PRINCETON UNIVERSITY

SDC PDS KEM K4 Review

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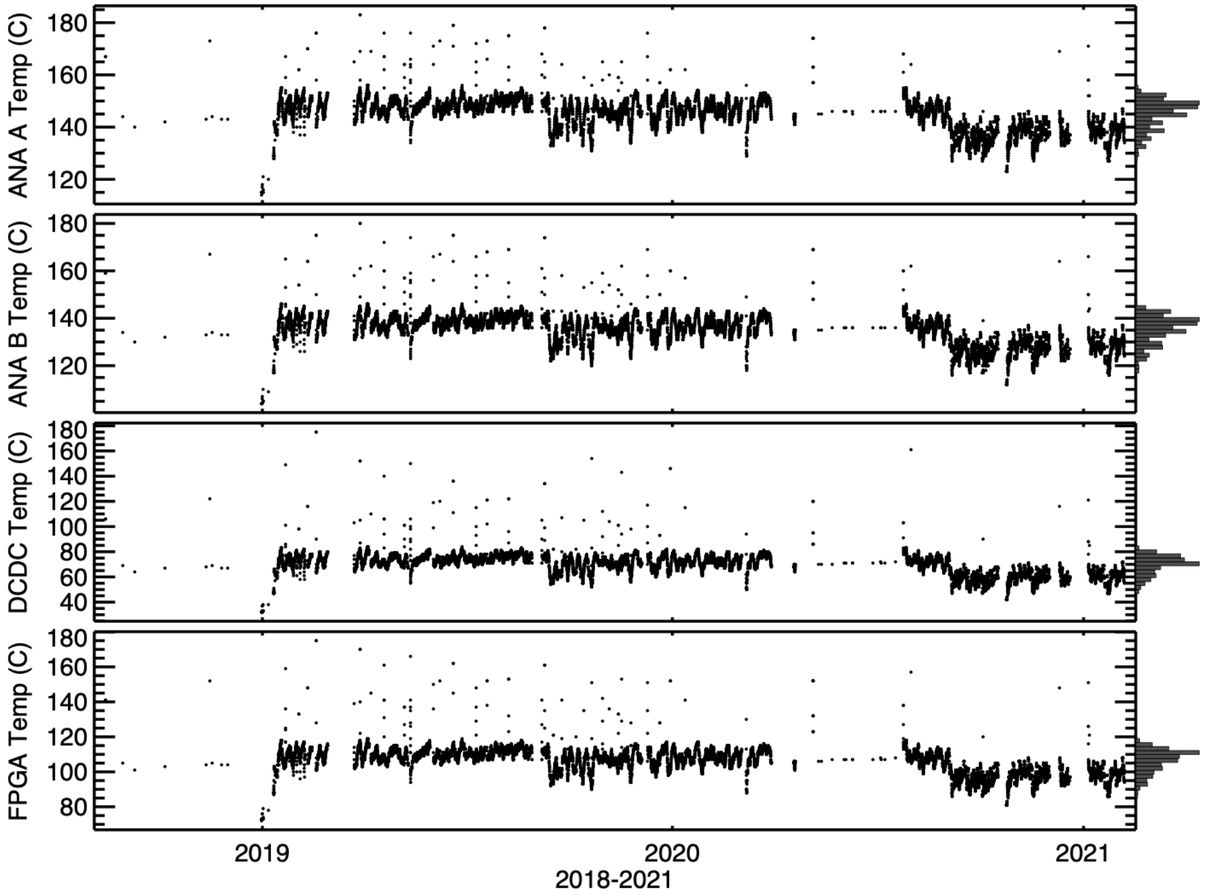
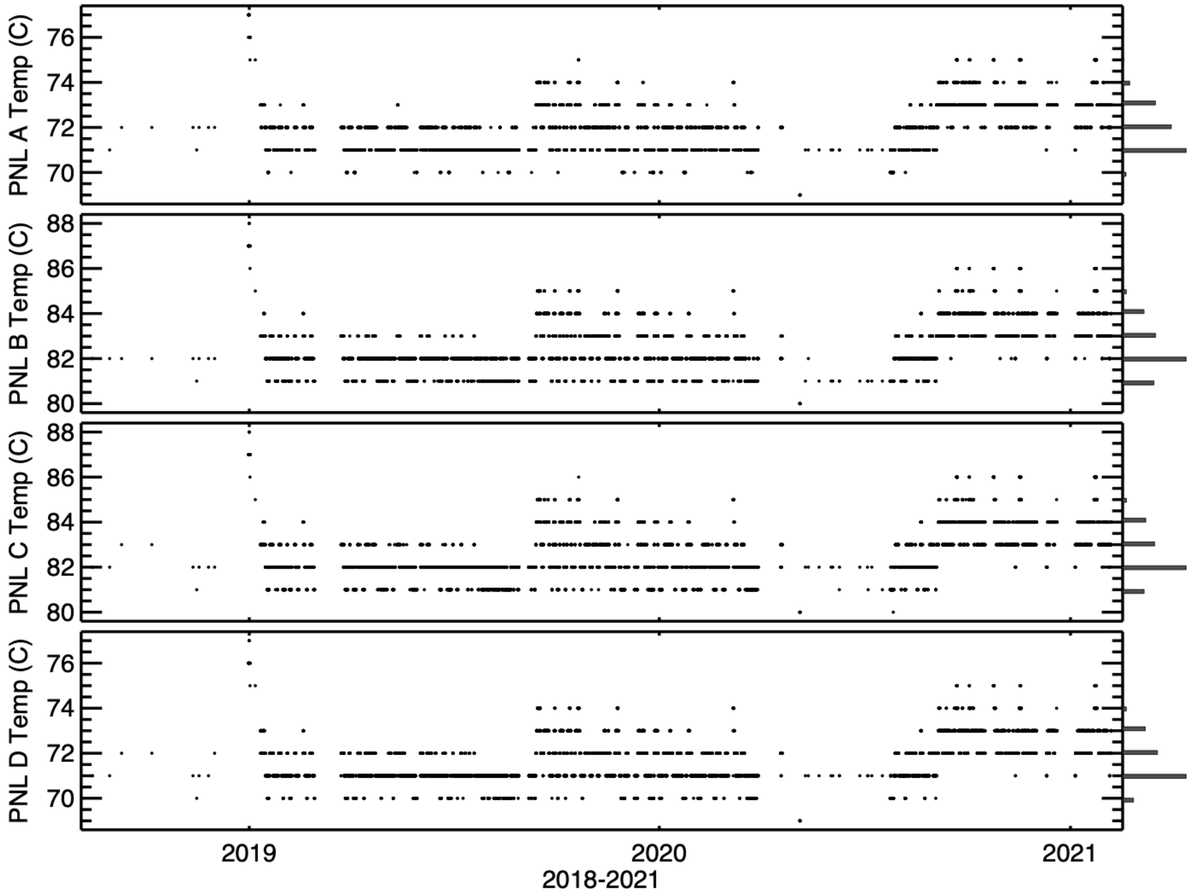
Overview

- Read Level 2 data: nh-a-sdc-2-kem1-v5.0
  - Plotted and assessed subset of temperatures
- Read Level 3 data: nh-a-sdc-3-kem1-v5.0
  - Plotted and assessed event amplitude distributions

