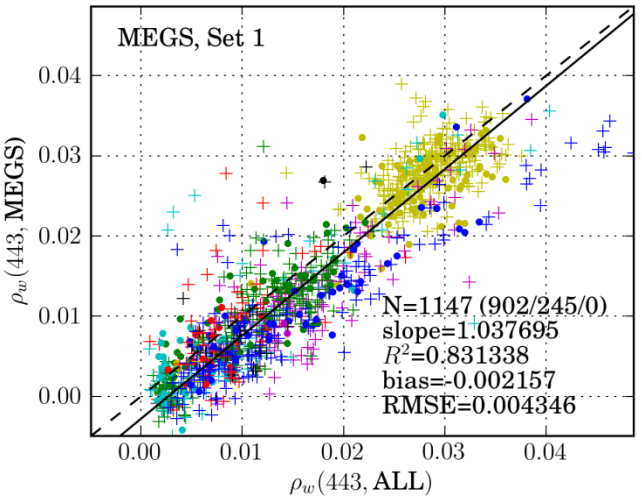
Validation method

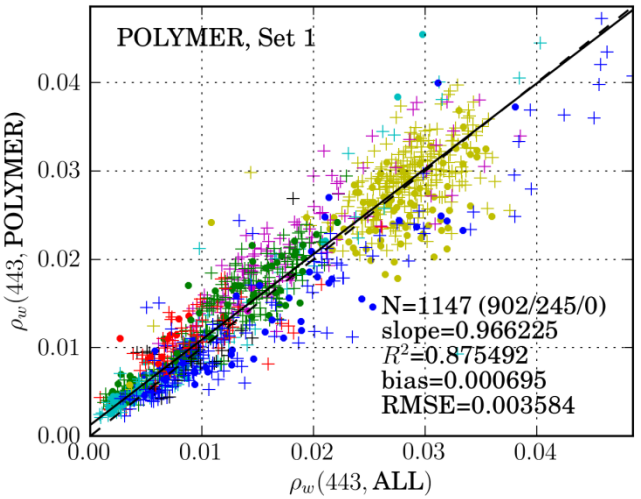
- Validation results updated with 3rd reprocessing:
  - Polymer results updated
  - MEGS level 2 updated
- Using full Mermaid database: NOMAD, SIMBADA, Palgrunden, EastEngChannel, AAOT, AbuAlBukhoosh, GustavDalenTower, NWBalticSea, PlumesAndBlooms, MOBY, HelsinkiLighthouse, CaliforniaCurrent, Algarve, MVCO, BOUSSOLE, BristolIrishSea
- Two validation datasets:

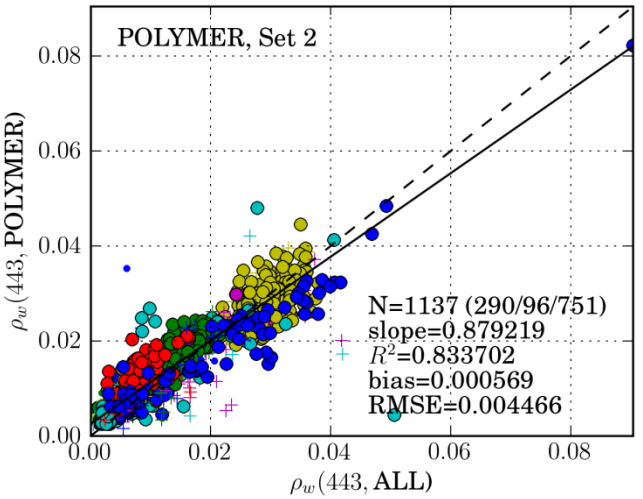
  1) Set 1 (No glint): no HIGH_GLINT and no PCD_1_13

  2) Set 2 (Glint, Polymer only): HIGH_GLINT or PCD_1_13

Validation of the reflectances at 443nm (global)

