Nitrate in surface water (DP1.20033.001)

Measurement

Nitrate (NO3-N) in surface water at 15 minute intervals, in units of micromoles per liter.

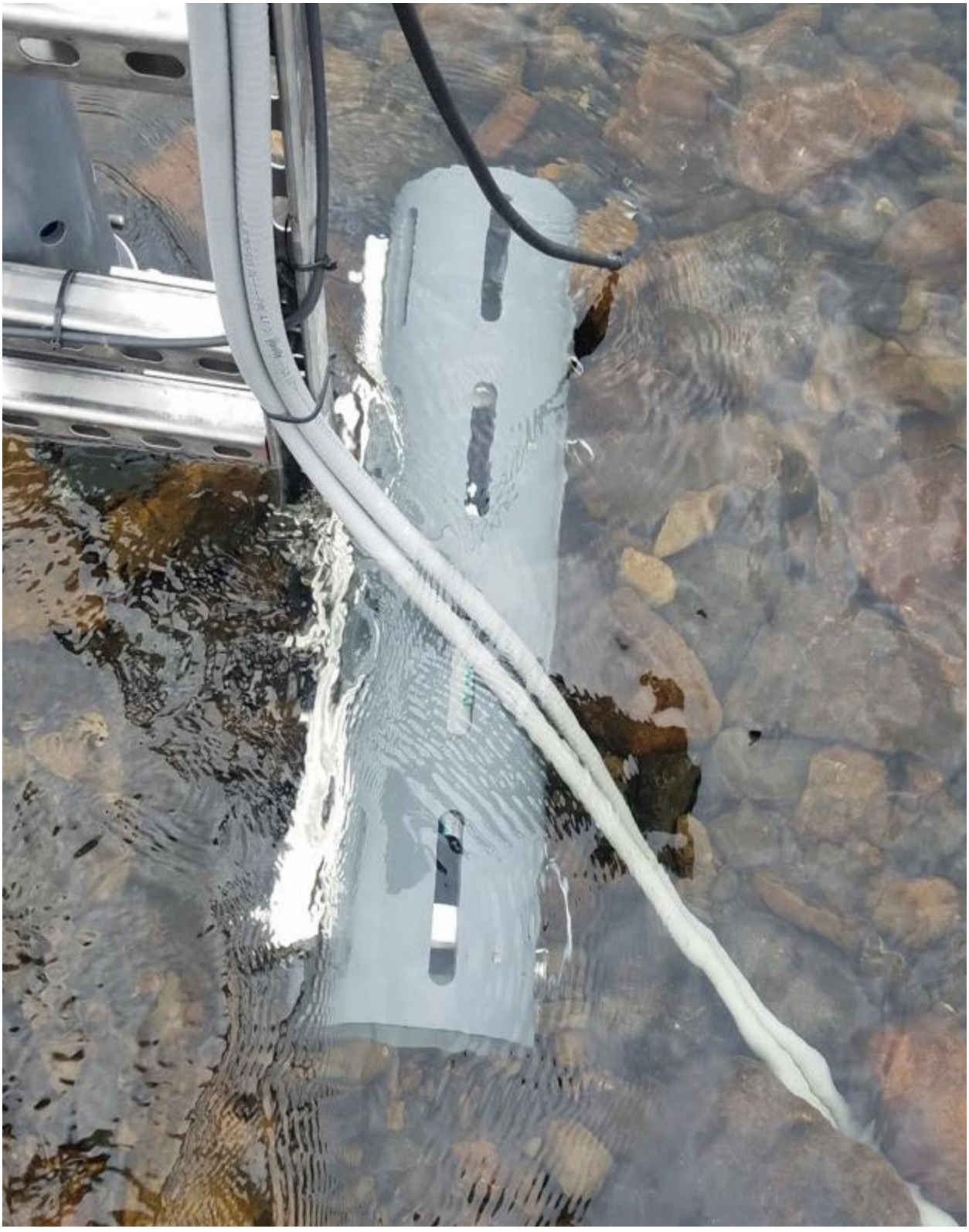
Collection methodology

Nitrate is measured using a SeaBird SUNA located at the S2 (sensor position 2, downstream) location of wadeable streams and on the buoy at lake and river sites. A burst of 20 measurements are collected every 15 minutes. Measurements 11-20 are used to calculate the 15 minute value.

For information about disturbances, land management activities, and other incidents that may impact data at NEON sites, see the Site management and event reporting (DP1.10111.001) data product.

Maintenance and calibration

The SUNA has an automated wiper which cleans the optical lens before each measurement burst. Manual cleaning is performed bi-weekly and field calibrating is performed monthly. Sensors are returned to the NEON CALVAL lab annually for refresh.



SUNA inside protective PVC housing.

Data package contents

NSW_15_minute: Nitrate in surface water summarized over 2 minutes from burst measurements taken every 15 minutes
ais_sunaCleanAndCal: Record of SUNA cleaning and calibration activities
ais_maintenance: Information related to aquatic sensor and infrastructure maintenance
variables: Description and units for each column of data in data tables
readme: Data product description, issue log, and other metadata about the data product
sensor_positions: Geospatial locations of individual sensors

Data processing and derivation

The first 10 measurements of each burst are discarded to allow the sensor lamp sufficient time to warm up. Measurements 11-20 are subjected to automated QA/QC tests, including gap, range, step and spike tests. Measurements which fail these tests are omitted from 15 minute averages.

Data quality

Each measurement is accompanied by a final quality flag ("...FinalQF"). NEON recommends only using data where the corresponding final quality flag is 0. Data with a final quality flag of 1 are potentially inaccurate and should only be used with caution. The final quality flag is based on automated QA/QC tests, including range, gap, and spike tests, as well as a manually set science review flag if applicable ("...FinalQFSciRvw"). Each measurement is accompanied by an estimate of measurement uncertainty, expressed at the 95% confidence level ("...ExpUncert"), which comprises known and quantifiable uncertainties. In addition, automated flags are applied when sensor lamp temperature and internal humidity are out of acceptable range; see variables file and ATBD for details on these flags.

Documentation

NEON Aquatic Sampling Strategy
NEON.DOC.001152vB | 931.8 KiB | PDF

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NEON Sensor Command, Control and Configuration (C3) Document: SUNA Nitrate Analyzer, Wadeable Streams
NEON.DOC.001570vE | 589.1 KiB | PDF

NEON Algorithm Theoretical Basis Document (ATBD): Surface Water Nitrate
NEON.DOC.002181vD | 725.4 KiB | PDF

NEON Preventive Maintenance Procedure: Submersible Ultraviolet Nitrate Analyzer (SUNA)
NEON.DOC.002716vF | 6 MiB | PDF

NEON User Guide to AIS Maintenance Data
NEON_ISmaintenance_vB | 217.8 KiB | PDF

For more information on data product documentation, see:
https://data.neonscience.org/data-products/DP1.20033.001

Citation

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