Level 2 Data

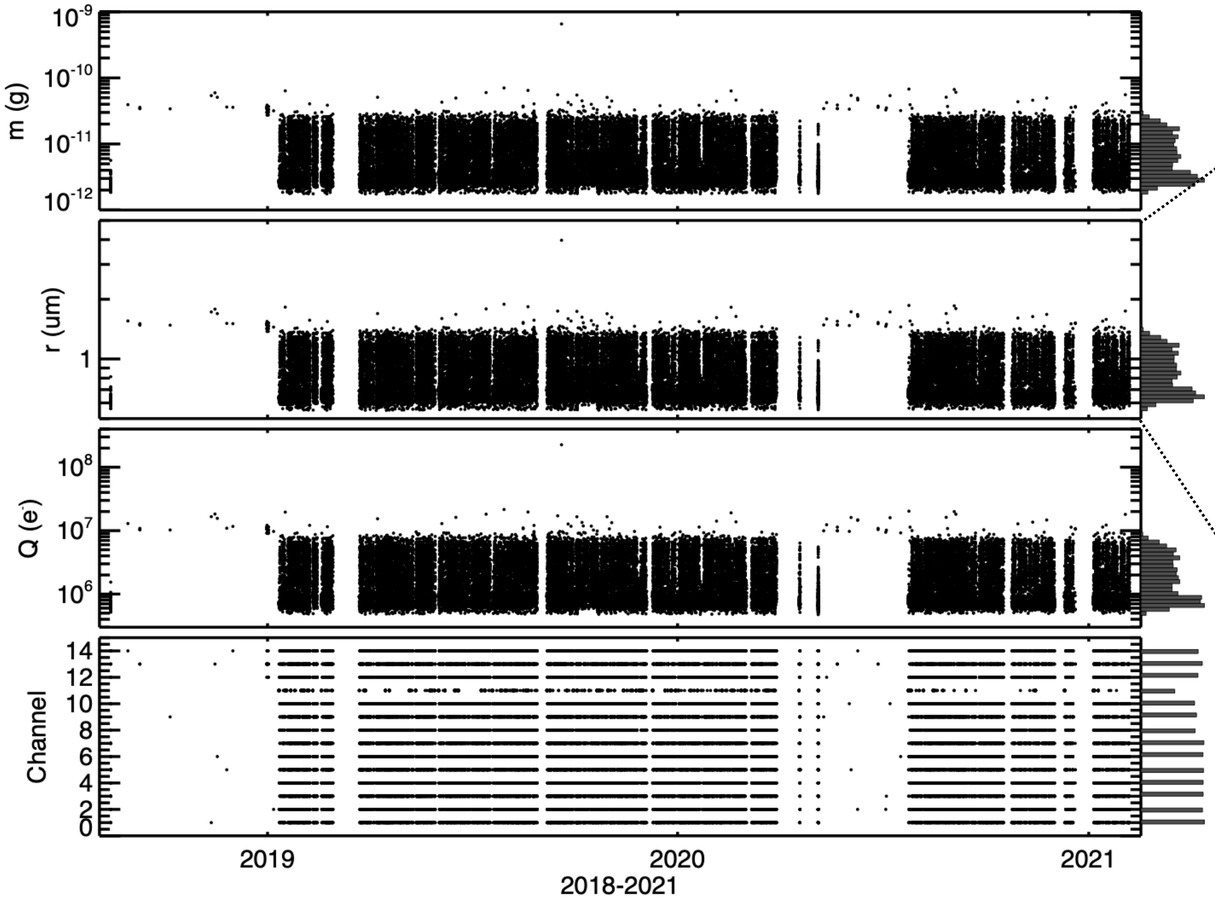

ANA A Temp (C)
ANA B Temp (C)
DCDC Temp (C)
FPGA Temp (C)
2019
2020
2021
2018-2021

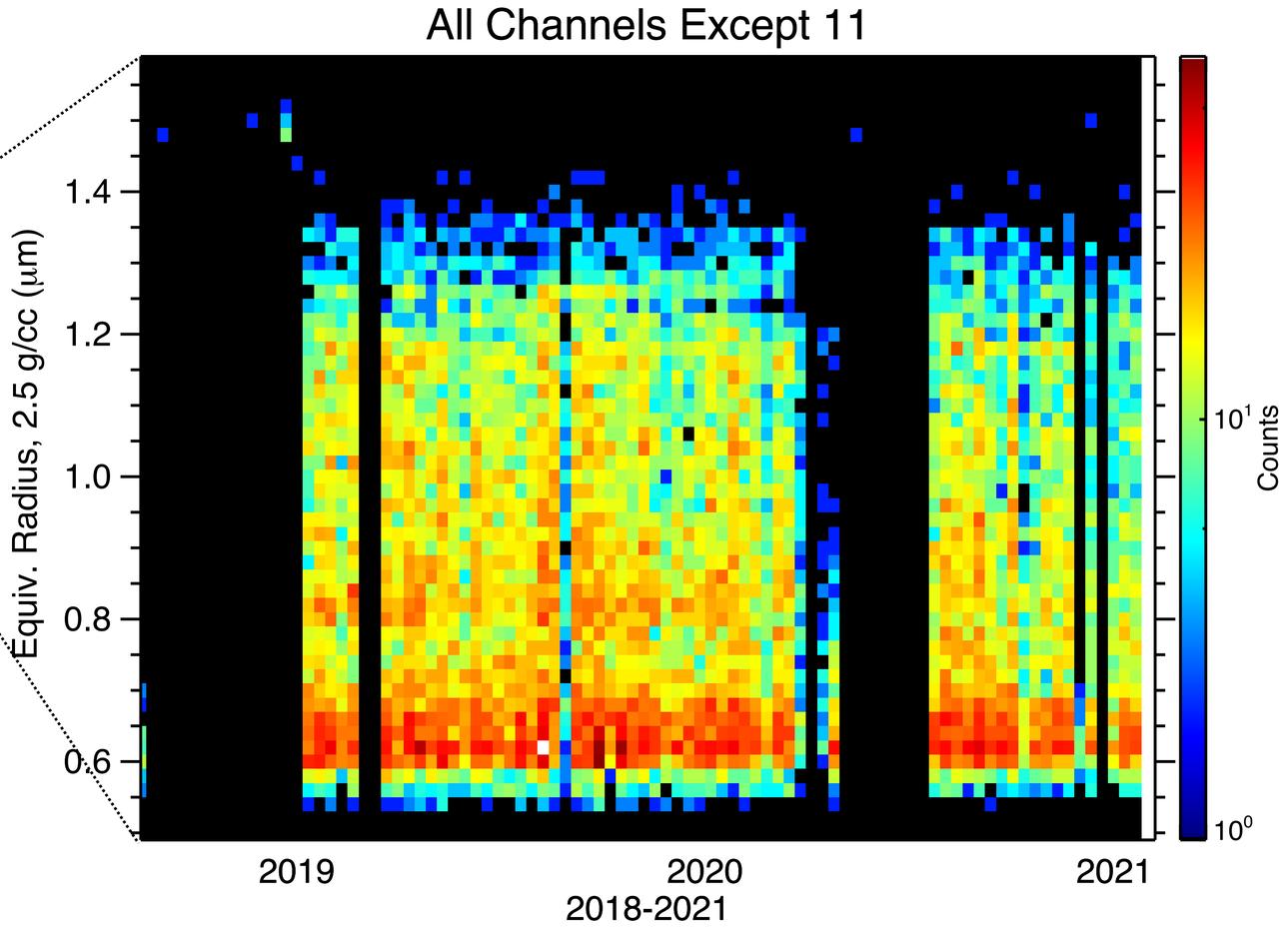

PNL A Temp (C)
PNL B Temp (C)
PNL C Temp (C)
PNL D Temp (C)
2019
2020
2021
2018-2021

Assessment of Level 3 Data

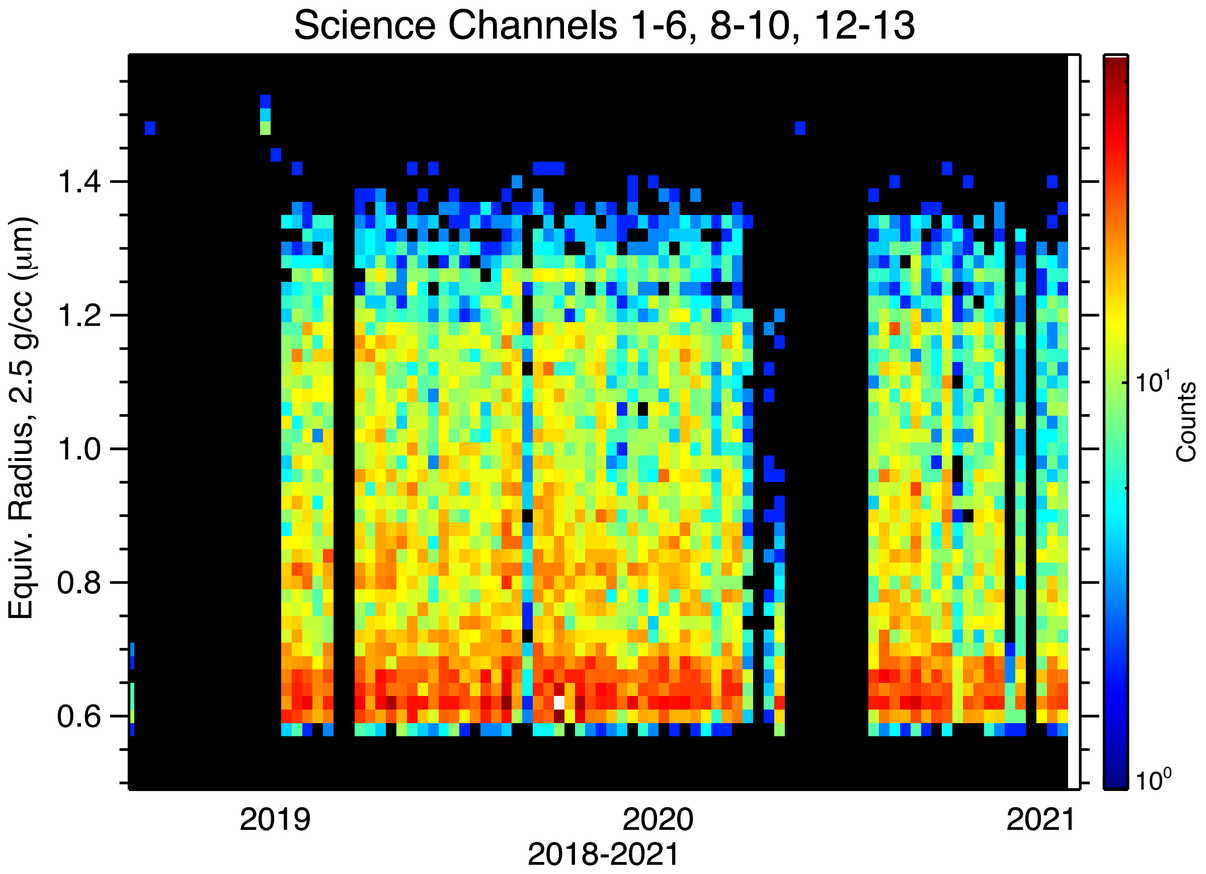
- Read Level 2 data: nh-a-sdc-2-kem1-v5.0
- Temperatures and voltages nominal
- Level 2 Channel_IDs all matched Level 3 Channels
  - 1-1 mapping L2 → L3
- No discrepancies observed in Level 2 data

