RHESSI Mission Update

R. P. Lin

Space Sciences Lab

University of California, Berkeley

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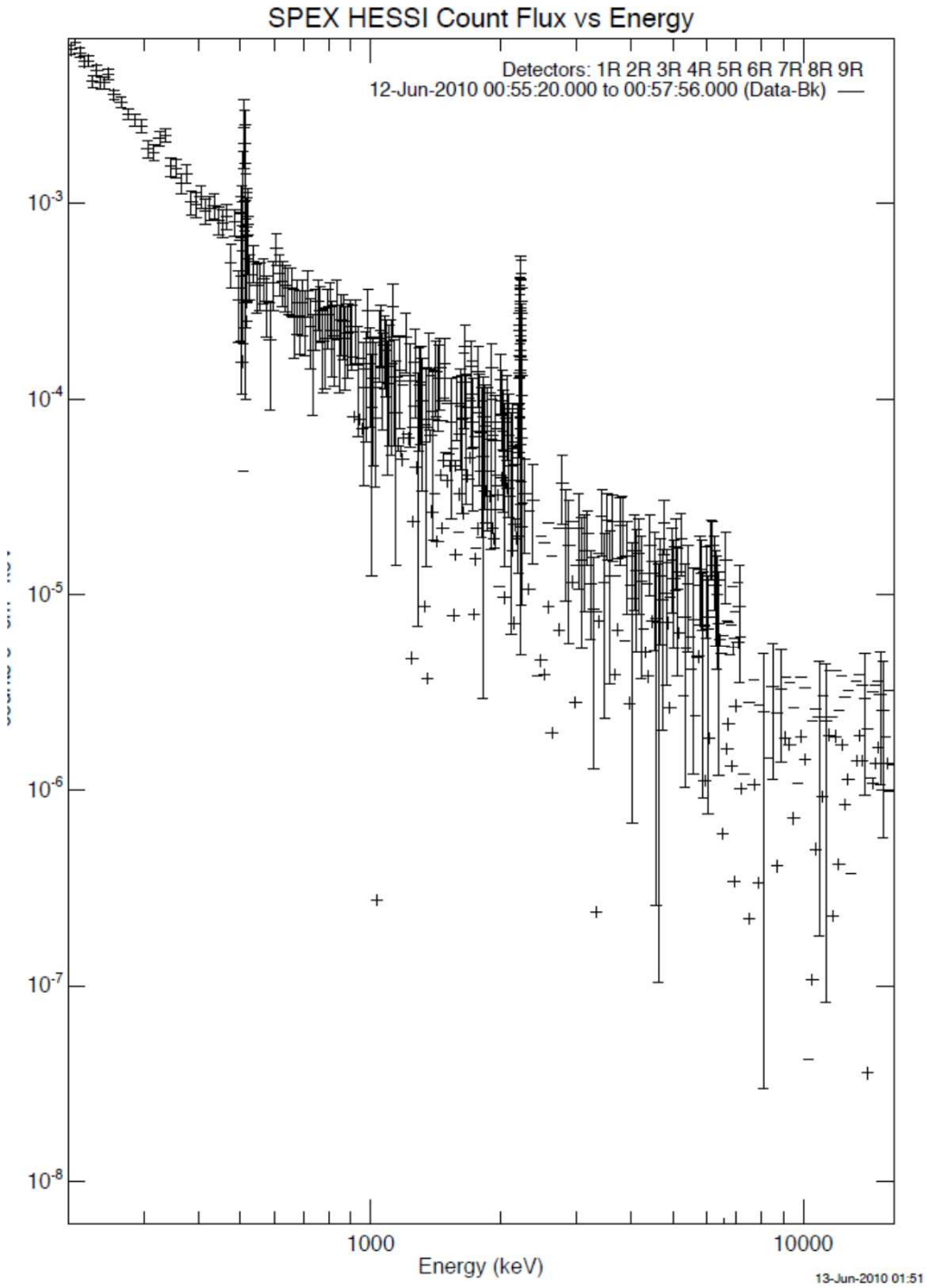
- RHESSI anomaly - March16, 2010
- Heliophysics Senior Review - April 20, 2010
- RHESSI back in operation - May 1, 2010 after detector anneal
- Finally solar activity - gamma-ray line flare June 12, 2010
- Senior Review results - July 15, 2010
- RHESSI cryocooler current increase - January 15, 2011
- RHESSI starts 10th year of operation - February 7, 2011



