Current Report

Introduction

Water year 2020 was classified as Dry in the Sacramento Valley and San Joaquin Valley, unlike the previous year, which was classified as Wet (source). The 2019-2020 data from all stations within the same region were plotted on one graph and then combined with the graphs from other regions to make a facet graph for each parameter. The minimum and maximum values in 2020 were determined for each field parameter or laboratory analyte to show the range within a single year. The instances when a result fell below the reporting limit were excluded from these minimum and maximum calculations. When this occurred, a vertical dashed line capped at the reporting limit was added to the graph to represent the presence of a non-detect. It should be noted that sampling was not conducted in April, May, and some of December 2020 due to the stay-at-home order and safety concerns caused by the COVID-19 pandemic. *** ### Specific Conductance

Surface specific conductance varied greatly in 2020 across the sampling regions with the highest levels occurring in the western regions (San Pablo Bay, Suisun & Grizzly Bays, Confluence) due to the strong marine influence from the Pacific Ocean. Surface specific conductance ranged from an average of 134 µS/cm (C3A in Northern Interior Delta, July) to 45,349 µS/cm (D41 in San Pablo Bay, November) during 2020. Higher specific conductance values were seen in 2020 (µ = 11,310 µS/cm) than in 2019 (µ = 6,702 µS/cm), which was likely due to the on-going drought keeping the San Francisco Estuary drier throughout the year.