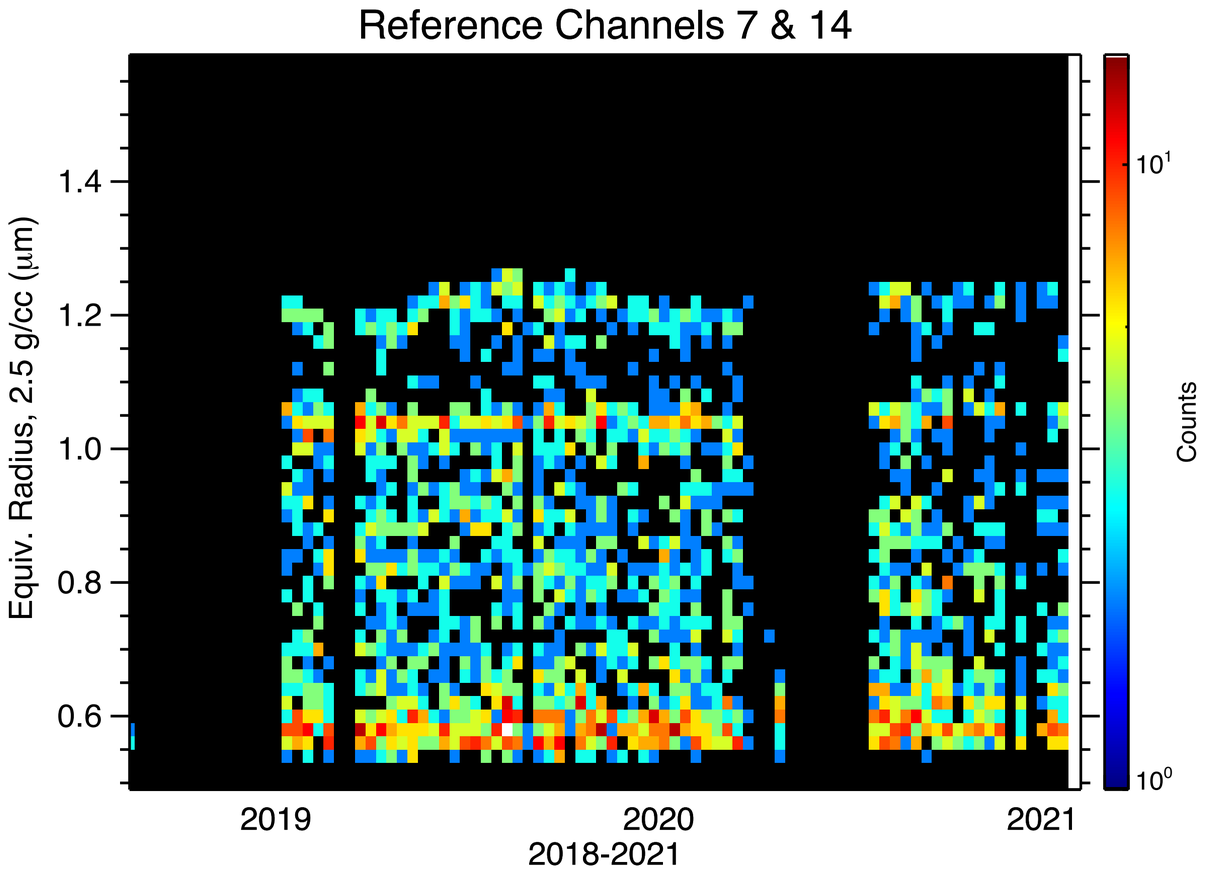
Level 3 Data: All events



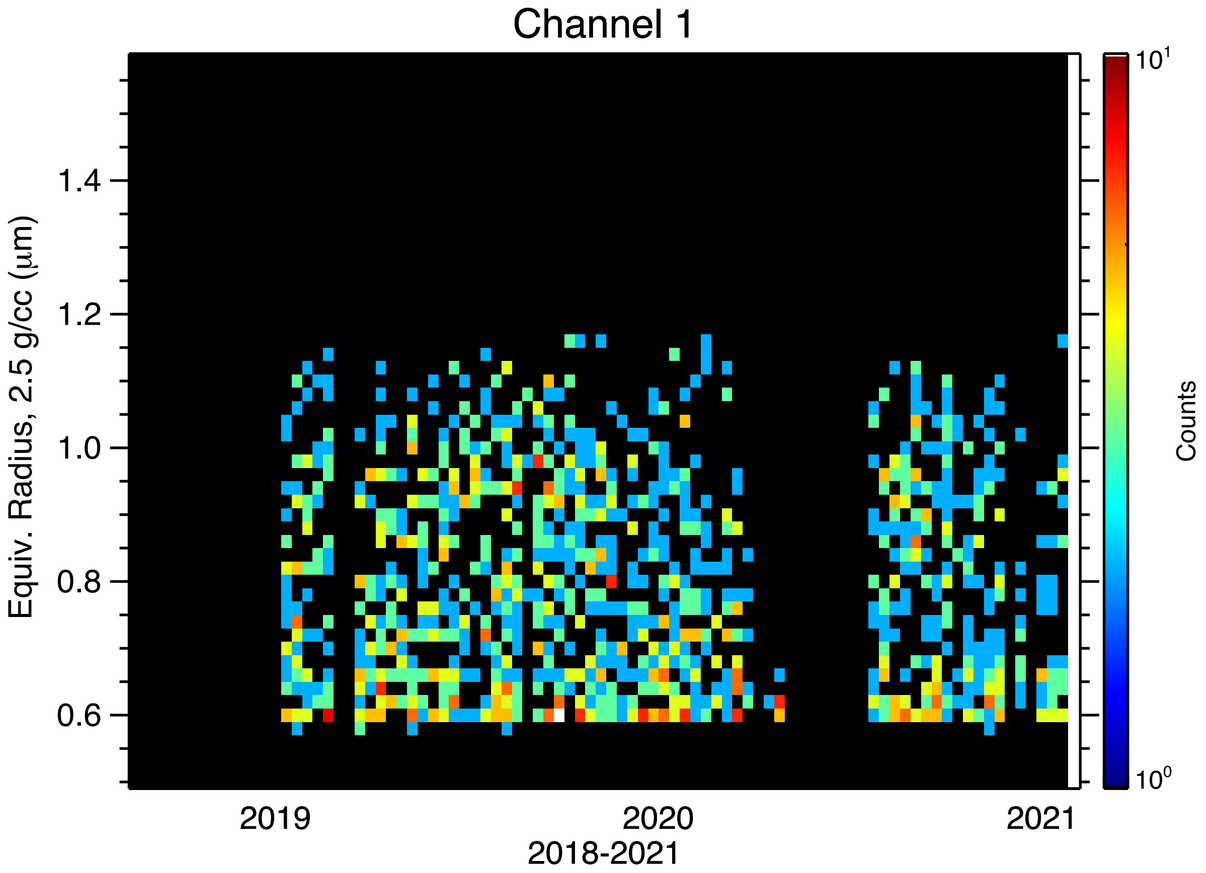


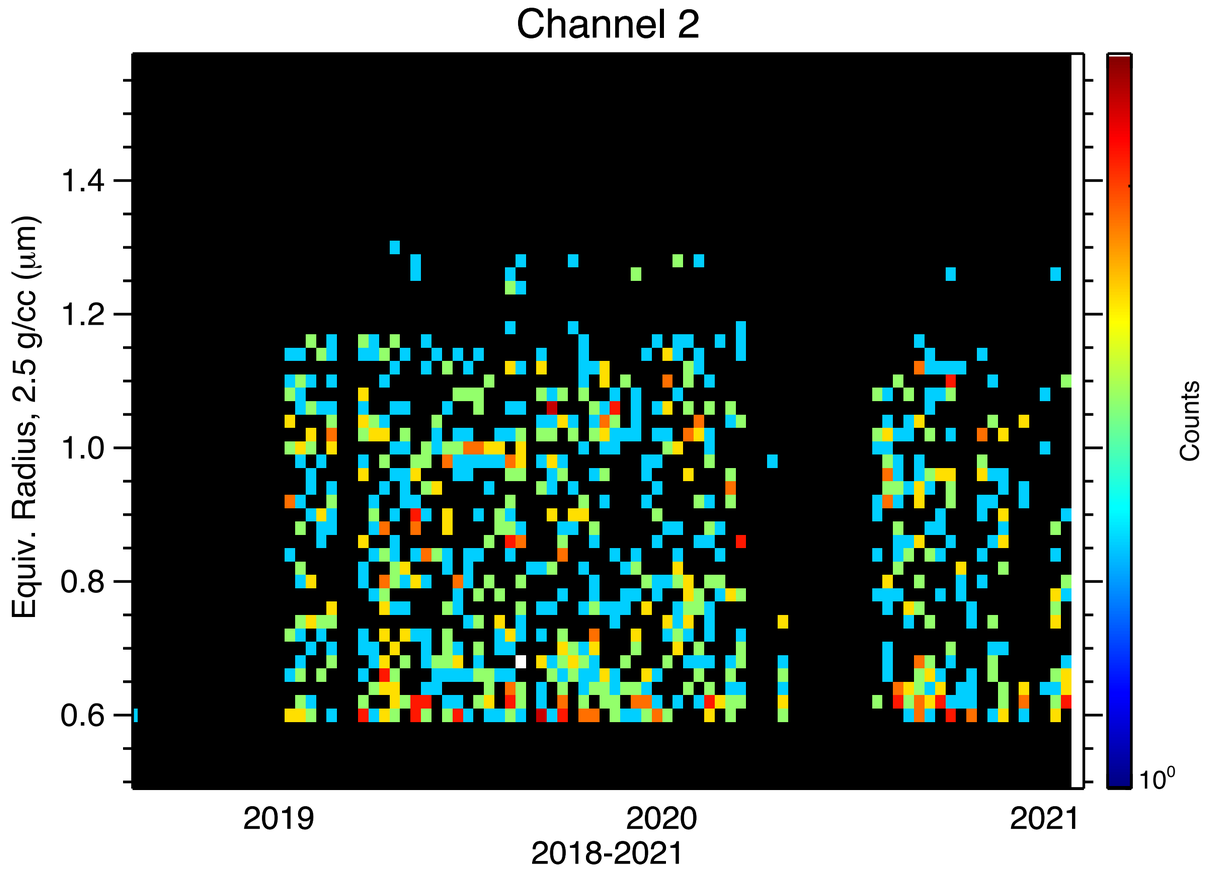
Level 3 Data: Science vs. Reference Channels



