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Dr. Gilles Joncas  
Université Laval  
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Dear Dr. Joncas,

**RE: CHAIR'S REPORT FOR THE JOINT COMMITTEE ON SPACE ASTRONOMY**

This Joint Committee for Space Astronomy (JCSA) Chair's Report covers the period from May 2009 to the present. The committee met twice in person during this period, in May 2009 at the CASCA meeting in Toronto, and in November 2009 at the Canadian Space Agency (CSA) headquarters in Montréal. The next meeting will take place May 24-25 2010 in Halifax. In this letter I highlight the issues that I feel are most important. A detailed summary of the face-to-face JCSA meetings is provided in the attached Appendices.

In my opinion, the main issues that CASCA should be aware of are the following:

- (i) JWST is proceeding well, having recently passed its Critical Design Review. Canadian involvement in the project recently received a major boost as a result of NASA's commitment to fully commission the major modes of all instruments in anticipation of them all being available in Cycle 1. This is a huge boost for Canada's Tuneable Filter Imager (TFI), which until fairly recently faced the possibility of not being available until at least Cycle 2. On the downside, this also presents challenges for the TFI team, because the project office is now insisting (very reasonably, in my view) that an augmented library of ground calibration data be provided in order to allow productive early use of the TFI. Obtaining suitable ground calibration data requires additional work on the part of both the instrument team and the prime contractor (COM DEV), and this is stressing the schedule. I also remain concerned that we do not yet have a fully assembled and functional etalon with which to obtain all these calibration data. So I have some concern that technical challenges remain to be faced before completion of the Tuneable Filter Imager.
- (ii) CSA has undergone a major reorganization to better align itself with the Government's Science & Technology Strategic Plan. The main goal of this restructuring is to allow the organization to better execute its proposed (but not yet publicly released) Long Term Space Plan. The new CSA structure is based on three Directorates. These Directorates are (1) Space Science & Technology, (2) Space Exploration, and (3) Space Utilization. In a nutshell, the Space Science & Technology Directorate is going to focus on so-called 'capacity building', the Space Exploration Directorate will focus on 'cradle-to-grave' operation of Space Missions, and the Space Utilization Directorate will focus on

support of other government bodies (e.g. the Department of National Defence). In future the main point of contact for astronomers is likely to be the Science & Academic Development Division of the Space Science & Technology Directorate, which will be headed by Alain Berinstain. This division will oversee proposed Chairs and Clusters in strategic areas, initial concept studies, and collaborative activities in Science & Technology.

- (iii) CSA is actively participating in the Long Range Plan 2010 (LRP2010) process, and is looking to the LRP2010 report for advice on where to proceed with new mission development in the future. As part of this process the CSA invited the LRP2010 Panel to Montreal on April 30, where face-to-face discussions were held on future directions for the Agency. The main messages coming from the Agency seem to be: (1) CSA's new president (Steve Maclean) is serious about developing a more positive relationship with the Universities, as evidenced by the recent restructuring, which is intended to better support things like a proposed Grants & Contributions program; (2) The LRP2010 Report will be most useful for CSA if it is phrased in such a way as to highlight how any proposed missions are aligned with CSA's priorities in the Long Term Space Plan in particular, and with the Government's Science & Technology Strategic Plan in general.
- (iv) Herschel and Planck are generating superb data and early results are now beginning to appear (mainly for Herschel). The bulk of the early Herschel results will appear in a special issue of *Astronomy & Astrophysics*.

In terms of the composition of the JCSA, the committee received two new members in the last year (Luigi Gallo from St. Mary's University and Laura Ferrarese from HIA) and I took over as Chair. At present the voting members are:

Roberto Abraham (Chair) - Term 2008-2011  
Dept of Astronomy & Astrophysics, University of Toronto

Robert Rutledge - Term 2007-2010  
Department of Physics, McGill University

Ludovic van Waerbeke - Term 2007-2010  
Department of Physics and Astronomy, University of British Columbia

Luigi Gallo Term 2009-2012  
St. Mary's University

Laura Ferrarese - Term 2009-2012  
Herzberg Institute of Astrophysics

Brian McNamara Term 2009-2012  
University of Waterloo

On the subject of the composition of the JCSA, it is perhaps worth noting to CASCA that I have been sensing a desire on the part of the CSA to revise its advisory committee structure.

