



ESTEC, 9+10 March 2016

Minutes from 29 March 2016

Attendants

Volker Beckmann	APC	VB
Roland Diehl	MPE Garching	RD
Carlo Ferrigno	ISDC	CF
Wim Hermsen	SRON	WH
Peter Kretschmar	ESA, ESAC	PK
Erik Kuulkers	ESA, ESTEC	EK
Philippe Laurent	CEA	PL
Alexander Lutovinov	IKI Moscow	AL
Miguel Mas Hesse	INTA Madrid	MM
Arvind Parmar	ESA, ESTEC	AP (for one presentation)
Jean-Pierre Roques	IRAP Toulouse	JPR
Pietro Ubertini	INAF Roma	PU
Ed van den Heuvel	Univ. Amsterdam	EvdH
Peter von Ballmoos	IRAP Toulouse	PvB

1 Welcome, Agenda, Actions

EK and PvB opened the meeting, emphasizing to concentrate on the extension case. The science case for INTEGRAL appears especially strong this round; PvB recommends concentrating especially on exciting variable sources.

Several IUG members were excused for a variety of reasons.

The actions from the last meeting have been closed and were mainly on a possible hibernation for INTEGRAL which seems off the table.

EK noted that the confirmation for 2017/2018 will be decided at the SPC Meeting in November, but the extension for 2019/2020 might only be discussed at the following SPC Meeting after the Ministerial Meeting which sets the ESA budget.

Extended discussion on options to search for high-energy counterparts to Gravitational Wave events. PU raised the question if the observing strategy should be changed for this opportunity.

2 Project Scientist Report

EK presented information about community interfaces, the status of the observatory, science highlights and outreach (see [viewgraphs](#)).

Tony Bird, Lorraine Hanlon and Dieter Hartmann will leave IUG in July 2016. EK proposes Diego Götz, Angela Malizia and Diego Torres as new members, to general agreement

Neil Gehrels and Wim Hermsen will be re-appointed as Mission Scientists for 3 years from June 2016.

François Lebrun has retired and is replaced by Philippe Laurent as IBIS Co-PI.

A new element in AO-14 is the option to apply for joint INTEGRAL/NuSTAR observations through the INTEGRAL TAC — up to 100 ks NuSTAR time in total. PL commented that joint observations for Hitomi should be considered; the Hitomi Open Programme is expected to start end 2016/early 2017, in line with INTEGRAL AO-14 observations.

Also data assigned to scientists from the Russian Federation is now becoming public when consolidated.

The INTEGRAL Project has signed a MoU with the LIGO/Virgo consortium to participate to the electro-magnetic follow-up campaign of GW signals until 1 June 2017.

2015 saw an increase in publication rate by ~25%, while various publications on V404 Cyg are still in the pipeline. ATels have peaked as well, almost reaching the maximum value from 2005, with a quarter of the 2015 ATels on V404 Cyg.

SL remarked that the current calibration uncertainties keep scientists from publishing data on TOOs of X-ray transients. PL commented that these issues should be fixed in OSA11 (see also ISDC status).

PU noted that easy access to high-level data for non-specialist users was another issue. CF and others commented that funding agencies were not very supportive of such work, e.g., the Swiss support for HEAVENS has been stopped.

JPR noted a general trend of manpower decreasing while efforts are rather increasing.

3 Instrument & Calibration status, Science Ground Segment

3.1 OMC

MM briefly presented the OMC status which is generally very smooth (see [viewgraphs](#)). There is still no need to consider removing Dark Current from the data. The lenses are darkening very slightly over many years, but much less than originally anticipated. The calibration is remaining stable.

A strange extended luminous feature was noted in an OMC image of the atmospheric haze around the dark Earth taken during the last Earth Observation. Various ideas for the origin were discussed, but without a conclusion. Several IUG members proposed to discuss this feature with colleagues working in other fields.

Action 18–1 on MM	Due: end March
<i>Provide size of extended luminous feature to IUG.</i>	

MM finished presenting a comparison of OMC data with lightcurves from JEM-X and ISGRI from the V404 Cyg outburst.

3.2 JEM-X

SB could not attend, there are no major news. An update to the analysis tools is projected for OSA11 (see ISDC News).

3.3 SPI

JPR summarised the SPI status (see [viewgraphs](#)).

Decreasing solar activity in the evolving solar cycle means that the background is rising, so at some point discussions on telemetry share might start again.