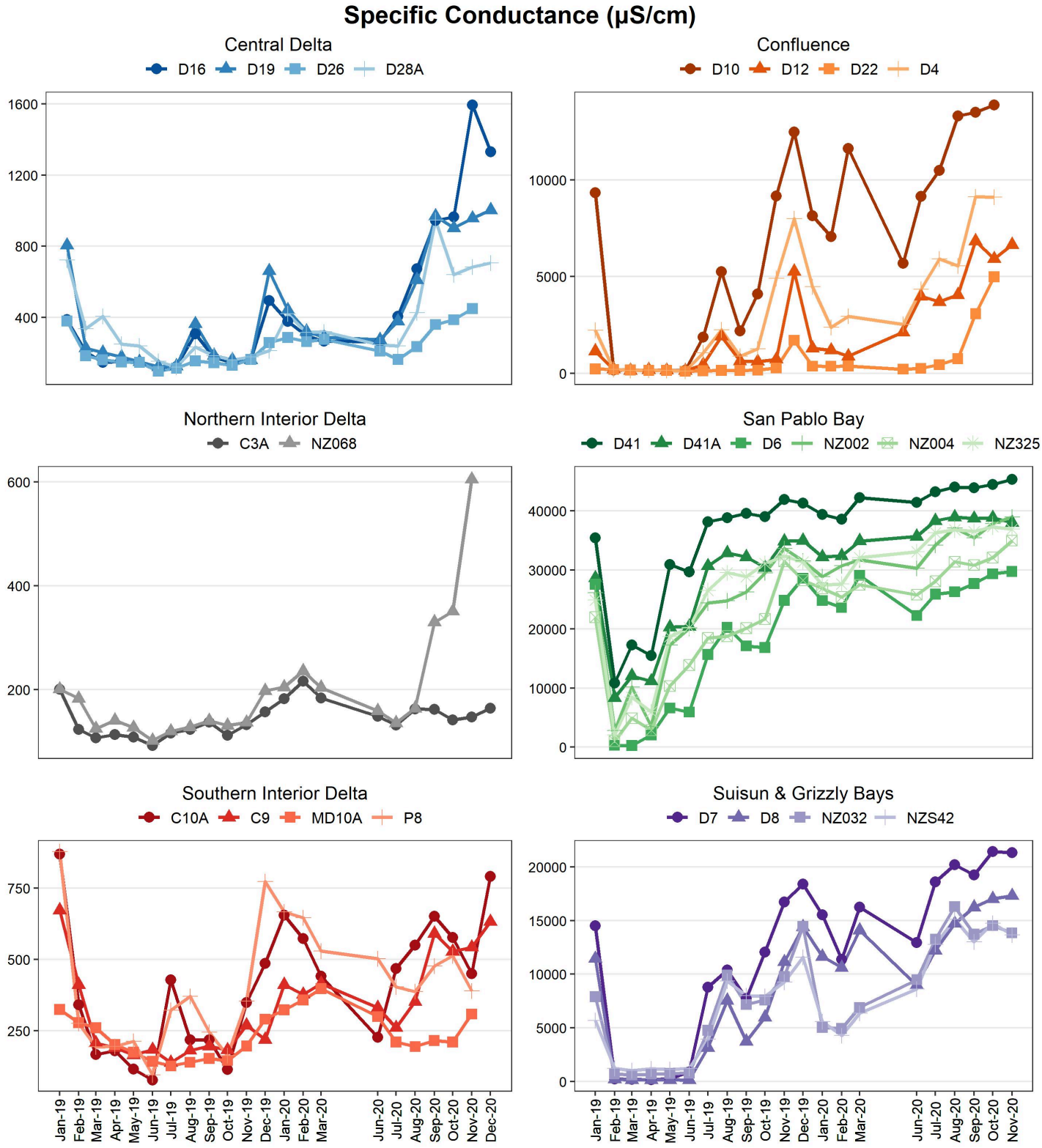

Figure 36: Surface specific conductance in µS/cm at six regions in the San Francisco Bay-Delta estuary during 2019-2020.

Turbidity

Surface turbidity values ranged from 0.3 FNU (D19 in Central Delta, March) to 41.4 FNU (D7 in Suisun & Grizzly Bays, November) during 2020. The year 2020 had lower average turbidity than in 2019 (9.8 FNU vs. 19.6 FNU), likely due to the drought conditions that result in lack of rainfall and snowpack runoff during the winter months.

