SECCHI Operations During the Extended Mission

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Current SSR1 Synoptic Program

Telescope	# Images and Size (pixels)	Exposure (seconds)	Cadence (minutes)	Total Images/Day	Compression Scheme	Total Mbits/Day
EUVI	1 2k x 2k (171)	4	2.5	575	ICER6	
	1 2k x 2k (171)	16	120	11	ICER4	
	1 2k x 2k (195)	16	10	133	ICER5	
	1 2k x 2k (195)	16	120	11	ICER4	
	1 2k x 2k (284)	32	10	143	ICER6	
	1 2k x 2k (304)	4	10	133	ICER5	
	1 2k x 2k (304)	4	120	11	ICER4	
	4 2k x 2k (All)	16/16/32/4	1440	4	ICER0	
COR1	3 1k x 1k (pB)	1.7	10	432	ICER5	
COR2	3 2k x 2k (pB)	6	30	142	ICER3	
	1 2k x 2k (B)	6	30	48	ICER3	
	1 2k x 2k (B)	72	1440	1	HC4	
HI1	1 1k x 1k	1200	40	36	Rice	
HI2	1 1k x 1k	4950	120	12	Rice	
Total				1693		4870.4

Current SSR2 Synoptic Program

Telescope	# Images and Size (pixels)	Exposure (seconds)	Cadence (minutes)	Total Images/Day	Compression Scheme	Total Mbits/Day
EUVI	1 2k x 2k (171)	4	2.5	525	ICER6	907.7
	1 2k x 2k (171)	16	5	274	ICER4	944.5
	1 2k x 2k (195)	16	10	142	ICER4	489.5
	1 2k x 2k (284)	32	5	167	ICER6	288.7
	1 2k x 2k (304)	4	2.5	429	ICER4	1478.8
COR1	3 1k × 1k	1.7	10	432	ICER5	1103.3

- EUVI SSR2 observations are interleaved with SSR1 observations to increase the image cadence in all wavelengths by at least a factor of 2 from that obtained with SSR1 alone.
- COR1 SSR2 observations are interleaved with SSR1 observations for an effective image cadence of 5 minutes.
- COR2 and HI images are onboard sums of individual images with shorter exposures.
- Program fills SSR2 in about 3.7 hours, after which the oldest data get overwritten, unless an event trigger is set.
- This program takes a total of 6275 images per day (SSR1 and SSR2 combined).
  - Some of these images are also processed for space weather.

Science Objectives During Extended Mission

- **Origin of SEPs**
- **CME Initiation**
- **CME propagation**
- **3D reconstruction**
  - **Triangulation using coronagraphs?**
- **Campaign observations (e.g. L4/L5 campaigns)**

- **SSR1 observations continue to provide the background synoptic program, with reduced image cadence and/or spatial resolution compared to nominal mission.**
- **Increased reliance on SSR2 (event buffer) observations to meet science objectives.**

Data Volume During Extended Mission

Date Ahead	Date Behind	Telemetry Rate (kbps)	Pass Duration (hours)	SECCHI Data Volume (Mbits)*
Jan 2007	Jan 2007	720	4	6158
Oct 2008	Sep 2008	480	5	5048
May 2009	Jun 2009	360	6	4475
Aug 2009	Sep 2009	240	7	3371
May 2010	Dec 2009	160	8	2433
Apr 2011	Nov 2010	120	8	1716
Sep 2011	Sep 2011	96	8	1286
Aug 2012	Aug 2012	30	10	167

* Based on known variables and current experience.

Proposed SSR1 Synoptic Program

Telescope	# Images and Size (pixels)	Exposure (seconds)	Cadence (minutes)	Total Images/Day	Compression Scheme	Total Mbits/Day
EUVI	1 2k x 2k (171) 1 2k x 2k (171) 1 2k x 2k (195) 1 2k x 2k (284) 1 2k x 2k (304)	4 16 16 32 4	5 120 120 120 120	288 12 12 12 12	ICER6 ICER4 ICER4 ICER6 ICER4	
COR1	3 512 x 512 (pB) 1 512 x 512 (B)	1.7 1.7	240 5	18 282	ICER7 ICER7	
COR2	3 1k x 1k (pB) 1 1k x 1k (B)	6 6	240 15	18 90	ICER6 ICER6	
HI1	1 1k x 1k	1200	60	24	Rice	
HI2	1 1k x 1k	4950	120	12	Rice	
Total				780		1680.0

- EUVI emphasis is on one wavelength at any time.
- COR emphasis is on total B, with reduced spatial resolution (but increased cadence for COR1).
- Minimal impact on HI observations (HI1 cadence reduced from 40 minutes to 60 minutes).
- Fits within the expected SECCHI daily data volume at 120 kbps.