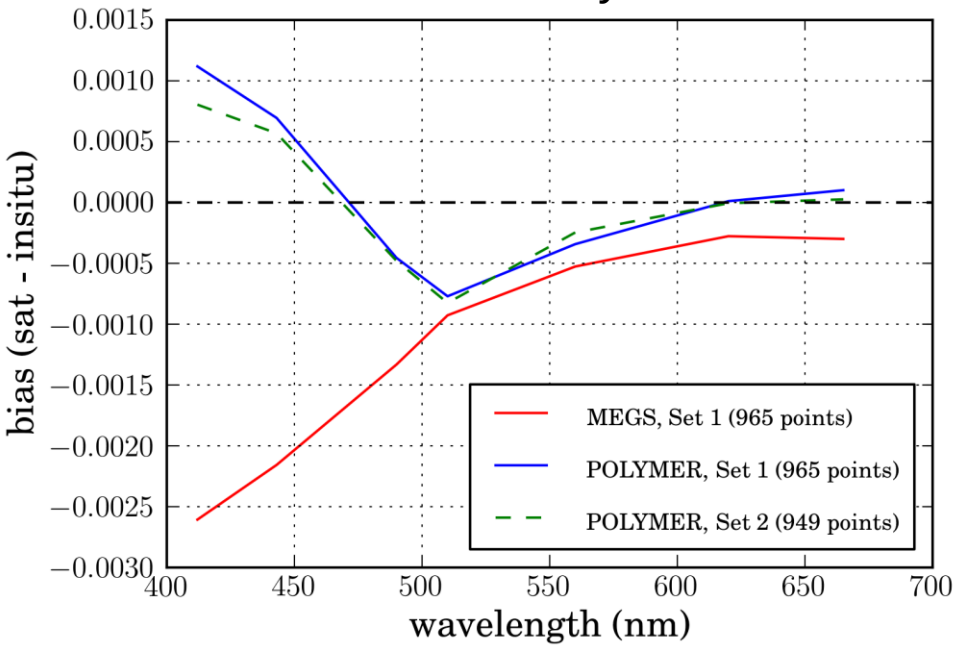




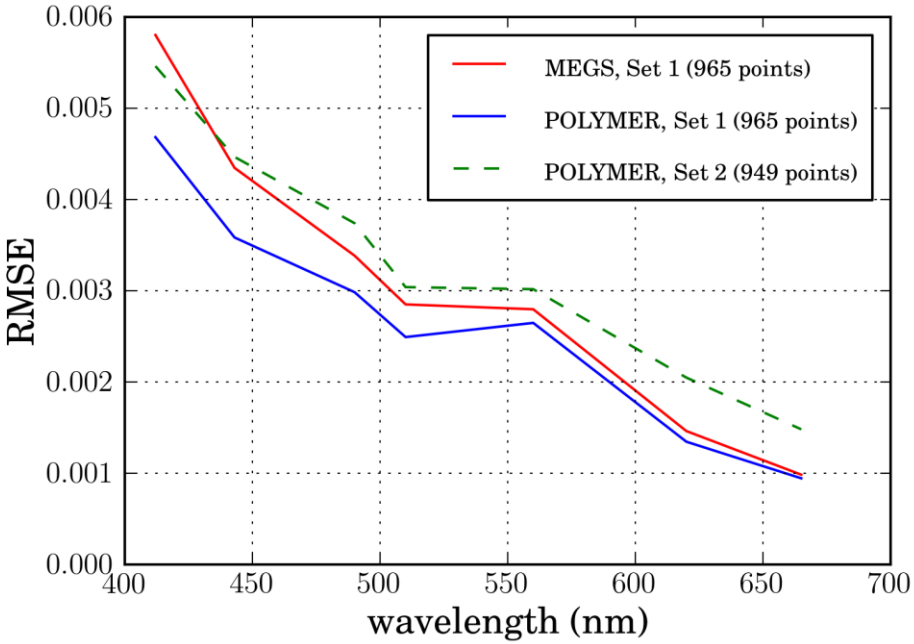


Global validation – water reflectance

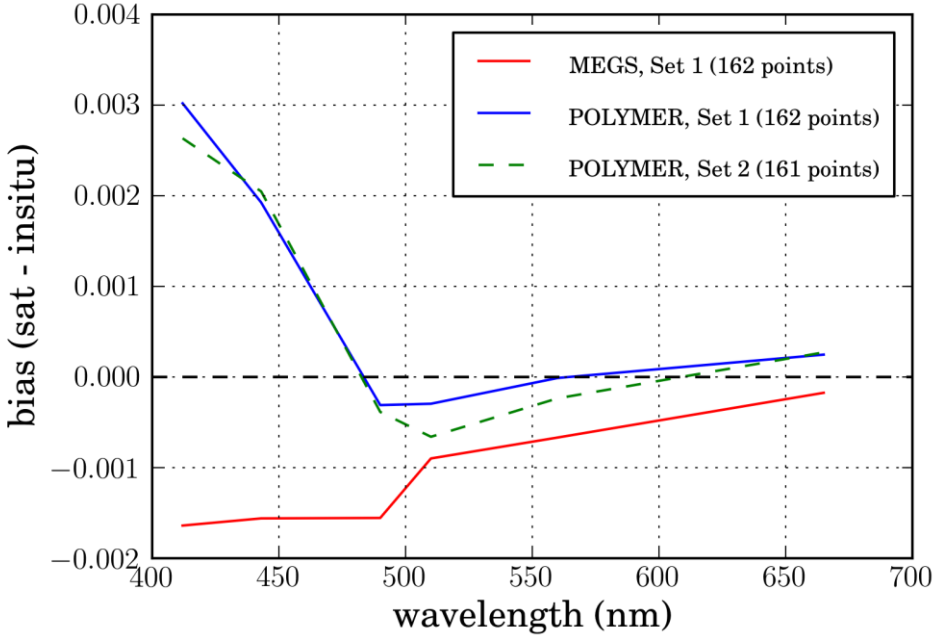
