

Supplementary Materials

The algorithms implemented on ACOLITE to compare their effectiveness for sewage water plume detection in this study were `kd490_qaasw` (for diffuse attenuation of light), `spm_nechad2016` (for suspended particulate matter detection), `t_nechad2016` and `t_dogliotti` (both for turbidity studies), and (Vanhellemont, 2021). Figure S1 shows a Sentinel-2 true color image from 1 August 2019, and Figure S2 compares the four mentioned algorithms for the same day. Both figures were processed on ACOLITE.

The first algorithm proved to be more suitable for emphasizing the sea outfall plume when it was not easily seen through an ocean color analysis. Hence, `kd490_qaasw` was the algorithm implemented to support the wastewater plume detection in this work.

ρ_s RGB S2A/MSI 2019-01-08 (11:39 UTC)

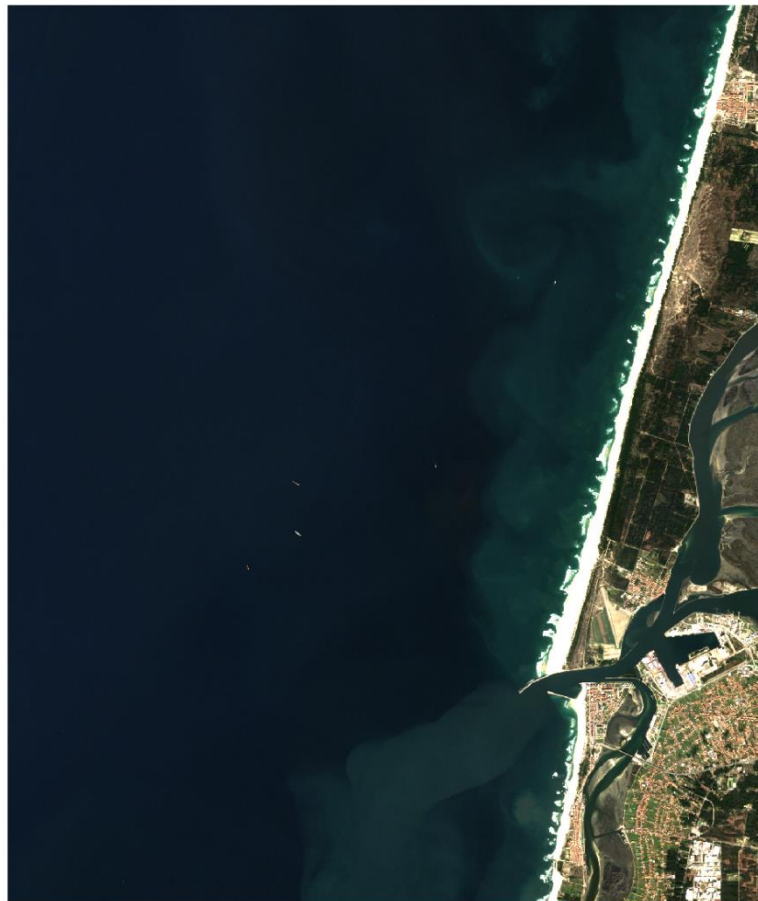
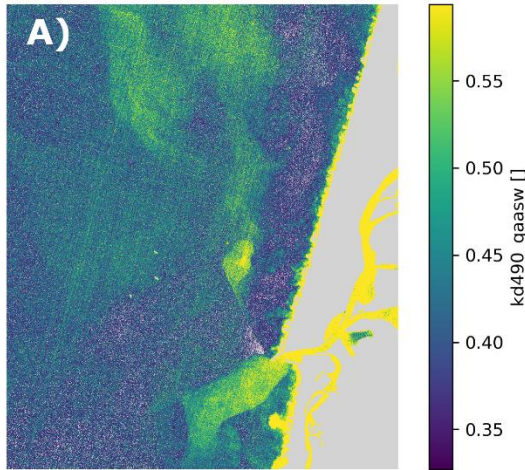
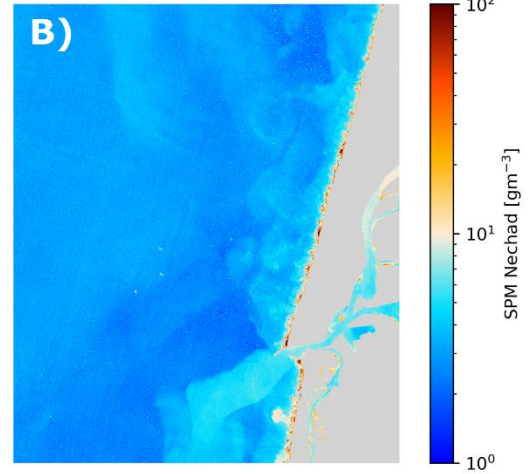


Figure S1. True color composite from the Sentinel-2 image Level 2 after processing the Level 1 image on ACOLITE.

