

Science Operations

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The Good

- New instrument developments, more opportunities
 - Dual Cryo-cooler system operative (LFA/HFA, 4GREAT/HFA)
 - 4GREAT commissioned
 - HAWC+ hold time extended
 - Uncertain until start of OC5N flights.
 - Hold time now allows “standard” 10h flights
 - Flight planning reworked to take advantage
- Supported many, standard and unique flights (SciOps and SDP team)
- Good response to Cycle 6 – positive feedback from GOs
 - USPOT tool well received, help desk well used and responding
 - 3 “Community days” (Madison, Toledo, Boston)
 - Several invited colloquia (Chicago, Athens, etc.)

More Good

- Planning tools updated
 - Cycle Scheduler now has rudimentary ability to lay out flight plans
 - Improves the long-range predictions
 - Short Term Scheduler now simulates calibration for all instruments
 - Provides much improved initial plans (at least for some instruments)
 - Cycle 6 selections planned using “full” STS simulations
 - P1 and P2 only
 - Will run full selection before formal schedule acceptance

More Good

- Nimble and flexible staff, able and willing to respond to changes in the flights schedule and re-plans
 - Re-planned many of the series
 - Good integrations between Science Flight Planners and Instrument Scientist
 - Adjusted, supported, and flew the science flights
 - Re-planned second half of OC5 over summer
 - Used CS and STS for re-plan of second half of OC5, and OC6
 - Planned and evaluated several alternate flight series

The Bad

- Lost
 - All (6 flights) of OC5D (FORCAST)
 - 1/2 (5 flights) of OC5E (HAWC+)
 - 3/4 (5 of 8) of OC5I (FIFI-LS)
 - 3/4 (7 of 11) of OC5K (FORCAST)
 - 1/4 (5 of 18) of OC5N (HAWC+)
- Fewer GO flyers, worse support offered

Series	Instrument	Flight Dates	Flight Plans	Flown
OC5A	GREAT	4	4	4
OC5B	FIFI-LS	8	8	8
OC5C	EXES	6	6+2 ¹	6
OC5D	FORCAST	6	10	0
OC5E	HAWC+	7	10	5
OC5F	EXES	3	3	3
OC5G	GREAT	7	9	7
OC5H	GREAT (NZ)	12	12	11
OC5I	FIFI-LS (NZ)	6	6	3
OC5J	FORCAST (NZ)	6	7	4
OC5K	FORCAST	10	20	4
OC5L	FLIPO	4	4	4
OC5N	HAWC+	19	26+2	14(?)
OC5O	EXES	7	7	N/A
OC5P	FORCAST	4		
OC5Q³	FIFI-LS	8	8	
LIGO DDT	FORCAST	2	2	

So many plans...

- Re-planning attempts to salvage lost science **(which everyone wants!)**
- Science Flight Planning requires the interaction between SFP and IS.
- With a significant amount of re-planning less time is available for user interactions and research

Footnotes:

1. Alternatives for phasing of Europa obs.
2. Long and short series, re-plan after lost flights
3. Developed in case HAWC+ needed two additional weeks to be ready to fly.

The Challenge - staffing

- We have lost, or about to loose, a number of staff scientists
- Recruitment is active:
 - Hired new EXES I.S. (Curtis DeWitt, coming on in January)
 - Interviewing HAWC+ I.S. candidates in December
 - Interviewing FIFI-LS/GREAT candidate in December
 - Several job ads out for
 - Instrument Scientist
 - Instrument Support Postdocs [new]
 - Pipeline software engineers (SDP)
 - Will be recruiting at the AAS in D.C.
- But the pool of applicants is thin
 - Often only one or two viable candidates for I.S. positions
 - We see the shift in IR astronomy from ground/sub-orbital to space
 - Several declines
 - Cost of living, Research time, Senior review (uncertainty)

Instrument Scientist Roster

Instrument	Prime	Backup	Note
EXES	DeWitt	(Richter)	DeWitt Jan 2
FIFI-LS	Klein	Vacant	Klein to U.S.
FLITECAM	Vacca	Hamilton	
FORCAST	Helton	De Buizer	
FPI+	Phüller	-	
GREAT	Chambers	Sandell	Interview Dec
HAWC+	Hamilton	Lopez-Rodriguez	Interviews Dec
HIRMES	Vacant		
Instrument Support Post-Doc			Recruiting

- The Good:
 - Several improvements in the science instruments
 - Dedicated, skilled staff
 - Good response to Cy 6 CfP
 - Planning tools getting sophisticated
- The Bad
 - A large amount of re-planning required in Cy 5, stretching the staff
- The Challenge
 - Staffing situation
 - Recruitment and retention
- Questions?