

SATURN-03 Turbidity Quality Control (8/1/20 - 3/1/21)

Correction for Offset:

First, the turbidity data were corrected for a stable baseline offset of 2.5ntu's that was monitored and quantified by routine in-situ deionized (DI) water readings.

Correction for drift due to fouling:

In addition, during August through early November of 2020, there was repeated fouling of the turbidity sensor at SATURN-03. This fouling was removed with weekly sensor cleanings after which the baseline returned to pre-drift levels. Most of these episodes resulted in a relatively small maximum offset, however, on a couple of occasions the fouling was more significant. Where possible, the associated data have had approximate corrections applied for the drift. Where fouling was more extensive or resulted in non-linear drift or there was attenuation of the signal, the data were flagged as bad. The extent of drift was quantified using both the shift in observed data following cleaning and the in-situ DI water readings. The onset of fouling was estimated based on visual inspection of the data as well as comparison with turbidity data from co-deployed MultiExciter Fluorometer.

The figure and table below show the periods of fouling, the corrected data, and periods where corrections were insufficient and the data were flagged as bad. Note that the corrections should be considered approximate and the data used accordingly. All corrected data have been flagged as QL3 (intermediate).

Figure 1. SATURN-03 Turbidity (all levels): raw data shown in orange and yellow (yellow data flagged as bad) and the drift-corrected data shown in blue.

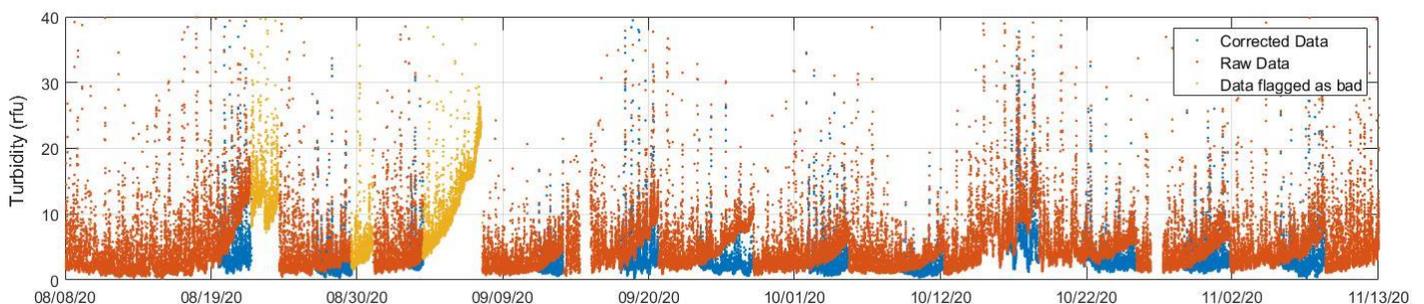


Table 1. Corrections for drift of SATURN-03 Turbidity were applied to the data during the time periods indicated here. Drift corrections are based on the assumption of linear drift between a zero offset at the start of the period to the maximum offset at the end of the indicated period. Note that the corrections should be considered approximate and the data used accordingly.

Correction Start	Correction End	Maximum extent of drift from baseline (ntu)
8/20/20 0:00	8/24/20 10:00	20
8/27/20 0:00	8/31/20 10:00	3.5
9/3/20 0:00	9/8/20 10:00	7
9/12/20 12:00	9/14/20 10:00	3.5
9/18/20 12:00	9/21/20 10:00	7
9/24/20 8:00	9/28/20 9:00	7.5
10/2/20 5:00	10/5/20 9:00	4
10/9/20 5:00	10/12/20 9:15	3
10/17/20 0:00	10/19/20 9:00	8.5
10/22/20 12:00	10/26/20 14:00	4
10/30/20 0:00	11/2/20 10:15	4.5
11/6/20 0:00	11/9/20 11:00	5.5