



# IAU Catalyst | February 2024



# Contents

<b>1 Executive Committee</b> .....	<b>3</b>
<b>2 IAU Divisions, Commissions &amp; Working Groups</b> .....	<b>7</b>
<b>3 News</b> .....	<b>13</b>
<b>4 Science Focus</b> .....	<b>23</b>
<b>5 IAU Offices</b> .....	<b>27</b>
<b>6 Cooperation with other Unions and Organisations</b> .....	<b>33</b>
<b>7 IAU Timeline: Dates and Deadlines</b> .....	<b>37</b>
<b>8 IAU Publications</b> .....	<b>41</b>

# 1 Executive Committee

## 1.1 Come to the General Assembly in Cape Town!

**Debra Elmegreen,**  
*IAU President*

We're just a few months away from the XXXII<sup>nd</sup> General Assembly in Cape Town, the first ever on the African continent. The preparations, led by Kevin Govender, Vanessa McBride, and Charles Takalana, have been underway since the winning bid was announced at the XXX<sup>th</sup> General Assembly in Vienna in 2018. We are so excited by all of the opportunities this General Assembly will bring to Africa and the world.

The rich history of astronomy in Africa began at least 7000 years ago, with a stone circle known as Nabta Playa that predates Stonehenge. Astronomers at Cape Town led international observational survey work over a century ago, and continues with the present-day SALT at the South African Astronomical Observatory (SAAO), the MeerKAT radio array as a precursor to SKA, the KELT and SuperWASP telescopes, and the H.E.S.S. gamma-ray telescopes, among many others.

South Africa became an IAU member in 1922, shortly after the IAU's founding. Other African National Members of the IAU include Algeria, the Republic of Botswana, Egypt, Ethiopia, Morocco, Nigeria, and most recently Madagascar and Mozambique. Africa plays a vital role in IAU activities. The IAU Office of Astronomy for Development (OAD), headquartered in South Africa, has engaged hundreds of thousands of people in projects that draw on the excitement of astronomy and apply its technologies through key local programs to achieve UN Sustainable Development Goals. An OAD flagship project, "astrostays," supports local economic development and fosters an appreciation of dark skies; this effort was featured on an International Science Council-BBC program on *Unlocking Science*<sup>1</sup> and was the subject of IAU Symposium 386 in Ethiopia in November 2023. The African Regional Shaw-IAU Workshop on Astronomy for Education (through the IAU Office of Astronomy for Education (OAE)) was hosted by the SAAO in October 2023, which also held the February 2020 Kavli-IAU Global Coordination Workshop on transient and multimessenger astronomy. Cape Town hosted an International School for Young Astronomers (through the

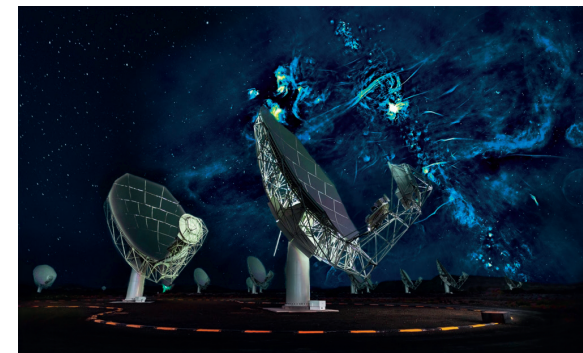
IAU Office for Young Astronomers (OYA)) on observational astronomy from 19 November to 9 December 2023.

African astronomers have held leadership roles in many areas of the IAU: Solomon Tessema from Ethiopia is one of our Vice Presidents on the Executive Committee, and Renée Kraan-Korteweg from South Africa served as Vice President in the last triennium. Several others have served as officers or on steering committees of our scientific Divisions, Commissions, and Working Groups.

With the full engagement of Africa in astronomy through Vision2024 and the intense efforts underway to make this meeting open-access, this General Assembly promises to be one of the most memorable in IAU's 105-year history. Be there, in person or virtually, to help celebrate our grand collective astronomical efforts and discover the beauty of Africa and its astronomical heritage!

### NOTES & REFERENCES

[1] *Unlocking Science* webpage: <https://stories.council.science/unlocking-science-astronomy-tourism/>



*Figure 1: MeerKAT telescope and two giant 'radio bubbles' above and below the central region of the Milky Way composite. Credit: South African Radio Astronomy Observatory (SARAO)*

# 1 Executive Committee

## 1.2 A Message from the New Interim General Secretary

**Piero Benvenuti,**  
*IAU Interim General  
Secretary*

When the IAU President approached me, prospecting my coming back to the IAU as Interim General Secretary (IGS), first of all, I felt honoured by the trust that the IAU Officers were demonstrating. At the same time, the offer evoked mixed feelings in me. I enjoyed very much my past “normal” General Secretary (GS) triennium, which enriched me both professionally and personally. Therefore, on one hand, the opportunity of spending an additional period as GS was quite enticing; on the other hand, the delicateness of managing the IAU during the months that precede a General Assembly made me ponder. In the end, considering that I owe a lot to the IAU and that I continue to be in close contact with the Union because of my involvement in the protection of dark and quiet sky as Director of the Centre for the Protection of the Dark and Quiet Sky from Satellite Constellation Interference (CPS), I accepted the Officers’ proposal.

My first priority as IGS is the support that the IAU will give to the preparation of the XXXII General Assembly (GA) in Cape Town this August. For several reasons, this GA will be remembered as a historical event: it is the first to be held in the African continent, which is flourishing as a leading player in astronomical research, and it is following the dramatic pandemic period that so much distressed our entire society.

The IAU financial resources that went partly unused because of cancelled activities during the pandemic will be used to support participation in the XXXII GA through the usual IAU grants, which are especially aimed at young researchers and colleagues in need. We are all looking forward to a very successful and enjoyable event!

I cannot conclude this short message without expressing my gratitude to Richard Green, who generously accepted the position of Interim Director of the CPS, a position that I will happily resume after the GA.



*Figure 1: Group photo taken on 30 August 2018 at the IAU General Assembly in Vienna, Austria. Credit: IAU/JM. Zamani*

# 2

## IAU Divisions, Commissions & Working Groups

### 2.1

#### New Series of Online Talks on Galaxy Spectral Energy Distributions

**Ignacio Ferreras**  
*Commission J1 Secretary*

**Nick Kylafis**  
*Commission J1 President*

**Cristina Popescu**  
*Commission J1 Advisor*

In 2023, the IAU Commission J1 on Galaxy Spectral Energy Distributions started a bimonthly online seminar series to disseminate the latest advances in the area of spectral energy distributions of galaxies. The remit of this commission encompasses a wide range of astrophysical problems over the full electromagnetic spectrum, so the seminars are aimed at covering both theoretical and observational work, probing many of the underlying components (stellar populations, gas, dust), as well as different spectral bands.