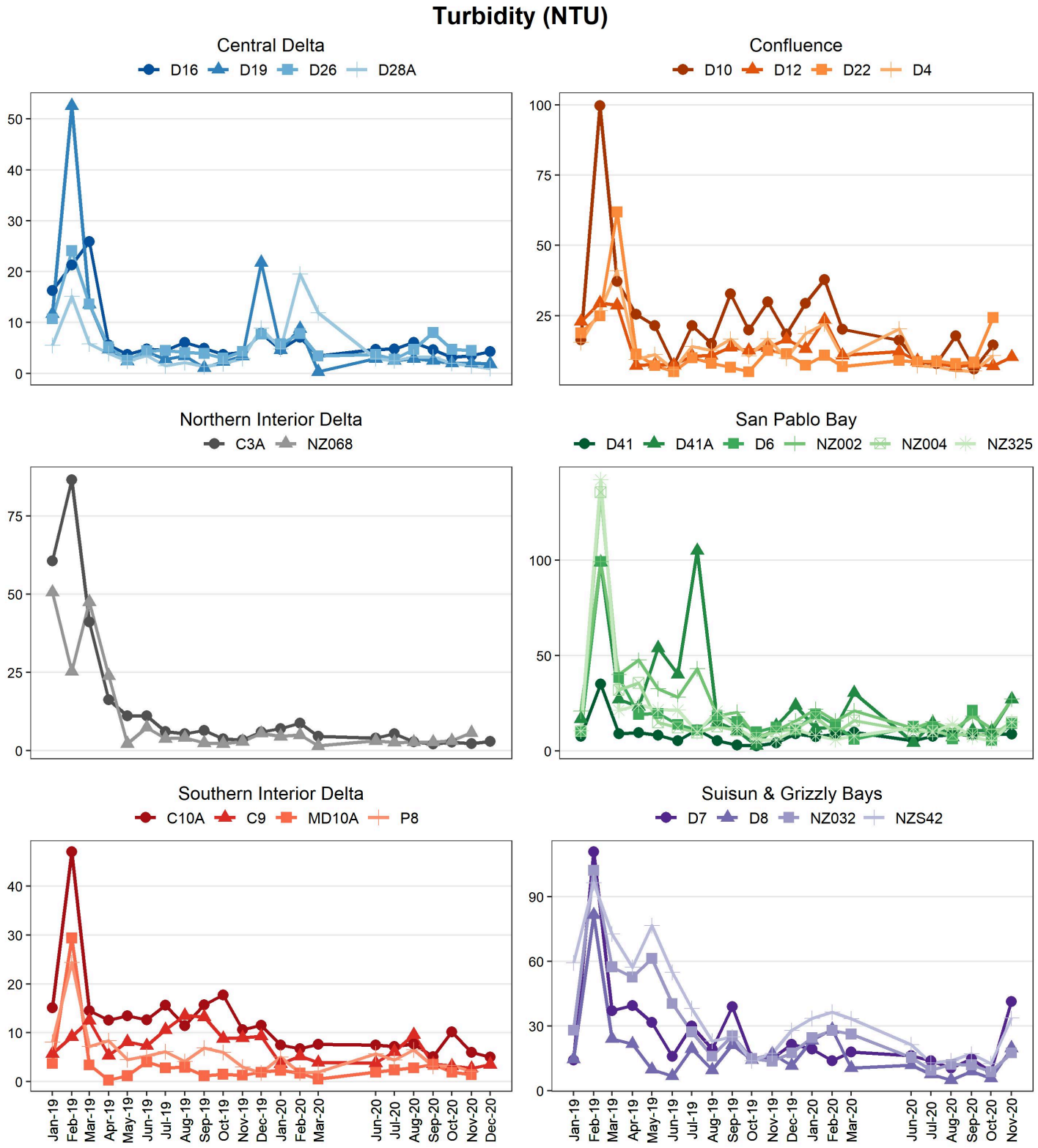

Figure 37: Surface turbidity in NTU at six regions in the San Francisco Bay-Delta estuary during 2019-2020.

Dissolved Ammonia

Dissolved ammonia levels in 2020 ranged from ≤ 0.05 mg/L (the reporting limit) in several regions to 0.7 mg/L (C3A in Northern Interior Delta, March and June). Dissolved ammonia levels are typically higher at C3A in the Northern Interior Delta due to its location downstream of the effluent discharge from Sacramento Regional Sanitation District. Ammonia levels are typically lower throughout the Delta and Bays, likely due to dilution and nitrification.

