Bringing Early-Career Scientists to the Fore: Lessons Learned from International Geosphere-Biosphere Programme (IGBP) Landmark Synthesis Event

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HIGHLIGHTS

- Benefits go both ways when early-career scientists and organisations interact.
- Start early and connect often with organising partners and participants.
- Follow-up engagement is necessary, but outcomes from IGBP's effort remain to be seen.

ABSTRACT Large international conferences can offer a range of benefits to participants, such as access to new scientific ideas, an international perspective, and the opportunity to network and discuss ideas with peers from around the world. Young and early-career scientists, particularly from developing countries, may have limited access to funds to attend international conferences. The International Geosphere-Biosphere Programme (IGBP) took the opportunity to support and engage young and early-career scientists from developing countries while organising a legacy event at the American Geophysical Union (AGU) 2015 Fall Meeting in San Francisco to mark the end of the IGBP. This policy paper discusses lessons learned and outcomes from this effort.

KEYWORDS *early-career; developing country; IGBP; AGU*

1. Introduction

The International Geosphere-Biosphere Programme (IGBP) began the process of organising IGBP's landmark synthesis event in 2013. This event was intended to mark the end of IGBP and celebrate the handover of international, interdisciplinary research into Earth systems, land use, and other fields to the next iteration, Future Earth. The event would highlight IGBP's accomplishments over the past nearly three decades at the American Geophysical Union (AGU) 2015 Fall Meeting in San Francisco. The venue would bring together researchers from many disciplines and from all over the world.

The events would also be the perfect place to draw attention to one of IGBP's focuses: capacity building. The IGBP planned to bring young/early-career scientists from developing countries together, to give them the opportunity to network with their peers and meet established scientists in the IGBP and Future Earth communities. The experience of attending an international conference would offer these young scientists an opportunity to present their own work, and to bring back their new-learned lessons to their home institutions and colleagues.

These objectives and more were fulfilled with the assistance of an Asia-Pacific Network for Global Change Research (APN) grant, alongside other support. The main objective was to provide opportunities for collaboration and networking for young scientists from developing countries and with the newly emerging Future Earth community, in a forum within the larger AGU meeting, where APN grantees could present their work to their peers and the international scientific community.

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The ultimate outcomes of these efforts remain to be seen, but an immediate appraisal of the events in December 2015—IGBP's concluding celebration and the gathering of young researchers from developing countries at the AGU—shows they were successful, meeting the goals of the IGBP. Lessons learned by the IGBP, now closed, should prove useful to other organisations that wish to accomplish the following: capacity building, networking for the next generation, and fostering interdisciplinary work in developing countries and their scientific communities.

2. Methodology

IGBP implemented a number of measures to ensure that APN grantees participated fully and left the meeting having established collaborations.

2.1 Partnerships for Planning and Funding

IGBP began communications with AGU on the IGBP landmark synthesis event in 2013, two years before the event. In 2015, IGBP was given a place as an observer on the AGU Program Committee. A close working relationship developed to ensure that the event ran smoothly. AGU provided practical and administrative support to APN-funded young and early-career developing country scientists (further details in section 2.4).

IGBP worked closely with Future Earth, the home for the next generation of interdisciplinary science research efforts, to develop and deliver a range of activities associated with the IGBP landmark synthesis event, namely the IGPB/Future Earth Young and Early-Career Scientists' Workshop, the Bella Gaia performance (2.3.3) and the Future Earth booth at AGU. IGBP reached out to its wide network of partners, as well as those involved in IGBP projects past and present, to develop the programme for this event, to seek funding and to get further support for this event before and during the AGU.

In addition to the APN grant, IGBP also received financial support from NASA and the European Space Agency (ESA), for various aspects of the IGBP landmark synthesis event. The request process started in fiscal year 2014/2015.

2.2 Selection of APN Grantees

During 2015, IGBP undertook a selection process to identify aspiring young and early-career scientists from the APN region contributing to IGBP science. IGBP worked with its core projects to identify scientists in their networks that met the following criteria: undertaking research of interest to an IGBP core project, aspiring young or early-career scientists, and located within an APN region, Africa or South America. IGBP core projects proposed the names of 16 potential candidates from APN regions. IGBP invited these to submit a paper abstract and an up-to-date CV to IGBP for consideration. These were scored by members of IGBP and its projects based on the concept of the paper and its relevance to the project and AGU. Consideration was given to the applicants' CVs and the potential benefit the opportunity to attend AGU might afford the candidate. The top 11 abstracts were selected to receive APN funding to travel to AGU.

As a condition of the funding, grantees were required to submit a revised version of their abstract for talks and poster presentations at AGU. IGBP asked the participating projects to assist the successful grantees in the development of their submissions to AGU, which helped connect grantees to the wider community while further training them in how the scientific community does its work. In the end, a total of 11 scientists were selected for APN funding, and 10 submitted at least 1 and in some cases up to 3 abstracts to AGU. All 10 scientists were invited to present posters at the AGU 2015 Fall Meeting.