The series kicked off with two talks focused on the methodology of spectral fitting: Professor Aaron Robotham (UWA/ICRAR) gave an update of his work based on the code ProSpect, which includes an evolving metallicity for the stellar populations, as well as an extension into the radio domain. Dr Camilla Pacifici (STScI) presented an overview of the methodology of extracting information from SED fitting, with insight into the interpretation of results produced by many of the available fitting codes. In the following talk, Prof Paula Coelho (Sao Paulo) focused on the issue of spectral libraries of stellar atmospheres, a fundamental piece of any population synthesis model. The last talk to date was delivered by Dr Guang Yang (Kapteyn Institute), showing

the latest results from JWST/MIRI (CEERS), for which spectral fitting suggests an interesting population of heavily obscured AGN at high redshift. In 2024, we will continue with talks on fitting AGN spectra (Professor David Rosario, Newcastle) and radiative transfer modelling in star-forming galaxies (Professor Richard Tuffs, Max Planck). And many more to come!

The talks are held every other month on the second Monday of the corresponding month. An announcement is circulated to all J1 Commission members a few days before the event, but everybody is welcome to attend. Please send us a message (to [iferreras@iac.es](mailto:iferreras@iac.es)) with your email address to be included in future announcements. All IAU members can also sign up for Commission J1 so that they will always be updated with this and other activities of the Commission. The talks are recorded and uploaded to a YouTube channel that can be accessed from the IAU web page ([iau.org / YouTube / channels](http://iau.org/YouTube/channels)) or in a standard search ([YouTube @IAUCommissionJ1](https://www.youtube.com/@IAUCommissionJ1)). We also welcome your feedback regarding future talks or the format of this series.

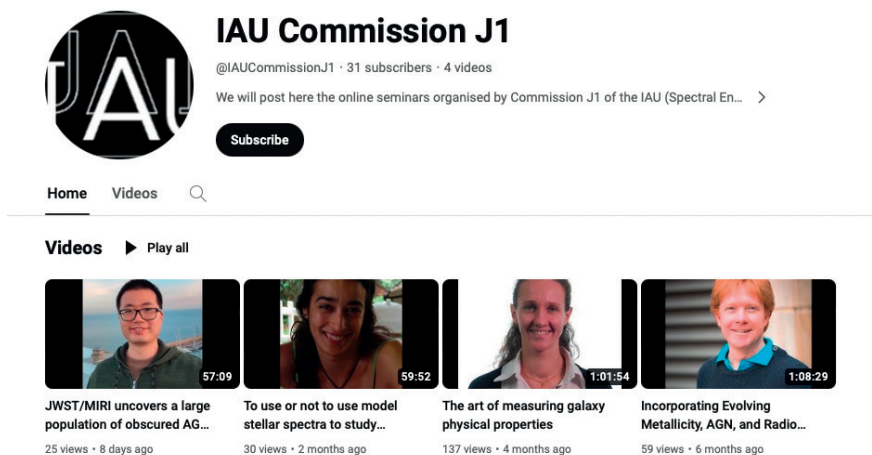


Figure 1: Screen capture of the new IAU commission J1 YouTube Channel. Credit: IAU Commission J1

## 2.2

### Highlights on the IAU Inter-Commission B2-B5 Working Group Laboratory Astrophysics Data Compilation, Validation and Standardization: from the Laboratory to FAIR Usage in the Astronomical Community

**Marie-Lise Dubernet,**  
Chair of the IAU Inter-Commission B2-B5 WG

The Inter-commission B5-B2 Working Group focuses on Laboratory Astrophysics Data Compilation, Validation, and Standardization, emphasising FAIR (Findability, Accessibility, Interoperability, Reuse) usage in the Astronomical Community. Established in November 2021, the group includes members from France, the USA, Austria, the UK, and China.

A large variety of atomic, molecular and solid-state data, commonly called "Laboratory Astrophysics Data", are essential for the analysis of astronomical spectra and for the development of astronomical models of a wide variety of astronomical objects. Databases useful to the astronomical community have been built over the years. Many analysis tools and modelling codes include Laboratory Astrophysics Data and both the astronomical and physics/chemistry communities have been working on interoperable access to data (IVOA<sup>1</sup>, the VAMDC<sup>2</sup> and the EuroPlanet<sup>3</sup> consortiums).

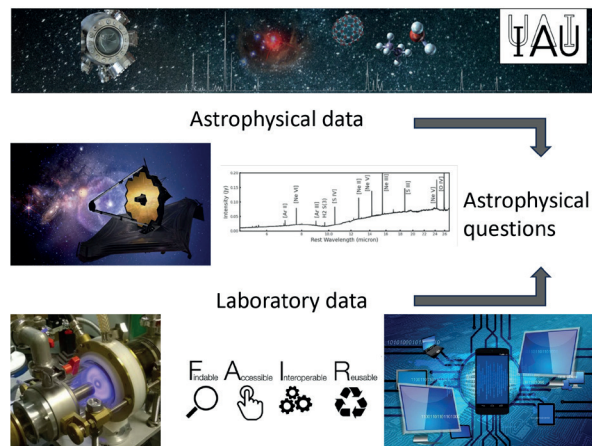
The working group had a very fruitful 2022 year, putting into place a series of actions such as surveys of the community in order to access the state-of-the-art in the field, setting up a Zenodo Community<sup>4</sup> where resources can be found, organising a session<sup>5,6</sup> at the Busan IAU

General Assembly, participating to various conferences with keynote lectures related to its objectives. Those activities led to the writing of a "white paper"<sup>7</sup> that will be published in the proceedings of the IAU 371 symposium: Honoring Charlotte Moore Sitterly<sup>8</sup>.

It is remarkable to note that this wide lobbying activity was followed in 2023 by a large survey<sup>8</sup> on the state of "Laboratory Astrophysics" in the USA. The Working Group members continue to be active within their country and communities to promote the discussions on the important issues of "Laboratory Astrophysics Data". The Working Group is open to new members as a means to widen its impact and long-term action further.

#### NOTES & REFERENCES

- [1] <https://ivoa.net/>
- [2] <https://vamdc.org/>
- [3] <http://www.europlanet-vespa.eu/>
- [4] [https://zenodo.org/communities/cb5-labastro\\_](https://zenodo.org/communities/cb5-labastro_)
- [5] <https://zenodo.org/records/6979299>
- [6] [doi : 10.1017/S1743921323000327](https://doi.org/10.1017/S1743921323000327)
- [7] [doi: 10.1017/S1743921323000261](https://doi.org/10.1017/S1743921323000261)
- [8] <https://www.nsf.gov/mps/ast/aaac/labastro.jsp>



*Figure 1: Fair image. Credits: SangyaPundir; Experiment: 10.3390/GALAXIES6040109 JWST: courtesy NASA, JWST Spectra: 10.3847/2041-8213/ac8a4e*

# 2

## IAU Divisions, Commissions & Working Groups

### 2.3 IAU Executive Committee Working Group on Professional-Amateur Relations Activities Overview

**Aniket Sule,**  
Co-Chair of the IAU Executive Committee Working Group on Professional-Amateur Relations

Since 2021, the IAU Executive Committee Working Group (WG) on Professional-Amateur Relations<sup>1</sup> has been developing ways to foster collaborations between professional and amateur astronomy communities. The WG started with a global survey of the distribution of amateur astronomers and observing equipment accessible to them. In 2023, it launched the Pro-Am Research Collaboration (PARC)<sup>2</sup> network through the IAU portal and started listing project opportunities. As a follow-up, the WG organised a 3-day workshop at Indian Institute of Technology (IIT-B)<sup>3</sup>, Mumbai, India, from 1-3 December 2023, primarily aimed at Amateur Astronomers.