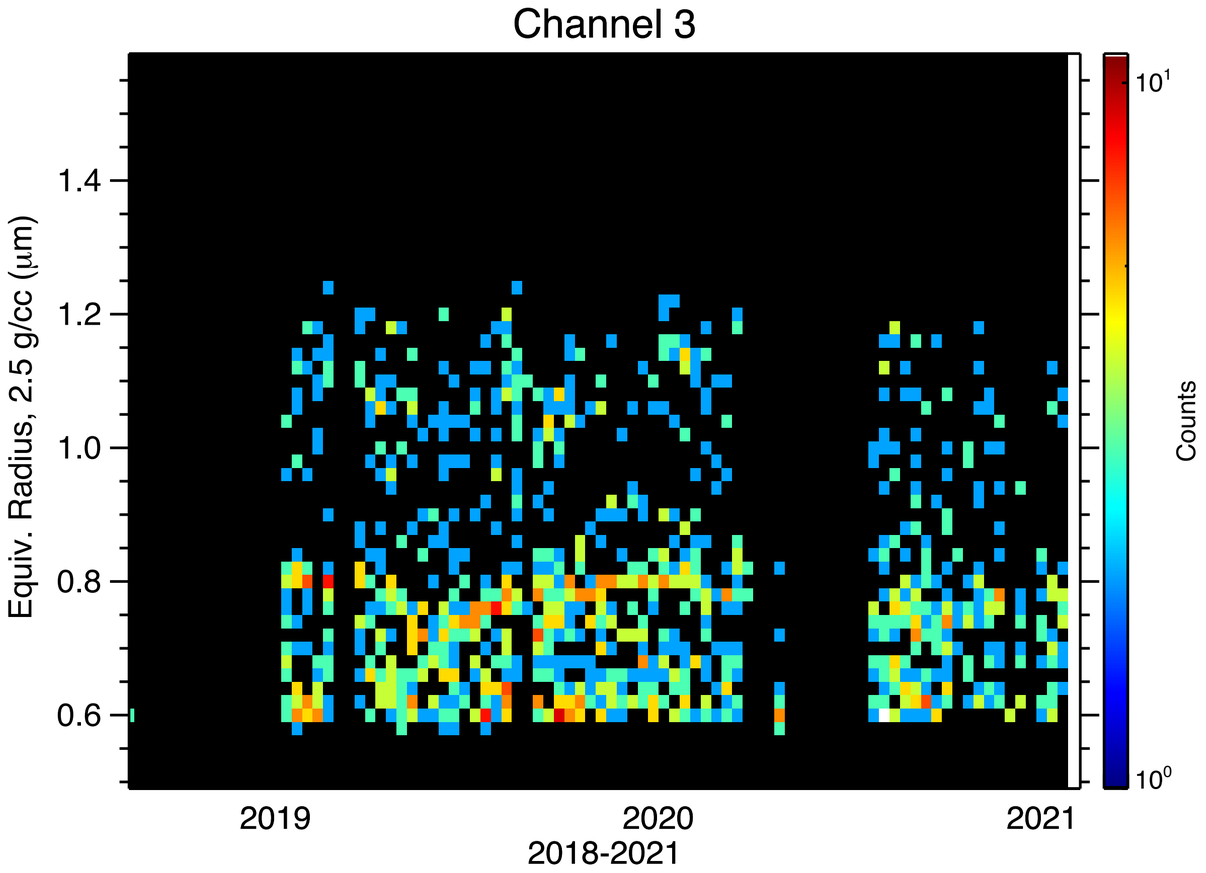


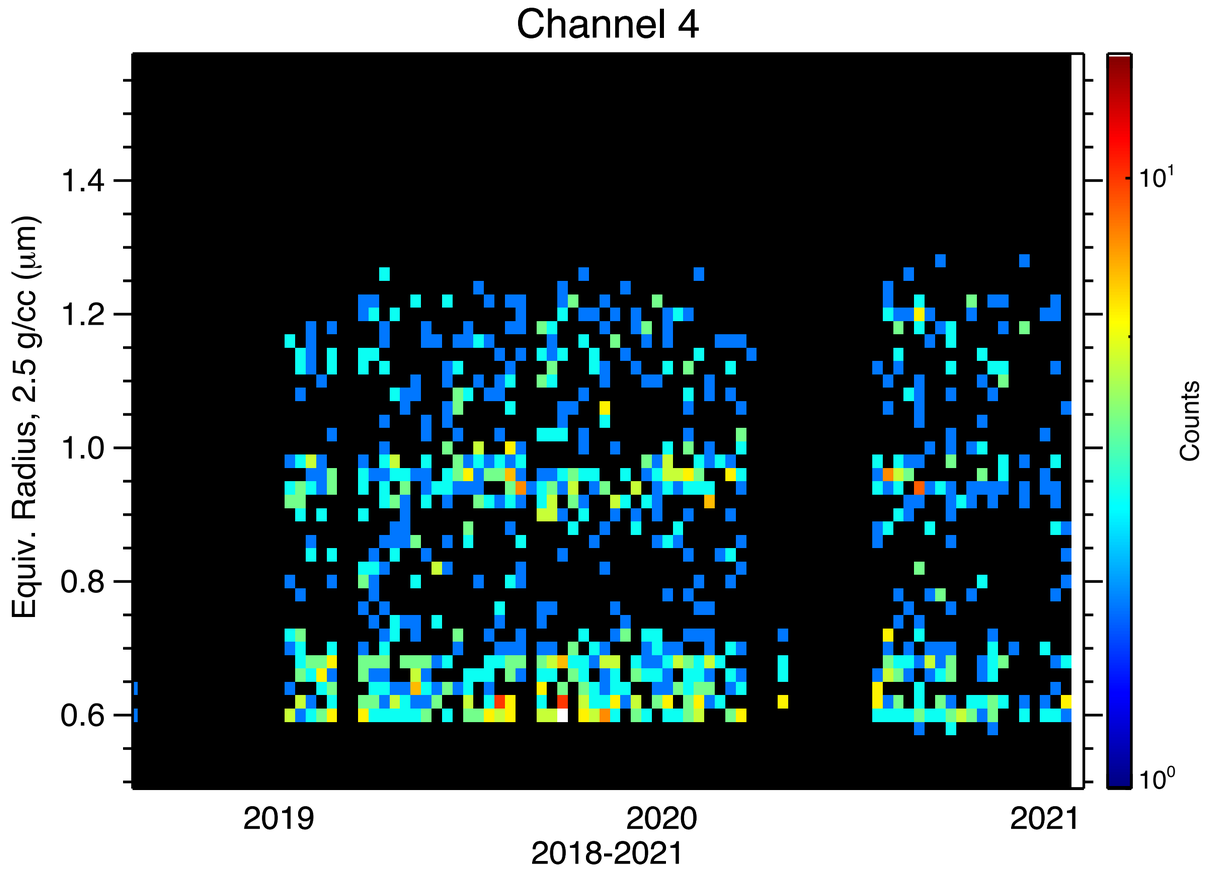
Level 3 Data: Individual Channels



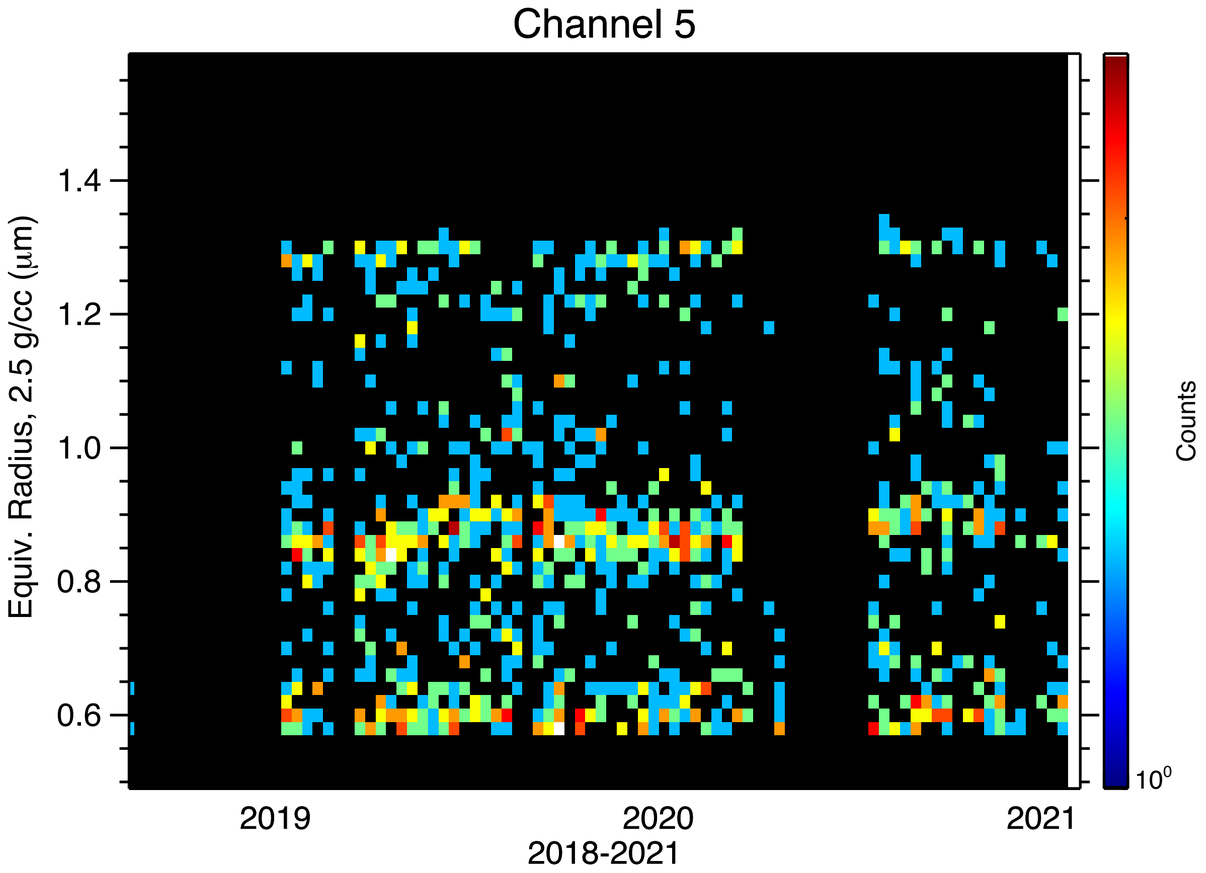


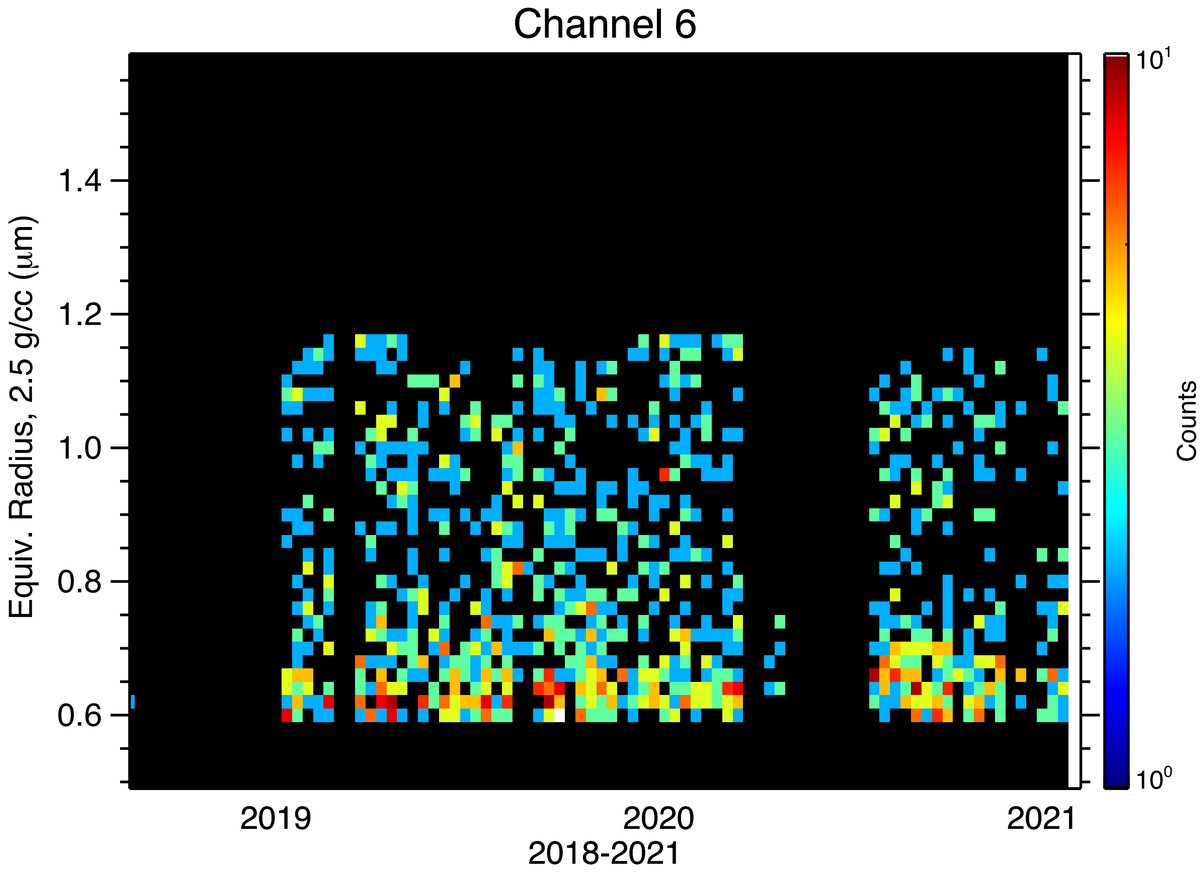
Level 3 Data: Individual Channels



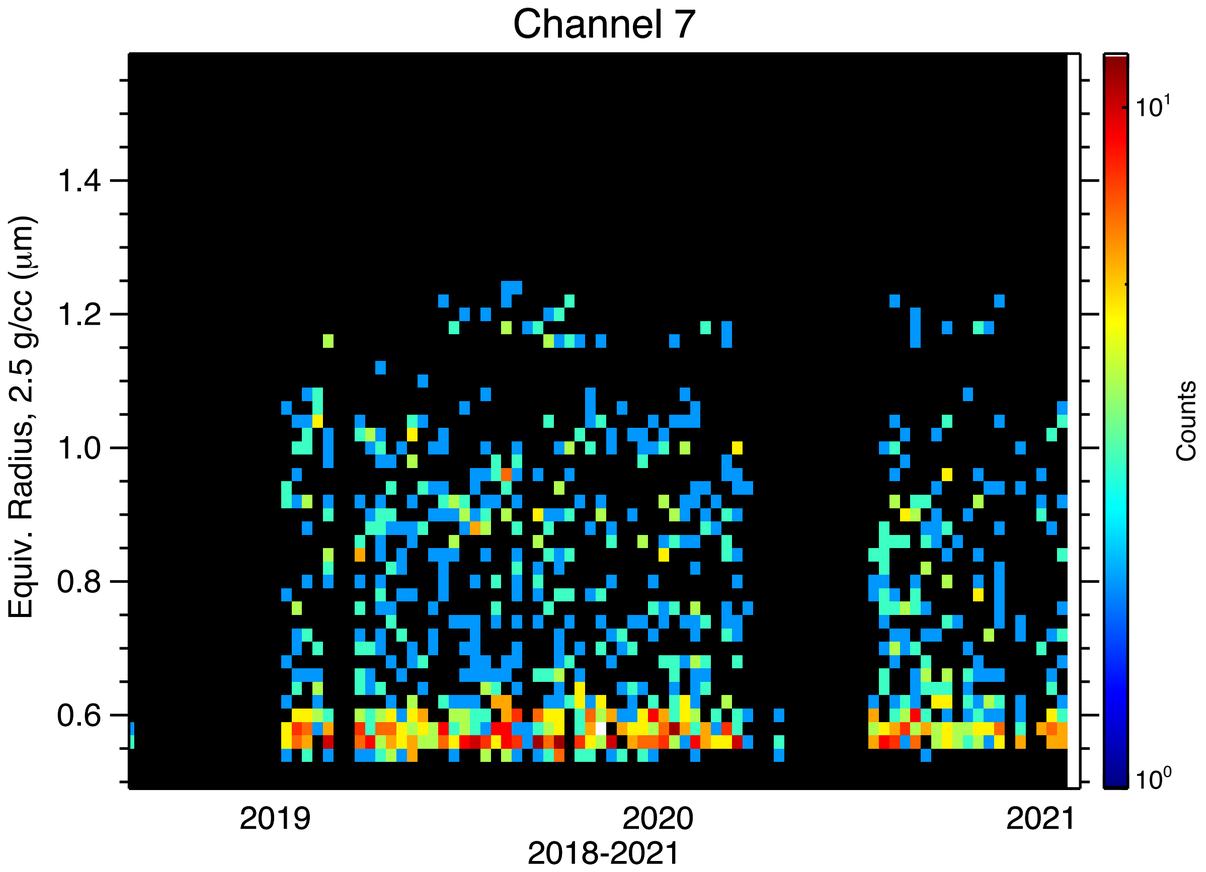


