

A comparison of Taffka and CSS derived Rrs

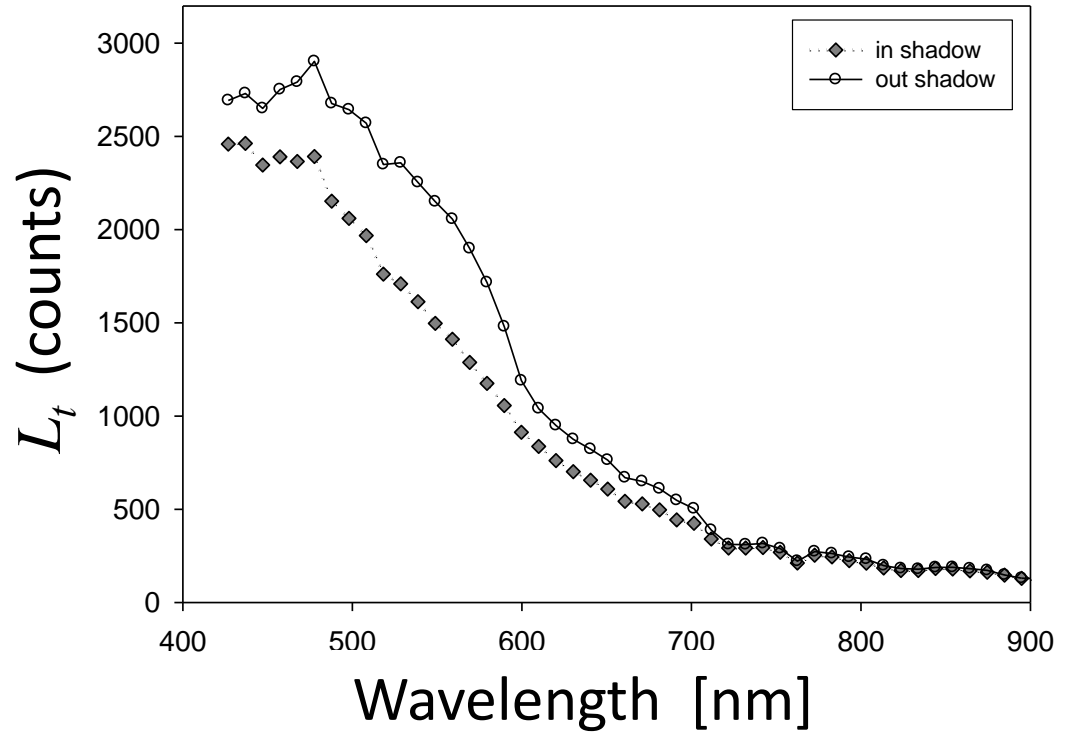
ZhongPing and Nick

$$L_t(\lambda) = L_{sky}(\lambda) + t(\lambda) L_w(\lambda)$$



$$R_{rs}(\lambda) = \frac{L_w(\lambda)}{E_d(\lambda)} = \frac{L_t(\lambda) - L_{sky}(\lambda)}{t(\lambda) E_d(\lambda)}$$

Cloud-Shadow Scheme (CSS)



(Reinersmann et al 1998, Lee et al 2007)

$$\left\{ \begin{aligned} L_t^{Sun}(\lambda) &= L_{sky}^{Sun}(\lambda) + t(\lambda) E_d(\lambda) R_{rs}(\lambda) \\ L_t^{Sdw}(\lambda) &= L_{sky}^{Sdw}(\lambda) + t(\lambda) E_d^{Sky}(\lambda) R_{rs}(\lambda) \end{aligned} \right.$$

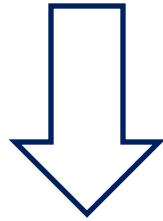
Assume:

$$L_{sky}^{Sun} \approx L_{sky}^{Sdw} \approx L_{sky}^{Sdw}$$

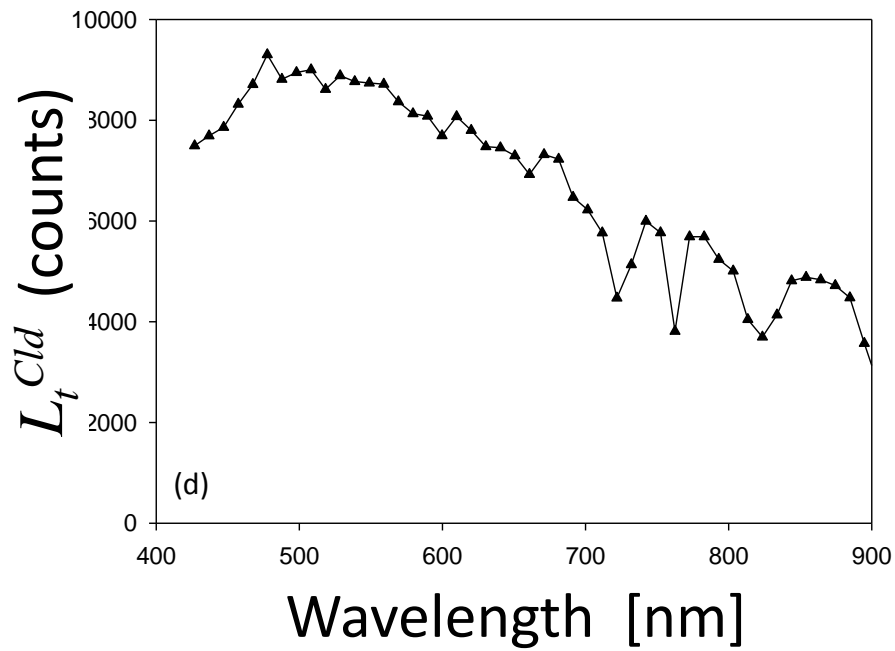
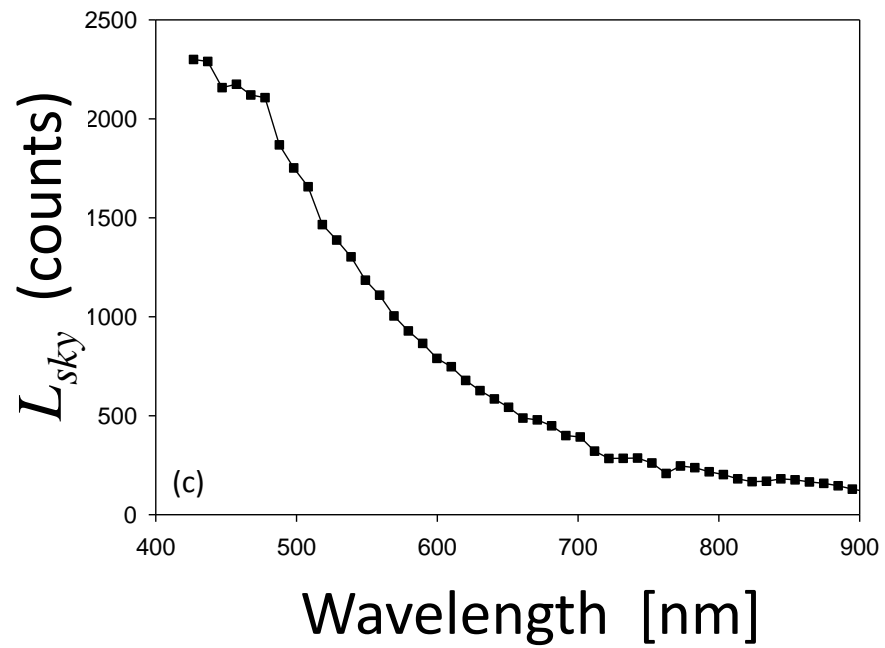