This seems natural to me in light of its recent re-organization. I would not be surprised if the CSA seeks to alter the role of the Joint Committee for Space Astronomy in future.

Looking to the future, my main high-level concerns for Canadian Space Astronomy are:

- (1) The delay in the release of the CSA's Long Term Space Plan, which has been awaiting 'imminent' approval by the government for many months now. Forward momentum in a number of important areas (e.g. calls for additional mission concept studies and implementation of various initiatives under the umbrella of the nascent Grants & Contributions program) seems somewhat stalled while the CSA awaits the approval of this planning document.
- (2) The delay in actually releasing funds for some projects that were selected as part of the 2008 Space Science Enhancement Program. Some selected projects have been funded, while others await release of funds that must await appropriations that have been delayed because of proroguing of Parliament.

Both issues will be discussed further at the JCSA meeting in Halifax.

Finally, I would like to end this letter by acknowledging the absolutely outstanding job done by my predecessor as Chair of the JCSA, Prof. Matt Dobbs (McGill).

Sincerely yours,

Roberto Abraham

## **APPENDICES**

### **JCSA RECOMMENDATIONS FROM THE MAY 2009 JCSA MEETING IN TORONTO**

We are pleased to see CASCA has begun the LRP process and that the CSA is engaged in the process.

We are glad Norman Marcotte, the NSERC representative, came to the JCSA and particularly glad that there is an ongoing dialog between the CSA and NSERC.

The interplay between these agencies has been important in funding space astronomy missions through their full life, which includes both operation and subsequent data analysis. In this context, the SRO program, which has allowed timely applications to match opportunities, has often been very useful. We hope that this feature of SROs is captured by some future NSERC or CSA program.

For all CSA funded missions, the JCSA recommends that approval of a mission should include funding through the first data release.

#### **PLANCK AND HERSCHEL**

An immediate concern is with respect to Planck and Herschel, where it is essential that the CSA act quickly to address contract renewals as soon as possible.

#### **DISCIPLINE WORKING GROUPS (DWG)**

The DWGs are an excellent means of identifying new ideas for future projects and incubating those ideas to greater maturity. We support the creation of a new DWG opportunity, but note that many of the projects and communities that participated in the first DWG AO are ready for more detailed study. We note that excellent ideas may exist outside of the DWG process, and these ideas should not be excluded from future mission opportunities.

#### **UPCOMING MISSION CONCEPT STUDY AO(S)**

Two mission concepts have come to the attention of the JCSA and the CSA that are timely and ready for immediate further in depth study. We are very happy that the proponents wish to study these missions to understand how feasible Canadian participation might be and how expensive it might be.

The JCSA recommends the CSA distribute a Request for Proposals (RFP) for Mission Concepts which can accommodate these aspirations. JCSA strongly recommends the timeline and budgetary requirements of Canadian contributions to ASTRO-H and JDEM set the parameters of this RFP, but that this RFP not disadvantage other space astronomy opportunities which can proceed within the same timeline and budgetary parameters. It should be clear that

issuing the RFP does not imply mission approval which would only occur at the end of a peer-reviewed process and technical feasibility review.

## **GRANTS AND CONTRIBUTIONS PROGRAMS**

The JCSA strongly endorses a move towards a greatly enhanced Grants and Contributions program and believes this is an excellent avenue for building capacity in Canada and training HQP. It will seed technology, innovation, and great science in Canada. The JCSA believes the SSEP should be expanded and strongly supported within this program.

The JCSA endorses the stated CSA plan for space science chairs, wherein the university will apply to CSA for a strategic area to hire a research chair position. The CSA would be an observer on the hiring committee. This is consistent with the university's need for academic freedom and is an excellent step in enhancing CSA/university interaction.

We were asked for advice on the timing for RFPs and announcements of results. The most important factor is a predictable and timely decision date. We do not feel there is a best time of year for RFPs.

The JCSA is alarmed that the CSA is migrating away from community consultations in defining its areas of priority for programs within the G&C.