The workshop was attended by 75 amateur astronomers. On the first day, the workshop started with a session by Akshat Singhal on the use of Python in astronomy. It was followed by Joe Phillip Ninan, who then showed how amateurs can search for exoplanets in publicly available data using Python codes. In the last session of the day, Varun Bhalerao discussed how amateurs can assist in the continuous monitoring of optical transients using 30-40 cm telescopes. This session also included a live demonstration of observation with GROWTH-India telescope<sup>4</sup> in the Himalayas.

On the second day, Avinash Deshpande introduced participants to radio astronomy done with low-cost antennae. Next, Dorje Angchuk spoke about doing astrophotography from the Himalayas. Clementina Sasso discussed solar physics projects in which amateurs can collaborate. Following that, Balaji Muthusubramanian and Kostas Markakis demonstrated a dedicated portal (named astro4pi) developed for pro-am collaboration. In the last session, John E. Brian O'Reilly spoke about the LIGO project and the potential of LIGO-India.

On the third day, Katrien Kolenberg spoke about the sonification of astronomy data. Disha Sawant discussed a newly launched citizen science project called "One Million Galaxies Project"<sup>5</sup>, and in the last session of the workshop, Aniket Sule discussed how amateurs can contribute to research on the historical development of Astronomy.

Khagol Mandal<sup>6</sup>, a 38-year-old local club of amateur astronomers in Mumbai, was the lead organiser for the workshop, and they were assisted by Krittika<sup>7</sup>, a student astronomy club of the IIT-B.

#### NOTES & REFERENCES

- [1] IAU Executive Committee Working Group (WG) on Professional-Amateur Relations page: [https://www.iau.org/science/scientific\\_bodies/working\\_groups/professional-amateur/](https://www.iau.org/science/scientific_bodies/working_groups/professional-amateur/)
- [2] Pro-Am Research Collaboration (PARC) page: [https://www.iau.org/science/scientific\\_bodies/working\\_groups/professional-amateur/](https://www.iau.org/science/scientific_bodies/working_groups/professional-amateur/)
- [3] Indian Institute of Technology (IIT-B) website: <https://www.iitb.ac.in/>
- [4] GROWTH-India telescope website: <https://sites.google.com/view/growthindia/>
- [5] One Million Galaxies Project website: <https://csa.pkc.org.in/>
- [6] Khagol Mandal web address [www.khagolmandal.com](http://www.khagolmandal.com)
- [7] Krittika Astronomy Club the website of the student astronomy club of the IIT-B: <https://krittikaitb.github.io/>



*Figure 1: Main room overview of the 3-day workshop at Indian Institute of Technology (IIT-B). Credit: The Author*

## 3.1 The XVII Latin American Regional IAU Meeting in Montevideo, Uruguay: A Brief Report

**Gonzalo Tancredi,**  
Chair of the SOC,  
Departamento de  
Astronomía, Facultad de  
Ciencias, Udelar, Uruguay

**Cecilia Mateu,**  
Chair of the LOC,  
Departamento de  
Astronomía, Facultad de  
Ciencias, Udelar, Uruguay

**Juan José Downes,**  
Chair of the LOC,  
Departamento de  
Astronomía, Facultad de  
Ciencias, Udelar, Uruguay

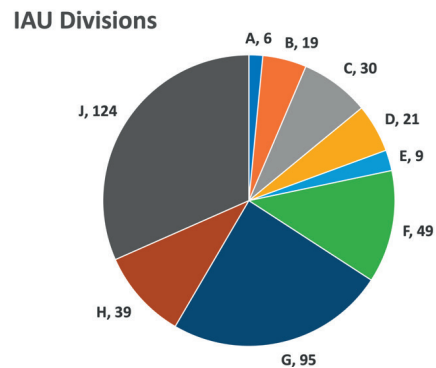
Figure 1: A Distribution of contributions among the IAU Divisions (from A to J). Credit: LARIM 2023 LOC

The XVII Latin American Regional IAU Meeting - XVII Reunión Regional Latinoamericana De La UAI (LARIM-RRLA)<sup>1</sup> was held for the second time in Montevideo, Uruguay, from November 27<sup>th</sup> to December 1<sup>st</sup>, 2023.

A total of 419 registrations were received, with 53% students and 47% researchers; gender distribution was 40% female and 60% male. Unfortunately, due to economic difficulties, the number of Argentine participants was low, and none from Venezuela were able to attend. The event featured 392 presentations, including 20 invited plenary talks (eight reviews, only two remote due to personal reasons), 140 contributed talks, and 232 posters. The gender distribution among invited talks was 55% female and 45% male.

The program was arranged according to IAU Divisions, ensuring at least one invited talk per Division. There were 24 parallel sessions in groups of three, and there was at least one session per Division. The distribution of contributions among the Divisions is presented in Figure 1.

Simultaneously, the III Workshop on Astronomy Beyond the Common Senses for Accessibility and Inclusion took place in Montevideo. Alongside the scientific program, five



outreach talks were held at different locations. All talks during the meeting were live-streamed on public YouTube channels (recordings will be available).

Due to the limited local support, we tried to keep the organisation's cost as low as possible. We acknowledge the financial support from the IAU and the Intendencia de Montevideo, which offered the Centro de Conferencias free of charge. Despite the limited funds, the Local Organising Committee could assign grants to 159 participants (38% of the total).

On November 30<sup>th</sup>, we held the Assembly of the LARIM. After a successful meeting of representatives from Latin American astronomical societies, the Assembly expressed a strong desire to establish a Federación de Sociedades Astronómicas Latinoamericanas, aiming to promote collaboration within the region. Mexico was chosen as the host of the XVIII LARIM to be held in 2025.

### NOTES & REFERENCES

[1] Further details about the meeting can be found at <https://rrla-larim-2023.uy/>



Figure 2: An image depicting the main venue is shown. Credit: LARIM 2023 LOC



## 3.2 Embracing a New Era at IAU General Assembly 2024 in Africa

**Kevin Govender,**  
*IAU Office of Astronomy for Development Director*

**Daniel Cunnama,**  
*Science Engagement Astronomer, South African Astronomical Observatory*

The upcoming 32<sup>nd</sup> International Astronomical Union General Assembly (IAU GA 2024), set to take place in Cape Town, South Africa, from August 6-15, 2024, is not just another event in the astronomical calendar. It's a groundbreaking moment, marking the first time this prestigious assembly will be held on the African continent. With the core principles of Accessibility, Impact, and Sustainability, IAU GA 2024, hosted by the National Research Foundation and supported by the Department of Science and Innovation, is shaping up to be a historic convergence of minds and ideas.

This year's General Assembly distinguishes itself with its inclusive and innovative approach. Emphasising a family-friendly environment, the event promises a novel hybrid conferencing model, welcoming both physical and virtual participants. This model is a testament to the IAU's commitment to making astronomical science more accessible and impactful globally.

The call for abstracts, now open until March 1, 2024, invites contributions for oral presentations and posters. This inclusive approach allows participation from every corner of the globe, ensuring diverse perspectives and insights.