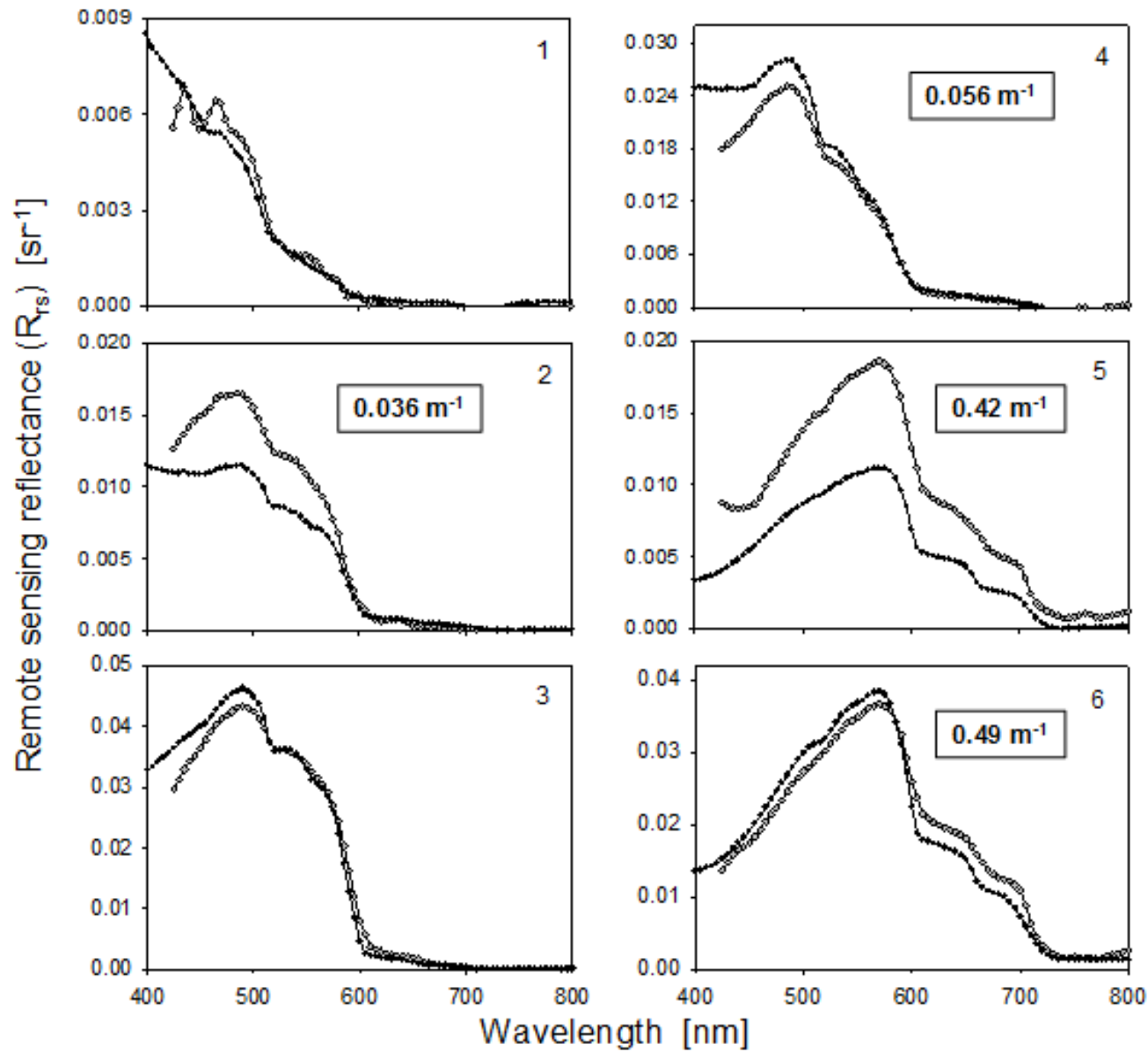
$$L_{sky}(\lambda) = L_t^{Sun}(\lambda) - \frac{L_t^{Sun}(\lambda) - L_t^{Sdw}(\lambda)}{1 - E_d^{Sky}(\lambda) / E_d(\lambda)}$$

$$L_t^{Cld}(\lambda) = L_{sky}(\lambda) + t(\lambda) E_d(\lambda) \rho$$



$$R_{rs}(\lambda) = \rho \frac{L_t(\lambda) - L_{sky}(\lambda)}{L_t^{Cld}(\lambda) - L_{sky}(\lambda)}$$





(Lee et al 2007)

Contrast between Taffka and CSS

Taffka

High-quality sensor calibration
Accurate account of aerosols/gases

(Marine time aerosol model)