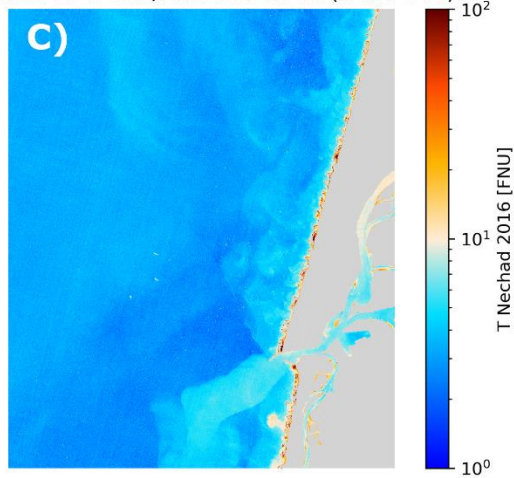
kd490_qaasw S2A/MSI 2019-01-08 (11:39 UTC)



SPM Nechad S2A/MSI 2019-01-08 (11:39 UTC)



T Nechad 2016 S2A/MSI 2019-01-08 (11:39 UTC)



T Dogliotti S2A/MSI 2019-01-08 (11:39 UTC)

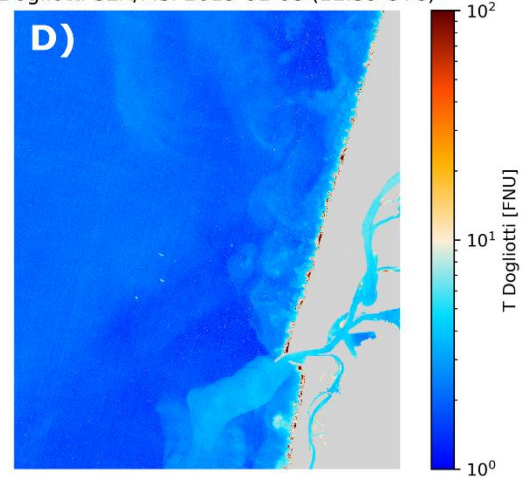


Figure S2. Comparison between the employed algorithm for plume detection. (A) *kd490_qaasw* (B) *tspm_nechad2016*; (C) *t_nechad2016*; and (D) *t_dogliotti*.

The average São Jacinto sea outfall catchment has not displayed a well-defined seasonal tendency, as observed in Figure S3.

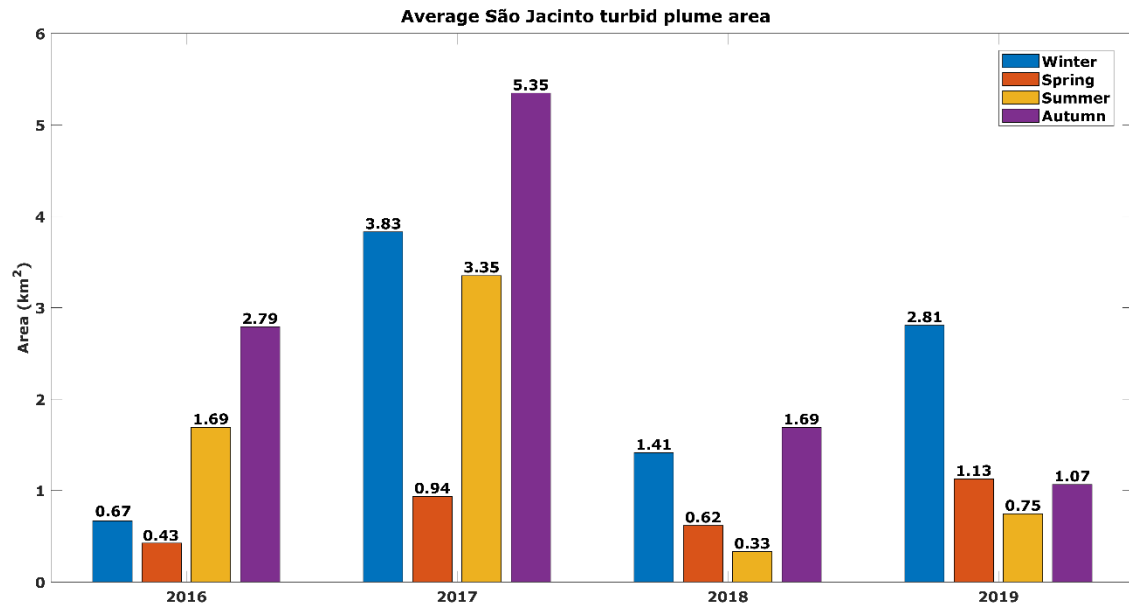


Figure S3. Seasonal average sea outfall catchment area.