Annealing 25 with 200h duration led to larger recovery than previous one. The ongoing annealing is scheduled again for 128h duration to reduce risk.

SPI budget in France is decreasing strongly in 2015 and 2016. Performance monitoring is continuing, but on-board S/W maintenance is already impossible. The situation beyond 2016 is unclear.

3.4 IBIS

PU explained the current situation on Italian funding status which shows a clear improvement. ASI plans to renew INTEGRAL contract for another 3 years. INAF is also injecting some money into this programme, with 3 fellowships announced related to INTEGRAL science. In addition further staff members are working on INTEGRAL.

As an example of Gravity Wave follow-up, PU showed PICsIT data around the GW event.

There is an ongoing effort to do cross-calibration with Crab across many missions within the IACHEC consortium. According to latest results from several missions, the Crab flux has increased to old levels above 50 keV, but apparently not in the 15–50 keV range, which may indicate an evolving spectral shape.

PL reported on the ISGRI status. A calibration effort is ongoing at CEA Saclay and at APC Paris. The plans for OSA11 were presented in detail (see [viewgraphs](#)).

There will be changes to the instrument-specific software and the IC tree. CF noted that these changes need to be coordinated with ISDC. In the future delivery of one calibration file roughly every month is foreseen. The files for the mission so far have been created already. The work share between France and Italy was discussed. CF also remarked that a technical discussion with ISDC on optimizing the size of response files, which are currently very large, should take place. The updated OSA11 schedule is slightly delayed because of GW issues.

In addition to the new energy calibration scheme, the ISGRI team is also working on improvement of ghost removal for deep exposures.

The plans for a “Temporal Observatory” delivering ISGRI light curves for any point of interest were presented. CF and PK emphasised that collaboration with all interested parties should be actively sought to optimise the use of sparse resources.

3.5 ISDC

CF reported on the ISDC status (see [viewgraphs](#)). Swiss funding has been approved so far only up to 2015–2016. The manpower situation is stable. The technical infrastructure has been reworked increasing performance and reducing maintenance effort.

While HEAVENS development is mostly frozen, ISDC continues to ingest INTEGRAL data into this interface.

Regarding JEM-X, the decayed calibration sources and strong time-variable gain mean that Near Real Time data from JEM-X2 cannot be used for spectral information, just for positions. This is routinely fixed in consolidated data with gain history derived by a manual effort in the JEM-X team. An improved `j_ima_iros` tool is planned to be delivered as part of OSA11.

OSA11 is planned for late spring 2016 and foreseen to include the improved ISGRI energy calibration, SPI enabling of PSD filtering and the new JEM-X lightcurve software.

INTEGRAL has a Memorandum of Understanding with the LIGO- Virgo consortium to follow-up Gravitational Wave triggers, currently valid until June 2017. ISDC was notified of GW150914 two days after the event. A paper on the search for a counterpart (negative) has been accepted for ApJL. There is a collaboration with the Fermi/GBM team to study comparatively instrument capabilities and limitations.

3.6 ISOC

PK gave a quick overview on the SOC and MOC (see [viewgraphs](#)).

At the SOC the situation has stabilised after implementing the saving programme for 2015 and 2016, leaving only 3.8 FTE in the core team. Routine operations are still smooth thanks to streamlining and so far no direct impact has been noted for TOOs – also due to luck and a good team spirit. Staff levels are expected to remain stable in the future.

At the MOC a slight reduction in manpower due to further sharing with other missions has been achieved. Further savings are planned to be obtained through sharing of SPACONS with Gaia.

A new scheme for Reaction Wheel Bias manoeuvres, not using the thrusters for tranquillisation, leads to significant propellant savings. The projected usage leaves margin for >10 years again. But degradation of the solar panels would probably limit operations in the early 2020's, long before the fuel margin.

3.7 Russian Science Data Centre

AL gave a brief status report on the RSDC (see [viewgraphs](#)). The full data is transferred from ISDC as soon as available and provided to the Russian community. Several dozen requests per month. Institutes from various parts of the Russian Federation use the data.

There are about 300 INTEGRAL publications with a participation of Russian scientists, about 140 in the refereed literature. Recently especially surveys have been reported.

Some other publications on variations of cyclotron lines in transient pulsars have been held back by energy calibration uncertainties. The Russian community considers fixing INTEGRAL energy calibration issues the highest priority for improvements.

3.8 USA

On behalf of the US colleagues, EK presented information on the US Guest Observer Facility including some history (see [viewgraphs](#)).

