

## JCSA Meeting Report Nov 2015

*Due to budget and travel restriction issues the JCSA did not have an physical meeting in November. The committee met via teleconference to discuss some pressing issues and will meeting again (via teleconference) in February to discuss other less urgent issues.*

A teleconference call of the JCSA was held on Nov 30, 2015.

JCSA members in attendance:

Denis Laurent (CSA, co-chair)  
J.J. Kavelaars (NRC-Herzberg, co-chair)  
Andrew Cummings (McGill)  
Sarah Gallagher (University of Western Ontario)  
Sabin Stanley (U. of Toronto)  
Marcin Sawicki (St. Mary's)

Observers

Stephane Desjardins (CSA)  
Victoria Hipkin (CSA)  
Christian Lange (CSA)

No guests were invited to attend this meeting and no reports were solicited from mission/project leads. Reports will be solicited from the May 2016 meeting.

### AGENDA:

As this is a teleconference meeting and we wish to keep the time practice the agenda is quite limited:

- AstroSat status and support funding. (15 minutes)
- WFIRST status and activities. (15 minutes)
- CASTOR status. (15 minutes)
- New Member selection. (5 minutes)

### AstroSat Status

Denis Laurent reported on the recent successful launch and check-out of the ISRO AstroSat mission. The UVIT telescope (partially contributed by CSA) was not yet fully tested but electronics were working. There will be a call, in Spring 2016, for proposals to conduct low-resolution UV spectroscopy with this platform. The UVIT PI (John Hutchings) has some science support but needs additional support if this facility is to be fully exploited.

## Recommendation

*The UVIT PI is supported in his efforts and encourage to submit a funding proposal to the CSA. CSA is encourage to make a positive decision on providing the support needed to ensure that this mission has a strong impact for Canadian science.*

## WFIRST

The concept studies for the WFIRST mission have now completed. There is The committee heard from Denis that CSA has been invited, by NASA, to consider participation in the WFIRST mission.

This section includes missions that are currently funded and either operating or nearly operating.

**Astro-H:** Luigi Gallo provided a written report on the status of the mission. Astro-H is a JAXA led X-ray survey mission. The Canadian Astro-H Metrology System (CAMS), has been delivered to JAXA, mounted, aligned and tested and is working well. Direct support for a calibration scientist in Canada is no longer provided by CSA and CSA will be providing support to NASA. NASA is now responsible for post-launch calibration testing and CSA will be providing support for that effort. Launch is planned for early 3016. The Astro-H team in Canada will require support to ensure that Canadian science activity is available to exploit our contribution to the mission.

*RECOMMENDATION: The JCSA recommends that the CSA negotiate with the Astro-H science team to provide them with the level of Phase-E support required to ensure the successful science exploitation of the mission. This support level should be significant enough to support a small number of junior (PDF) researchers and enable the team to attend relevant science meetings.*

**BRITE:** Tony Moffat (UdeM) provided a written status report. The BRITE mission team has successfully developed analysis/processing procedures that largely correct the noise issues that were found after BRITE launch, as well as correcting some pre-launch. One of the Canadian BRITE nanosats did not detach correctly and is not operational, the team continues to hope that satellite will detach but this probability of this is no known. Due to some delays in launch and then the need to deal with post-launch noise issues the full science mission for BRITE is a bit delayed. The BRITE team requested from CSA some additional operational support to ensure that the science mission is achieved. The JCSA had previously recommended that this support be provided now. Additional support requests will be evaluated against the science productivity of the mission and the BRITE data access / distribution policy.

**CADC:** David Schade provided a presentation from the CADC. CSA provides support to the CADC via an MOU between NRC and CSA. Under this MOU CADC provides archive support for Canada's space astronomy platforms. In particular this MOU has supported the development of alternative archive approaches for HST, these approaches are developed by the CADC and the adopted by STScI. The CADC is now working with the other JWST archive partners to help enable the JWST archive. A proposed framework for a tripartite JWST archive is being drafted and will be provided to the three agencies for their comment and approval. The CADC contribution may come via the CANFAR project. Once agreed to, the CADC and CSA will develop the costing and funding of the Canada's participation in the tripartite JWST archive.