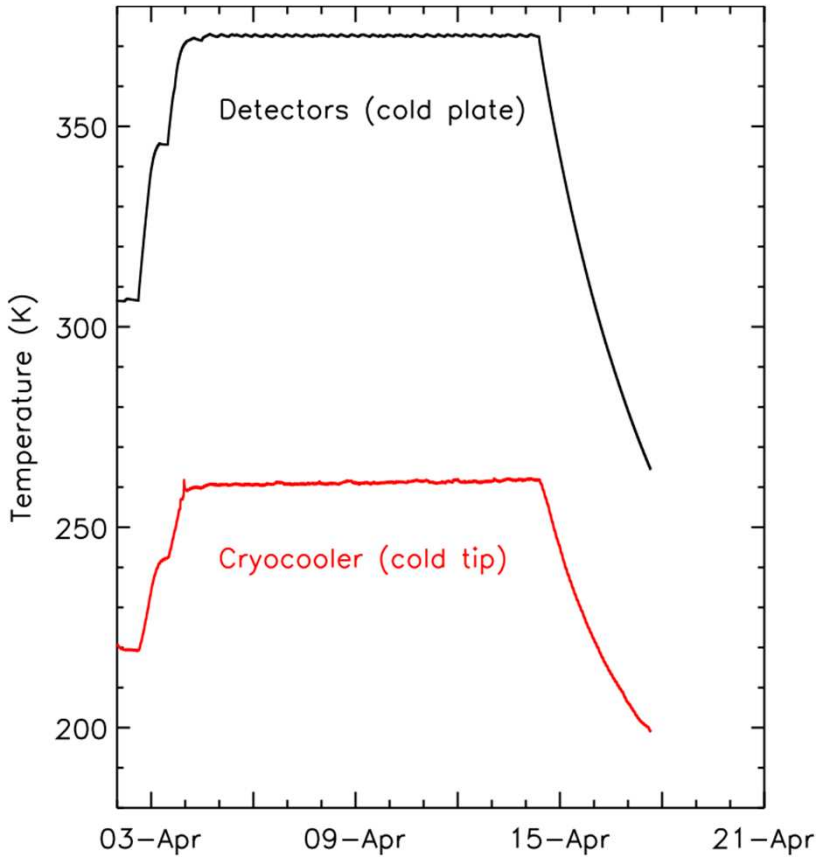
June 12, 2010 Gamma-ray line flare

Courtesy Gerry Share

RHESSI Anomaly

- 2010 Mar 16, 07:27 UT
  - Clock stopped
  - All non-essential systems off
  - Battery under-voltage and cold (-36 C)
  - Charge level at lowest setting
  - Cryocooler off – detectors warming up
  - Protected by “Lazarus” circuitry
- March 17
  - Began recharging and heating up the battery
- March 18
  - Spacecraft systems turned on
- March 19
  - IDPU turned on
- March 20 – April 1
  - Heated to ~30° C to evaporate condensates in spectrometer
  - Began preparations for annealing the detectors

RHESSI Detector Anneal



- Anneal
  - ~100 ℃ for ~10 days
  - Cryocooler at safe power level (20 W)
- Cool-down
  - Started April 15
  - Cryocooler power increased to 80 W (max.)
  - Expected to reach operating temperature (<100 K) in about a week

Anomaly Investigation

- Original Cause unknown
  - Spurious undervoltage (UV) trip
- Possible Causes
  - Electronic noise spike?
  - A spike caused overcurrent (OC) trip in NEB1 on March 20
  - Occasional spikes seen before(?) and after anomaly
- Impacts
  - Allowed condensate outgassing and detector anneal
  - Aspect control system detuned but still meets imaging requirements
- Preventative Steps
  - Disable hardware UV and OC trips
    - Retain software trips programmable via Flight Parameter Table
  - Increase battery charge to level 3 (from previous level 2 of 15)
    - Provide extra margin on end-of-night voltage

