

## Minutes of JCSA Meeting December 8-9, 2014

The Winter 2014 JCSA meeting was convened by telecon on December 8-9, 2014. Kavelaars, Martin, Cumming, Hinshaw, Laurin, Ouellet, Dupuis, Hipkin, Saad, Naylor, Thacker, Sawicki, Boston, Doyon, Hudson, Hutchings, McNamara.

### **Introduction and CSA update:**

New membership: Marcin Sawicki to replace McNamara (OTHERS)  
Luc Brule - now Acting President of the CSA  
Erik Dupuis - Acting Exploration Development Director  
Canadian Space Conference to be held in March 2015  
Canadian Space Exploration Workshop to be held 9-12 June, 2015  
MOST Satellite was sold to MSCI (Toronto) on October 14; science support to UBC to end early in 2015, when archive activities are completed.  
HIFI/Plank are post-operational with CSA support for archiving  
ASTRO-H CAMS experienced problems earlier in the year, but is now on-schedule for delivery in Jan. 2015.

NEOSsat is not fully operational due to pointing and electronic noise problems. However, fine pointing has been achieved with future promise. Questions were raised about its ability to achieve limiting magnitude specification, but numbers were unavailable.

### **Afternoon Session Monday**

NSERC representative Elizabeth Boston presented an overview of developments at NSERC. Highlights included:

\$15M added to the 2014 Discovery grants; \$9M for indirect costs.  
Canada First excellence Research Fund launched in December 2014

JCSA is pursuing a grant program administered jointly by NSERC and the CSA to fund astronomical research performed using Canadian space assets. Boston recommended the JCSA develop strong arguments and demonstrate community support for a new joint funding model with NSERC. The arguments should link to international collaborations.

Vicki Hipkin discussed the Space Exploration Workshop scheduled for 9-12 June 2015. An organizing committee is being constructed. A JCSA volunteer was solicited.

JWST discussion lead by JWST project manager Karl Saad and by Rene Doyon

Treasury Board approval is anticipated by Feb 14 for funding through commissioning in 2019. The detector swap continues.

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Rene Doyon presented NIRISS highlights: 1) launch date is holding steady and costs have remained within the reserve budget with good prospects to remain within budget. 2) NIRISS is delivering excellent image quality consistent with spec. Issue: a glint ghost was found in GR150R grism. The team has a spare grism but it must be flight qualified. 3) The new detectors look good and are being characterized. A flight grism cracked during shipment from the coater; the backup is available for flight.

### **Mike Hudson led the WFIRST discussion.**

Highlights included:

RFI to be issued in May 2014 pertaining to the IFU, photometric calibration, fine guidance, archiving, and Coronagraph

Science teams will be convened in early 2015.

Question: how can Canada become a major player during early survey planning, and how can we participate in the breakthrough papers?

Proprietary time allocation is unclear because WFIRST is primarily a survey telescope. Canadian access to and participation in catalog and calibration design and construction will be crucial. Benefits will come with team membership. Questions about terms of access to the 25% of GO time were raised. Not clear any of 25% GO time would be guaranteed to Canada. Total mission cost: \$2.1B including operations, but without the \$300M for coronagraph.

### **Rob Thacker led a discussion of the Mid-Term Review process**

- 1) White papers are being completed and submitted to the MTR committee.
- 2) The highest LRP2010 priority -- significant involvement in a Dark Energy mission -- is at issue. A role in Euclid has not been ruled out but Canadian participation would not come via the CSA. CASTOR another route to address the LRP2010 priority as is WFIRST. WFIRST will be expensive if Canada is to become a major player. An early election call could bring MTR timeline forward. The community needs a credible plan to move forward. The question arose whether DE remains the highest priority at the MTR. Canada's historical strength is geared toward wide field surveys, which would incorporate DE surveys. Commented that JWST overrun hurt Canadian astronomy and so using as a benchmark is not good – example of Canadian ambition.

### **David Naylor led a discussion on SPICA/SAFARI 2.0**

Major organizational changes have occurred. JAXA was to lead, but ESA recognized that JAXA underestimated the complexity and cost. Center of mass has shifted to ESA. The project must go in the M4 competition in Fall 2015. Safari instrument principal

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investigator is Pieter Roelfsema. SAFARI is an imaging FTS much like Spire on Herschel, but more sensitive. Project is now 75% ESA 25% JAXA. SRON Netherlands now leads both Safari and the program as a whole. Canada, being a Safari partner, would benefit, with access to the entire facility. The coronagraph has been de-scoped so that Safari is now the primary instrument, which is a good opportunity for Canadian participation.

Naylor reported that no SPICA proposal was submitted to the M4 competition last September. Apparently, Favata (ESA) and Tsuneta (JAXA) attended a SPICA Consortium meeting on the very day of the submission deadline. It seems Japan underestimated the cost by a factor of two and ESA is experiencing cost overruns on other missions. Whether an M5 call for SPICA will happen isn't clear. The instrument must be chilled to 6K which will drive up cost. A cost report on the observatory is due in the March 2015 timeframe.