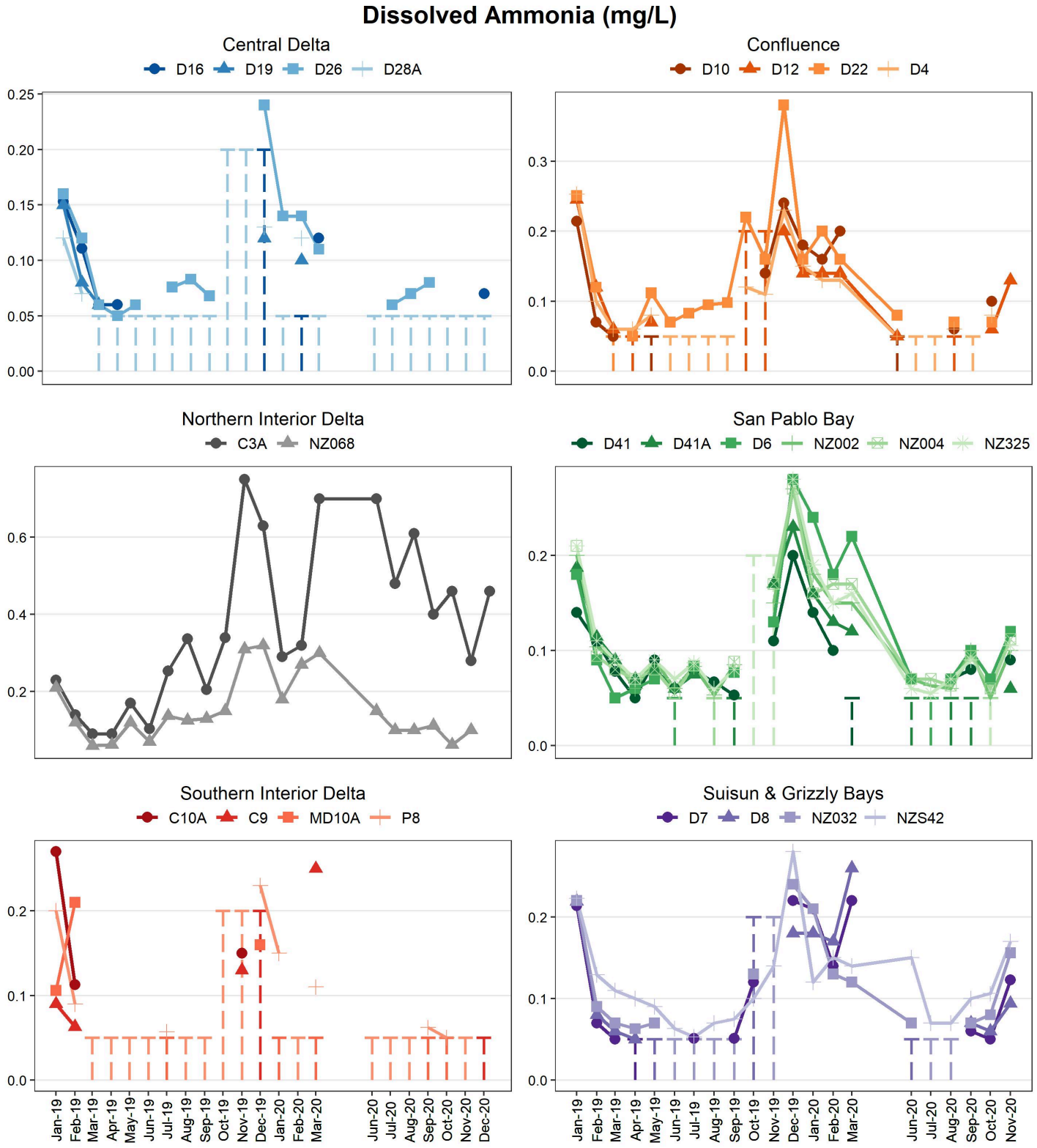

Figure 38: Dissolved ammonia concentrations in mg/L at six regions in the San Francisco Bay-Delta estuary during 2019-2020. Dashed lines represent the range of possible values for months where the raw value was a non-detect.

Chlorophyll a

Chlorophyll a values in 2020 ranged from 0.53 µg/L (C3A in the Northern Interior Bay, November and NZ325 in San Pablo Bay, March) to 32.5 µg/L (C10A in Southern Interior Delta, July). The highest levels of chlorophyll a were seen in the Southern Interior Delta region during the summer months in 2020. This was mostly due to elevated levels at station C10A, which is known for being shallow during dry periods of the year, with increased temperatures and lower flows allowing for increased phytoplankton production. These elevated chlorophyll a levels in the summer at C10A also align with the continuous fluorescence data collected at this station. More information about the phytoplankton genera is described in the phytoplankton section. Average chlorophyll levels across all regions were similar in 2020 to those in 2019 (2.84 µg/L vs. 2.28 µg/L).