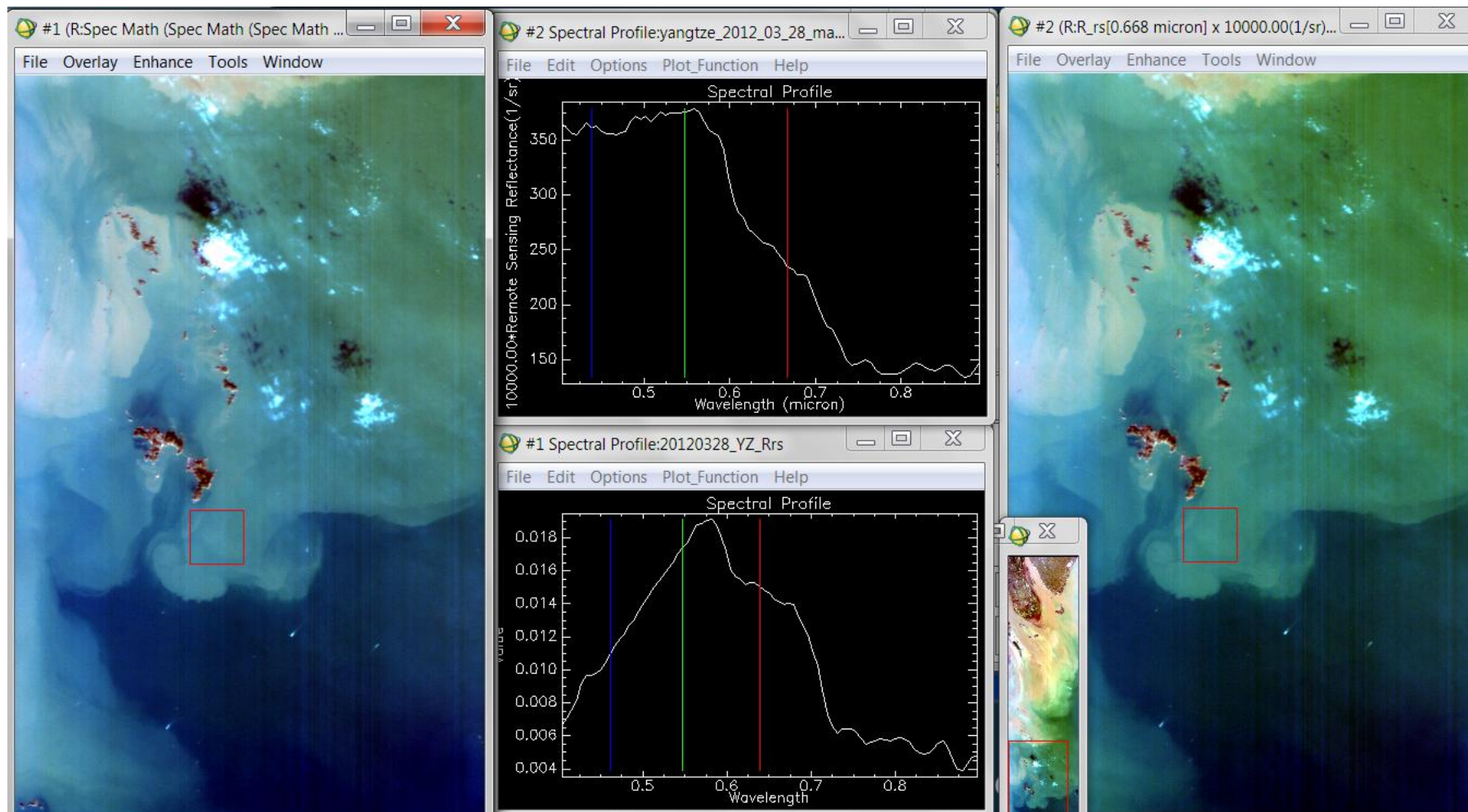
CSS

'uniform' atmosphere
contribution

(no assumption of any aerosol)