In a stride towards inclusivity, the IAU GA 2024 also offers grant opportunities, including IAU Grants and Africa Grants, designed to support astronomers and students from diverse backgrounds. These grants, supported by partners such as the LSST Discovery Alliance and African Astronomical Society, are particularly aimed at those with limited means and young scientists, fostering a more diverse astronomical community. The deadline for these grants coincides with the abstract submission.

The scientific program of IAU GA 2024 is as diverse as it is comprehensive. Attendees can look forward to sessions on Gravitational Wave Astrophysics, Advances in Solar Observations, Planetary Science in the JWST Era, and more. These sessions reflect the cutting-edge research

and developments in astronomy, offering a platform for groundbreaking discussions and discoveries.

For more information on the IAU GA 2024, including details on abstract submission, grant applications, and the conference program, please visit the official website or contact the team at [info@astronomy2024.org](mailto:info@astronomy2024.org).

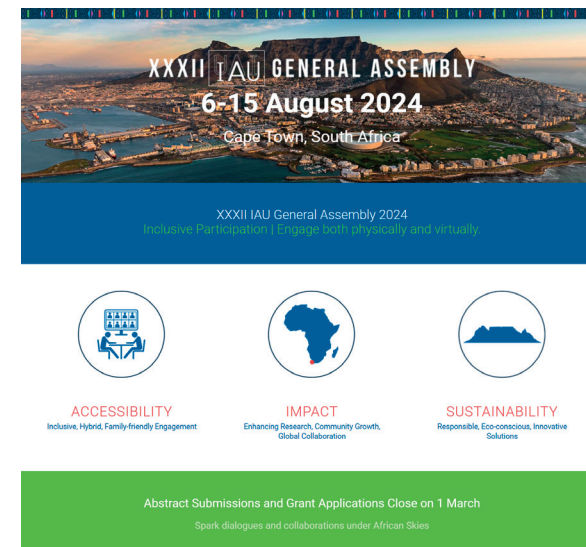


Figure 1: A partial snapshot of the IAU GA 2024 website frontpage at <https://astronomy2024.org/>. Credit: GA2024 NOC.

## 3.3 IAU Membership Coordination: Towards Building a Member-centered Engagement Strategy

Lina Canas,  
IAU Membership  
Coordinator

Over its one hundred years, the IAU remained steadily advancing across the decades, relying on its members, a community of international experts and their strong volunteer commitment to shaping the Union's paths and advancing the science of astronomy<sup>1</sup>.

This involvement is rooted in the relationship with and between the Union's members, creating a Union centred around a sense of community and providing exceptional value through reliability, offering opportunities for training, networking, and funding, but most of all, being inclusive. Moving beyond a limiting single Union-member dichotomy and having numerous initiatives serving the wider astronomy-related community through its Offices and Centres' of different focus actions.

Understanding the added value that the IAU brings to the broader astronomy ecosystem is essential, as well as identifying how the IAU supports its Individual and Juniors members (e.g. career-wise) and National members (e.g. achieving their institutional goals). Therefore, our membership engagement strategy<sup>2,3</sup> is implemented on two fronts – external and internal, but focused on one central aspect – achieving representative growth. External membership engagement focuses on the growth of the Union itself, engaging with external institutions, and growing our membership into a full international representation of nations and relevant fields. (And) Internal engagement with our National members, Individual and Junior numbers, growing internally, while achieving a good representation and supporting the national communities we already serve.

At the core of the membership coordination plan and engagement strategy is our pursuit of representation, evolving by involving our members in clear, open communication, knowing our members, their needs and expectations, and combining this information to help define the added value of the Union and having dialogues that can inform our actions as a Union. As we move into the second half of the

implementation of the IAU Strategic Plan 2020-2030, and as we start 2024, the year of our first General Assembly in Africa, we have a unique opportunity to continue our pursuit of global representation and collaboration.

We value your feedback in building our membership engagement strategy fundamentals. Please contact us, at [iauinfos@iap.fr](mailto:iauinfos@iap.fr) if you'd like to be further engaged in the discussion.

### NOTES & REFERENCES

- [1] Johannes Andersen, David Baneke, Claus Madsen, The International Astronomical Union: Uniting the Community for 100 Years. DOI: <https://doi.org/10.1007/978-3-319-96965-7>
- [2] Red Rocket Creative Strategies, The Four Essentials for Member Engagement: A White Paper <https://blog.redrocketcreative.com/membership-engagement-strategy> (retrieved on September 2023)
- [3] Camila Fonseca Amorim da Silva et al., The future of scientific societies. *Science* 380, 30-32(2023). DOI:10.1126/science.adh8182

## 3.4

### Shaw-IAU Workshop on Astronomy for Education: Global and Regional

**Markus Pössel,**

*IAU Office of Astronomy for Education Director*

**Carolyn Liefke,**

*IAU Office of Astronomy for Education Deputy Director*

The IAU Office of Astronomy for Education (OAE) continued its series of international workshops funded by the Shaw Prize Foundation. From November 29 to December 1, 2023, nearly 800 participants from 97 countries took part in the (by now traditional) global online Shaw-IAU Workshop. The event focused on two themes: Five sessions were all about astronomy education outside the classroom, featuring examples of how astronomy can be taught in a diverse range of environments such as science centres, planetaria and youth clubs.

Three sessions covered the year's special science topic: planetary atmospheres, covering planetary atmospheres for solar system planets – including our own Earth – as well as the emerging field of studies of exoplanet atmospheres. The science topic provides participants with key knowledge in selected sub-fields in astronomy. This year's topic was chosen for its relevance to climate change as one of the key challenges facing humanity.

Other sessions covered astronomy education research as well as best-practice examples and resources for primary and secondary school teaching. Communities of Arabic-, Hebrew-, Portuguese-, Romanian- and Spanish-speaking astronomy education stakeholders had organised networking sessions in their respective languages. Selected talks will be available on the OAE's YouTube channel.

This year also saw a completely new format: October 3–5, the African Regional Shaw-IAU Workshop on Astronomy for Education took place in Cape Town, organised by the South African Astronomical Observatory, the African Astronomical Society and the OAE (lead: Dr Tshiamiso Makwela).

For this in-person workshop, participants from all over Africa gathered to discuss the potential of astronomy for primary and secondary school education, network and share experiences and best practices. The workshop also served to strengthen and expand the network of African astronomy educators,

including the IAU National Astronomy Education Coordinator teams (NAECs). Additional regional workshops are planned for the coming years.



*Figure 1: Group photo of the African Regional Shaw-IAU Workshop in October 2023. Credit: IAU OAE*

## 3.5

### Asia-Pacific Regional IAU Meeting Overview

**Saeko Hayashi**

*APRIM2023 SOC Chair,  
National Astronomical  
Observatory of Japan (NAOJ)*

**Junichi Watanabe,**

*APRIM2023 LOC  
& SOC Chair,  
National Astronomical  
Observatory of Japan (NAOJ)*

The bus is leaving for Big Palette Fukushima, and the signboard at the bus stop urges people to form a line. Young and used to be young, from east and west, all different ways of greetings, with one destination, they got on board. Is the air in the bus hot because of the excitement of those on board or the August weather in Japan? The enthusiasm for sharing the research or activities is the common thread amongst the participants of the Asia Pacific Regional IAU meeting held in August 2023 in Koriyama City, Fukushima Prefecture, Japan.

