



Read-me for Data Users

MEMORANDUM FOR: The JPSS Program Record
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SUBJECT: NOAA-21 VIIRS Surface Type Validated maturity status and public release
DATE: 06/13/2024

Validated maturity status declaration for NOAA-21/NOAA-20/S-NPP VIIRS Surface Type

Maturity Review Date: 06/13/2024
Effective Date: 06/13/2024
Operational System: NESDIS STAR Offline Surface Type Production System

The JPSS Algorithm Maturity Readiness Review Board approved the release of the JPSS VIIRS Annual Surface Type (AST) to the public with a validated maturity level quality as of 06/13/2024 based on JPSS Validation Maturity Review held on 06/13/2024 (https://drive.google.com/drive/u/1/folders/1rvzpLyuStNDdLLLYwPzlcJQ0YRs_9V5o).

1. Maturity stage definition (reference to the AMM webpage for maturity definition:

<http://www.star.nesdis.noaa.gov/jpss/AlgorithmMaturity.php>)

- Product performance has been demonstrated over a large and wide range of representative conditions (i.e., global, seasonal).
- Comprehensive documentation of product performance exists that includes all known product anomalies and their recommended remediation strategies for a full range of retrieval conditions and severity level.
- Product analyses are sufficient for full qualitative and quantitative determination of product fitness-for-purpose.
- Product is ready for operational use based on documented validation findings and user feedback.
- Product validation, quality assurance, and algorithm stewardship continue through the lifetime of the instrument.

2. Algorithm Description:

N21 VIIRS AST has been generated with a full year surface reflectance data integrated with full year NOAA-20 and available NOAA-21 VIIRS surface reflectance data. The final product is VIIRS AST V2023. AST products based on S-NPP and NOAA-20 VIIRS observations of year 2022 and before are available at <https://www.star.nesdis.noaa.gov/pub/smcd/JPSS/VIIRS-AST/>. Algorithm details and evaluation/validation results is provided in VIIRS AST ATBD, which can be found at https://www.star.nesdis.noaa.gov/jpss/documents/ATBD/ATBD_VIIRS-



[SurfaceType_V2023.pdf](#).

List of Products: VIIRS AST 2023

Product requirements/Exclusions: L1RD and GSegDPS-2019.

Quality flags: Quality is assessed for the whole global map with general accuracy. Results are provided in the product ATBD.

Product evaluation/validation: The N21 VIIRS AST product is evaluated for its 2023 data product version which requires surface reflectance data of a full 2023 year.

Product availability/reliability:

N21 VIIRS AST V2023 and previous version are available from

<ftp://ftp.star.nesdis.noaa.gov/pub/smcd/JPSS/VIIRS-AST>.

Algorithm performance dependence:

Surface reflectance, training data sets and classification algorithm

Known errors/issues/limitations: None

3. Changes since last maturity stage:

- More than 12 months of NOAA-21 data required by the AST algorithm have become available
- Developed methods/code for combining NOAA-21, NOAA-20 and S-NPP data for improved surface type monitoring

4. Review board recommendations

5. Path Forward/Future Plan

- Need to continue to improve code robustness and efficiency to handle greatly increased data volume
- Develop more robust methods to integrate NOAA-21, NOAA-20 and S-NPP for monitoring surface type changes
- Continue to monitor training/validation sites to identify surface type changes and relabel those changes
- Generate new AST products

6. Additional Items to note

Additional information is available in the JPSS VIIRS Surface Type algorithm theoretical basis document (ATBD) and validation maturity review briefing, which can be accessed at:

<http://www.star.nesdis.noaa.gov/jpss/Docs.php>

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