We believe there should be some fraction of the "clusters" and "chairs" funding set aside and assigned on the basis of excellent ideas not necessarily in the prioritized list. NSERC has done this for the CREATE program, wherein the majority (60%) of the funding is targeted to a few key areas identified within the government's S&T strategy, and the smaller fraction is awarded competitively with scientific excellence being the primary factor.

## **SMAO**

The JCSA and the space astronomy community is anxiously awaiting the release of a new Small Missions AO within the G&C program.

## **HIA ROLE IN SPACE ASTRONOMY**

A recent International Review Committee (the "peer review") to HIA recommended a stronger role for HIA in Space Astronomy.

The JCSA recognizes the substantial contributions HIA has made to space astronomy. We welcome the development of a structure that would allow HIA and CSA to share and build on one another's expertise in a more fluid and symbiotic manner. We encourage both institutions and the community to explore scenarios for this. The JCSA would like to be involved in this discussion. We see strengths in the two organizations and the proper interaction of the two would be powerful. We also see weaknesses in each that should be improved upon.

## **SSEP**

Request that CSA post status of SSEP selection process as soon as possible, so applicants can plan and understand what's going on.

## **RECOMMENDATIONS PERTAINING TO MISSIONS**

### **HERSCHEL HIFI**

We congratulate the entire team on the recent launch of Herschel. We commend the excellent outreach activities by the Waterloo team that accompanied launch this month. We commend the community education by the Canadian Herschel team at CASCA. We have recommended CSA act quickly to address the contract renewals as soon as possible.

Herschel/SPIRE

CSA congratulates the team on the official release of the data processing environment for SPIRE. We note that two issues were identified prior to launch (unexpected behaviour in a linear translation stage, and some instability in half of the short wavelength detectors). These issues could affect the mapping speed of the instrument. The JCSA notes that a new contract will be issued with the University of Lethbridge to cover the in-flight phase of Herschel/SPIRE, and that the team has also reached agreement with CSA on contractual amendments to allow them to hire additional development staff. We recommend CSA proceed with these contractual matters as soon as possible.

### **PLANCK LFI, HFI**

We congratulate the entire team on the recent launch of Planck. This has been a long path and the entire community is looking forward to the science that will be derived. We have recommended CSA act quickly to address the contract renewals as soon as possible.

### **EBEX**

Progress on EBEX appears to steady, with integration in Ft. Sumner occurring now in anticipation of a test flight in the next few weeks. A science flight is scheduled for November 2010. The JCSA notes that the project is operating in a reduced-funding mode because of the cancellation of the SMAO. Despite this, the project remains on track, although one can envision a number of potential risks (such as damage to the hardware during the test flight) which would, if realized, require additional funding.

### **NEOSSAT**

We are unable to provide advice about NEOSSat since the PI has chosen not to submit a Mission Report for this JCSA meeting and the last one. We have been told that there were issues identified in the CDR, including electronics issues. There is expected to be a significant overrun in launch costs. The committee had a couple of questions:

- Will astronomers have access to observing time with NEOSSat through a guest observers program? How is the time allocated? Will data be publicly available? Will data be archived at CADC?

- Will the science team be free to publish satellite specifications (i.e. point spread functions, optical design, sensitivity) in their scientific papers? We hope so, but it's not clear since this is also a DND mission.

The committee would like to hear a 30 minute talk on NEOSSat, preferably from the PI but alternately from CSA officers, at the next JCSA meeting.

#### **CADC**

CADC continues to play an important role in the space astronomy community and provide an important service that is often used as an example of how to implement an open data policy to other fields of space science investigating options for data archiving.

Will CADC be contributing/participating to the archiving of JWST? If so, what unique capability will CADC provide, or will this simply be a mirror of data elsewhere? The JCSA will be contacting CADC for more information on this topic for the next JCSA meeting. The JCSA is interested to hear what unique capabilities the CADC will provide the JWST program and Canadian astronomers.

#### **SPICA/SAFARI**

This project appears to be going well. We commend the PI and team on bringing this ambitious project and associated infrastructure to Lethbridge and to Canada. We have noted the importance of this project, facilities, and associated development for both SPICA and other future prospects outlined in the DWG report. AIG is unique amongst groups at smaller Canadian institutions in playing such a large role in space astronomy projects and deserves recognition for this from the community and host university.