Yangtze River

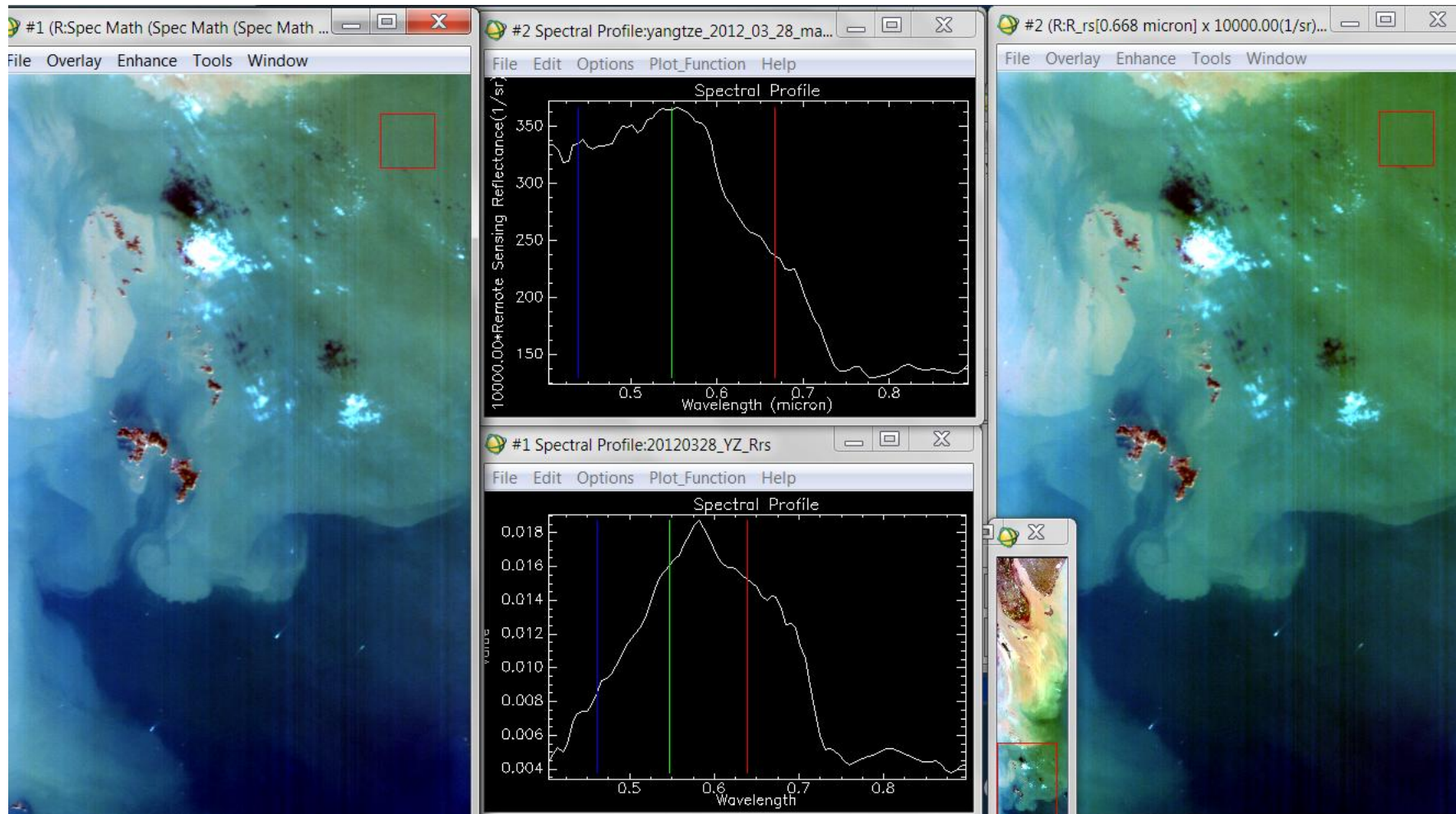
Top: Taffka Rrs



Bottom: CSS Rrs

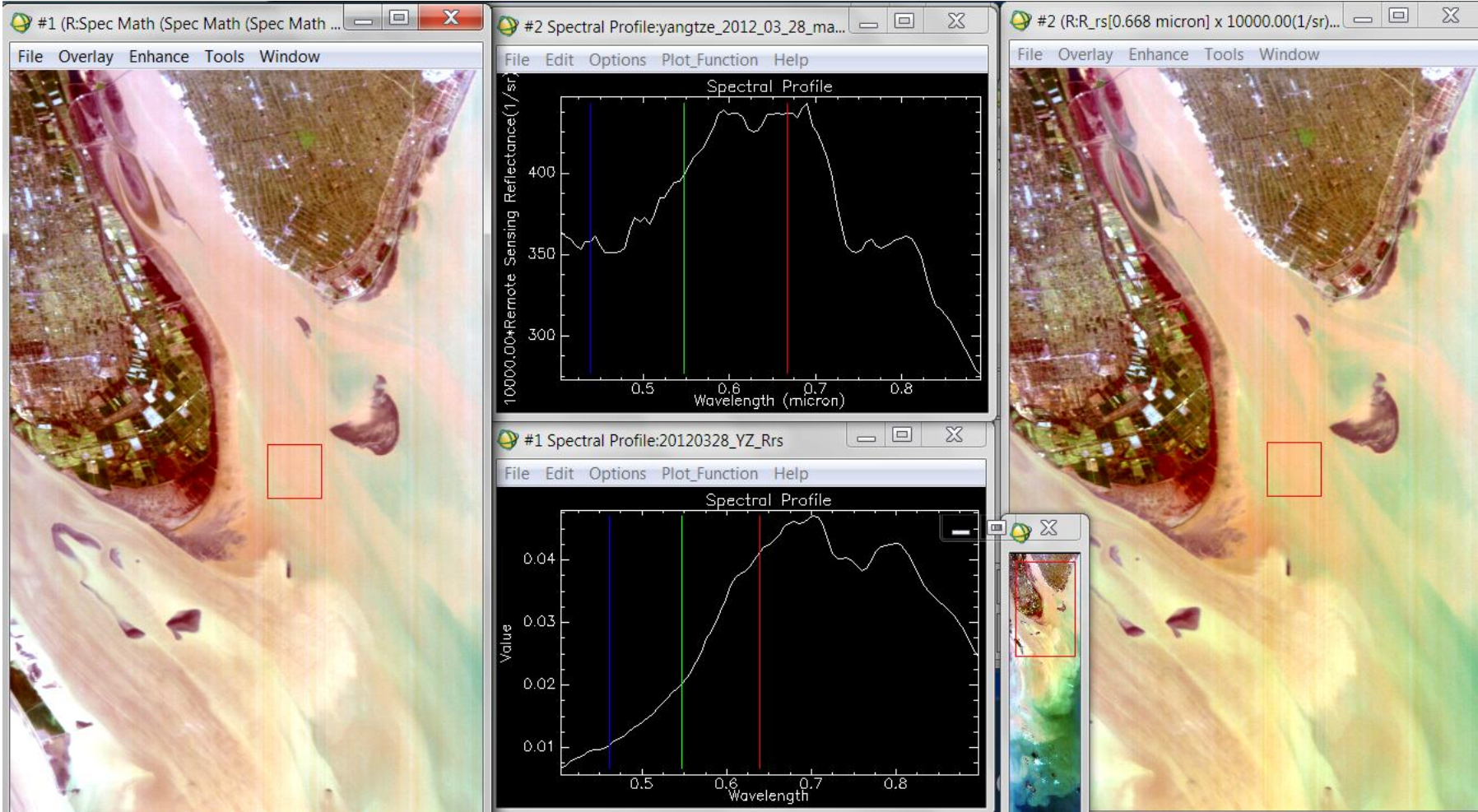
Yangtze River

Top: Taffka Rrs

