



# **NEON Terrestrial Instrument Data QA/QC Technical Working Group**

## ***2020 Annual Report***



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National Ecological Observatory Network (NEON) is a project sponsored by the National Science Foundation and proudly operated by Battelle.

# Introduction

Since its inception, NEON has relied on expertise within the science, education, and engineering communities to advise on key areas impacting the design, construction, and maintenance of the observatory with the goal to optimize its operation. Currently, two types of external advisory bodies support staff and leadership in making key decisions that guide all of NEON's activities: the Science, Technology & Education Advisory Committee (STEAC) and Technical Working Groups (TWGs). Both bodies are comprised of experts nominated to serve in these roles who are selected by NEON staff following a rigorous selection process.

NEON currently relies upon input from 22 TWGs. These groups play an important role by providing input to NEON's data collection and processing methods and ensuring that NEON infrastructure, data, and programs are a valuable community resource. Working groups are participatory and advisory; they are often tasked with providing input on issues that have scientific, educational, engineering, or operational implications.

This document includes a summary of activities, recommendations, and NEON's response to those recommendations for the Terrestrial Instrument Data QA/QC TWG during the 2020 funding year (November 2019-October 2020).

The Terrestrial Instrument Data QA/QC Technical Working Group represents a diverse set of NEON data users and experts, in the relevant disciplines of biometeorology, soil science, ecology, and data science. The overarching goal of the TWG is to ensure that NEON delivers the highest quality data possible with the available resources and that quality information is adequately communicated to data users. The TWG broadly covers terrestrial instrument measurements, data processing, data monitoring, and data publication as they relate to quality.

## Q1 – November 2019-January 2020

### Summary of Activities

Held FY20 Kickoff meeting. Agenda and discussion focused on the progress and current status of TIS data quality. Feedback was requested on additional quality checks that should be performed on TIS data collected during the early construction period, given the addition uncertainty in installation and maintenance protocols. Background: A significant amount of previously unpublished TIS data collected during early construction will become available after reprocessing occurs in March/April 2020. The science team plans to perform additional quality checks on some data products prior to publishing.

### TWG Recommendations

The TWG recommended several product-specific quality checks to perform on early NEON data, such as cross-comparison of wind direction collected with the 2D and 3D wind sensors. The TWG also recommended general quality analyses that could be performed to test the assumptions involved in data processing and quality control, such as assessing whether the turbine in the aspirated temperature shield actually functions above the theoretical threshold of 12 m s<sup>-1</sup>.

## NEON Response

TWG recommendations on data checks to perform on early NEON data were incorporated into planned checks. The additional recommendations on general quality analyses to perform were recorded, but it was noted that the timescale for implementation would be much longer and the effort prioritized among other quality improvements.

## Q2 – February 2020-April 2020

### Summary of Activities

The TWG did not meet in Q2, but the science team is currently implementing the recommendations the TWG provided in Q1 regarding data checks for early NEON data newly produced by reprocessing. Next meeting estimated for June/July 2020.

### TWG Recommendations

N/A

### NEON Response

N/A

## Q3 – May 2020-July 2020

### Summary of Activities

Presented results of the 2020 TIS quality review. The TWG provided feedback and advice on the priority of quality improvements and techniques to achieve them.

### TWG Recommendations

The TWG agreed with NEON's prioritization of quality issues and recommended a specific technique to address spurious trace precipitation in the primary precipitation data product.

### NEON Response

NEON will follow up with the TWG to implement the technique to improve the primary precipitation data product.

## Q4 – August 2020-October 2020

### Summary of Activities

No activity for Q4

## **TWG Recommendations**

N/A

## **NEON Response**

N/A

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