Currently the HEASARC maintains 17 searchable INTEGRAL catalogs including published catalogs and an up-to-date mirror to the INTEGRAL data archive containing all public data.

The INTEGRAL archive at the HEASARC is the third largest mission archive behind Fermi and Swift. Downloads of INTEGRAL data from HEASARC averaged about 1.7 TB/year since 2008.

For 2015–2016 31% of INTEGRAL-related refereed publications had US authors, often with collaborative science utilizing data from NASA-led missions.

HEASARC personnel remain a point of contact between ESA and NASA.

4 Publication of high-profile results

PvB raised the question of “deontology” of high-visibility publications, where conflicting statements on data and measurements should be avoided. This discussion was triggered by apparently differing results on V404 Cygni and a possible pair plasma signature being published in Nature and arXiv.

After some discussion IUG agreed that draft publications considered with potential for press releases (i.e., papers slated for Nature, Science or similar, ...) should be submitted to the Project Scientist for a recommendation on their release, especially in case of conflicting views. The agreed approach is:

- The authors are requested to present the paper – or an advanced draft – to the ESA Project Scientist before submitting it to the journal or astro-ph.
- The ESA Project Scientist will make a recommendation (publish/revise) to the authors, after having consulted the IUG or a sub-group of the IUG. The guiding principle shall be: 1 instrument – 1 collaboration – 1 datapoint, while leaving interpretation open.
- After the paper has received a recommendation for publication, “friendly fire” from other members of the collaboration must be avoided.
- In case the paper is submitted/published without a recommendation for publication, ESA will not make a press release on the topic.

5 Mission Extension Process

AP presented the process for the upcoming Mission Extension (see [viewgraphs](#))

The working groups evaluate missions, the ranking is done at SSAC. With inputs from D/SCI on affordability the SPC paper on mission extensions is prepared.

In the 2019–2020 time frame a number of new missions will be in operation, increasing the budget pressure.

The extension proposal template is unchanged with 5 pages of science case within a 7-page total.

In a change to previous years, the science cases will be presented in a joint SSEWG/AWG meeting (with SSAC present) and the presenter can come from the User Group as well. IUG was requested to nominate a presenter.

In later discussions the consensus was that while EK should also explore the tendencies of other projects for their choice of presenter, by default EK should present the INTEGRAL Science Case, if possible with PvB as ‘backup’ for additional questions.

PU remarked that asking ASI for its support could lead to misleading information as ASI is no longer the major support for INTEGRAL, this rather comes from INAF. Similar concerns were raised by JPR and PL.

ESA will request information from the national space agencies who should be aware of other funding.

6 Extension case 2016

The science case for the confirmation of INTEGRAL operations to 2018 and extension to 2020 was discussed in detail and a skeleton structure agreed at the meeting. PU and RD had already provided detailed comments on the text of the previous case with ideas for updates.

In general there was an agreement to reduce the number of headings, to begin the text with a number of essential “punch lines” and to emphasise the role of INTEGRAL in studying the variable high-energy sky, as demonstrated with the deep TOO observations of SN2014J or V404 Cyg, and the role of INTEGRAL to detect or put upper limits on counterparts to Gravitational Wave events.

The TOO abilities of INTEGRAL were discussed at some length. PK explained that faster reaction times than the few hours of the fastest TOOs were simply not possible and even these could only be reached under favourable circumstances. But once TOO observations were scheduled, continuing deep follow-ups was basically routine work and could be done even with the limited teams in the Ground Segment.

Based on the agreed skeleton structure EK agreed to take text from the last cases (including the updates received so far) and to flesh out the draft with this. A draft document was to be circulated within two weeks of the IUG meeting.

Action 18–2 on EK	Due: end March
<i>Circulate draft of new Science Case.</i>	

<p>Recommendation 35: Repoint on GW events <i>IUG recommends to repoint INTEGRAL as fast as possible to search for possible Gravity Wave counterparts in gamma-rays once a candidate position is known with sufficient accuracy as judged by the Project Scientist. The observation has to be done without disclosing information about the position or other details outside the INTEGRAL Ground Segment.</i></p>
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7 INTEGRAL Conference 2016

WH summarised the preparations of the INTEGRAL Conference, which will be held October 10–14 in Amsterdam. A first circular was to be sent out in the following week.

IUG agreed in general with the plans, there were some discussions about including further areas, e.g., CTE or high-energy neutrino astronomy.

8 Next Meeting

The next IUG meeting shall be held early in 2017 when the new ESA budget is known.