#### **MOST**

There was concern from within the JCSA that with the NASA GO opportunity, US-based observers may have better access to MOST than Canadians. We have been reassured that this is not the case and we accept this. We note that US-based observers are better funded for their MOST observations, but do not see a way around this. We encourage MOST observers to apply to the SSEP program for support.

We suggest including a link on the MOST webpage explaining to Canadian astronomers how to apply for MOST observing time.

#### **UVIT**

We are impressed by the progress and performance with the Canadian instrumentation and software contributions to UVIT, as reported by Hutchings. We are concerned about the lack of science planning within the international collaboration, though we note there has been considerable planning within the Canadian contingent.

Though the science planning is slow to materialize, we appreciate that the Canadian team is doing the utmost to push this along within the international collaboration and that it is inappropriate to pursue this alone. We appreciate there are considerable cultural differences between the agencies involved and are happy with the efforts the Canadian team is making.

**JWST**

We are very happy to directly see a healthy interaction between CSA, industry, and mission scientists. There has clearly been enormous managerial progress for this project and the JCSA is impressed. We commend everyone involved.

We are pleased to see that all all RIDs(RFAs) for the etalon are closed.

We are concerned about the cost over-runs derived from the 1 year launch delay and issues with Teledyne components. We assume CSA has contingency and plans in place to deal with this. We would like to hear an update on the effects of this next meeting, if there are any. It is frustrating that ITAR is reported as one of the biggest issues inhibiting the Canadian team's progress. It is unclear whether recent issues with Teledyne components are the result of insufficient understanding of the components, ITAR issues, genuine issues with the hardware, or a combination of all three.



# Joint Committee on Space Astronomy

## Minutes of meeting - November 26-27, 2009

Prepared by D. Laurin, CSA

Location: room 2A-107, Canadian Space Agency, John H. Chapman Space Centre, 6767  
Route de l'Aéroport, Saint-Hubert, Québec

| <i>JCSA</i>                           | <i>CSA</i>   | <i>CASCA/HIA/NSERC</i>                                | <i>Guests</i>                               |
|---------------------------------------|--|---|---|
| Roberto Abraham (U of Toronto, Chair) | Dave Kendall (Director General, space science, day 2)                          | Paul Hickson (UBC, CASCA president, video-conference) | Matt Dobbs (McGill, former JCSA chair)      |
| Laura Ferrarese (HIA)                 | Alain Berinstain (Director Planetary Exploration and Space Astronomy)          |   | René Doyon (UdeM)                           |
| Luigi Gallo (Saint Mary's)            | Denis Laurin (science manager, space astronomy)                                |   | John Hutchings (HIA)                        |
| Ludovic van Waerbeke (UBC)            | Jean Dupuis (exec. Secretary, program scientist in space astronomy)            |   | David Schade (HIA/CADC, videoconference)    |
|                                       | Alain Ouellet (program manager, planetary exploration and space astronomy)     |   | Séverin Gaudet (HIA/CADC, videoconference)  |
|                                       | René-Pier Marius-Phaneuf (program lead, space astronomy, JWST mission manager) |   | David Bohlender (HIA/CADC, videoconference) |
|                                       | Robert Kardum (program lead, Planck HFI and LFI, Herschel SPIRE)               |   |   |
|                                       | James Doherty (program lead, MOST, Planck HIFI, NEOSSat)                       |   |   |
|                                       | Karl Saad (JWST program manager)   |   |   |
|                                       | Louise Beauchamp (academic relations)  |   |   |
|                                       | Ruth Ann Chicoine (communications officer)                                     |   |   |

Unable to attend: Brian McNamara (Waterloo), Bob Rutledge (McGill)

Day 1:

Start at 9h00am

### **Introduction:**

Roberto Abraham

Round of self-introductions and presence sheet circulated.

Top concerns are TFI support during cycle 1 of JWST operation. The other main issue is the delay in issuing contracts for PLANCK and SPIRE during operations, to be discussed below.