Accuracy

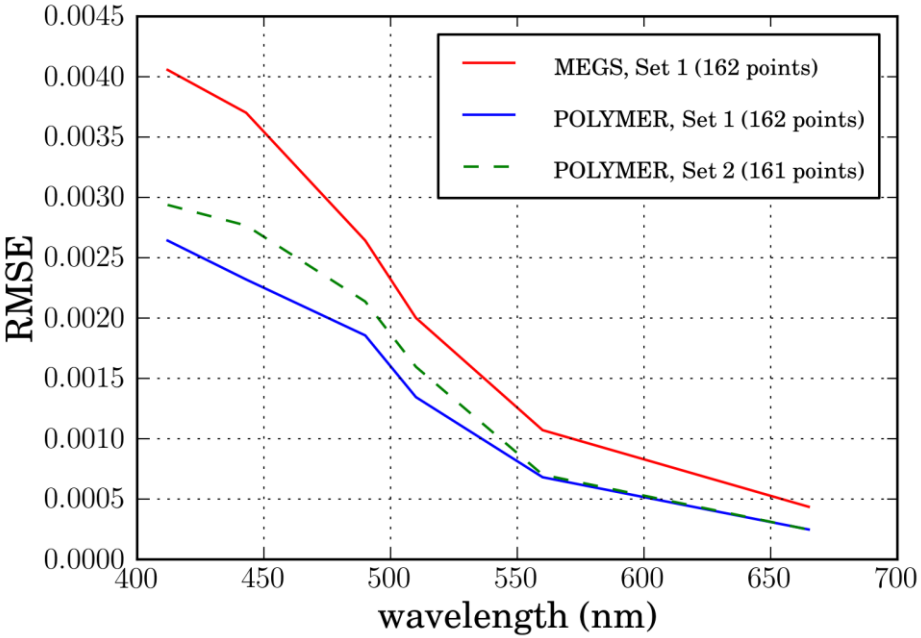


Precision

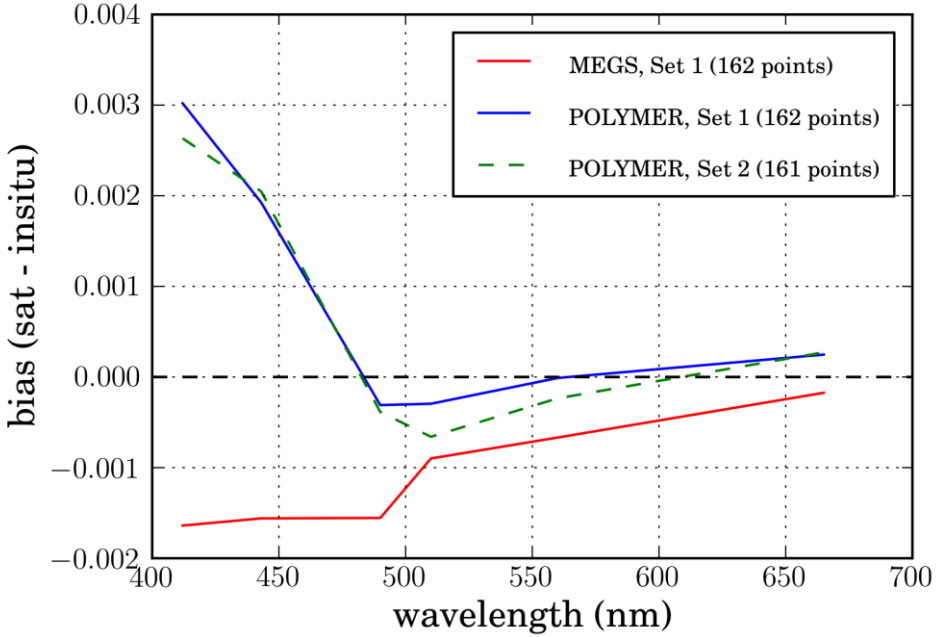


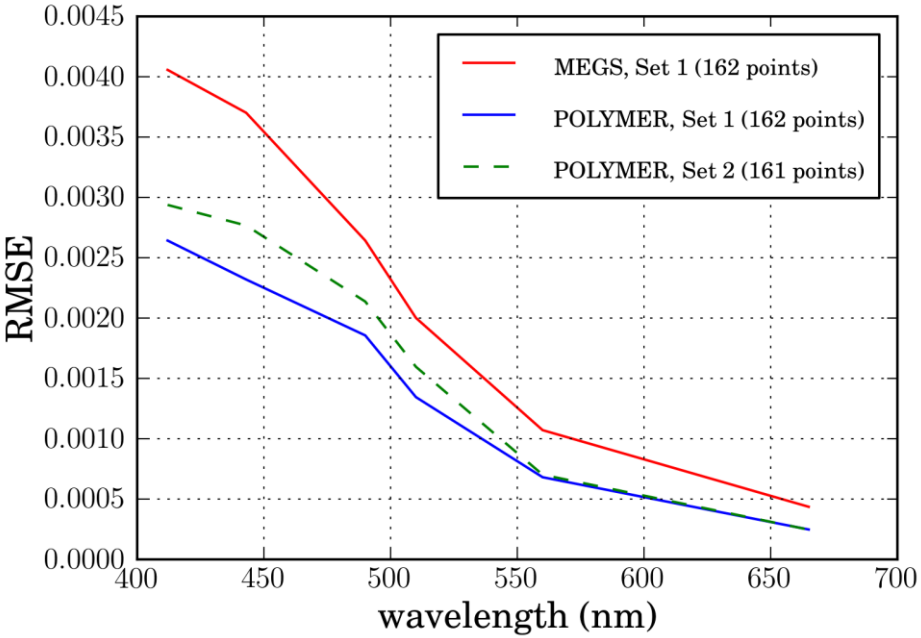
Boussole


MEGS, Set 1 (162 points)
POLYMER, Set 1 (162 points)
POLYMER, Set 2 (161 points)
bias (sat - insitu)
wavelength (nm)
0.004
0.003
0.002
0.001
0.000
−0.001
−0.002
400
450
500
550
600
650
700