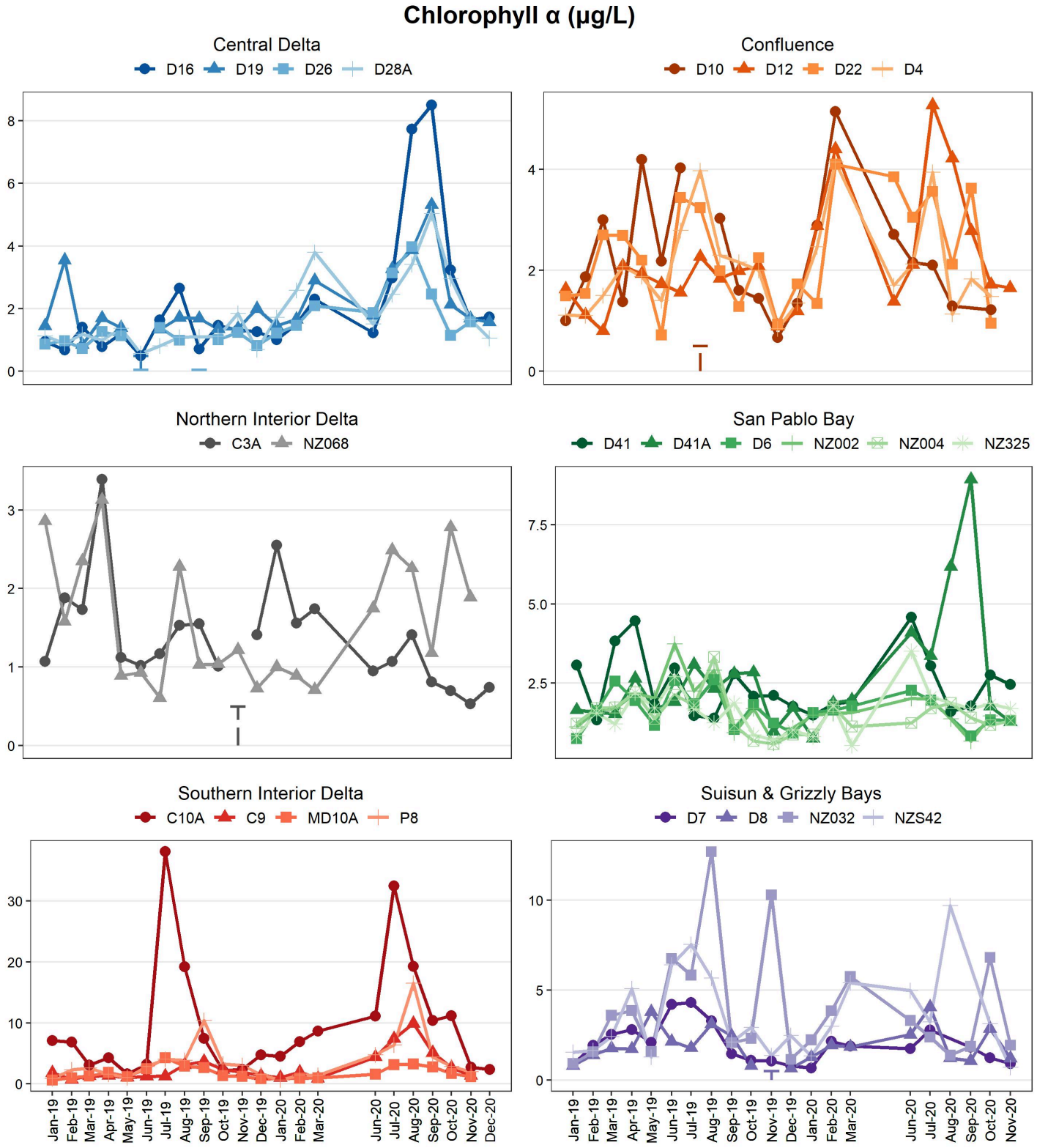

Figure 39: Chlorophyll a concentrations in µg/L at six regions in the San Francisco Bay-Delta estuary during 2019-2020. Dashed lines represent the range of possible values for months where the raw value was a non-detect.

Dissolved Nitrate + Nitrite

Dissolved nitrate + nitrite values ranged from ≤ 0.05 mg/L (the lowest reporting limit) to 3.5 mg/L (P8 in Southern Interior Delta, October) in 2020. The Southern Interior Delta region had the highest fluctuation of dissolved nitrate + nitrite concentrations and had the highest levels compared to the rest of the estuary, likely due to influence from nearby agricultural land use and wastewater treatment effluent. Reporting limits for dissolved nitrate + nitrate were as high as 7.5 and 15 mg/L for western regions in late 2019 due to chloride influence on the analytical method. These reporting limits were cropped out of graphs for scale.