**Space astronomy update:**

Denis Laurin

Denis reminded the committee that Spider and BRITE are going to be supported through the new contribution program. The difference between a grant and a contribution was explained (note by J. Dupuis, see <http://www.tbs-sct.gc.ca/cmp/doc/faq/faq-eng.aspx#a13> for a comparative table between contracts and grants & contributions).

A summary of SPICA was provided. Committee interested by the details of a potential Canadian contribution.

CSA has provided of letter of intent to JAXA stating that Canada will evaluate possible contribution to the ASTRO-H mission, (no commitment at this stage). Luigi Gallo reported that ASTRO-H launch is delayed by 6 months to February 2014. The PDR will likely be delayed to early next year.

Denis reminded the committee about the mandate of the JCSA with respect to CSA. The committee noted part of the mandate was to advise CASCA. It was suggested that the bulleted-list with the JCSA mandate on the CSA website indicate that JCSA also has a separate mandate with respect to CASCA.

Paul Hickson joined at 9:30 by video-teleconference from UBC.

Paul summarized the mandate of the JCSA to CASCA. The committee must advise CASCA and submit a yearly report to the CASCA board. It was stressed by CSA and CASCA that the JCSA is an independent committee that reports both to CASCA and CSA.

A reminder was given by CSA (Alain B) about the reason for reliability checks. This would allow CSA employees to share protected information with committee members. Chairman is encouraging members to proceed with the process. CASCA will inform new candidate members about this CSA requirement.

CSA discussed the possibility of offering administrative support to the JCSA to alleviate the Chair's administrative tasks in running the committee. The motivation for doing that is to make sure the committee is at arm's length from CSA. The committee needs to take ownership of its activities. Committee agrees with the idea but is unsure how this is going to be implemented. CASCA will look into the possibility of addressing this at next board meeting in early December. It was recommended by former JCSA chair (Dobbs) to do a long-term set-up to ensure continuity and ease-up interface with the community.

An update was given about Mission Concepts RFP which was targeted toward ASTRO-H and Dark Energy missions. A maximum of 4 contracts of \$150K each will be issued. The duration of the studies will be 8 months. Clarifications were asked about the timeline of when final results will be announced. It was explained that final results are to be announced by PWGSC. A question was asked by the committee about the relevance of having a science component associated to the ASTRO-H proposal. From the members' point of view, this created a situation where scientists had to partner with a specific company, which then forbid them to take part in more than one proposal.

A brief review of MERX tendering system was given to the committee. Committee recommends CSA continue to announce the RFP by e-mail to CASCA when an RFP relevant to space astronomy is published on MERX.

Fourteen space astronomy proposals were submitted in response to SSEP AO. A majority of proposals were related to the Herschel mission. An important recommendation was made by the final review committee. It was recommended to create two categories: one for existing science teams and one for general observers. In the future, science will be allocated funding for data analysis, through the right funding mechanism right from the beginning of a mission.

15 minute break at 10h30

Continuation of space astronomy update:

Denis Laurin presented an update about the discipline working groups (DWG) and mentioned that a new AO may be released if needed. The committee asked about exactly what is expected from DWG and how their recommendations are used by CSA. There is a concern about how missions will be selected. It was mentioned that it was not clear to the community what would be done with DWG reports. An effort needs to be done by CSA to better explain the mandate of the DWG to alleviate for the perceived disconnect between the community and CSA.

**CADC update:**

The presentation was given by videoconference by David Schade at HIA with participation of David Bohlender and Séverin Gaudet also at HIA.

Two main items were discussed: MOST enhanced archive support, and an increased role in JWST.

CADC would like the committee to look into the data policy workshop written by CSA (John Manuel). David Schade is suggesting we look into only the space astronomy sections and try to push to obtain the draft report.

*Action item #1:* Jean Dupuis has to get a copy of the relevant space astronomy section from the data workshop report to submit to JCSA. **Due date:** before next face to face meeting.

CADC would like to have feedback on the report submitted to the JCSA.

The MOST enhanced support is an immediate high priority for CADC and would like to have a recommendation issued by the JCSA rapidly. The committee is wondering how many astronomers in Canada will need to use a MOST archive or this is directed toward the MOST science team. CADC argues that this would be directed mainly through the general community and would facilitate access to high quality data on secondary targets.