2.3 Creating Networking Opportunities

IGBP was keen to maximise APN grantees involvement and networking opportunities in AGU. This was done in part by requiring all grantees to submit abstracts. All those who submitted an abstract were invited to present in a poster session at AGU, allowing them a platform to meet peers and widen their scientific networks. Giving a poster at a meeting with more than 20,000 attendees meant they would meet with other researchers in the poster hall, even if they only spoke to the scientists with posters on either side of their own. The APN grantees were also invited to help staff the Future Earth booth at AGU, which was another practical way to engage them and also widen their networks.

In addition to their poster presentations, IGBP involved APN grantees in a number of ways, described in the following sections.

2.3.1 IGBP/Future Earth Young and Early-Career Scientists' Workshop

Grantees were invited to apply to attend a two-day workshop sponsored by IGBP and Future Earth, held at Stanford University (Palo Alto, California) directly before the AGU fall meeting in San Francisco.

Those wishing to attend the Young and Early-Career Scientists' Workshop had to submit a short statement outlining their research interests and motivation for participating. In total, 24 participants were selected to attend the workshop, of which 4 were APN grantees. IGBP funded a further 5 workshop participants from Africa and South America. The goal was to have a regionally diverse group of people participating in the workshop.

The Young and Early-Career Scientists' Workshop focused on principles and approaches that can be useful in providing guidance on implementing a co-design approach. The workshop was meant to engage the participants in Future Earth research and the scope of its programming. An important aspect of Future Earth is stakeholder engagement. To reflect this, Natasha Udu-gama, Director of Community Partnerships for AGU's Thriving Earth Program, joined the workshop to introduce participants to Thriving Earth Exchange (TEX). The platform focuses on natural hazards/disasters, natural resources, and climate change, and builds collaborative relationships between scientists and non-scientists to design and implement local solutions together.

The workshop's breakout sessions were meant to develop collaborative skills so that young and early-career scientists might learn to work "across boundaries of disciplines and society." The participants were chosen based on their geographical and also disciplinary diversity, including physical geography, ecology, atmospheric chemistry, sustainable and environmental governance, and development studies.

2.3.2 IGBP Celebration Banquet

All APN grantees were invited to the IGBP celebration banquet, which brought together around 150 scientists and agency partners who shaped IGBP over the past three decades. Key personnel from Future Earth were also invited. IGBP used the occasion as an opportunity to establish young developing-country scientists' interactions with the global environmental change community and senior personnel from Future Earth.

2.3.3 Bella Gaia Performance

All APN grantees were invited to attend the Bella Gaia performance, a live music and dance performance accompanied by images representing the Anthropocene. A post-performance panel discussion took place with representatives from IGBP, Future Earth, and AGU, which co-sponsored the event, and Bella Gaia's founder and others.

2.3.4 Promoting 100 IGBP Co-sponsored Sessions

The IGBP community was well represented at AGU with 100 co-sponsored IGBP sessions. These sessions were labelled as co-sponsored by IGBP so they were easy to identify. Highlights included sessions with an integrated and policy-relevant approach, such as "What's the Big Deal about the Anthropocene?" and "More Bang for Your Buck: How Does Coordination Add Value to Sustainability Science?" In some cases where panellists/speakers would not normally have attended this type of conference, IGBP provided funds to assist. IGBP provided APN grantees with a guide to the AGU conference that included details on the 100 sessions co-sponsored by IGBP; the aim was to introduce them to new ideas presented by established researchers from the global environmental change community.

2.4 Practical Support to APN Grantees

IGBP worked with AGU to identify and offer support to the grantees throughout the meeting. Practical considerations included helping developing country scientists register for AGU and submit their abstracts without paying fees. AGU set up a special registration portal online for each of APN and other developing country grantees to allow them to bypass payments, and the membership organisation invoiced IGBP directly for the fees.

APN grantees were provided information on the AGU International Buddy Program (http://fallmeeting.agu.org/2015/international-buddy-program/), which "connects first-time Fall Meeting attendees, whose first language is not English, with other experienced attendees who speak the same first language". The AGU International Reception, a free event on the first evening of the meeting, also provided support to international participants.

Further support for the APN grantees came through network building with each other: they stayed at the same hotel, were all invited to the IGBP celebration banquet where they were introduced to each other, and were all invited to the Bella Gaia performance and seated together. The grantees who attended the pre-AGU workshop had an additional opportunity to network with their peers and senior global environmental change scientists. These activities fostered international relationships and support among this cadre of young scientists from developing countries.

3. Results and Discussions

All the IGBP landmark synthesis event activities reflected the IGBP synthesis findings through a range of different approaches. Scientifically, panel discussions, AGU Union sessions, IGBP-project-led sessions, and posters were paired with the IGBP celebration banquet and Bella Gaia performance. The Future Earth/IGBP Young and Early-Career Scientists' Workshop as well as through information and discussions at the Future Earth booth further engaged all participants. Because the IGBP core projects identified the Asia-Pacific scientists whom they thought would benefit most from participating in the IGBP landmark synthesis event, the scientists' research naturally contributed to the IGBP synthesis and they participated in many of the above activities.