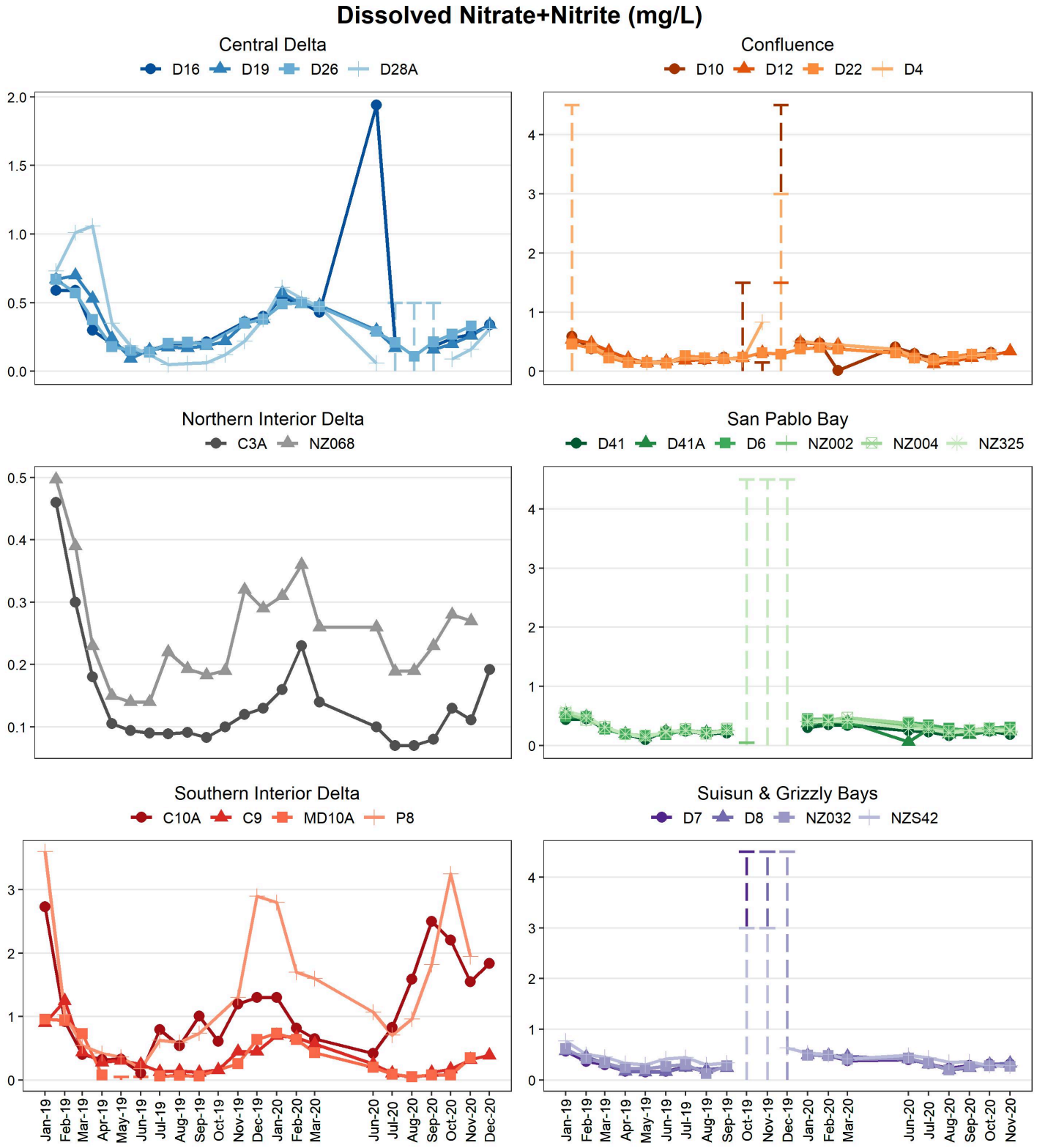

Figure 40: Dissolved nitrate and nitrite concentrations in mg/L at six regions in the San Francisco Bay-Delta estuary during 2019-2020. Dashed lines represent the range of possible values for months where the raw value was a non-detect.

Total Phosphorus

In 2020, total phosphorous levels ranged from 0.04 mg/L (D28A in Central Delta, December) to 0.49 mg/L (P8 in Southern Interior Delta, September). Total phosphorus concentrations were overall similar compared to 2019 (both averaging 0.10 mg/L).