*The JCSA encourages the CSA to be receptive to the proposal for CADC participation in the JWST archive as the CADC has a proven history of providing high-value additions to the HST archive system that have been critical to delivering science from HST. More than half of HST science productivity comes from the archive and careful attention to the JWST archive will be critical to JWST's science success.*

**Herschel – SPIRE:** David Naylor provided a written report on work done for SPIRE. The team contributed the SPIRE\_CAL\_13\_1 content for the latest release of HIPE (Herschel Interactive Processing Environment). In the proceeding 6 months Canadian researchers appeared on 13 peer-reviewed publication using SPIRE data. The SPIRE team will be continuing to provide improved calibration, next release schedule for Fall 2016. The extended mission phase ends in July 2016.

**JWST:** Rene Dyon provided a verbal report during the meeting and submitted a written report (after them JCSA meeting, due to a technical issue). JWST is on-track, the 'half-time show' (refurb of NIRCcam, NIRSPEC and FGS/NIRISS) went as planned. The science instruments are back in the Integrated Science Instrument Module and ready for vibration and cryo-vac testing. The NIRISS team is starting to ramp-up work on the data pipeline. Jason Rowe will be joining the JWST team at UdeM in the fall. The FGS/NIRISS team will be making a call for new members the details are TBD. This call is to refresh and augment the team now that launch is immanent.

The JCSA re-stated a willingness to go to a shorter proprietary period for GO programs with the warning that this short proprietary period increases the need for some level of science support. The JCSA had a long discussion of various approaches that such funding should take. The conclusion is that the funding should be substantial enough to cover a significant fraction of the cost of getting JWST analyzed and the funding should be structured in a way that attracts very highly qualified junior researchers (PDFs) to work on the JWST data.

*RECOMMENDATION: The CSA should work with the FGS/NIRISS team and NSERC to establish a program of Postdoctoral Support targeted at JWST observing programs.*

*Support will be needed during the proposal phase through to publication. This might be structured as a contract to a small number JWST Fellows with the expectation that those JWST Fellows would then become involved in a broad number of science projects at different institutions across the country.*

**MOST:** MOST has been sold and operates on a pay-to-use basis. The CSA is aware that some science activities are continuing with the facility but is not involved in the operations. MOST is now a private facility.

**NEOSSat:** Denis Laurent provided a verbal report on behalf of the NEOSSat PI. The majority of difficulties associated with NEOSSat sensitivity issues are being worked through. At this time the CSA is reasonably confident that NEOSSat will provide a successful science return. The Space Surveillance component of NEOSSat requires less sensitivity and is successful operating. The team in Calgary is examining the currently available observations and will evaluate the viability of the mission and report back to CSA. No time line for this action was provided.

**Planck - HFI:** Richard Bond provided a written report on the current status of the HIFI component of Planck mission. The mission has been a tremendous success with very high publication and citation rates. Data reduction and analysis continues with the final data products expected to be completed in Spring 2016. The Canadian team has been included in the 'Core-2' group, which will provide the final maps for Planck and requests that their contract be expanded to cover costs until the final release is available.

*RECOMMENDATION: The JCSA recommends that, when feasible, the CSA pursue negotiations with the Planck-HFI team to provide continued support so that Canadian scientist can continue to participate in the Core-2 efforts to provide the final Planck data products, excepted completion is March 2016.*

**UVIT:** John Hutchings provided a written and verbal report on the status of AstroSAT/UVIT. The telescope is now being assembled at ISRO and a firm launch date (18-Septemeber-2015) has now been set. The telescope is working and effort is now focusing on the pre-launch calibration work and post-launch observing sequences and data processing.

There is concern that all expertise associated with data processing and observation planning is located in India and this will present challenges associated with data transfer rates, network latency and time-zones. The UVIT contract has a small support budget, which would not provide significant impact if spread across a even a small number of Projects. An AstroSAT data-specialist who is familiar many aspects of the facilities (in particular UVIT) and is prepared to provide community support while also pursuing their own science areas is an attractive option.

## Mission Opportunities

**Athena/IXO:** No report was provided. Athena plans continue to evolve, the current schedule is to target a mission for the 2028 time frame.

**CASTOR:** John Hutchings, on behalf of Pat Cote, presented the status of the mission. The Technology Study examining the detector feasibility has found that the filters available for CASTOR will introduce a substantial red leak. This is requiring a re-working on the optical design of the telescope with an investigation of using a beam splitter as a possible option. The team would like to see the current contract extended to allow the extra work of a new optical layout to be pursued. Any new design concepts will need to be vetted against the science case for CASTOR and this will require some additional support to the science team.