NASA Heliophysics 2010 Senior Review

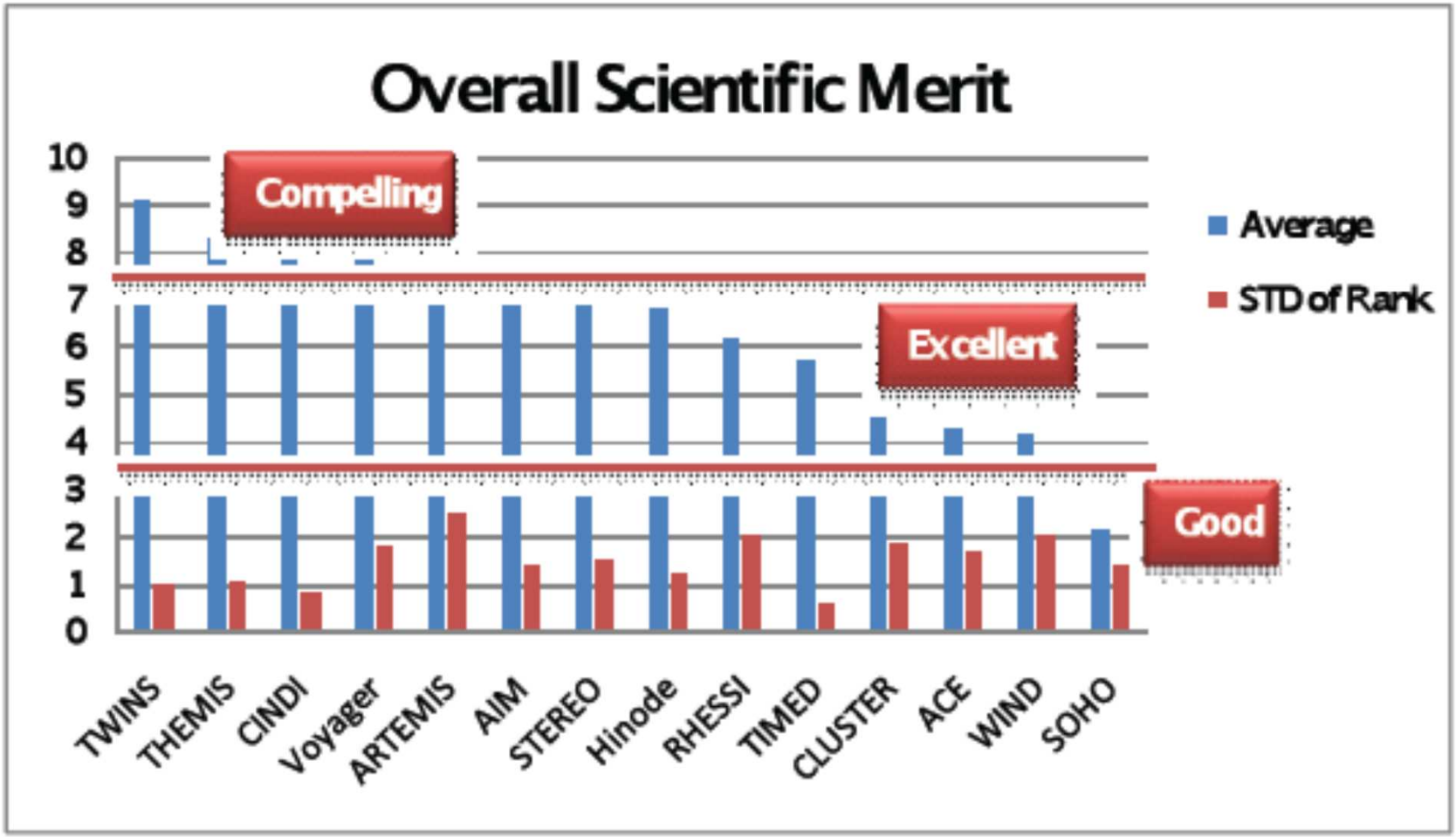


Figure 1 Senior Review panel rank of the overall scientific merit of the proposed extended missions