Her Imperial Highness Princess Akishino made the opening ceremony a special occasion by referencing her own admiration of the sky and the outreach efforts in the region.

There were almost 500 participants from 39 countries and regions, with about 500 presentations and many discussions. The topics of the science session spanned from the nearest star – the Sun - and the planetary system all the way to the very end of the known universe.

Travel support from IAU helped those from overseas, primarily early career researchers, as the airfare was skyrocketing. Hybrid mode was offered, and it was worthwhile making all

sorts of arrangements to enable it, including the temporary cables installed throughout the building. This region includes two oceans – the Pacific and Indian – and the Eurasia and Americas continents. Hence, the time zone spans between plus and minus nine hours (or so) with respect to UTC. One remote participant quipped it is normal to get up in the middle of the night as an observational astronomer.

For many early career researchers, this was the first in-person international conference after the isolation due to the pandemic. Summer weather did not hinder the friendly and sincere discussions. The networking is forged or started during this conference and is to be continued.



*Figure 1: Women in Astronomy session had many participants and interactions. Group photo after "Women in Astronomy" session. Credit: The Authors*



*Figure 2: From east and west, north and south, we gathered together to look up! Group photo after a plenary session. Credit: The Authors*

# 4 Science Focus

## 4.1

### The IAU Symposium 386 on 'Dark Sky and Astronomical Heritage in Boosting Astro-tourism Around the Globe' Report

**Alemiye Mamo**

*Chair of the IAU*

*Symposium 386*

*Space Science and*

*Geospatial Institute (SSGI)*

The IAU Symposium 386 (IAUS386), titled 'Dark Sky and Astronomical Heritage in Boosting Astro-tourism Around the Globe,' took place in Addis Ababa, Ethiopia, from November 13-17, 2023, in a hybrid format. It marked the fourth IAU symposium in Africa and the second in Ethiopia. The symposium focused on sharing research and experiences to preserve dark skies and promote astro-tourism globally. It included five scientific sessions and two forum discussions covering topics such as dark sky conservation, cultural astronomy, astro-tourism policies, and education. The forums addressed the significance of dark sky conservation, collaboration, policy development, and the use of dark skies in education, concluding with anticipation for the upcoming IAU General Assembly in 2024 and emphasising the development of an African strategy for dark sky conservation.

The symposium drew 200 participants from around the world, with 160 attending in person and 40 joining online, representing six continents and 34 countries. The program featured six opening remarks, 11 invited talks, 65 contributed talks, nine posters, and two forum discussions. Side events included a mini-exhibition, two public talks and outreach activities conducted in six schools. The Scientific Committee (SOC) comprised 16 globally recognised professionals. The local organisation was spearheaded by the Space Science and Geospatial Institute (SSGI) and IAU in collaboration with the Ministry of Innovation and Technology (MiNT), the Ministry of Tourism (MOT), the Ethiopian Space Science Society (ESSS), the East Africa Regional Office of Astronomy for Development (EA-ROAD), and the Africa Astronomical Society (AfAS).

In conjunction with IAUS386, the Africa Planetarium Association (APA) Biannual Workshop and Dark Sky and Astro-tourism Capacity Building Training were conducted from November 11-12, 2023, as satellite workshops of the IAU386 Symposium, linking Dark Sky, Astro Tourism, and Digital Planetarium. The APA workshop attracted 46 in-person participants from 13 countries and aimed to foster

collaboration with African-based science centres, enhancing science communication and education, particularly in astronomy, while promoting Astro-Tourism and related fields. Concurrently, a capacity-building training on 'Dark Sky and Astro-tourism' targeted 80 participants in Ethiopia, including scientific communities, astro-tourism stakeholders, and government decision-makers. The goal was to explore the integration of dark sky and Astro-Tourism into the existing tourism industry, raising awareness and facilitating experience-sharing on these crucial issues.

In summary, IAUS386 facilitated international collaborations, igniting initiatives to preserve dark skies and harness the economic potential of astro-tourism. The symposium played a pivotal role in establishing partnerships between the scientific community and the tourism industry, contributing to economic development and GDP growth through the promotion of dark skies, cultural astronomy, and astronomical heritage. The IAUS386 organising committee acknowledges the support provided by IAU and other organisations for the success of the symposium.



Figure 1: Group photo for the IAUS386. Credit: The Author

# 4 Science Focus

## 4.2

### The IAU Symposium 385 on 'Astronomy and Satellite Constellations: Pathways Forward' Report

#### The IAU CPS Hub Leads and Management Team<sup>14</sup>

The IAU Symposium 385<sup>1</sup> on Astronomy and Satellite Constellations: Pathways Forward, held on 2–6 October 2023, was a big success. The Management Team and Hub Leads of the IAU Centre for the Protection of the Dark and Quiet Sky from Satellite Constellation Interference<sup>2</sup> (IAU CPS), in addition to the Scientific Organising Committee (SOC)<sup>3</sup>, were heavily involved in the preparation of sessions<sup>4</sup>.

The Community Engagement sessions were fortunate to have presentations from traditional knowledge keepers. The speakers shared perspectives on their relationship with the sky and cosmos and discussed ways to co-create collaborative endeavours related to the night sky and space. We also heard from speakers with a background in history and science and technology studies, who helped us examine past and present space and astronomy issues.

The “SatHub” or software and observations sessions concentrated on challenges to ground-based and space-based radio and optical astronomy (whether imaging or spectroscopy), as well as amateur astronomy. They also addressed strategies for co-existence in all of these categories. In recent years, various strategies for co-existence in terms of optical astronomy have been developed. There are now better models and data for satellite brightness, which are key to enabling mitigation, active avoidance, or use in compliance checks. Future observations by the CPS SatHub observing network will determine whether some coatings and Bragg mirrors<sup>5</sup> on reflective surfaces of Starlink satellites will help and how well. For spectroscopy, better modelling and understanding of satellite spectra will enable the emission from satellites to be calibrated out of astronomical data. Autonomous imagers on large spectroscopic facilities can help identify when an exposure was contaminated. For space-based observatories, there are software solutions (Starunlink) for streak detection and elimination that may help. Ultimately SatHub is bringing all stakeholders together to tackle the constellation challenge.

The Policy sessions included awareness-raising and coordination. The Policy Hub is engaging a growing network of ~140 people in research and policy work and regular interactions with government affairs representatives from several national astronomical societies, observatories and spectrum managers. These sessions also included discussion on deliverables from the work packages the Policy Hub has undertaken (a position paper, Space Sustainability Rating, consolidating recommendations from the satcon-related workshops (Dark & Quiet Skies I<sup>6</sup> & II<sup>7</sup> and SATCON 1<sup>8</sup> & 2<sup>9</sup>), lunar policy, etc.). Progress in policy-making in countries all around the world was also highlighted with the general message that steady interaction with policymakers and industry is required to raise awareness and promote the protection of dark and quiet skies. There is also a growing number of high-level recognitions of the topic of dark and quiet skies<sup>10,11,12,13</sup>.

The Industry and Technology session consisted of a panel including a representative from SpaceX, who provided an update on Starlink satellites and their mitigation measures. The Q&A highlighted a number of concerns regarding relationships with regulators, the state of the market and its limits, and the flow of information from operators to support independent researchers.

