NASA Mission Management Updates to the Hinode Science Working Group

September 2019



On behalf of the US instrument teams



CLASP-2

- Successful sounding rocket launch April 11, 2019.
- IHOP 368
- Science Target: Chromospheric magnetic fields
- Spectropolarimeter (Mg II h and k ~ 280 nm)
- Zeeman and Hanle effects
- Requested complementary Hinode (particularly SOT SP) and IRIS observations.



AIR-Spec

- Successful high altitude aircraft flight July 2, 2019.
- IHOP 374
- Science Target: IR emission above the limb during eclipse
- Infrared spectrometer
- Requested complementary Hinode (particularly EIS) observations.



BITSE

- Balloon launch window August 27 September 15.
- IHOP 385
- Science Target: Coronal heating and solar wind acceleration
- Coronagraph $(3.5 8 R_{sun})$ not much information provided on instrument
- Requests complementary Hinode (particularly EIS) and IRIS observations.



ESIS/MOSES III

- Sounding rocket scheduled for September 24, 2019 launch.
- IHOP 380
- Science Target: Explosive events in the transition region
- Slitless spectrographs with multiple projections (Ne VII 465 A;
 O V 630 A)
- FOV: 20'x10' and 10'x10'
- Requests complementary Hinode (all) and IRIS observations.



EUNIS

- Sounding rocket scheduled for November 13, 2019 launch.
- IHOP 365
- Target: nanoflare heating
- Two co-aligned EUV multilayer telescope/spectrographs.
- 11' slit rasters across 2'
- Requests complementary Hinode (particularly EIS for calibration) and IRIS observations.



MaGIXS

- Sounding rocket scheduled for April 2020 launch (slip likely).
- IHOP not yet submitted.
- Science Target: AR loop heating frequency.
- Soft X-ray spectrograph (6-25 A)
- Will request complementary Hinode (XRT & EIS) and IRIS observations.



Ground-based

- WHPI (Whole Heliosphere and Planetary Interval) observing campaign
 - international initiative to study the entire solar-heliospheric-planetary system during solar minimum
 - hundreds of participants worldwide
 - focused on low-latitude coronal holes and recurrent high-speed solar wind streams
- ALMA (upcoming dates not yet provided):
 - various science targets
- GREGOR
 - Flux cancelation; field intensification; vertical fields
- SST
 - flare ribbons / current sheet (ToO); flux cancelation
- Eclipse
 - Ground-based observations from Chile (PCH jets)
- BBSO
 - Flux emergence; open flux elements; outflows into the corona
- Hida
 - Spicules and prominences

2-6. Focused Mode



- Status: Operable
 - No major issues reported from the teams.
- Focused Mode coordination
 - Routine communication during weekly instrument team meetings
 - Biggest challenge is ToO observatory coordination (ALMA/NuSTAR)
 - Savage is monitoring and communicating priorities as appropriate
 - Mid-week pointing changes implemented when necessary
 - Bamba-san (continuing?) has been monitoring solar conditions and suggesting repointing when appropriate (conditions have been exceedingly quiet)
 - Priority list circulating with weekly meetings
 - Active Region evolution (flux emergence, waves in sunspots, flare monitoring)
 - Coronal Holes
 - Prominence / Filament
 - Disk-center (long baseline synoptic scans)
 - Polar magnetic network

2-6. Focused Mode



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*** CLASP-2 launched April 1. ESIS launches in Sept. EUNIS launches in Nov. Other launches / campaigns [PSP – March, Sept; ALMA – April & Oct-Mar?]

2-6. Focused Mode



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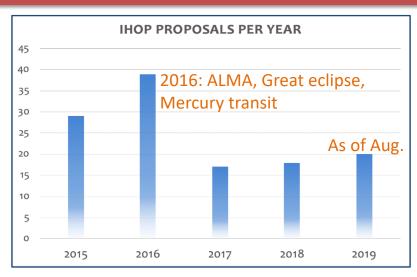
*** MaGIXS launches in 2020 (Spring 2020, Date TBD).

Other launches / campaigns [PSP – March, Sept; Solar Orbiter – April 27 – May 10; ALMA – Oct-Mar?]

2-7. HOP Updates



- IHOP program healthy
 - 385 total as of Aug. 2019



- HOP activity since Hinode 12 meeting:
 - PSP coordination
 - ALMA observations
 - WHPI campaign
 - Eclipse (Jul 2)
 - Continuing Cycle 25 Bright Points (<u>IHOP 336</u>)
 - weekly campaign to observe solar cycle BP dependence since March 2017
 - CLASP-2, AIR-Spec, Hida, BBSO, SST, GREGOR, ESIS, EUNIS
 - Long period pulsations, photospheric/chromospheric coupling, jets, flux cancellation, filaments, ribbons/current sheet, emergence, plasma beta, field intensification, vertical fields, outflows

3-2. NASA situation

- Senior Review Call for Proposals expected to be released Fall 2019.
 - Presentations Spring 2020
 - Review Forward Work from 2017 SRP