The JCSA was informed that the Phase-0 call has been delayed, with no certainty as to when this might proceed.

*RECOMMENDATION: The JCSA encourages the CSA to extend the contract for CASTOR technology studies so that they will be able to examine possible solutions to the red-leak issue that has been identified. The JCSA stress that the science team must confirm that changes to the design of CASTOR are acceptable. The JCSA encourages the CSA to find support for the efforts of the Science Team, as needed.*

**SPICA/Safari:** David Naylor provided a written report and also presented the report via teleconference. SPICA/Safari is a ‘cold mirror’ version of Herschel. This project has been supported by the CSA (and JCSA) for a fair while now. Unfortunately, the complexity and cost of the project have delayed the project and now a budget force ‘de-scope’ is occurring. The majority of participants are not particularly interested in a substantially reduced mission, and the reduce mission would results in a significant change in the Canadian contribution. *A firm decision on SPICA/Safari is expected in the fall and David Naylor’s request is that CSA provide a no-cost extension to the contracts he currently has in-place so that Canada is not seen to be leaving the project. Once the full details of the SPICA situation are in-hand a more complete evaluation of future participation will be conducted.*

*RECOMMENDATION: The JCSA sees the value in continuing to pursue participation in the SPICA/Safari mission and recommends that contacts associated with proposal be given no-contract extensions while the details of the mission are ironed out.*

**LiteBIRD:** There was no presentation on the status of LiteBIRD, however the JCSA recognizes that this project is participating in the same down-select as WISH and so we await further information on how these two projects are evolving.

**WISH:** Marcin Sawicki (who is also on the JCSA) provided a presentation on the status of WISH. WISH is a wide-field near-IR imaging telescope concept being studied by JAXA. A Canadian contribution for this mission (a filter exchange unit) has been identified. This mission is broadly supported in the Canadian astronomy community. In the coming months JAXA will announce if WISH will proceed to a Phase-0 study. At this time there are no formal estimates of the costs of providing a FEU for WISH and the FEU baseline design is an unknown risk. The WISH team would like to pursue a concept study of the FEU, in preparation for participation in a Phase-0 study with the JAXA WISH team.

*RECOMMENDATION: The JCSA repeats our previous recommendation that a concept study that evaluates a Canadian contribution to WISH be conducted. This study should be of sufficient detail to provide a firm cost/risk estimate associated with providing the WISH FEU and provide a detailed science impact assessment. This study should not be called for until after JAXA has determined if WISH will proceed to a Phase-0.*

**W-FIRST:** Mike Hudson, as the Canadian Science observer on WFIRST SDT, reported the status of the WFIRST mission. This presentation focused on the process for Canada to become a partner in the mission and process for organizing WFIRST Science Teams. NASA will announce a choice between the various models proposed in the SDT report. At this time there is no agreed on formula or expectation regarding how many Canadian scientists will be allowed to join the WFIRST Science Teams, what process will be used to assign them or what roles they will be allowed to play. The expectation is that these details will get settled through negotiations between the CSA (with representation from the Canadian astronomy community) and NASA. Likely those negotiations should be occurring while NASA is thinking about how to structure the call for science teams and instrument teams but will need to wait until CSA has the results of the various instrument concept studies that are on going. At this time the number and role of Canadian astronomer participation in WFIRST is vague. Setting a priority for this project within the context of the Canadian communities LRP objectives requires knowing the answers to these questions.

*RECOMMENDATION: The JCSA recommends that CSA (with representation from the Canadian astronomy community) engage in direct negotiations with NASA to determine the what level of involvement with science missions of WFIRST with the goal to making the project open for participation of all Canadian astronomers.*

## Science Exploitation

A theme that runs through every JCSA meeting is the need to fund science analysis that makes use of CSA funded missions. The 'Discovery Grant' funding process is not adequate to the job. NSERC-DG funds are usually too limited to support the level of HQP

(PDFs) needed to fully exploit a new space observatory. In addition, the timing of space missions (schedule slip followed by pressure from short proprietary periods and/or pressure from science competitors using the same facility) does not align with the NSERC/DG cycle. For this, and other, reasons the JCSA continuously pushes the CSA to create a coherent well funded program to support mission data / science specialists. Such a program, if in place today, would benefit the UVIT, Astro-H, BRITE, JWST and other projects. Having regularized funding opportunities on a scale and time-frame appropriate to space astronomy missions is a key ingredient to achieving the full science potential of those missions.