In light of the outcomes shared at the IAUS385, the next steps for everyone include examining the new information, requesting collaborations with some and inviting symposium participants who have not yet joined the IAU CPS to do so. You are welcome to look over the slides and video<sup>4</sup> of individual presentations on the IAUS385 website. You are also welcome to visit the IAU CPS website<sup>2</sup> and become a member.

#### NOTES & REFERENCES

[1-14] You can consult all notes and references [here](#).

# 5 IAU Offices

## 5.1

### Astronomy for Mental Health: Flagship project of the IAU Office of Astronomy for Development

#### Dominic Vertue

*IAU Office of Astronomy Development, Astronomy for Mental Health Flagship Project Manager*

In its mission of making the world a better place, the IAU Office of Astronomy for Development (OAD) has been implementing pilot projects aiming to use astronomy as a tool to improve mental health and well-being.

Mental health is a pressing global concern, and approximately half the population will develop a mental health disorder within their lifetime<sup>1,2</sup>. There is also a stark disconnect between adequate access to mental health services, utilisation of these services, and affordability of these services<sup>2-8</sup>. To aid in meeting the mental health needs of individuals, the OAD set out to find ways that astronomy can help.

The OAD's pilot activities in 2023 included:

- Online workshops for university students (focused on astronomy-themed self-care activities.)
- In-person focus groups with postgraduate students (focused on evaluating the resources created.)
- Wellbeing retreat for postgraduate students (focused on guided dark sky sessions.)
- Online recordings and workbooks targeting the general public (focused on astronomy-themed self-care activities.)

Pilot activities don't substitute or replace mental health services but provide a novel way for self-exploration and learning coping mechanisms.

Positive feedback has been received from participants of the various pilot activities carried out throughout the year. The OAD continually adapts based on the feedback received to create more meaningful and useful materials. These are packaged into easy-to-use resources and distributed freely online and through the OAD's website and regional offices.

A common thread between all activities is the multi-disciplinary collaboration between mental health care professionals and astronomers. We use self-reflection activities from Acceptance and Commitment Therapy combined with astronomy to create a context through which

participants can shift their perspectives and gain new insights into their challenges.

One of the pilots provided a good example of how astronomy can be used for mental health. During the wellbeing retreat, PhD students were taken to Sutherland, a dark sky location, to explore the restorative effects of interacting with the night sky<sup>9,10</sup>. During the day, they explored and worked on their studies, and as the Sun set, they were guided through self-exploration activities while learning about and enjoying the beauty and awe of the night sky.

The OAD continues to investigate the potential of using the night sky as a tool to enhance mental well-being for everyone. We welcome anyone keeping up with the latest information findings or to get involved at: [www.astro4dev.org/astronomy-mental-health/](http://www.astro4dev.org/astronomy-mental-health/).

#### NOTES & REFERENCES

[1-10] You can consult all notes and references [here](#).



Figure 1: Sutherland retreat group. Credit: IAU OAD

# 5 IAU Offices

## 5.2

### IAU Office for Astronomy Outreach 2023 Overview and a Sneak Peak Into 2024

**Kelly Blumenthal**

*IAU Office for Astronomy Outreach Director*

The IAU Office for Astronomy Outreach (OAO) focuses on making astronomy accessible to everyone through inclusive outreach and public engagement. It is a joint venture of the IAU and the National Astronomical Observatory of Japan (NAOJ), based in Mitaka, Tokyo, and hosts a network of more than 130 IAU National Outreach Coordinators (NOCs).

The Office has recently seen some changes as Lina Canas, our former Director, and Suzana Filipecki Martins, the former International Outreach Officer, resigned from the OAO. The OAO is now under the leadership of former OAO Deputy Director and new Director Kelly Blumenthal, and the search for a full team is currently underway.

We have recently published two issues of the Communicating Astronomy with the Public (CAP) Journal in honour of the Centennial of the Planetarium, both of which can be downloaded for free at the CAP Journal website<sup>1</sup>. As a note to all of our readers and potential authors, the journal is now fully peer-reviewed. We invite everyone to review the new CAPjournal submission guidelines<sup>2</sup> and consider submitting your work to the journal.

The next CAP Conference, the largest conference of astronomy communicators worldwide, will take place from 24-28 June 2024 online and at Cité de l'espace in Toulouse, France. Registration, abstract, and grant submission are now open at the CAP 2024 conference website<sup>3</sup>.

Our NOCs have been and continue to do inspiring work within their communities to spread awareness and knowledge of astronomy. We are excited to kick off the new year with our Women and Girls in Astronomy Global Outreach Project, bookended by the International Day of Women and Girls in Astronomy (11 February) and the International Day of Women (8 March). This year, we are featuring the incredible stories of some of our NOCs who have worked through experience and by example to promote the participation of women and girls in astronomy. This year marks the 10th anniversary of the NOCs

network, and we plan to celebrate our NOCs throughout 2024. Stay tuned for more information about our plans for 2024!

#### NOTES & REFERENCES

- [1] CAP Journal website: <https://www.capjournal.org/issues/index.php>
- [2] CAPjournal submission guidelines: <https://www.capjournal.org/submission.php>
- [3] CAP 2024 conference website: <https://www.cap2024conference.org/>



Figure 1: CAPjournal #33 cover. Credit: ZEISS Archive (Foreground Image) Formation and Evolution of Dark Matter Halos (II. Formation of the Large-Scale Structure of the Universe) ver.2; Simulation: Tomoaki Ishiyama; Visualization: Hirotaka Nakayama; 4D2U Project, NAOJ (Background Image)



# 5 IAU Offices

## 5.3

### The International School for Young Astronomers: 2023-2024 Program

**Itziar Aretxaga**

*INAOE, ISYA Director*

**David Mota**

*University of Oslo, ISYA*

*Deputy Director*

**Nigar Abbasova**

*University of Oslo, OYA intern*

The International Schools for Young Astronomers (ISYAs) program organised the 43<sup>rd</sup> ISYA<sup>1</sup> in Mexico from 17<sup>th</sup> July to 4<sup>th</sup> August 2023 and the 44<sup>th</sup> ISYA<sup>2</sup> in South Africa from 19<sup>th</sup> November to 9<sup>th</sup> December 2023.

The 43<sup>rd</sup> ISYA was held at the Instituto Nacional de Astrofísica, Óptica y Electrónica in Tonantzintla, Mexico, and was attended by 39 students, mostly at the MSc level, from 13 Latin American countries: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Ecuador, Mexico, Panama, Peru, Salvador and Uruguay. Among these, there were nationals of Colombia and Spain studying in the above countries. We had 14 lecturers: nine from Mexico, one from Australia, one from Brazil, one from Italy, one from Norway, and one from the USA. The school was geared towards the exploitation of large databases, although observational optical and millimeter-wavelength astronomy was also part of the curricula.

The 44<sup>th</sup> ISYA was held at the South African Astronomical Observatory (SAAO) in Cape Town and was attended by 28 students, mostly at the MSc level, from 12 African countries: Botswana, Burkina Faso, Ethiopia, Kenya, Madagascar, Mozambique, Namibia, South Africa, Tanzania, Uganda, Zambia. Among these, there were nationals from

Cameroon, Ghana, Sudan, and Zimbabwe. We had ten lecturers: three from South Africa, two from the USA, one from Australia, one from Mexico, one from the Netherlands, one from Norway, and one from Spain. The school was geared towards optical data exploitation, with a visit and practice at SAAO telescopes.