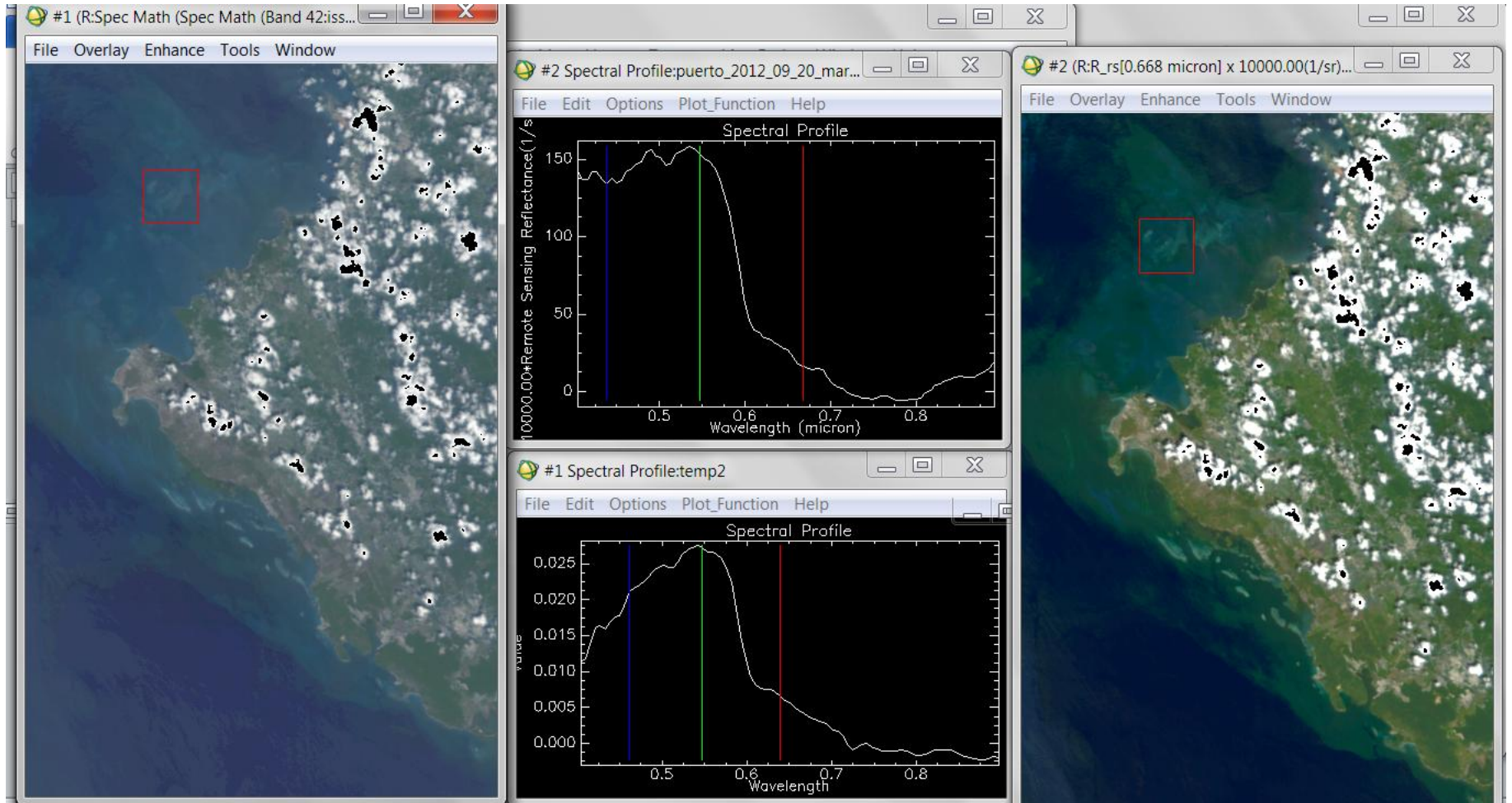


Bottom: CSS Rrs

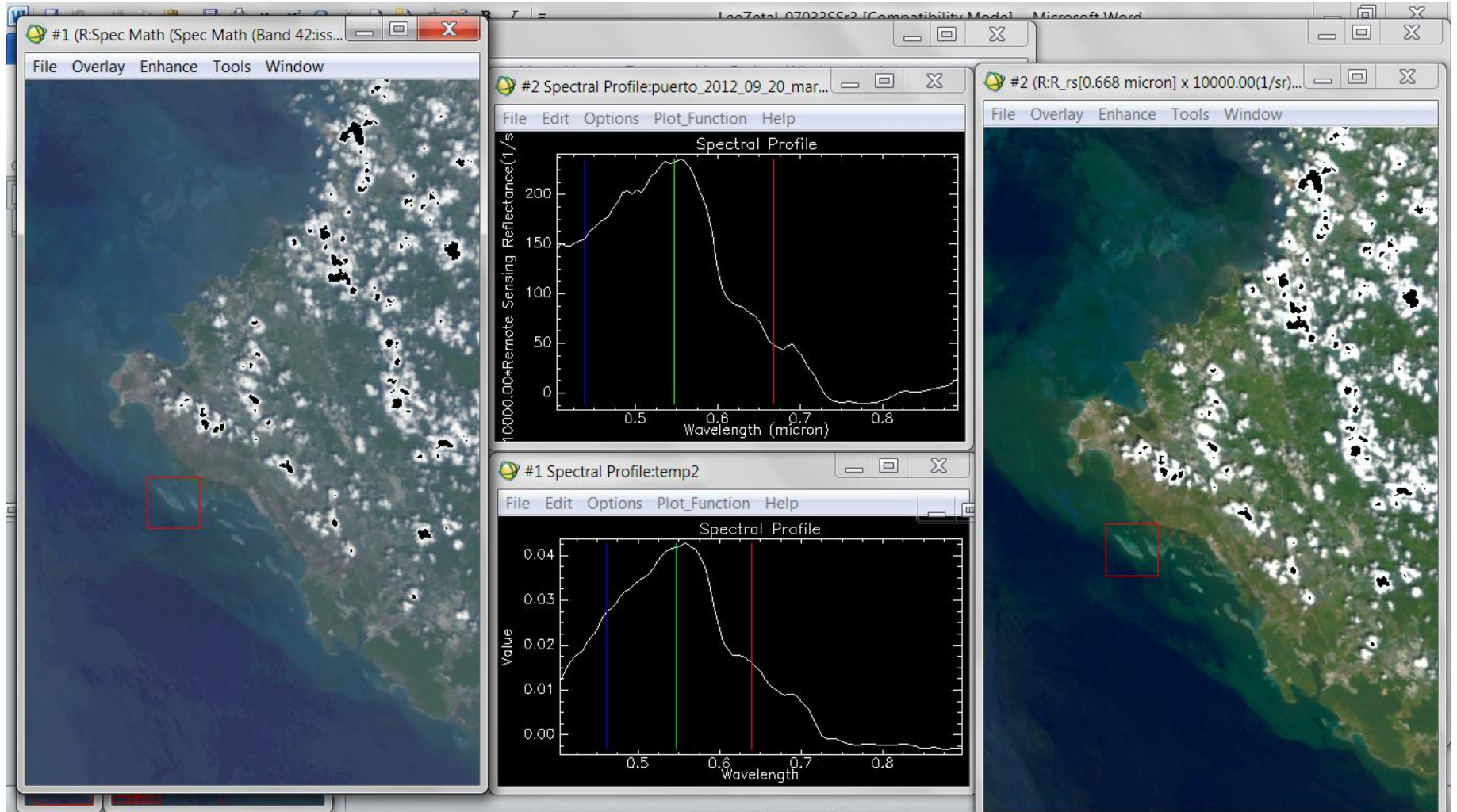
Yangtze River



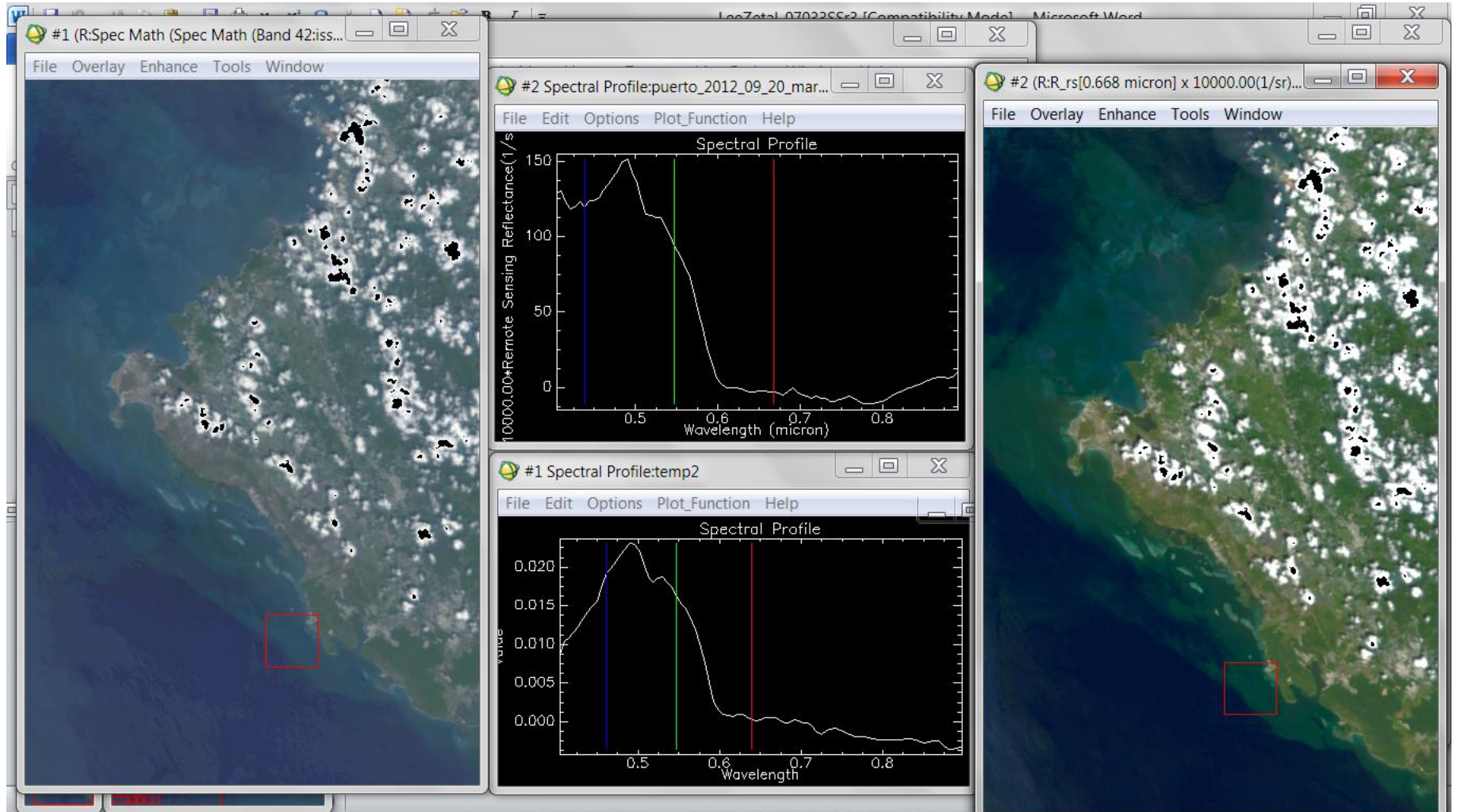
Puerto Rico