Naylor's group request: Current development contract ends 30 June 2015. Assuming SPICA proposal will be submitted to M5, he will need a new contract totaling \$82 K through March 2016. One additional year of R&D could be funded at a total cost to the CSA of \$109K.

Question: What would be the science return to Canada? Unclear but perhaps two SAFARI co-I's Naylor (instrument) and a science PI to be named, plus ten scientists with access to guaranteed time.

Question: Would the mission be driven exclusively by guaranteed time teams? Will a GO program be initiated? Possibly to both questions, but perhaps in a survey mode. Indications are a PI program will be available. Time allocation: 1/3 to instrument builders, 2/3 open to all.

### **MTR JCSA white paper Discussion**

Discussion centered on moving forward with CASTOR Phase 0 and worries about apparent lack of the ~\$1M needed. The committee expressed the view that CASTOR may be easier to sell than WFIRST, although WFIRST obviously fills the LRP2010 dark energy priority. Discussion was hobbled by lack of full cost estimates for CASTOR. Committee agreed that without a strong statement in favor of CASTOR from the MTR, the Phase 0 study will not move forward.

A discussion of potential new projects identified the coronagraph on WFIRST, WISH, SAFARI, Athena. All are expensive.

### **Day 2 12-9-14**

#### **Hutchings discussed progress on UVIT/ASTROSAT**

A grounding problem arose with Vis during testing at ISRO with a fix in progress.

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First science is intended to showcase the observatory's capabilities, e.g., observe M33 and M31 in the X-ray and UV bands to study nuclear variability and make echo maps. The instrument includes many UV filters capable of separating continuum from lines in the far UV, near UV, and visual bands.

Canadian observing time will be allocated separately through CANTAC but procedures have not been fleshed out.

Canada will receive five percent of the observing time.

The announcement of opportunity for proposals will be issued after the launch date has been set.

Guest observing time will ensue one year after launch. Data rights may be limited. Proposers must state which (co-aligned) telescopes they wish to use in the science proposal. Proprietary time is being negotiated but will likely be one year duration beginning at receipt of data. The first PV data will be immediately archived. In year three, 20% of the time will be open for all proposers.

### **CASTOR discussion**

A WP has been circulated emphasizing CASTOR's higher resolution and deeper image capabilities compared to, for example, LSST. CASTOR is designed to support dark energy surveys following the decadal mandate. Good progress is being made with detector design and concept development. A Phase 0 study is urgently needed. The science plan must be updated to support WFIRST, and or Euclid. Significant partners must be identified. France, US, India have all expressed interest but progress has stalled lacking a Phase 0 study.

**Alain Ouellette** discussed issues at the CSA.

Alain stated that WFIRST, WISH, CASTOR are all in play, but all are expensive and the CSA has little money to invest. The CSA may be able to scrape up money to explore one but not all.

Issue: Should a CASTOR Phase 0 take priority over WFIRST? A Dark Energy mission is the community's highest priority.

### **WISH: Marcin Sawicki**

Marcin discussed the release of a JAXA Announcement of Opportunity for a mission launching in 2023. The Japanese WISH team is preparing a proposal due February 16, 2015. Potential partners are asked to submit letters of support to be included in the proposal.

Marcin asks the CSA to provide a letter of interest. The proposal would eventually lead to a JAXA Mission Definition Review (MDR) to be completed by the end of March 2015. The projects selected through this process will proceed to a Science Requirements Review (SRR) in early 2016. The letter from CSA is expected to indicate interest and not a commitment.

The Canadian contribution could be toward a filter mechanism.

**Other issues:**

The Athena+ European X-ray mission has been selected for a 2028 launch — time is short to gain Canadian participation. The community should maintain contact with European colleagues to keep the door open.

**Reccomendations to CSA:**

- 1) Travel restriction: Astronomers are stakeholders in the CSA and we are taxpayers. The CSA has an international purview that relies heavily on partnerships. Unlike many government agencies, travel is an essential element of maintaining partnerships. Despite the desire to reduce government travel, it is counterproductive to self-impose a travel ban that obviously affects the CSA's ability to do its business.
- 2) The lack of funding for science performed with CSA assets is a longstanding issue for the JCSA. NSERC has expressed willingness to develop a joint funding model to support successful proposers on CSA assets. One such model would: JWST support framework proposed in Bob Abraham's white paper. We urge the CSA and JCSA to work with NSERC to develop a model as part of the MTR process.
- 3) The JCSA strongly encourages the CSA to commence both the CASTOR Phase 0 and WFIRST concept studies. Both address the highest priority in LRP2010, which is a DE mission. We encourage the CSA to continue to study WISH but not at the expense of WFIRST or CASTOR.
- 4) The shifting sands of the SPICA/Safari mission from a primarily JAXA led mission to a partnership with ESA has opened opportunities for Canada to become a major player in this exciting mission. Canada and Lethbridge are world leaders in cryogenic FTS imaging and spectroscopy. The JCSA urges the CSA to continue to fund Naylor's lab at \$83 K until March 2016 and if possible, an additional year for \$109K total.

Respectfully yours,  
Brian McNamara  
Chair, JCSA  
5-8-15