The 45<sup>th</sup> ISYA will be held near Algiers, Algeria, from 15 September to 5 October 2024.

We highlight the words of one of our recent alumni: *"I am immensely grateful for the opportunity to be an ISYA participant; this has been my best, most inspiring and most practical astronomy experience so far! Long live ISYA and many, many more young astronomers across Africa get the opportunity to change Africa's astronomy landscape through such programs."*

#### NOTES & REFERENCES

[1] 43<sup>rd</sup> ISYA Website: <https://www.inaoep.mx/~isya2023/>

[2] 44<sup>th</sup> ISYA Website: <https://isya2023.saa.ac.za/>

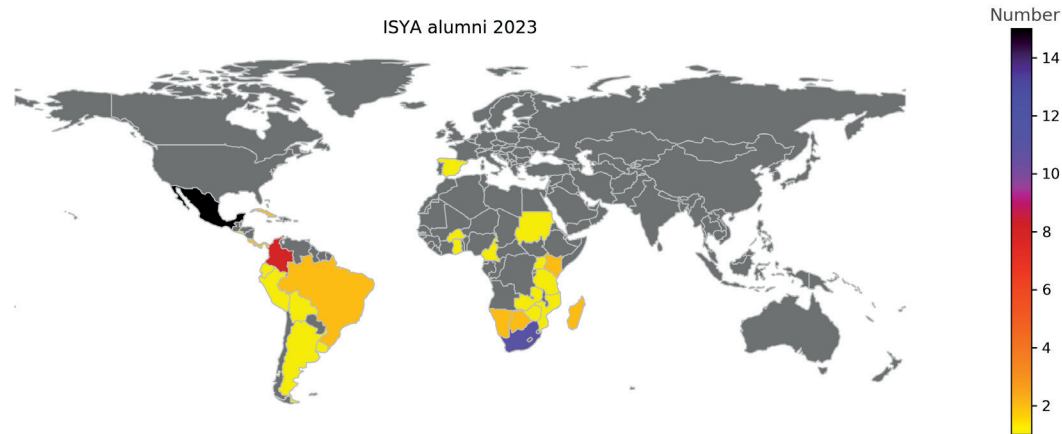


Figure 1: Distribution of the nationalities of ISYA alumni attending the 43<sup>rd</sup> and 44<sup>th</sup> ISYAs in 2023. Credit: IAU OYA/ISYAs

# 6

## Cooperation with other Unions and Organisations

### 6.1

#### IAU/I-HOW Radio Astronomy 2023: A Joint Iran and Türkiye Hands-on Workshop in Radio Astronomy

**Fatemeh Tabatabaei**  
IAU/I-HOW Radio Astronomy  
2023 Scientific Organising  
Committee Chair

The IAU Hands-On Workshops (I-HOW)<sup>1</sup> were initiated in 2022 to train young scientists in developing countries to access vast amounts of astronomical data available in archives scattered around the world. The I-HOW Radio Astronomy 2023<sup>2</sup>, a joint Iran and Türkiye Workshop, took place at Erciyes University in Türkiye from 4 to 15 September thanks to the Gordon and Betty Moore Foundation, the Institute for Research in Fundamental Sciences, the Turkish Astronomical Society, and the Erciyes University.

This workshop was aimed to increase awareness in central and western Asia of possible research in radio astronomy, provide a unique platform to learn reduction and analysis of interferometric observations, increase science return of the available radio arrays, highlight current research programs, inspire young researchers to use future observatories such as SKA and ngVLA, and foster environment. A full-fledged program, including lectures, tutorials, projects, and scientific talks, was designed and completed successfully.

The workshop was held with 32 participants (56% female) from Georgia, Iran, Kazakhstan, Pakistan, Türkiye, and Uzbekistan, who were selected based on academic and scientific merits. Eleven lecturers and tutors (45% female) were selected based on their expertise covering four general topics: I) Radio continuum studies with MeerKAT, II) HI 21-cm spectroscopy with VLA, III) mm and submm studies with ALMA, and IV) Long base-line interferometry with VLBI and EHT.

Science talks were designed to showcase the application of radio data to study a wide range of topics such as star and planet formation, galaxy evolution, the interstellar and intergalactic medium, AGNs, and black holes.

A more in-depth training was performed by working on projects in groups of 2-4. Participants presented their results on the last day of the workshop. They showed excellent performance in learning the concepts, methodologies,

tools, data handling and presenting their results. They were even capable of discovering new features in the archived data thanks to the amazing lecturers and tutors who made selfless acts and devotion to the workshop. Evaluating the organisations, about 100% satisfaction was demonstrated by the participants at the end of the workshop.

#### NOTES & REFERENCES

- [1] I-HOW: IAU Hands-On Workshops page: <https://iau.org/training/iau-hands-on-workshops/>
- [2] I-HOW Radio Astronomy 2023 Website: <https://ihowradioastro.github.io/>



Figure 1: Photo of a session of the Workshop. Credit: IAU/IHOW Radio Astronomy 2023 LOC



Figure 2: Group Photo: Credit: IAU/IHOW Radio Astronomy 2023 LOC

# 6

## Cooperation with other Unions and Organisations

### 6.2

#### The IAPS-OAD Partnership in Advancing Astronomy for Mental Health

**Anna Christoforidou**  
*International Association of Physics Students (IAPS)*  
*Outreach Manager*

**Jan Scharf**  
*IAU-IAPS Liaison Officer*

In November 2023, an innovative initiative was launched through the collaborative efforts of the IAU Office of Astronomy for Development (OAD) and the International Association of Physics Students (IAPS)<sup>1</sup>. This project, the first of its kind, aims to delve into the fascinating intersection of astronomy and its influence on mental health and well-being.

The International Association of Physics Students (IAPS) connects physics students and physics student societies worldwide, fostering a spirit of peaceful collaboration. One of the key activities of IAPS is the annual organisation of the International Conference of Physics Students (ICPS)<sup>2</sup>, along with the Physics League Across Numerous Countries for Kick-ass Students (PLANCKS)<sup>3</sup> – a theoretical physics competition.

During the OAD-IAPS “Astronomy as a Tool for Mental Health” Workshop, participants were introduced to the Acceptance and Commitment Therapy (ACT), a well-established psychotherapeutic technique. Additionally, the workshop included activities from the OAD’s workbook, “Planetary Self-Care Activities: Jupiter Joyful Journaling.” This particular activity is designed to encourage students to engage in self-reflection, goal-setting, and the exploration of their aspirations and dreams.



Figure 1: International Association of Physics Students (IAPS) Logo. Credit: IAPS

Looking ahead, IAPS remains committed to maintaining a close relationship with the IAU Office for Astronomy Outreach (IAU OAO). The goal is to explore future collaborative opportunities that can expand and enrich their joint efforts on physics outreach. This includes potential collaborations with all International Astronomical Union (IAU) Offices, thus broadening the scope and impact of their shared mission.