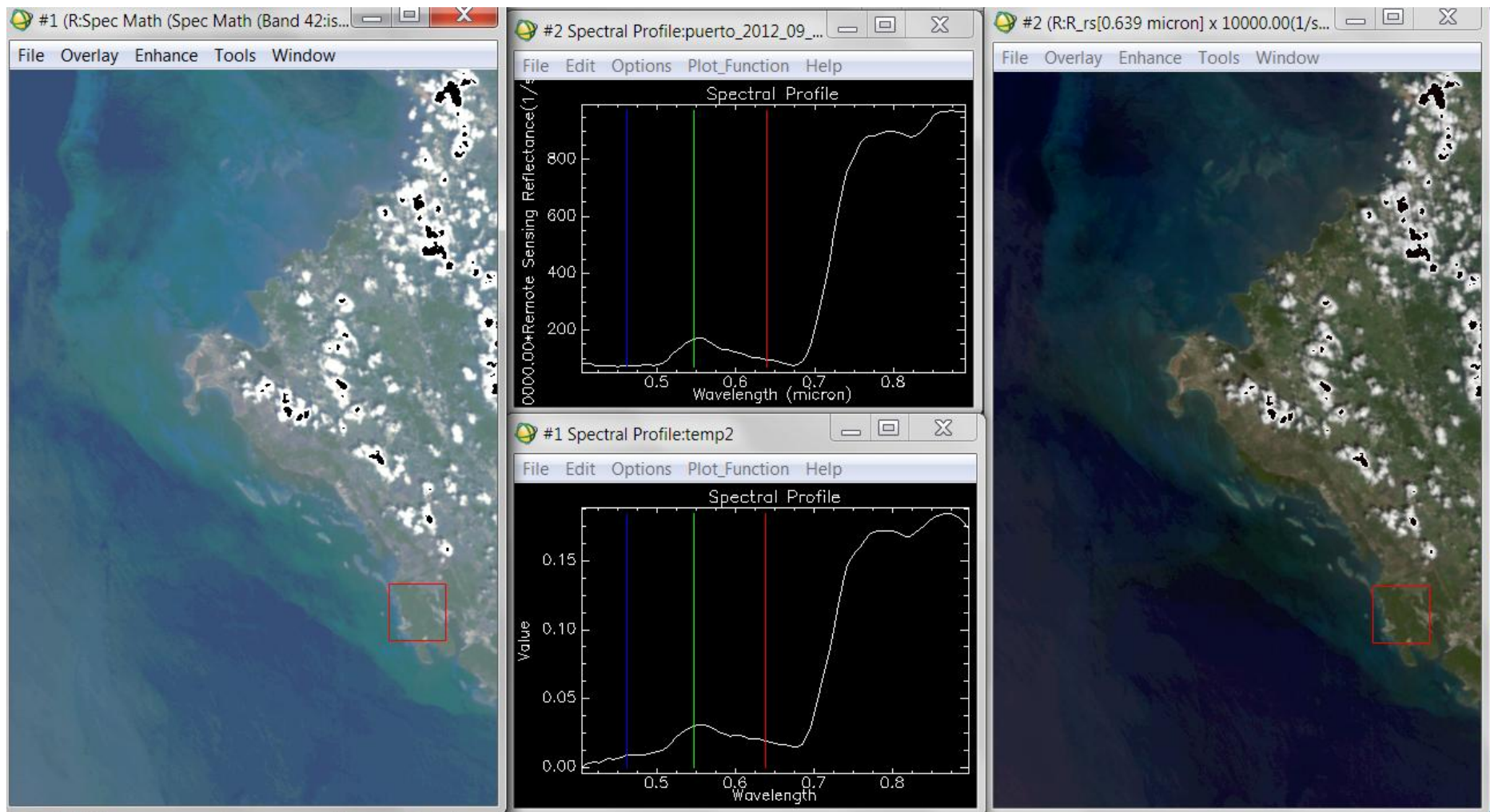
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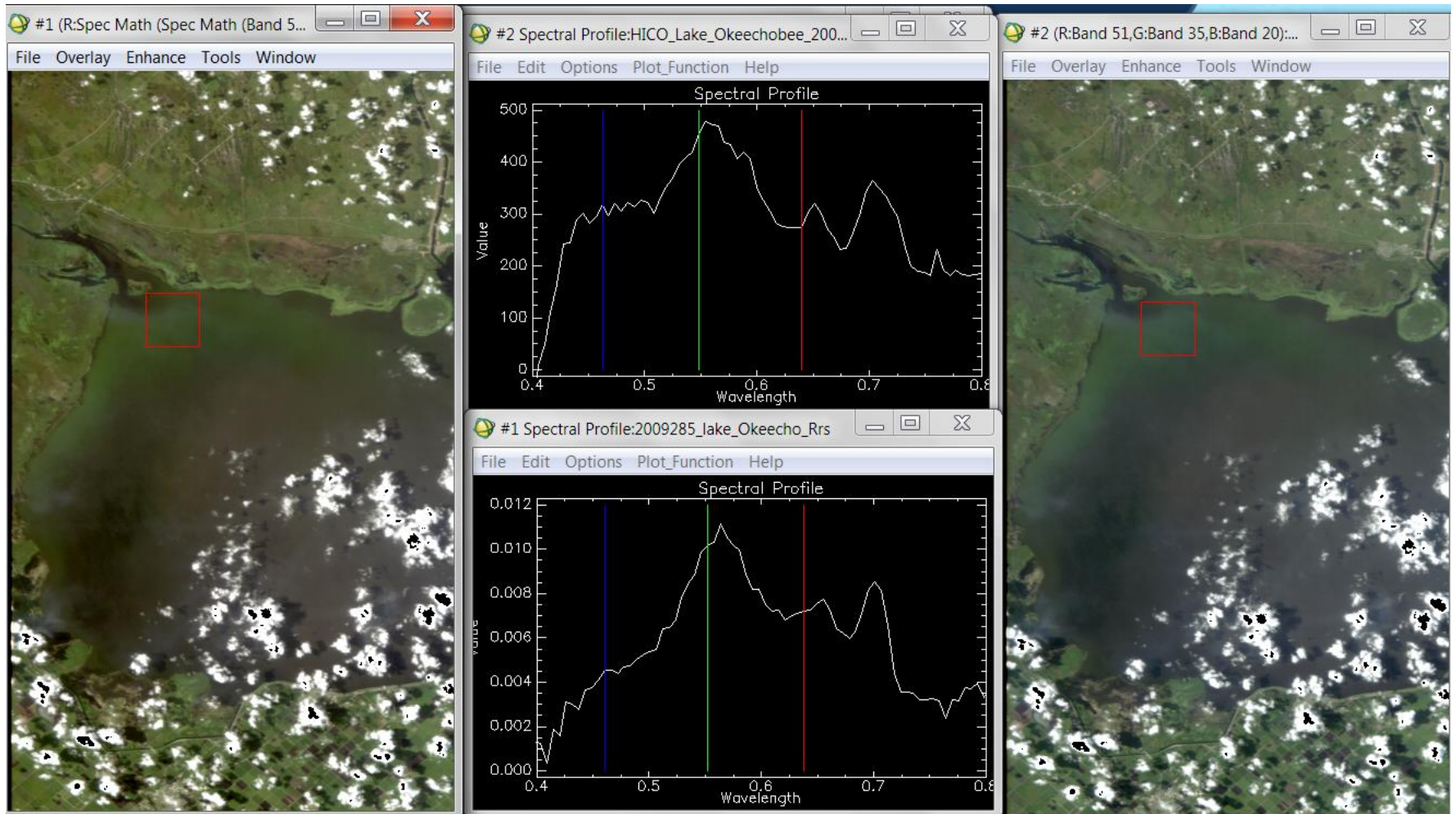
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