USGS CARD4L self-assessment of Surface Temperature (Collection 2)

Summary Table: WGCV CARD4L Review Panel evaluation

	Threshold	Target
1. General Metadata		
1.1 Traceability	Not required	Not verified*
1.2 Metadata Machine Readability	Verified	Not assessed
1.3 Data Collection Time	Verified	Verified
1.4 Geographical Area	Verified	Verified
1.5 Coordinate Reference System	Verified	Verified
1.6 Map Projection	Not required	Verified
1.7 Geometric Correction Methods	Not required	Verified
1.8 Geometric Accuracy of the Data	Verified	Verified
1.9 Instrument	Verified	Verified
1.10 Spectral Bands	Verified	Verified
1.11 Sensor Calibration	Not required	Verified
1.12 Radiometric Accuracy	Not required	Verified
1.13 Algorithms	Verified	Verified
1.14 Ancillary Data	Verified	Verified
1.15 Processing Chain Provenance	Not required	Verified
1.16 Data Access	Verified	Not assessed
1.17 Overall Data Quality	Not required	Not verified*
2. Per-Pixel Metadata		
2.1 Metadata Machine Readability	Verified	Not assessed
2.2 No Data	Verified	Verified
2.3 Incomplete Testing	Verified	Verified
2.4 Saturation	Verified	Verified
2.5 Cloud	Verified	Verified
2.6 Cloud Shadow	Verified	Verified
2.7 Snow/Ice Mask	Not required	Verified
2.8 Illumination and Viewing Geometry	Verified	Not assessed
3. Radiometric and Atmospheric Corrections		
3.1 Measurement	Verified	Not verified*
3.2 Corrections for Atmosphere and Emissivity	Verified	Verified
3.3 Measurement Uncertainty	Not required	Not verified*
4. Geometric Corrections		
4.1 Geometric Correction	Verified	Verified

*See explanation provided in the notes below

1.1 Traceability: Evidence to justify the claim requires a full uncertainty budget showing a comparison to an independent reference which is also SI traceable and with an associated uncertainty. In the case of LST the FRM4STS project has established a traceable route from the in situ radiometers at Gobabeb to the blackbody source at NPL. At the least the measurement and measurement uncertainty should provide evidence of validation at such a reference site.

1.17 Overall Data Quality: The stated requirement is ‘quantitative assessment to high quality reference data with full traceability of uncertainties’, and that validation and intercomparison can provide this. Evidence to demonstrate compliance is required (see the comment on 1.1).

3.1 Measurement: Stating an uncertainty is valuable but that alone would not make it SI traceable (see comments for 1.1).

3.3 Measurement Uncertainty: ST-QA band gives a quantitative uncertainty value in K as a total, clarity about partitioning by contributor, the basis of the aggregation and if this is done at pixel level, is required. A fully traceable measurement uncertainty model should be provided starting with the measurement equation and evaluating all sources of error.

CARD4L review outcome:

Threshold level:	**Compliance verified for all applicable items**
Target level:	**Compliance for four items yet to meet requirements, was not assessed; claims of achieving Target requirements for Traceability, Overall Data Quality, Measurement and Measurement Uncertainty need to be supported by evidence, compliance for these items could not be verified; compliance for the remaining items was verified**

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