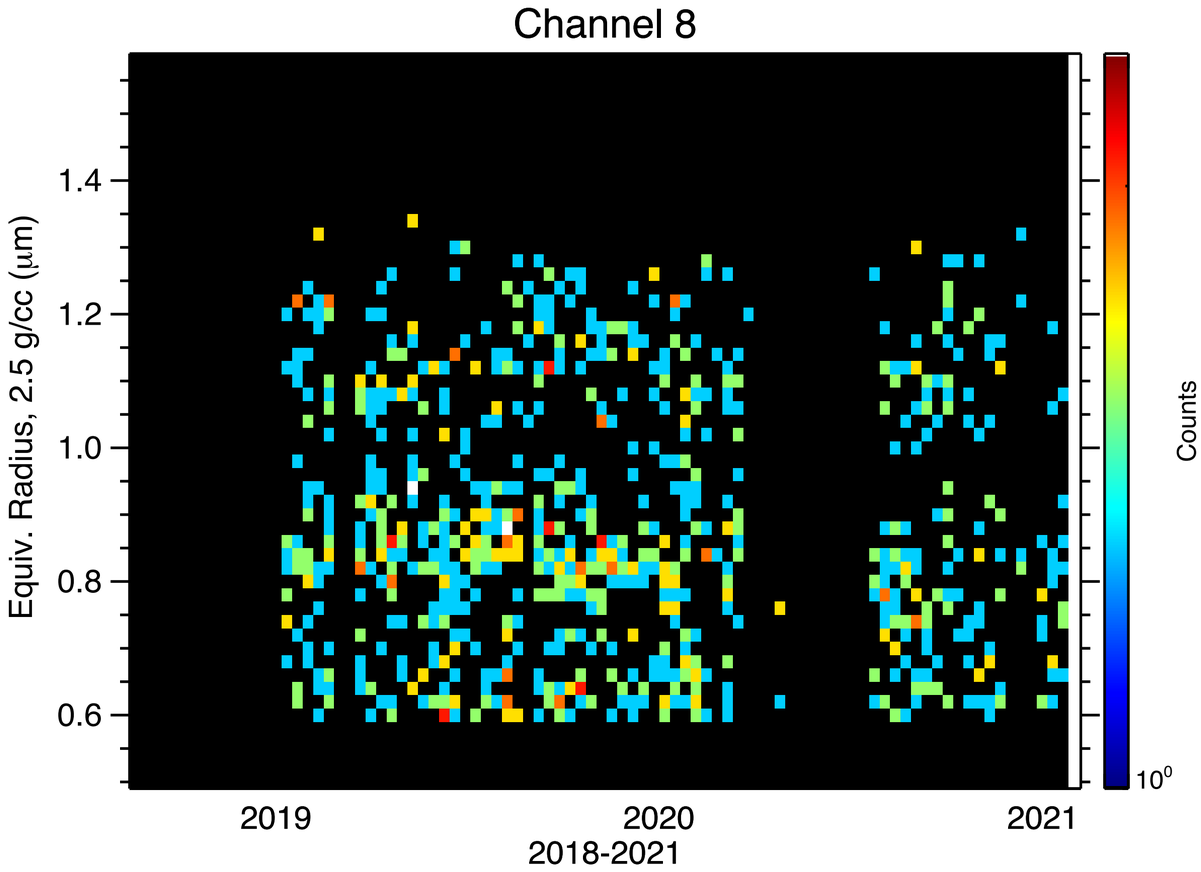
Level 3 Data: Individual Channels



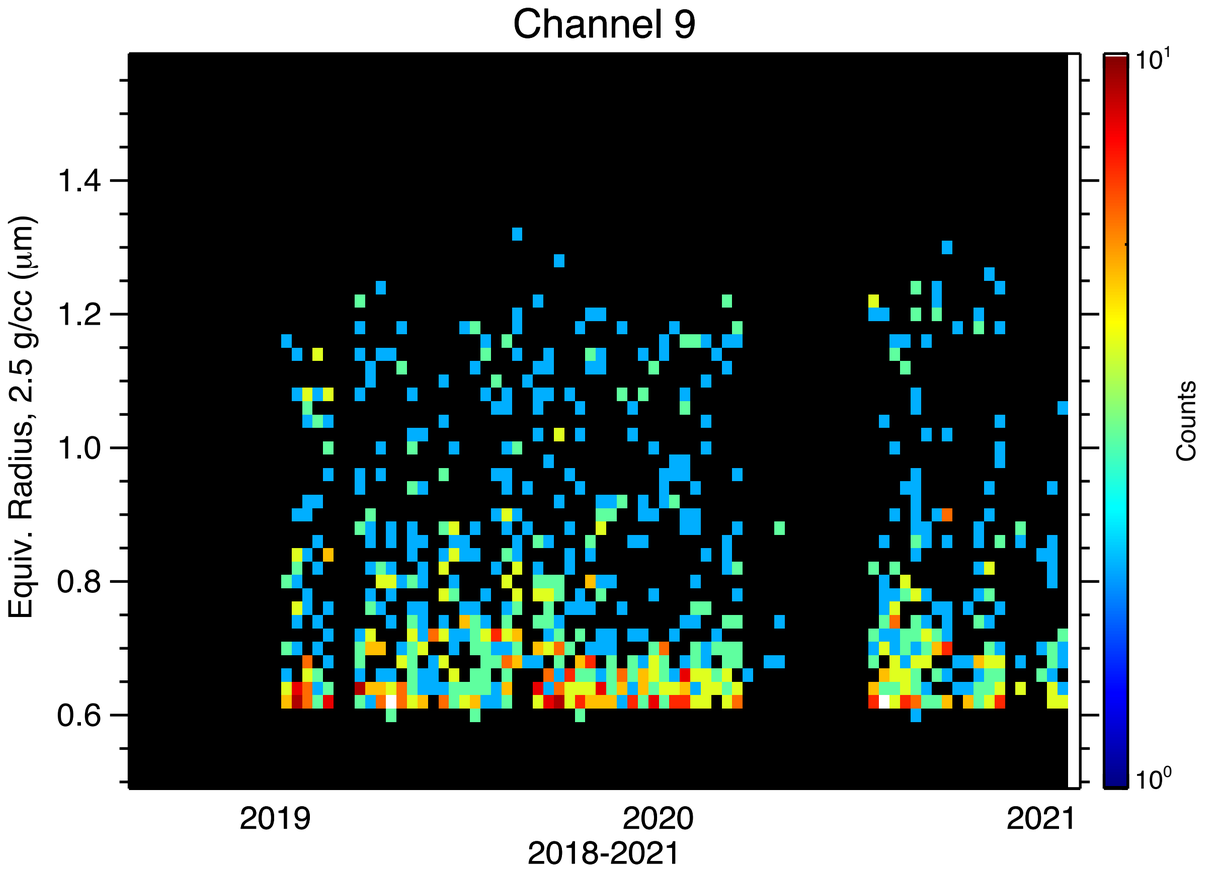


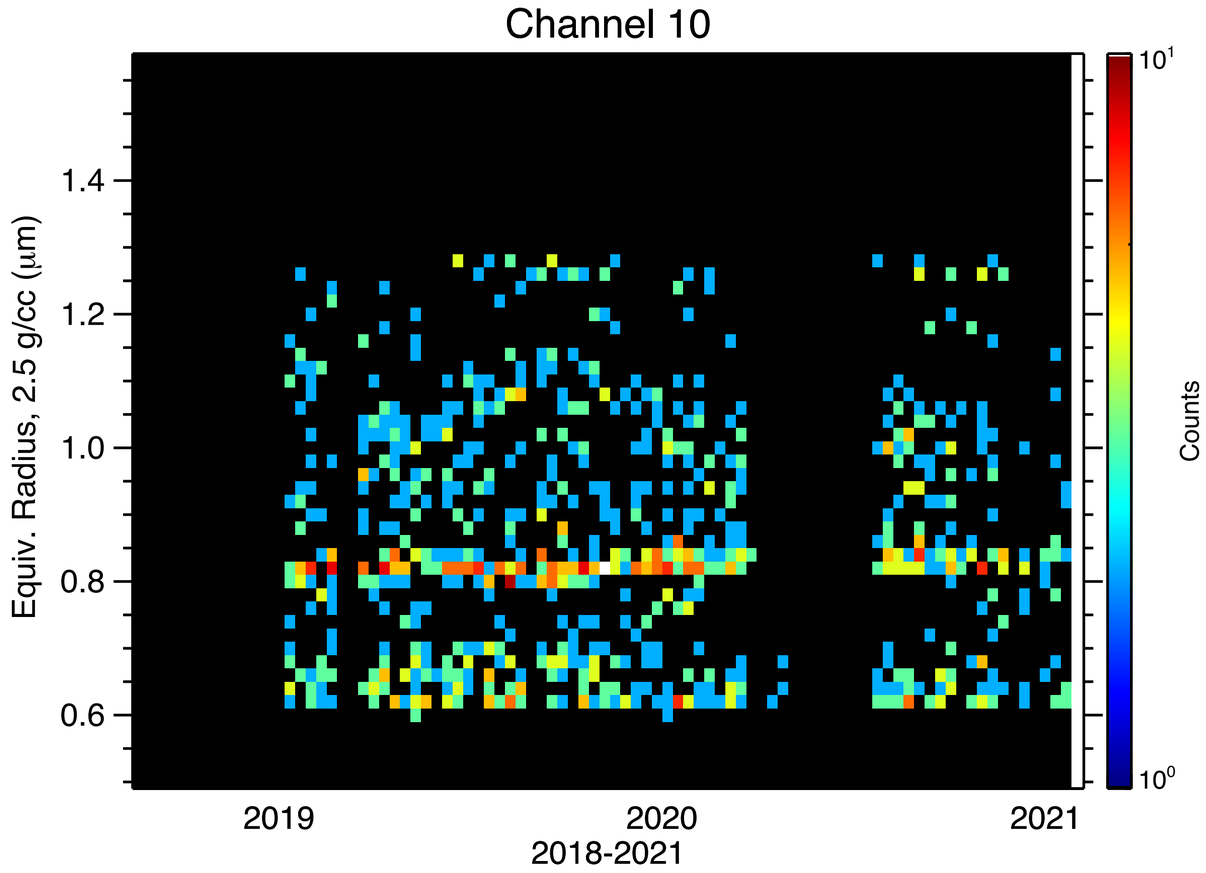
Level 3 Data: Individual Channels



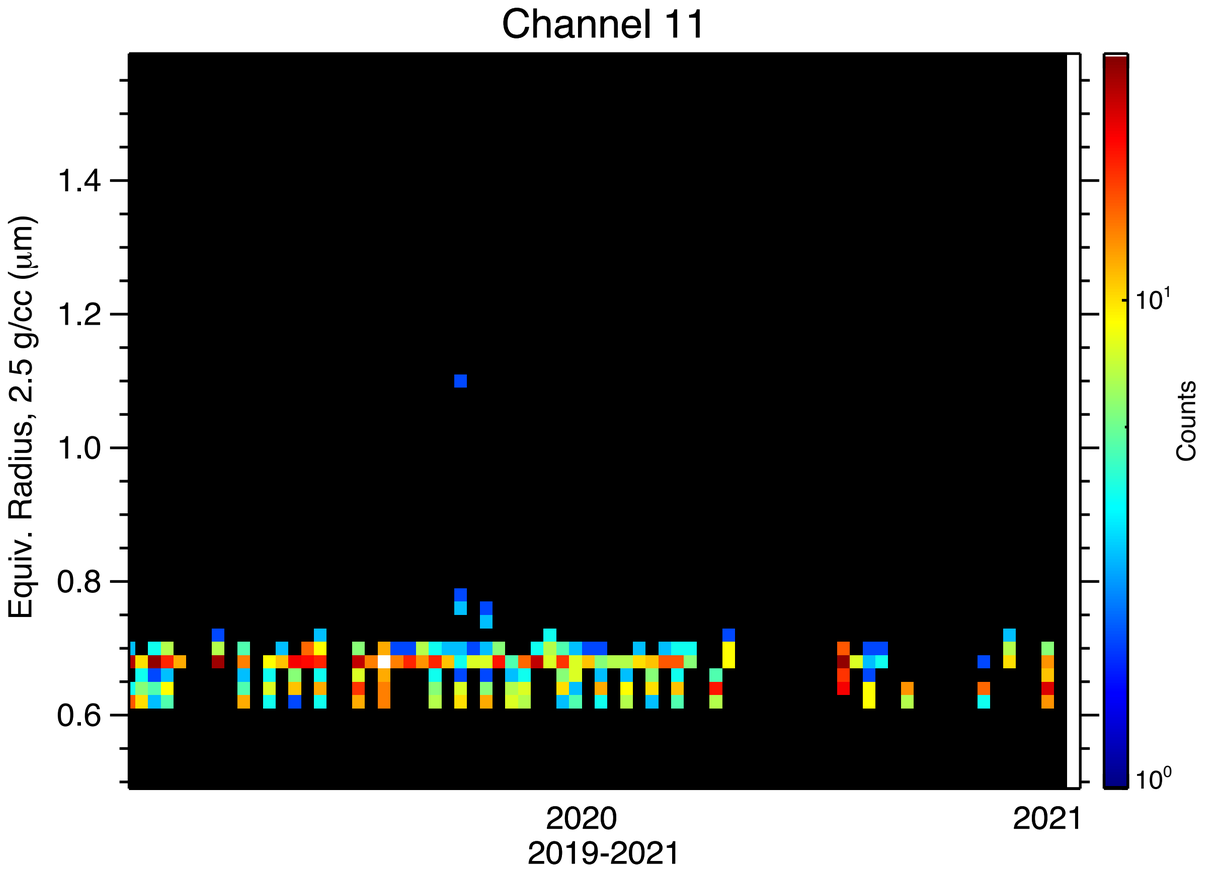


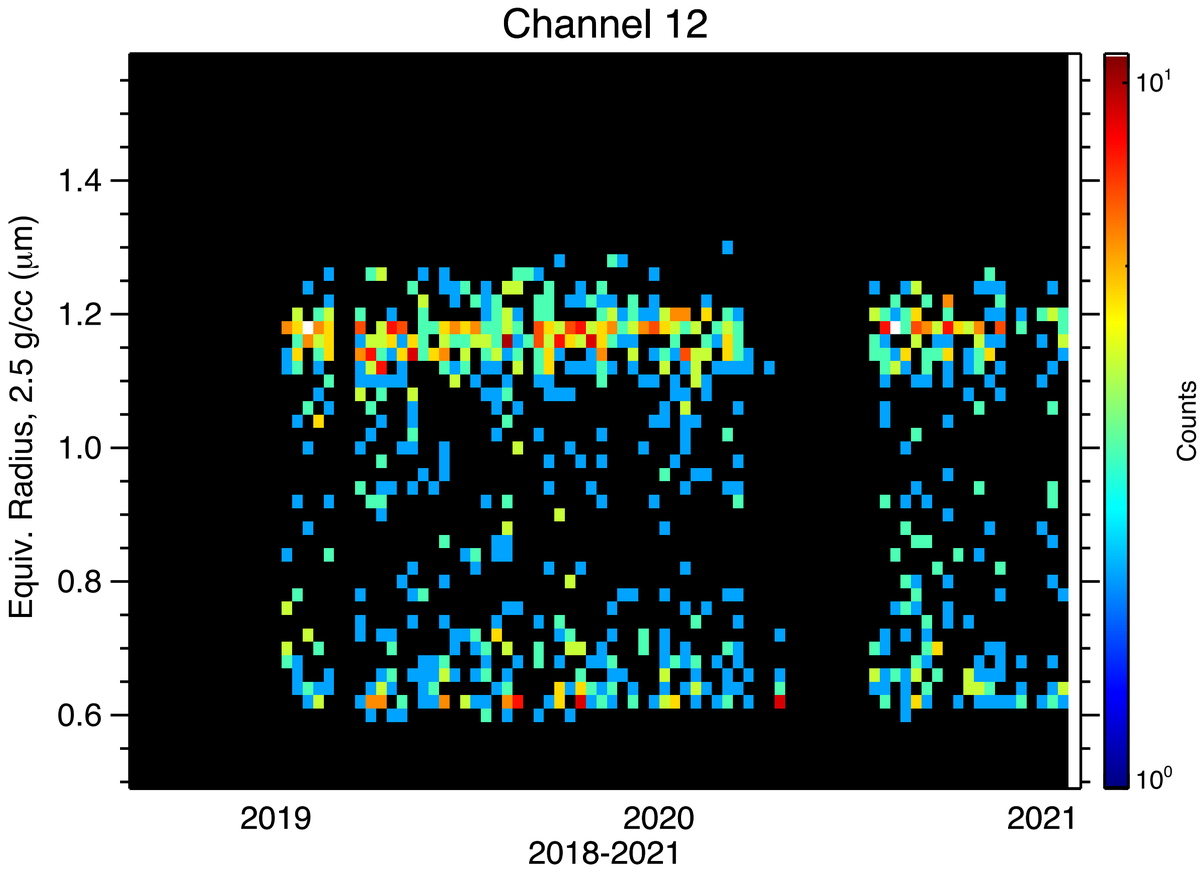
Level 3 Data: Individual Channels