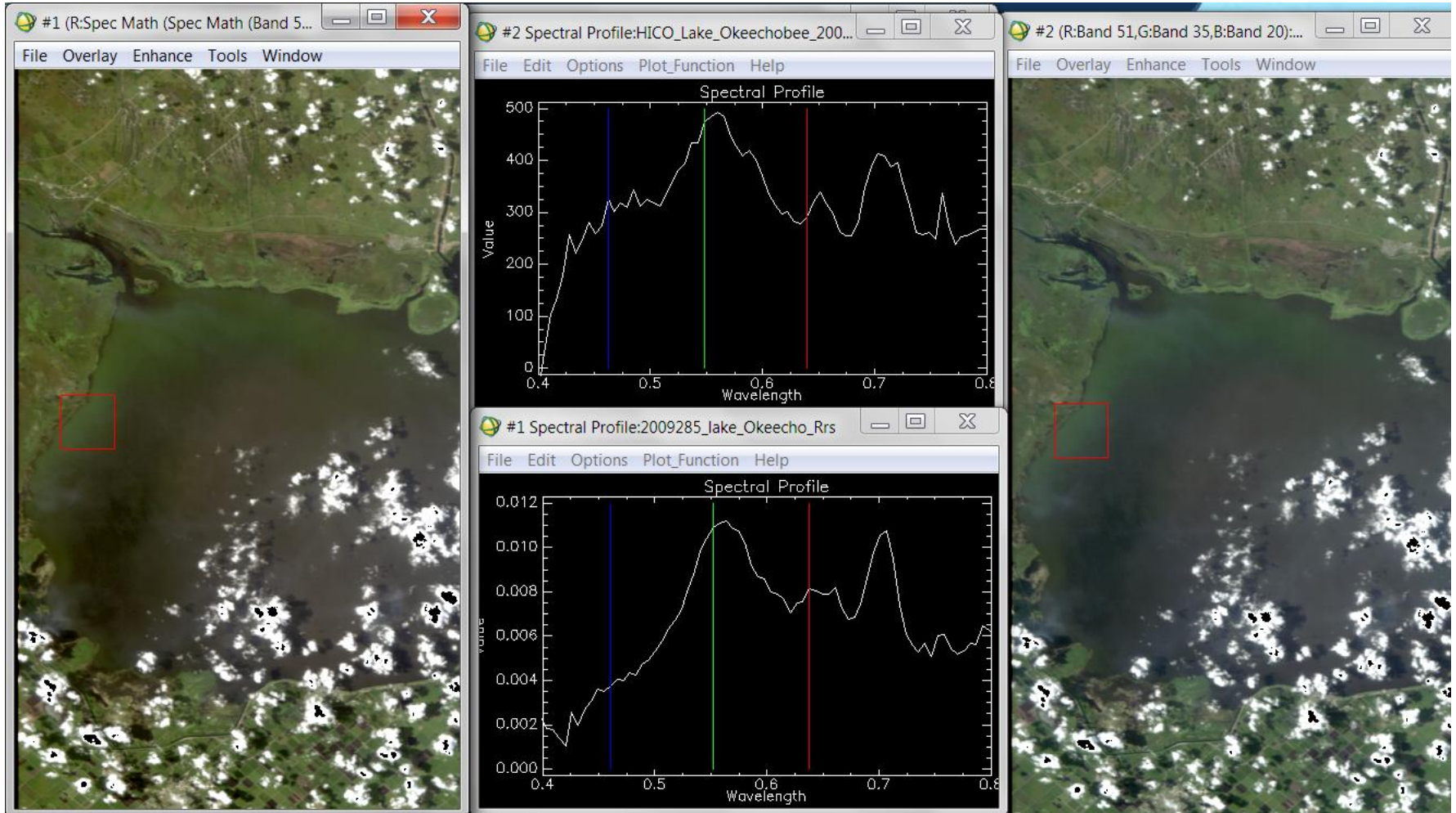
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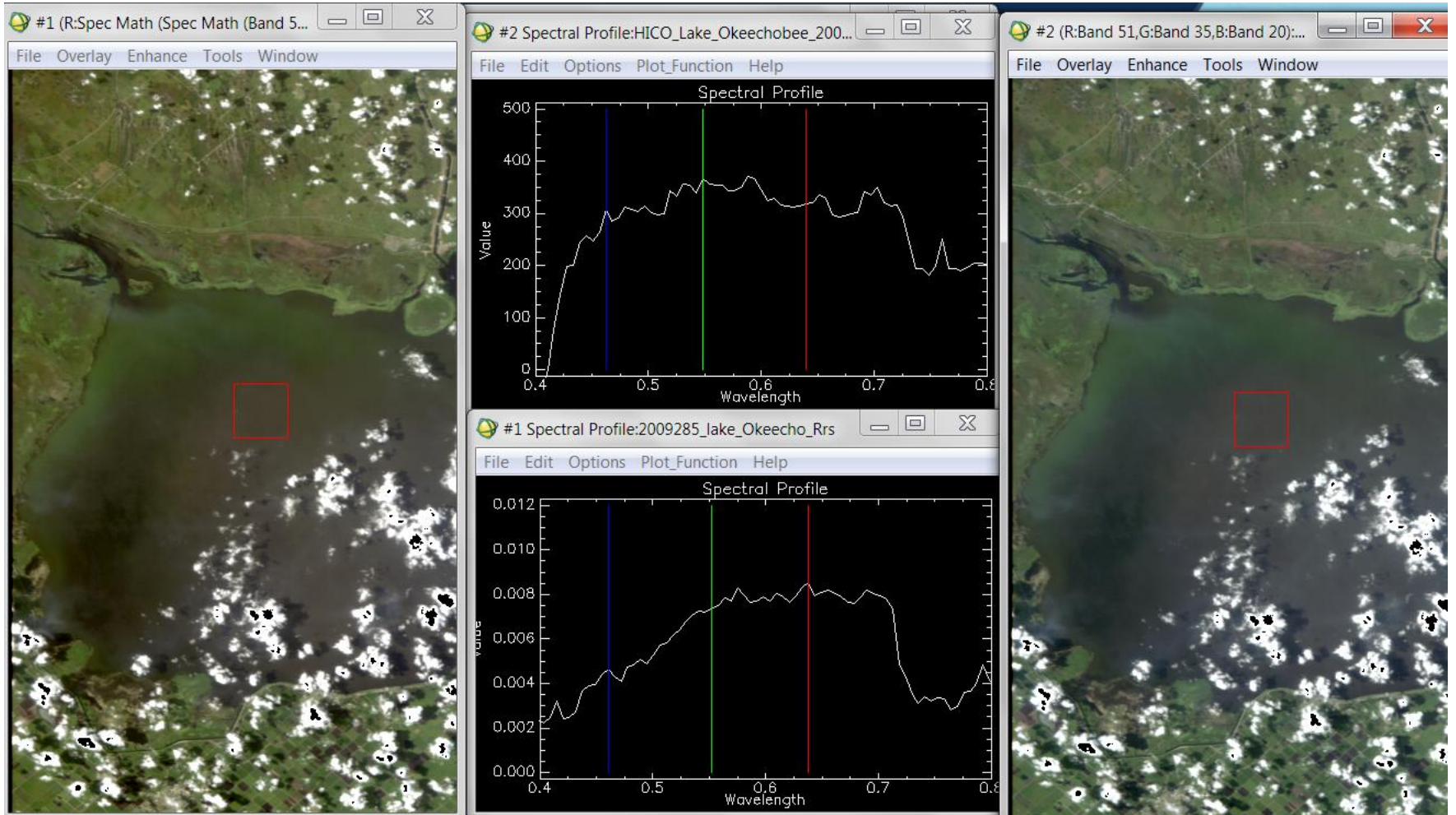
Lake Okeechobee