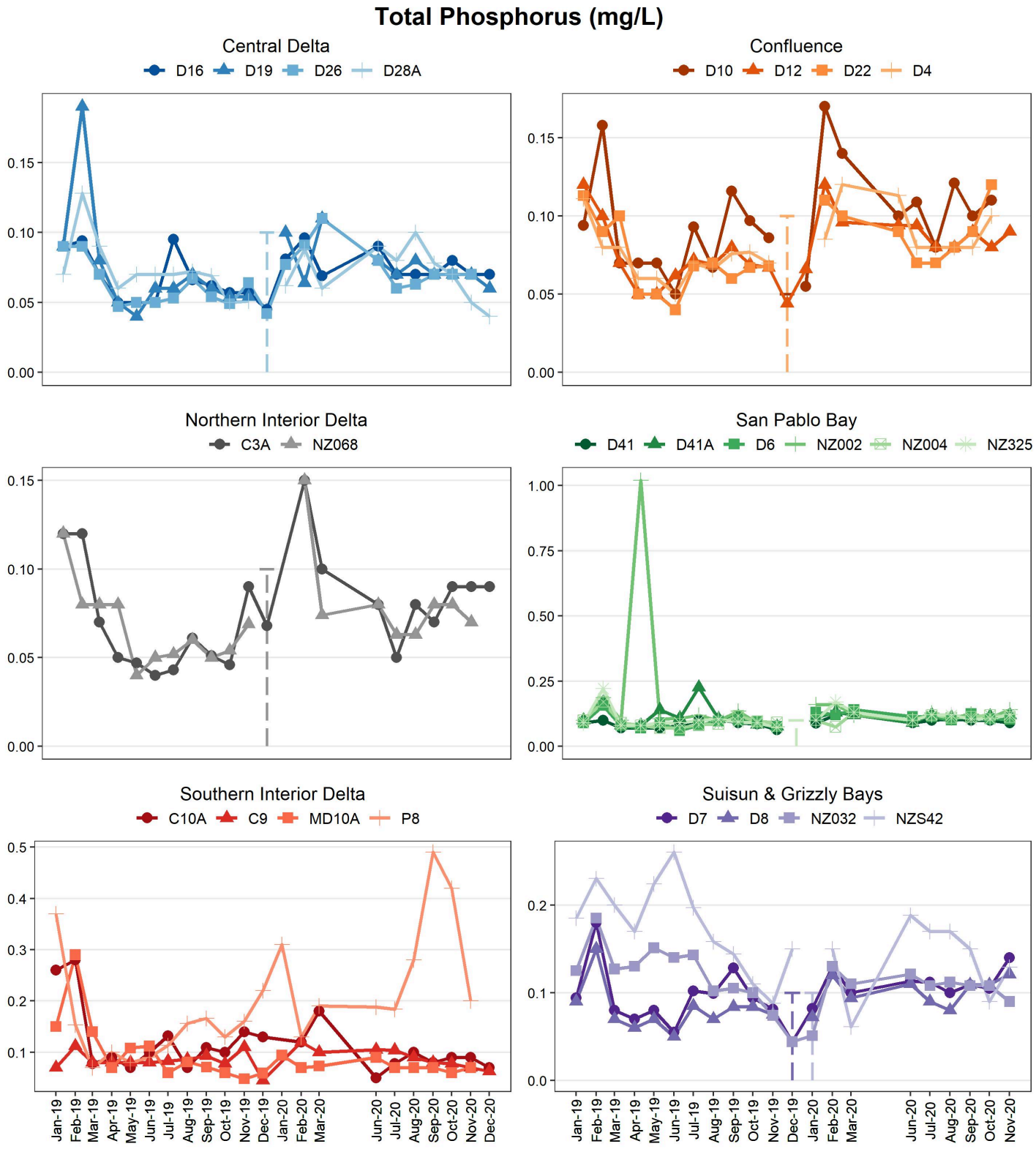

Figure 41: Total phosphorous concentrations in mg/L at six regions in the San Francisco Bay-Delta estuary during 2019-2020. Dashed lines represent the range of possible values for months where the raw value was a non-detect.

Data and Archived Reports

EMP's discrete water quality data sets are available publically via the Environmental Data Initiative (EDI) here.

Archived annual reports can be found here (link currently broken).

For questions related to EMP's discrete water quality data sets, please contact Morgan Martinez at Morgan.Martinez@water.ca.gov.