### TIRS Bias Model Calibration

#### Background

Conversion from instrument digital counts (DN) to radiance (W/m^2-sr-µm) occurs in 3 steps: response linearization, bias removal, and gain application. The bias that is removed in the second step is a combination of the dark and background response of the instrument, and is the total response of the instrument to “nothing,” or a very cold target. On orbit the TIRS instrument will collect data while looking at deep space. The per-detector means of the data from these collects can be used as an estimate of the cumulative dark and background responses of the instrument.

This algorithm only needs to be implemented as a part of Ingest, and should not be run using long (meaning longer than the typical 2 seconds) space look collects.

#### Input

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Description** | **Symbol** | **Units** | **Level** | **Source** | **Type** |
| Per Detector Means from latest space look (TIRS) | *STIRS* | DN | NbandsxNSCAxNdetectors | Histogram Statistics | Float |

#### Output

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Description** | **Symbol** | **Units** | **Level** | **Target** | **Type** |
| Per Detector Means from latest space look (TIRS) | *STIRS* | DN | NbandsxNSCAxNdetectors | BPF | Float |

#### Options

* Start and stop date/time of desired means (T0 and T1). Normally T0 should be the stop of the pre-acquisition deep space collect andT1 should be the start of the post-acquisition deep space collect .

#### Procedure

Retrieve the histogram statistics from one collect each of TIRS space look data acquired prior to the desired start date/time (T0) and after the desired stop date/time (T1) and write these to the BPF database.