#### NOTES & REFERENCES

- [1] International Association of Physics Students (IAPS) Website: <https://iaps.info/>
- [2] International Conference of Physics Students (ICPS): <https://iaps.info/events/icps/>
- [3] Physics League Across Numerous Countries for Kick-ass Students (PLANCKS): <https://iaps.info/events/plancks/>



Figure 2: This was ICPS 2019! Around 500 Physics students from almost 50 countries from across the globe gathered for a week of lots of Science, Culture and friendship. Credit: IAPS

# 7 IAU Timeline: Dates and Deadlines

## 7.1

### IAU Dates and Deadlines February – September 2024

#### FEBRUARY

##### Feb 1

- Call to Commission Membership for At-Large Organizing Committee Candidates;
- Call to Division Membership for At-Large Steering Committee Candidates

##### Feb 15

- The General Secretary shall invite Division Presidents and the members of the Executive Committee to nominate potential members of the Special Nominating Committee (SNC);
- DEADLINE for Approved Nominations for Individual Members to be Submitted to the IAU Secretariat by NCAs or Adhering Organizations and subsequently nominations are transferred to the Membership Committee;

##### Feb 15 - Mar 15

- Nominations for the IAU Astronomy Education Prize, the IAU Astronomy Outreach Prize and the IAU Astronomy Development Prize
- Submission of Resolutions without Financial Implicationst

##### Feb 21

- Communication of Motions to Amend Statutes and Bye-Laws to the National Members

#### MARCH

##### Mar 1

- Closure of Candidate Applications for Division Elections
- Closure of Candidate Applications for Commission Elections
- GA2024 Deadline for Abstracts & Grants and Early Registration
- DEADLINE for Applications for the Gruber Foundation Fellowship
- GS to send to the Finance Committee the 2023 Financial Report, the Auditor's report and the proposed Triennial Budget

##### Mar 15

- GS to send to the National Members the Triennial Budget.
- Deadline for Submissions by the National Members of Honorary Member candidates

##### Mar 31

- Triennial Reports due for Transactions from: Divisions, Commissions and WGs

#### APRIL

##### Apr 1

- Opening of Commission Elections
- DEADLINE for submitting to the GS bid books proposing to host the IAU General Assembly in 6 years

##### Apr 8

- GA2024 Abstract Outcomes to Authors

##### Apr 10

- Opening of Division Elections

##### Apr 15

- Submission of Motions to Modify the Proposed Budget or Any Other Matters Pertaining to it, to the General Secretary (before the General Assembly)
- Deadline for the Finance Committee to Provide the IAU General Secretary with the Annual Report on the Accounts

##### Apr 30

- Notification of the Adoption of any Proposed Modifications to the Budget Distributed to the National Members

##### Apr 29

- Grants Outcomes to Authors

#### MAY

##### May 1

- Communication by the GS of the complete GA Business Agenda to the National Members
- End of Commission Elections
- Program of Symposia, Focus Meetings and Division Days Finalized and Announced
- Call for Letters of Intent (LOI) for Symposia 2026

# 7 IAU Timeline: Dates and Deadlines

## 7.1 IAU Dates and Deadlines February – August 2024

May 10

- End of Division Elections

May 15

- DEADLINE for the Finance Committee to submit a list of at least 10 Individual Members of the Union who accept to serve on the Committee for the next triennium if elected, including a nominee for Chair
- DEADLINE to receive potential nominations of members for the Special Nominating Committee (SNC) for the following triennium from Division Presidents and EC Members
- DEADLINE for the Membership Committee to submit a list of at least 10 Individual Members of the Union who accept to serve on the Committee for the next triennium if elected, including a nominee for Chair
- Announcement of Recipients of the Gruber Foundation Cosmology Prize

May 20

- The General Secretary forwards list of proposed Finance Committee Members for the next triennium to the National Members and invites additional nominations from them
- The General Secretary forwards list of proposed Membership Committee Members for the next triennium to the National Members and invites additional nominations from them

May 31

- Applicants will be Notified by the IAU General Secretary of the Outcome of the Selection for the Gruber Fellowship and Announcement is Posted
- Communication to the SOC of the Final Selection of Symposia
- GA 2024 Payment Deadline: Early & Normal Registration  
GA 2024 Deadline for Normal Registration

### JUNE

Jun 1-Aug 15

- IAU General Assembly 2024 Late Registration

Jun 7

- Accepted Individual and Junior Members Public Announcement

Jun 10

- Public Announcement of the Division and Commission Election Results

Jun 15

- PhD Prize Winners Announced

### JULY

Jul 15

- DEADLINE for additional nominations from the National Members for future members of both the Membership Committee and the Finance Committee [Edit](#)
- Members who have been marked as 'Inactive' for 3 years will be removed from the IAU lists

Jul 30

- The Finance Committee shall submit a report, including the auditor's reports, to the EC on its findings and recommendations concerning the development of the Union's finances over the preceding triennium

### AUGUST

Aug 1

- Budget Committee Formed (second EC Meeting at the GA)

Aug 6 -Aug 15

- GA 2024 XXXII IAU General AssemblyCape Town South Africa

Aug 31

- All Working Groups and Associate Memberships End Unless Actively Reproposed

# 8 IAU Publications

## 8.1

### IAU Publications August 2023 – February 2024

The IAU publishes scientific results and information in all areas of astronomy. IAU Publications comprise primarily the Information Bulletin and the Proceedings of the IAU General Assemblies and other scientific meetings sponsored by the IAU.

Here we present Catalyst readers with a summary of the recent publications and updates.

For further information regarding the full documents please go to the IAU official website IAU.org [here](#).

#### SYMPOSIA PROCEEDINGS

The IAU published one new symposia proceedings.  
Find them online [here](#).

#### WORKING GROUP REPORTS

The IAU published one new Working Group Reports.  
Find it online [here](#).

#### SMALL BODIES NOMENCLATURE BULLETINS

The IAU published seven new IAU Working Group Small Bodies Nomenclature Bulletins.  
Find them online [here](#).

#### NEWSLETTERS

The IAU published one new IAU Newsletters.  
Find them online [here](#).

#### BROCHURES

The IAU published two new IAU Brochures  
Find them online [here](#).



International Astronomical Union, 2024.

**Editor(s) in Chief:** Debra Elmegreen, Piero Benvenuti

**Managing Editor:** Lina Canas

**Production:** International Astronomical Union Secretariat

*Cover: This breathtaking photograph was captured on 17 June 2023, near Keetmanshoop, Namibia, and is one of six winners in the category of Still images taken exclusively with smartphones/mobile devices. Dominating the night sky, the majestic arc of the Milky Way creates a celestial bridge across the heavens. The image captures a range of notable astronomical objects: the Large and Small Magellanic Clouds, seen towards the bottom of the image and appearing as fuzzy clouds; Antares, seen towards the top left of the image; and the coalsack nebula (referred to by various names by Indigenous cultures around the world), seen vertically above the Large Magellanic Cloud. Silhouetted against this astral backdrop, the trees — which are actually succulent aloë plants native to southern Africa — add a touch of Earth's unique beauty. Historically, these plants were known as 'quiver trees' because groups of local Indigenous people would use their hollowed branches to hold darts. The serene Namibian landscape, combined with the brilliance of the southern hemisphere's stars, offers a glimpse into the majesty of our Universe. Credit: Jianfeng Dai/IAU OAE (CC BY 4.0)*