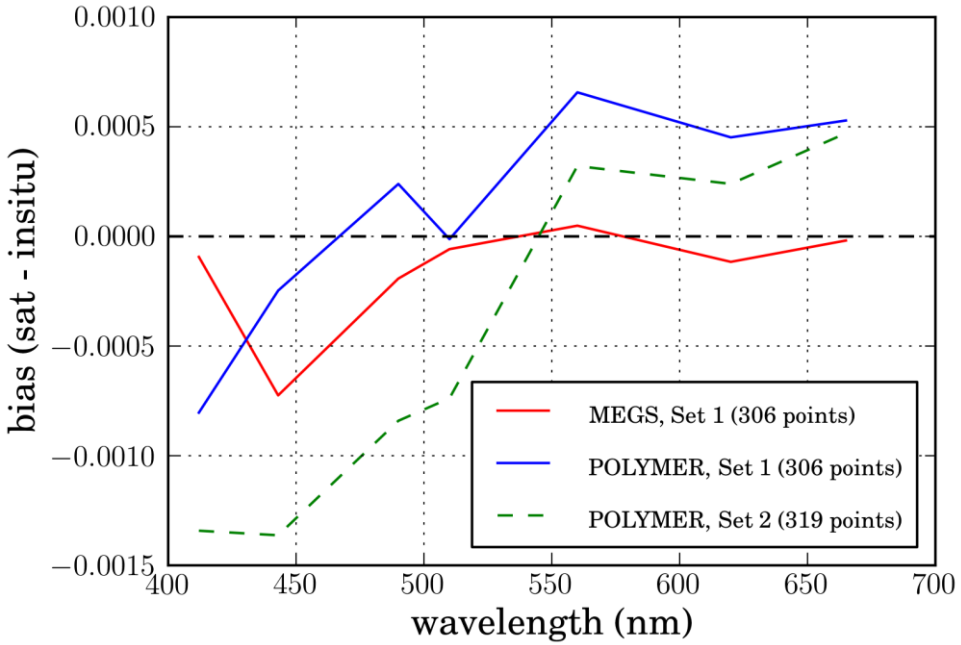

MEGS, Set 1 (162 points)
POLYMER, Set 1 (162 points)
POLYMER, Set 2 (161 points)
RMSE
wavelength (nm)
0.0045
0.0040
0.0035
0.0030
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
400
450
500
550
600
650
700

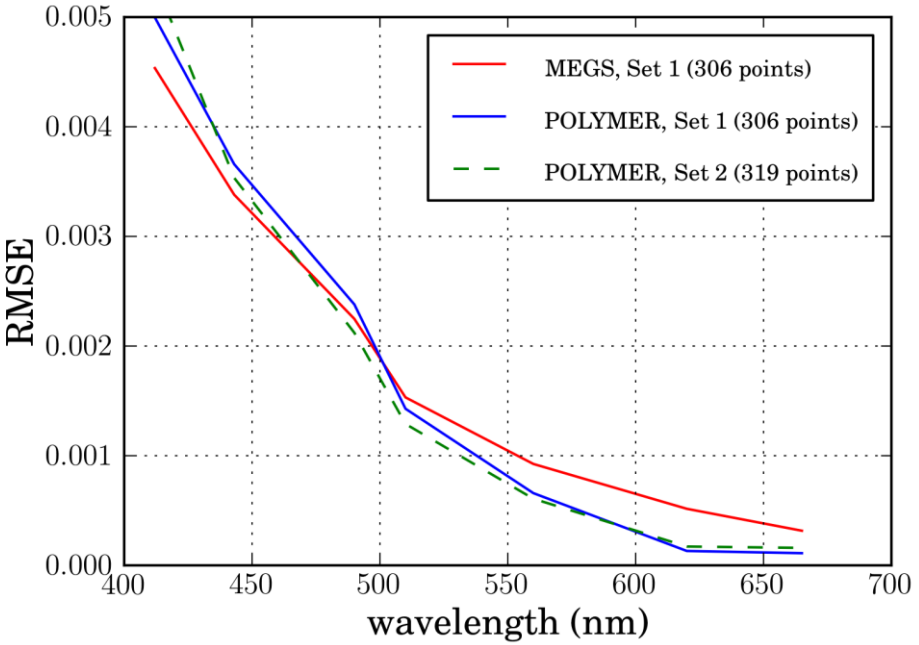
Boussole


MEGS, Set 1 (162 points)
POLYMER, Set 1 (162 points)
POLYMER, Set 2 (161 points)
bias (sat - insitu)
wavelength (nm)
0.004
0.003
0.002
0.001
0.000
−0.001
−0.002
400
450
500
550
600
650
700


MEGS, Set 1 (162 points)
POLYMER, Set 1 (162 points)
POLYMER, Set 2 (161 points)
RMSE
wavelength (nm)
0.0045
0.0040
0.0035
0.0030
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
400
450
500
550
600
650
700

MOBY


0.0010
0.0005
0.0000
−0.0005
−0.0010
−0.0015
bias (sat - insitu)
400
450
500
550
600
650
700
wavelength (nm)
MEGS, Set 1 (306 points)
POLYMER, Set 1 (306 points)
POLYMER, Set 2 (319 points)


0.005
0.004
0.003
0.002
0.001
0.000
RMSE
400
450
500
550
600
650
700
wavelength (nm)
MEGS, Set 1 (306 points)
POLYMER, Set 1 (306 points)
POLYMER, Set 2 (319 points)

Conclusion

- Spatial coverage compared to standard processing: +100%
- Good precision and accuracy after 2000 match-ups
- No vicarious calibration
- Polymer is being evaluated in the Ocean Colour CCI Round-Robin
- Applied in NRT applications at D+1 in several projects (ICESCAPE, ship campaigns, SHIVA FP7 project, fisheries)
- Work in progress: application to MODIS, SeaWiFS and GOCI