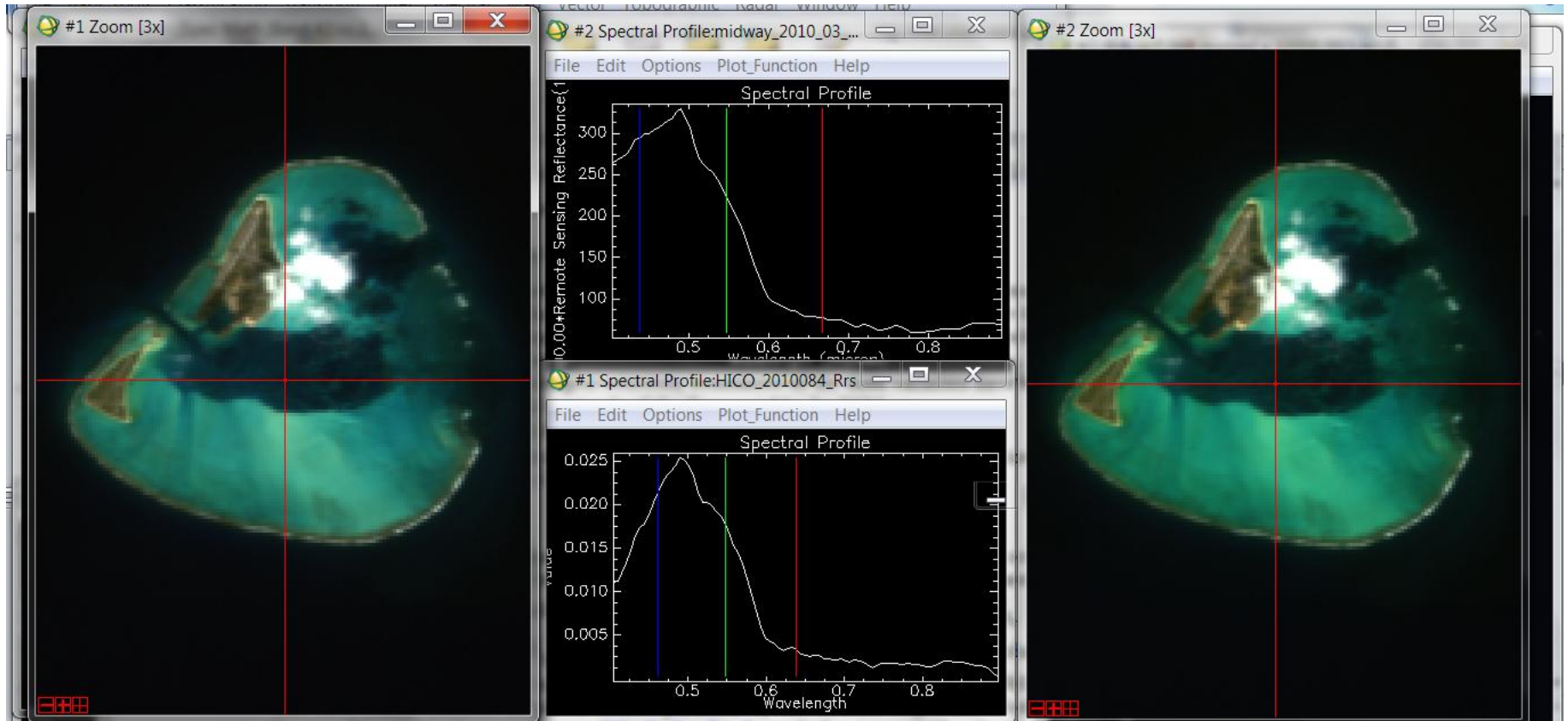
Lake Okeechobee



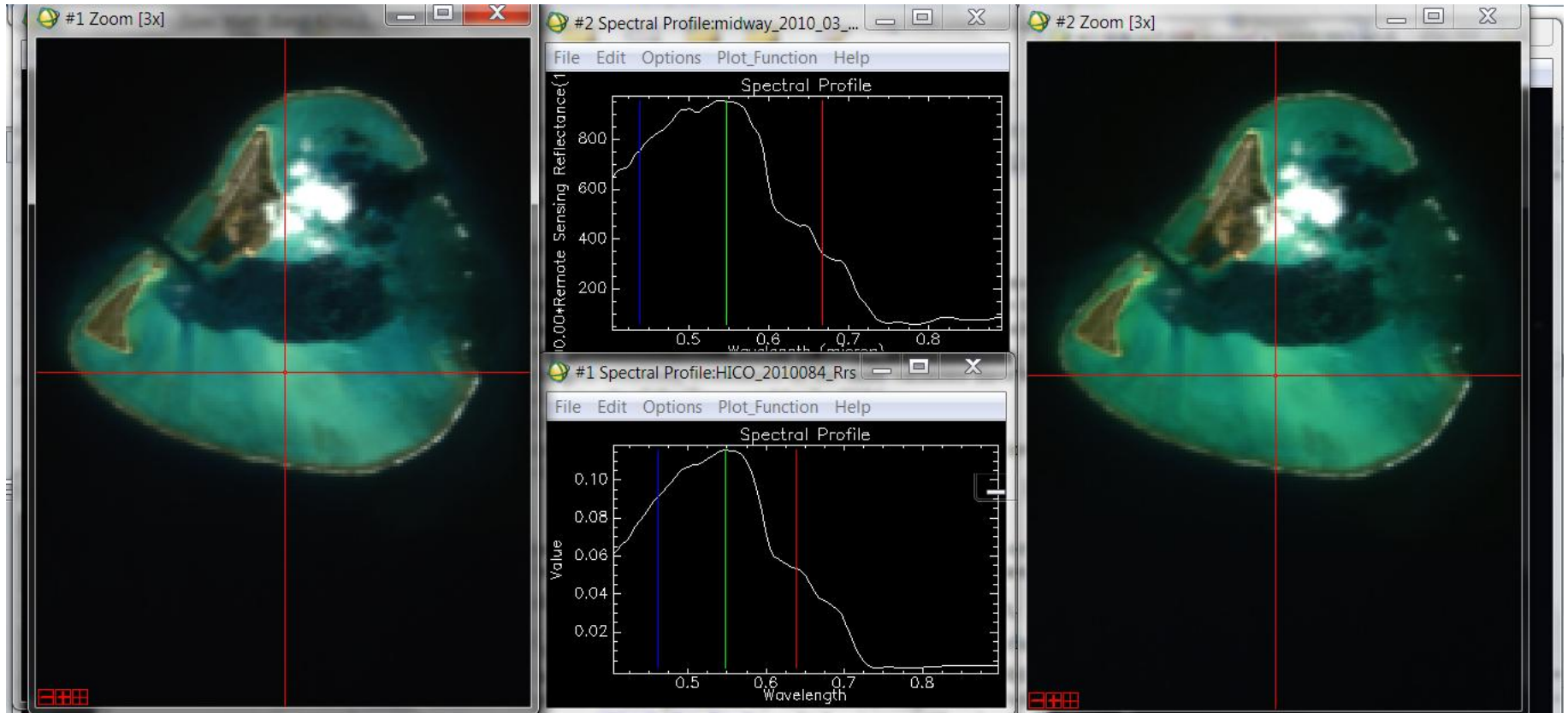
Lake Okeechobee



Midway



Midway



Midway