3.1 Importance of Early Planning and Partnership Development

Advanced planning helped ensure that APN grantees would be able to engage fully in IGBP's landmark synthesis event at AGU. It cannot be emphasised enough that these processes take time. IGBP began the process of finding funding more than two years before the event itself.

Relationship building was also instrumental to the success of this event. Close working relationships developed over years meant that AGU and IGBP worked together successfully on the many different practical and strategic aspects of this event, and Future Earth and IGBP successfully developed a suite of activities together.

With such planning, IGBP could support a total of 20 young and early-career scientists from developing countries to attend the AGU fall meeting and participate in the IGBP landmark synthesis events. Of these, 10 were funded via APN funding. IGBP found funding to allow an additional 9 developing country scientists to attend the IGBP landmark synthesis event from Africa and South America. Having multiple partners and time to accomplish these goals made this possible, including finding alternative funding from other partners for other unrelated activities to free up monies for the developing country scientists.

3.2 Encouraging Active Engagement

IGBP put in place mechanisms to ensure that all funded participants fully engaged in the IGBP landmark synthesis event and AGU to make sure they got the most out of the experience. Requirements to submit abstracts to AGU, invitations to the IGBP celebration banquet and Bella Gaia performance, the chance to participate in the Young and Early-Career Scientists' Workshop and also get involved in the Future Earth booth—all were designed to maximise their experience.

All but one recipient submitted a paper to one or more sessions as a condition of their grant. (That person was sick at the time of the submission deadline.) The grantees had the experience of preparing an abstract for a high-level international meeting in collaboration with IGBP core projects scientists, and interactions with the international scientific community at a top-level scientific meeting.

All APN grantees who submitted a paper (or in some cases up to three) were invited to give a poster presentation at AGU. In general, very few abstracts are accepted as oral sessions at AGU, and poster sessions are the normal mode of communication for the majority of AGU attendees. This opportunity allowed the APN grantees to interact with peers interested in their subject matter and to build new contacts and networks while learning about scientific communication and participation in the scientific process.

For those invited to attended the two-day Young and Early-Career Scientists' workshop, participants received training and time to think about related global environmental change subjects, including marine protection, urban resilience, rural sustainability, and human and environmental health interactions. They also learned about co-design and co-production, the current modes of creating knowledge in international, multidisciplinary research efforts. The participants also gained experience in working in teams as they developed case studies with their colleagues. Future Earth has already contacted the scientists' as part of their Future Earth Open Network initiative.

3.3 Necessity of Follow-up Engagement

After IGBP formally closed in December 2015, following up on APN grantees' experiences of AGU has not been possible. However, through informal communications, participants expressed their appreciation for this opportunity and their enthusiasm for what they had learnt at AGU.

Questionnaires were conducted in advance of AGU to establish how the APN scientists would communicate their experience of AGU to their peers. The 10 APN grantees expressed their plans for presenting scientific talks to their academic colleagues after returning home from AGU, organising scientific collaborations and meetings at their own institutions, and encouraging students to publish and communicate their results. Some were also very interested in promoting communications via social media to heighten public awareness of the issues they study. They all looked forward to international collaborations, and to collaborating across disciplines, and hoped that the introductions made at AGU would lead them to this kind of transdisciplinary, multifaceted work at an international level.

While it remains to be seen whether they have succeeded in these goals, IGBP hopes that having taken the time to think about and respond to this survey, in addition to experiencing an international conference with the global environmental change research community, will keep these goals in mind for these young researchers, and ultimately benefit their communities, both civil and scientific.

Future Earth asked participants to complete feedback forms following the Young and Early-Career Scientists' workshop, with overwhelmingly positive responses. Out of the 20 evaluation forms completed, 8 said that the workshop was excellent and 12 said that the workshop was good. All said they would recommend the workshop to colleagues. Among their assessments, they greatly appreciated the diversity of backgrounds and nationalities, as well as the gender balance achieved by the organisers. Responders also appreciated that the workshop was oriented toward concrete projects, stakeholder perspectives, and broader research approaches.

Future Earth was given contact details for all the APN grantees and followed up with them after AGU to invite them to give feedback on and act as "ambassadors" for the Future Earth Open Network, an online digital platform meant to connect the global sustainability science research community.

4. Conclusions

Over the past three decades, IGBP as an organisation was active in enhancing multidisciplinary scientific research, informing social policy and clarifying such important issues as the Anthropocene. IGBP considered the Landmark Synthesis Event at the 2015 AGU Fall Meeting in San Francisco to have been a success and a suitable celebratory closure to its nearly 30 years of work in global environmental change, on many levels.

Part of that success came in the introduction of young scientists from developing countries to the next generation of global change research and the researchers who will continue the IGBP legacy. Sufficiently early planning and meaningful interactions with partner organisations contributed immensely to the success of the program and the achievement of the objectives of bringing researchers from all levels together to further research in global change.

Now that IGBP has closed its doors, the organisation will be unable to follow up to see what happens as a result of this project. Nevertheless, taken as a freestanding experience, the efforts made in service of these scientists and related organisations seem to have been a success.

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