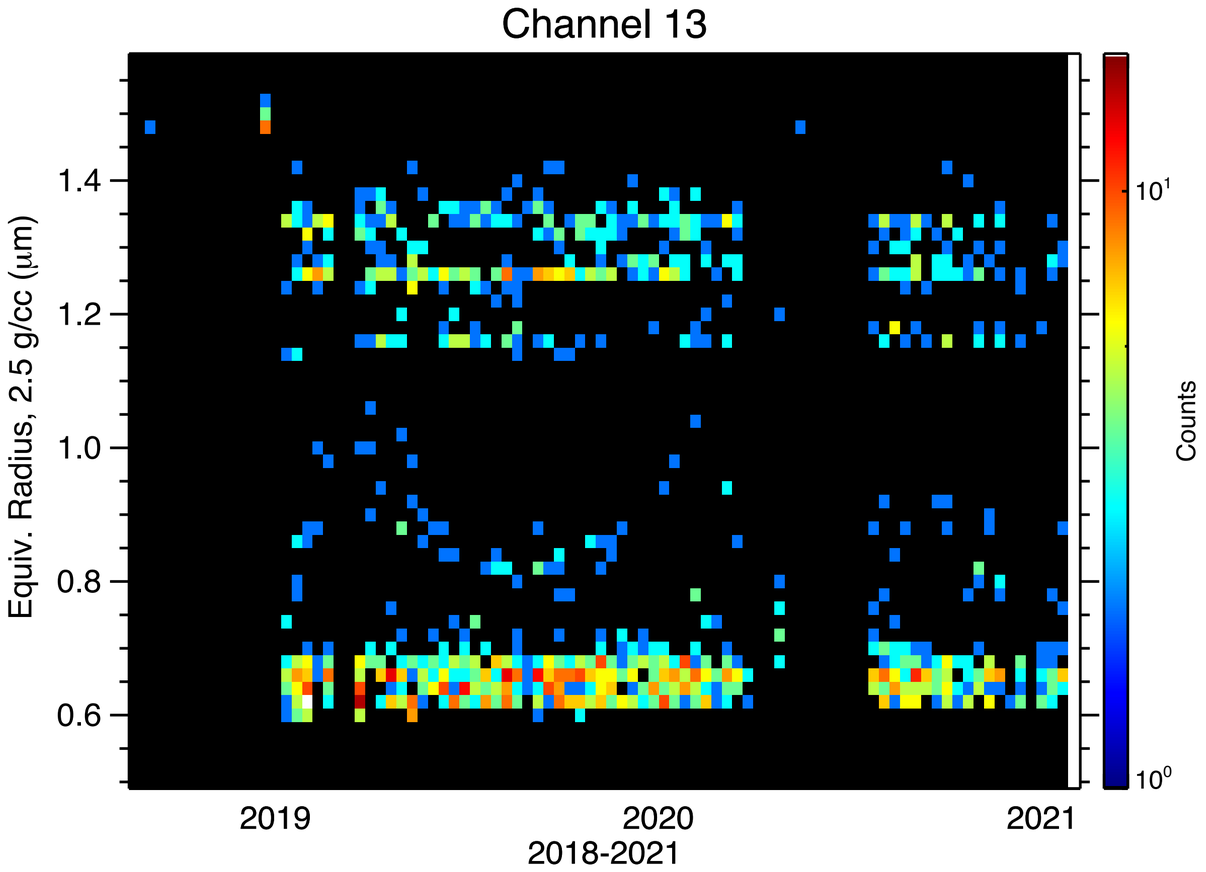


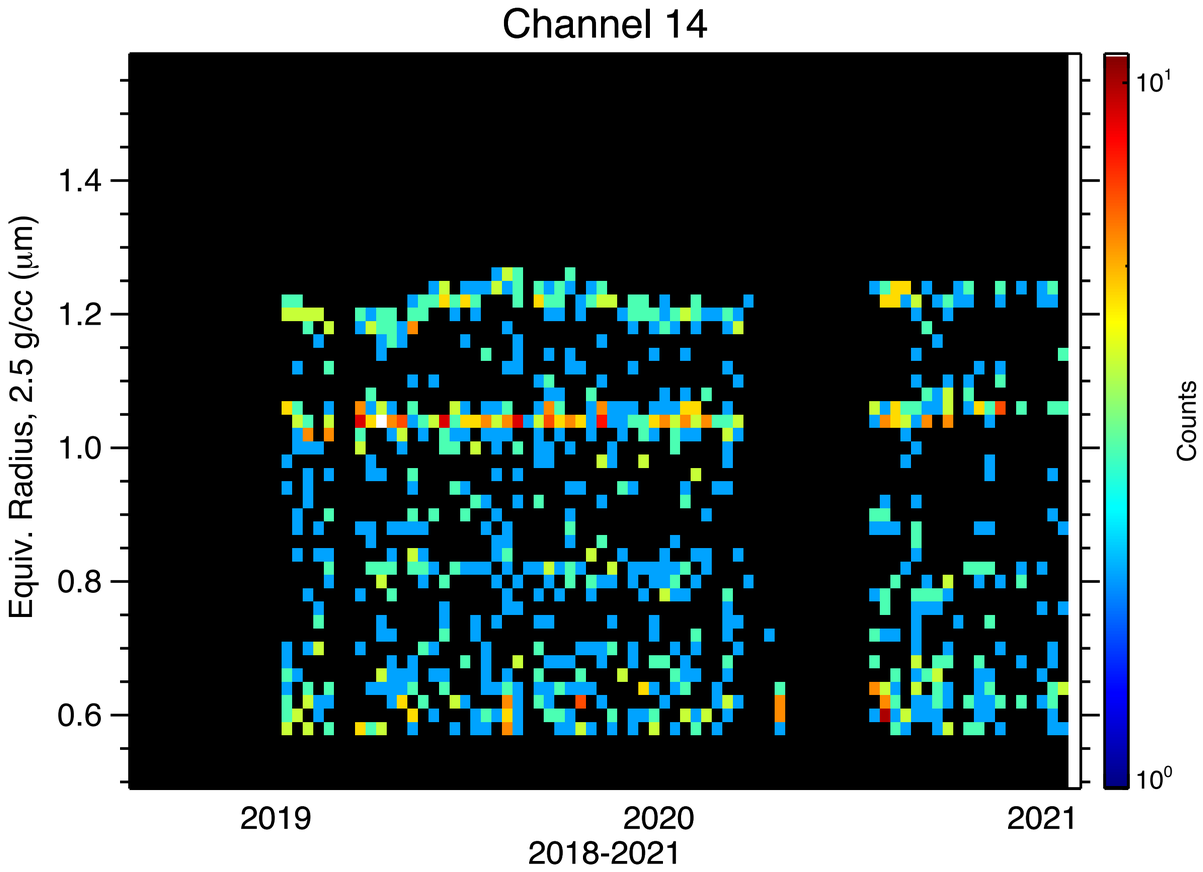
Level 3 Data: Individual Channels



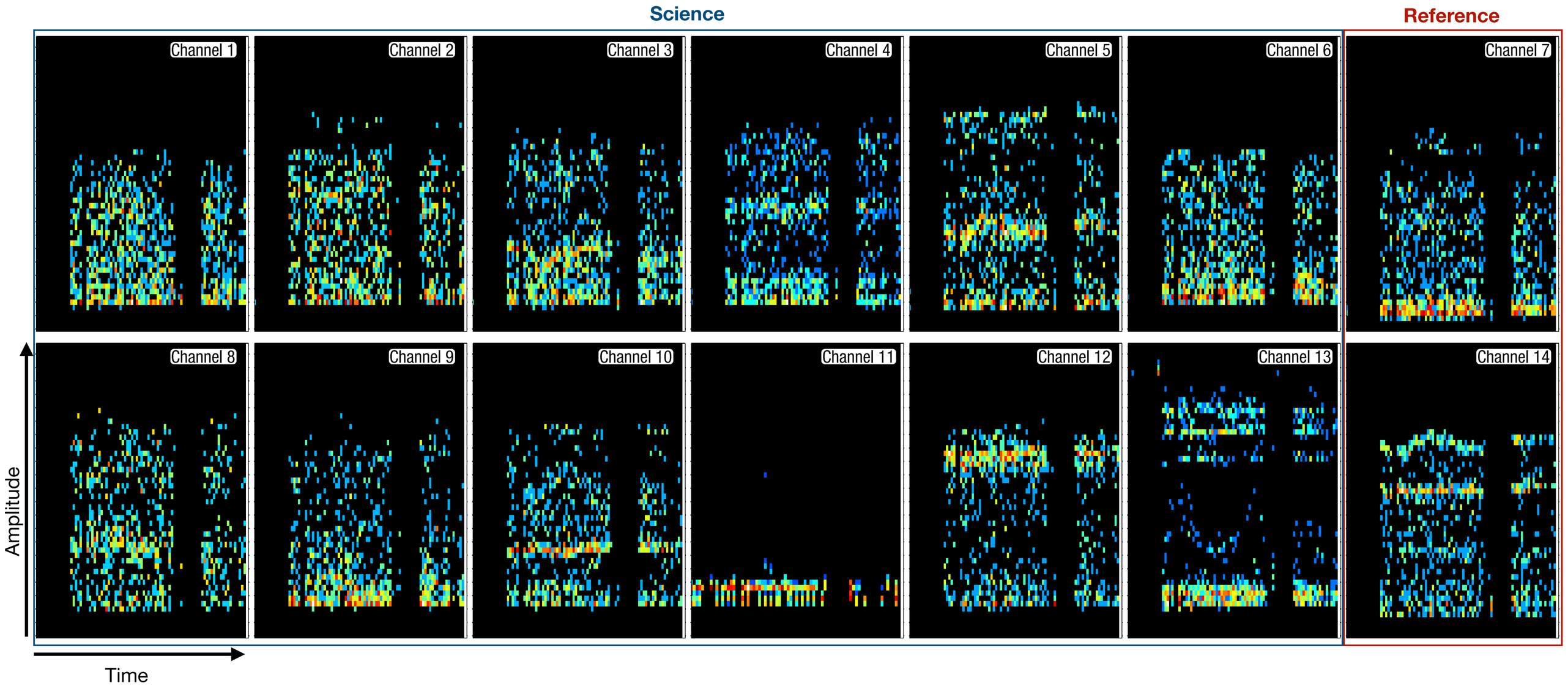


Level 3 Data: Individual Channels





Level 3 Data: All Channels



Assessment of Level 3 Data

- Read Level 3 data: nh-a-sdc-3-kem1-v5.0
  - Covers 2018-226T21:08:56 to 2021-037T21:47:01
- On/off times located in //document/sdc_on_off_times_v0845.tab
  - Provides sufficient information to calculate fluxes
- Channels exhibit very different amplitude distributions as a function of time
  - Non-power-law distribution in charge/size.
  - Non-monotonic peaks in amplitudes at different amplitudes across different channels.
  - Fluxes calculated by differences between cumulative rates across channels would incorporate these distributions.
  - Possibility of noise sources not currently accounted for.