

Discussion for data collected on 2020-May-06

1. Strong thermocline was present at 25 meters depth located near the outer two stations beyond 82.8 degrees west. The water temperatures below the thermocline were much lower and likely represent the intrusion of a different water mass than the above and shoreward waters. This deeper water mass was also less saline, with elevated dissolved oxygen, and elevated chlorophyll concentrations. This pattern is unusual since deeper waters typically have lower dissolved oxygen concentrations. These conditions are similar to conditions observed offshore before the red tide event in 2019 with the exception that the bottom oxygen levels this year are much higher than last year.
2. Surface circulation patterns are complex near the outer sampling station. Surface convergence (where two circulation patterns come together and intersect) likely caused some downwelling (where surface waters are pushed downward) contributing to the strong thermocline. Higher than expected dissolved oxygen could be due to downwelling because what was once near-surface water with elevated oxygen concentrations gets pushed deeper by downwelling.
3. A less saline water mass is located near the surface at the third station from shore at about 82.9 degrees west and also at the two shoreward stations. It is likely that this is associated with land-based runoff. A strong cold front passed through Florida from the west April 30 and 1.1 inches of rain was reported at the Naples Airport weather station. Total rainfall in April 2020 was nearly 0.5 inches above average for total rainfall in April as reported in preliminary climate data produced by the South Florida National Weather Service Office.
4. The elevated chlorophyll concentrations near the bottom are relatively low with a maximum only reaching 0.28 ug/l. Algae blooms can easily reach levels well above 1 ug/l and thus these concentrations do not seem particularly high nor of immediate concern.

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