

Spectral matching inversion algorithms for PACE
application in optically shallow waters:
an assessment using HICO and PRISM data

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Y1 progress – PACE SAT meeting

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Parameterization – optically shallow waters

$$R_{rs}^{mod}(\lambda) \approx f\left(\frac{\Delta a_{\phi}}{\Delta \lambda}, P, S, G, Y, X, \rho, B, H\right) + \varepsilon$$

$B_1 \quad B_2$

$$P = a_{\phi}(440)$$

$$G = a_{dg}(440)$$

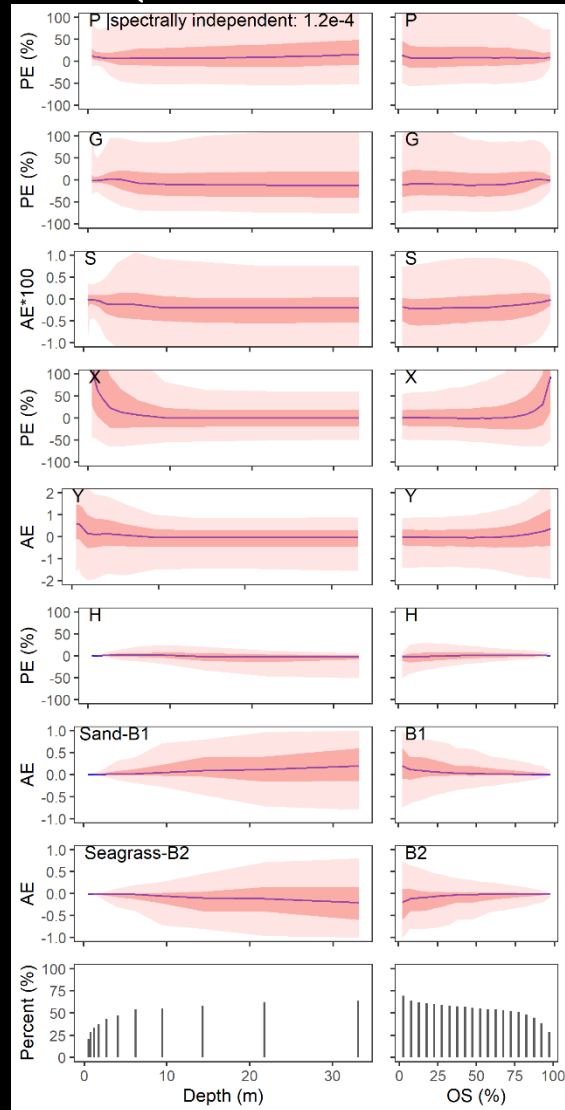
$$X = b_{bp}(550)$$

$$B = \rho(550)$$

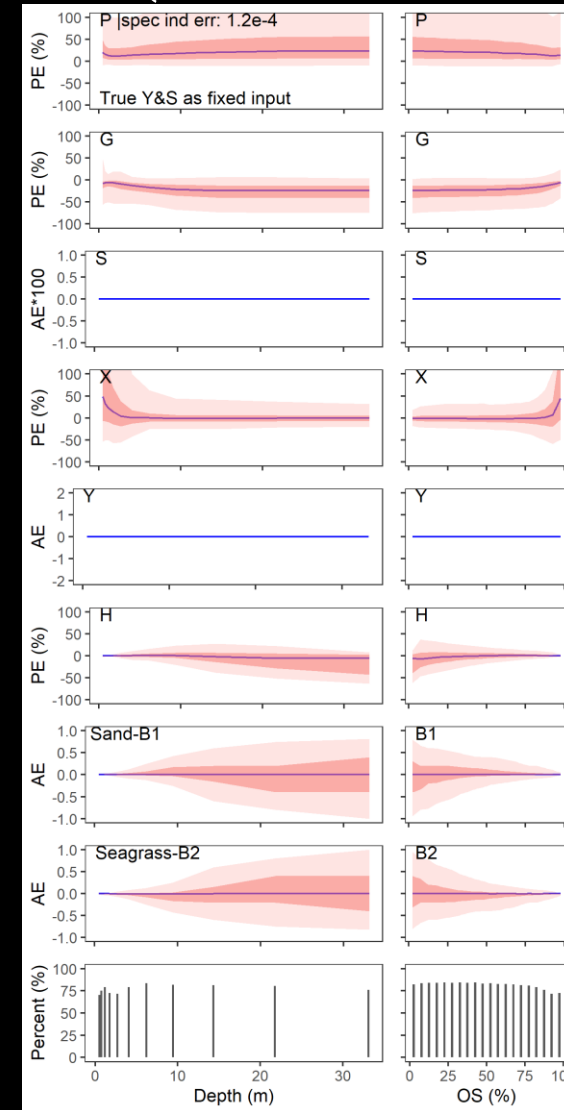
Considering S and Y

$$R_{rs}^{mod}(\lambda) \approx f\left(\frac{\Delta a_p}{\Delta a_s}, P, S, G, Y, X, X, B, H\right) + \varepsilon$$

$$R_{rs}^{mod}(\lambda) \approx f\left(\frac{\Delta a_p}{\Delta a_s}, P, X, G, X, X, X, B, H\right) + \varepsilon$$



Percentiles:
25 → 75%
5 → 95%



Summary of findings

- Determined optimal optimization solution & algorithm
- No benefit to fixing H if initialization value is close
- S, Y
 - Cannot be solved with ε
 - If fixing, errors must be < 0.2 (Y) and < 0.004 (S)
 - Empirical approaches can achieve these accuracies
- ρ, B
 - New framework for global implementation
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