Action item # 2: JCSA needs to review MOST archive proposal and give feedback to CADC.  
**Due date:** before the end of 2009.

CADC would like the committee and CSA to consider how CADC could become involve in the JWST archive. John Hutchings reminded CADC that NASA, at this point, does not want an external (out of USA) JWST archive. CADC has been discussing with counterparts at STSCI but not much progress has been made at this point.

Action item # 3: JCSA to identify who should be contacted at NASA or STSCI to discuss the possibility of having CADC play a role in the JWST archive. Hutchings to contact David Schade and Kathy Flanagan to find out whom they have been contacting.

John Hutchings discussed the status of the UVIT archive discussions with ISRO. The new ASTROSAT project manager has been contacted but no official reply has been received from his part yet. No significant progress has been on that front since the last JCSA meeting. John Hutchings will visit India in December and will discuss again these issues. The committee is wondering about if ASTROSAT can be realistically sent within one year considering the apparent lack of organization with the project.

Recommendation: CSA to take a more aggressive stance with respect to the ASTROSAT archive issue and contact higher management at ISRO to resolve this issue.

John Hutchings is suggesting that we look into the possibility of having CADC staff to assist in TFI operations.

**JWST update:**

Karl Saad presentation:

Committee is concerned about the fact that TFI may not be supported during cycle 1 of the mission.

John Hutchings presentation:

Launch slip is putting extra pressure on the JWST project on NASA's side. Some specifications may need to be relaxed in order to avoid cost overrun. Project is getting ready for the mission CDR. Good news is that mirror polishing is progressing very well.

Break for lunch at 12h30 pm

Continuation of John Hutchings presentation:

The main concern is about operations. CSA and NASA HQ had a recent teleconference to discuss these issues and discuss the so-called *Modes Proposal* recently submitted by STSCI to NASA GSFC. If approved, this proposal would ensure that all modes of TFI would be supported. The STSCI argument is that it takes a lot more effort to properly support an instrument beyond typical activities carried out during the commissioning phase. There is an issue of perception with TFI that a calibration plan is not ready and that we are late in development of data pipeline. According to higher management at STSCI, at least 7 FTEs are required to properly support FGS and TFI. Chairman is concerned that much effort is spent to build the TFI and that in the end the TFI will not be used. John Hutchings listed activities to which CADC could take part: pipeline, data distribution tools, could help with data analysis tools, could provide an exposure time calculator. CSA is suggesting that further discussions could be made with NASA HQ to push this point. The committee noted that this may not be politically popular at the project level. The committee argues that the CADC approach may be the right one in the end.

Action item # 4: JCSA recommends that HIA and CSA discuss the possibility of integrating CADC in TFI operation support activities.

Science team is not happy about its level of participation especially concerning the development of the TVAC test plans. The science team needs more visibility at COMDEV. This is partially resolved for the PFM test plan since science team will give its input.

Recommendation: The JCSA recommends that the FGS science team be strongly involved in the planning of testing activities (TVAC).

John Hutchings is concerned about travel budget limitation this year which affect participation to crucial meetings.

**UVIT update:**

John Hutchings

Calibration is on-going at U. of Calgary. Apart from a few snags (hard-drive replacement for GSE and vacuum problem failure) things are progressing well. There is a technical issue with timestamps which is presumably associated with the FPGA. After delivery to India, Joe Postma will support tests in India in the winter. CSA is looking at a post-delivery engineering support contract. John Hutchings has been discussing with India about time assignment issue. He believes that we should keep Canadian time separately of the selection process in India. NSERC is withholding last installment of UVIT SRO grant until after launch.

**Communications update:**

Ruth Ann Chicoine

There were a lot of activities since last meeting, most related to IYA. A web release is being prepared about recent Herschel and Planck results. CSA plans on publishing articles in each

issue of CASCA's newsletter. CSA is talking about doing a filmed documentary on FGS testing at the David Florida Laboratory (DFL) next summer in a partnership with STSCI.

