

**Total Confidence Value and Proximity Confidence Flags
for Microwave SST retrievals**
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The GDS version 1.6 defined confidence flags and proximity confidence flags for microwave SST data were subject to misinterpretation. Most users have traditionally seen confidence flags as a means to identify cloudy pixels and the default appears to be selecting the highest confidence value retrievals. In the GDS, the confidence value is described as have a value spanning 0 (no data or bad) to 5 (highest confidence in SST measurement). There were comments during the science team meeting about why a confidence value of 6(IR) or 13(MW) (skin/diurnal effect) broke this trend of increasing value = increasing quality. For this reason I have chosen not to add skin/diurnal effect to the confidence values. Advanced users can identify these pixels using the confidence flags.

The original definitions of the confidence flags had bits set to 1 when the pixel was within a certain distance of land or rain pixels, less than 285, or at high wind speeds....

GDS Version 1.6 Confidence Flag Definition

- 0 potential side lobe contamination (based on distance to land only)
- 1 relaxed rain contamination suspected (based on distance to rain only)
- 2 TMI SST retrieval in SST < 285
- 3 High wind speed retrieval (>12m/s)
- 4 Sea ice retrieval
- 5 Sun glint suspected
- 6 Native bias and std
- 7 Native confidence value

GDS Version 1.6 confidence values were assigned as:

- 10 Unprocessed: Data that have not been classified (measurement indicates sea ice)
- 11 Questionable: Data that are may be contaminated by land, rain, sea ice, RF interference, degraded due to uncertainty in seawater emissivity at higher wind speeds, and/or are below a low SST threshold.
- 12 Acceptable: Data that are far from land, rain, sea ice, RF interference and are within a favourable wind speed regime.
- 13 Diurnal: Data are far from any rain or land flags but are within a low wind speed regime where a cool skin or warm layer may influence the observed SST.

If any of the confidence flags were set, the confidence value was set to 11 (questionable).

RSS does not believe these pixels are bad, but they are located in regions where it is more likely that bad data may be present. These flags were never meant to be rejection flags, but in every application of microwave L2P data shown at the GHRSSST meeting, it appeared that users were using the confidence flags to reject data. The new definitions provide confidence flags that more specifically identify problematic pixels and the proximity confidence have been simplified.

In the simplified user manual I would recommend that users simply use the total confidence value. If MWCV is less than 3, then the data should be thrown out. Advanced users can examine the actual confidence flags or rejection flags for additional information if they choose.

It might be useful if in the JPL software there was a special question asked of the user in the netcdf reading routines requesting confidence values to highlight the use of these confidence values. Unprocessed data is given a higher value than Bad and Suspect data because if it hasn't been flagged than it is good data.

Microwave Proximity confidence value (MWPCV) definitions.

Value	Definition
1	Bad: Data has been rejected
2	Suspect: Data that may be contaminated, (any confidence flags thrown except DW)
3	Unprocessed: Data that have not been classified by confidence flags. This data should be fine.
4	Excellent: Data that we think are good

Microwave confidence flags definitions.

Bit	Definition
0	rain present within 50km and difference from yesterday's OI SST greater than 0.6 K
1	rain present within 100km and difference from yesterday's OI SST greater than 0.8 K
2	ice present within 150 km and difference from yesterday's OI SST greater than 0.6 K
3	difference from yesterday's OI SST greater than 5 K
4	STD and Mean calculated from yesterday's OI SST from data within 250 km of pixel. SST at pixel required to be within 3*STD of mean
5	land present within 125 km and difference from yesterday's OI SST greater than 0.6 K
6	diurnal warming calculated from model greater than 1 K
7	diurnal warming calculated from model greater than 0.3 K

Generally, the highest confidence (no flags set in bits 0 - 5) will result in the highest quality data.