NASA Heliophysics 2010 Senior Review

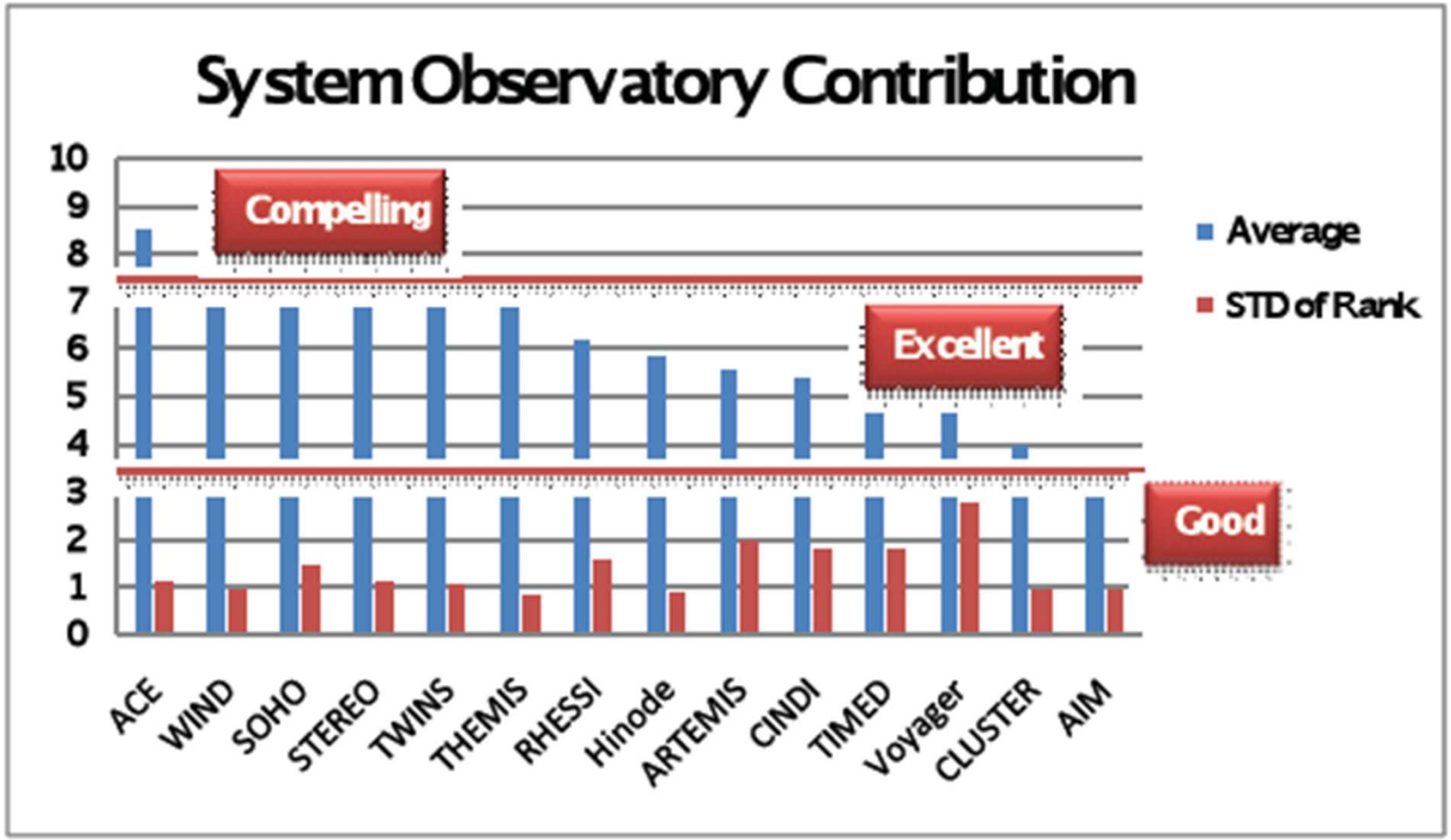


Figure 2 Senior Review panel rank of the contribution to the Heliophysics System Observatory goals