**Grants and Contributions program presentation:**

Alain Berinstain

Treasury board has approved the new grants and contributions program. The new program is much broader with two major components (in comparison with 12 "annexes" in previous G&C program): support of knowledge (research) and awareness and learning. The main research components are: space & sub-orbital missions, science investigations, partnerships, research chairs, and accelerators.

Overall, the committee commends very highly this new program. This program will be managed by CSA and announced through the CSA website, not MERX.

**Academic relations presentation:**

Louise Beauchamp

Two items to be discussed: sub-orbital workshop and annual performance indicators survey.

The sub-orbital workshop will be concerned with capacity building and training. A time constraint of approximately 3 years and a budget limit of about \$3M will be put on the sub-orbital projects. The research would be peer-reviewed. The timing of the workshop is end of March or early April 2010. CSA will be seeking input from the different communities about their needs for different platforms.

Louise presented the new form for the performance indicator survey which should be an improvement with respect to forms sent in previous years.

**Space astronomy roadmap:**

Denis Laurin

The committee remarked that too many missions are listed on the roadmap, and it could be misleading in terms of realistic expectations for what will actually be attempted. The committee recommends we call the missions roadmap a 'candidate missions roadmap' instead.

*Action item # 5:* The JCSA to review the CSA space astronomy roadmap and provide comments to CSA. **Due date:** Mid-December

The JCSA recognizes effort of the CSA in dealing with issues with the Planck HFI contract and setting up a new grants and contributions program that will resolve serious funding issues we had recently.

JCSA asks a question about CSA contribution to ESA. Alain Berinstain explained that Canada is an "associate member" which does not grant Canada an automatic access to all of its auxiliary programs. CSA is contributing of the order of \$25-30M per year to the ESA budget,

which then comes back to Canadian industry. Luigi Gallo asked if CSA would have a say in reviving the ESA external science fellowship. Alain Berinstain believes that we have no say in this. He mentioned that CSA contribution to ESA allows us to have pro-rated number of Canadian employed by ESA.

In camera session starts at 4pm.

Meeting adjourned at 5h30pm.

Day 2:

**CSA Space Science update:**

Dave Kendall

CSA is in the process of long term planning and implementation plans are being developed. The roadmaps that will come out of each branch will be fundamental in developing the implementation plans of the long term space plan (LTSP). The timescale for this is working through the next budget (early February). CSA hope to have the roadmaps published by the end for February. If we are successful in the budget process, an increase in grants and contributions will be seek in order to put the desired programs in place. The committee hopes that the mission roadmap will be refined over the next few months to more specific options. They were reassured that a major mission would not be approved without a strong recommendation from the LRP.

The committee expressed satisfaction with the new grants and contribution program. The committee would like to know what kind of capacity CSA would like to see develop. CSA is aiming toward a dozen of chairs (depending on funding) and would be disappointed if could not fund areas of critical importance such as space astronomy. CSA has to be careful in working with the community to identify areas of strengths. Do we want to support emerging areas that have potential or do we want mainly to maintain existing strengths? No priority areas will be defined until debates and discussions have happened.

The sorts of numbers the community should be looking for next major contribution to a space astronomy mission would be similar to what was provided for JWST. For space astronomy Canadian-led missions, the community may consider payloads that would fit on a small satellite (with a total mass not exceeding 500Kg as a general guideline).

CSA noted that more effort should be given to developing the space astronomy community and the next generation of principal investigators that could provide vital support to the space astronomy program. We have to be very careful with the directions we want to take and make sure we do not duplicate skills already available at HIA for example. It was debated within government how to treat the astronomy file, it has not always been clear that CSA should have the mandate to develop space astronomy. However, the current CSA president is supportive of space astronomy and should be part of the fundamental mandate of the agency. The CSA would like to receive recommendations from the committee on how to better form the next generation of principal investigators in space astronomy.

Does CSA have a preference for the type of future space astronomy projects? Would it prefer or favor Canadian-led missions? CSA says that it would be interested in developing smaller satellites (nanosats, microsats) but understand that it may be a limitation as forefront space astronomy is done from large platforms. CSA is also considering the science impact.

What is going on with CSA reorganization? CSA is restructuring its organization to better deliver the long term space plan.



## **Missions highlights:**

Denis Laurin

MOST continues to operate normally and CSA has a no plan to stop supporting it until it dies (2012-2014). There is an issue with CGRP registration of UBC that has not been renewed.

NEOSSat:

The committee wondered again why a mission report is never sent by the mission PI. It was explained that this mission is not quite considered in the space astronomy portfolio and that it may be due to a cultural difference with the planetary exploration community in terms of the interaction between the PIs and advisory committees.

The archiving of the data has not been firmed up yet. The image archive will presumably contain ancillary data of astronomical interest (limiting magnitude of 20, broad-band visible, 0.85 deg field, up to about 300 images per day).

Action item # 6: Roberto Abraham to contact Alan Hildebrand very soon, to encourage to submitting mission reports and/or other updates for next JCSA meeting and discuss data archive plans. Due date: mid-December.

Action item # 7: The committee would like to know how large of a telescope could be accommodated on a 500kg satellite with technical assistance from CSA.

Matt Dobbs noted that JAXA is doing studies for CMB or X-ray satellites on small satellites.

## **Review of Mission Reports**

JWST-TFI:

The main worry is at the operational risk where there is a possibility that the TFI will not be operated early on the JWST mission (cycle 1). The committee would like to recommend that CADC have a greater participation in JWST support.

JWST-FGS:

The committee would like to indicate awareness of the problem of adding an extra cryogenic cycle to support full field illumination tests. The committee ought to encourage the science team to develop the test plan.

CADC:

The committee will recommend that it interfaces with CSA and STSCI.

Action item # 8: To add as an agenda item for next meeting a discussion about the space astronomy extract from data workshop.

The committee was informed of an impression that CSA funding does not appear to be proportional to the level of effort invested by CADC on space astronomy projects. According to the report, CSA is funding one third of their space astronomy effort.

SPICA Safari:

No major issues. Important infrastructure has been developed in Canada to perform testing of new detector technology (TES for example).

EBEX:

The reviewer notes that the technology being developed at McGill could potentially have a wide range of applications in various space missions. Read-out systems reportedly operated correctly during recent test flight although analysis is not complete yet. The science flight will be delayed by several months (to November 2011) and uncertainties remain in the fabrication of detectors in Berkeley.

PI states that funding level is appropriate but the difficulty is with the duration. Grant is spread over 14 months. Current funding will take the team up to launch. Damage to the gondola during test flight was significant. There was apparently a design problem with balance of the gondola that is currently being addressed.

The star camera will likely be replaced by a camera similar to the one used during the BLAST mission. The main concern of the PI is the timeline for the delivery of the detectors.

Herschel-SPIRE:

First science results to be presented in a meeting next week in Madrid. Contractual issues have slowed down the performance of the Canadian contingent which had consequences on salaries and travels.

Herschel-HIFI:

Report on failure investigation is out now. Operation with the redundant system will resume in January 2010. The problem was located in the Local control oscillator unit. Problem was described by James Doherty.

UVIT:

Point of concern is with data distribution. There is also an issue with the SRO funding. Considerations are given into having a Canadian time allocation committee although the reviewer seems to favor allocating Canadian time share through the India panel review. (Note to me: Could the delivery of detectors be delayed until we have a firm commitment from ISRO about data issues?)

Planck LFI:

PI expressed serious concern with amount of science analysis funding. JCSA was reassured that funding was imminent.

Planck HFI:

Everything seems to be working as expected except with the issues with contract renewal with PWGSC. Again, JCSA was reassured that funding was imminent.

Action item # 9: CSA to alert the JCSA when the Planck HFI contract renewal is issued.

MOST:

Reviewer does not see any problems with the MOST archive proposal. Mostly, the creation of this archive would relieve the MOST team from this responsibility. The committee will review the proposal and issue a recommendation to CSA concerning the MOST archive.

Closed meeting

Tag-up at 14h15

The committee would like to have support from CSA technical and scientific staff to provide technical assistance to JCSA to make sure they assign the right priorities for future space astronomy missions.

Next meeting is to be a day (TBC, 2-days) before CASCA conference in Halifax.