



*Promoting Cooperative Solutions for Space Sustainability*

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### **FROM THE EXECUTIVE DIRECTOR**

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*For many years the Secure World Foundation has described its activity as, “Promoting Cooperative Solutions for Space Sustainability.”*

Looking back on 2014, there is a lot of evidence that we have been true to our word.

We have worked with the United Nations Committee on the Peaceful Uses of Outer Space to facilitate in-depth discussion of possible guidelines for the long-term sustainability of space activity. We have organized a dialogue in Tokyo on Space Situational Awareness in cooperation with Japan Space Forum and the organizers of the Advanced Maui Optical and Space

Surveillance Conference. We have partnered with the Space Foundation to present a forum on radio spectrum allocation and competition issues to the annual Space Symposium in Colorado Springs.

Members of our SWF staff have [testified before the U.S. Congress](#), briefed the Japanese Diet, presented to sessions organized by the British Foreign Office, and taken leadership roles in capacity building and policy sessions organized by the UN and other international institutions.

Following up on last year’s success in helping achieve UN endorsement of the International Asteroid Warning Network and the Space Mission Planning Advisory Group, SWF was actively engaged in the discussions aimed at creating terms of reference for these two new institutions.

As you will see as you read through the pages that follow, these samples are only part of the activity that made 2014 a busy and cooperation-filled year for Secure World Foundation. Thank you for the interest and support of our work you have shown throughout the year. It means a lot to us and provides the energy and inspiration that helps keep our work on behalf of space sustainability sustainable.

*Michael K. Simpson, PhD.  
Executive Director  
Secure World Foundation*

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## ***SUMMARY OF 2014 PROGRAM ACTIVITIES***

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### **SPACE SUSTAINABILITY**

Throughout 2014, we continued to place major emphasis on the challenges of ensuring sustainable use and access to Earth orbit. Although we once felt somewhat alone in our advocacy for space sustainability, it has been heartening to find an increasing number of partners with whom to share and extend this important objective.

During the spring we were pleased to host a visiting fellow, Dr. Fon Yonggang from the China Academy of Sciences who looked at governance issues related to commercial space and especially the strategies to latecomers to the market seeking to increase competition and extend the market for space-based services such as navigation and timing systems. Working in close partnership with the Space Policy Institute at George Washington University, Dr. Fon is now completing a paper focusing on the case of China's Beidou system.

The year also saw another cooperative study advance as SWF supported the International Academy of Astronautics (IAA) and its effort to produce a document detailing the political and legal issues surrounding space debris and its mitigation. Led by former SWF Executive Director, Dr. Ray Williamson, the IAA has assembled an international team of scholars and practitioners to create a handbook on the current state of the issue and the critical questions that must be answered to keep debris from becoming a barrier to space operations and the services they provide.

Recognizing that the radio spectrum issues also contain the risk of interfering with space sustainability, the Foundation organized a special session on the subject during the annual Space Symposium in Colorado Springs. With excellent cooperation from the Space Foundation, SWF presented a breakfast panel on the implications of radiofrequency interference for broadcast, telecommunications, and Earth observation applications. Importantly this well-attended session addressed both intentional and unintentional interference and raised the issues connected with terrestrial competition for spectrum traditionally reserved for the space sector (greater capacity for cell phone coverage, but less for satellite data transmission for predicting weather or responding to natural disasters). Many participants noted that the session had provided them with the most comprehensive insight into the issue that they had yet received.

During the summer, SWF worked with Wilton Park, an arm of the British Foreign Office, to support a session on "Emerging Space Economies: Next Steps Towards Prosperity." This session assembled diverse participants from both developed and emerging space economies looking at issues of sustainable access to space and the growing importance of reliable space applications to sustainable economic development on Earth.

Our strong partnership with the organizers of the Advanced Maui Optical and Space Surveillance Technologies (AMOS) Conference led to two important events on space situational awareness (SSA) during the year. The first was a session on SSA held in Tokyo with the support of the Japan Space Forum in February and the second was an SSA Dialogue organized in conjunction with the AMOS Conference itself in September. Assembling international experts who do not always get the opportunity to work together, both events stressed the importance of international cooperation in the field and of increased commitment to data gathering and information sharing.

Looking forward to 2015, we intend to keep focusing attention on space sustainability with growing team of partners and co-sponsors. There is a certain amount of pride in having been an early voice advocating for

attention to space sustainability, but as the number of partners increase so too does the prospect of making tangible progress.

### SPACE SUSTAINABILITY PROJECTS

- Chinese Space Fellow – Dr. Fon Yonggang
- International Academy of Astronautics Cosmic Study
- [Space Symposium – Radiofrequency Interference Panel](#)
- SSA Dialogues – [Japan Space Forum](#) and [AMOS](#)
- [Wilton Park Conference – Emerging Space Economies: next steps towards prosperity](#)

### SPACE POLICY AND LAW

In its efforts to be a useful and respected resource for decision makers around the world, the Foundation has continued to link issues of space policy and law to their impact on the well-being of people around the world.

Our statement before the plenary session of the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) emphasized not only our work in support of the space agenda outlined in the 1999 Vienna Declaration but also our work in support of the UN's Millennium Development goals. We continue to believe that sustainability in space is important because of its critical importance to humanity on Earth.

This year our efforts in this focus area have included close cooperation with the Regional Center for Space Science and Technology Education for Latin America and the Caribbean (RECTEALC) to increase our understanding of space policy issues in Latin America and advance capacity building there. We were also pleased to continue our long partnership with the UN Institute for Disarmament Research (UNIDIR) with which we organized a space security conference in Geneva and a joint side event for members of both the First and Fourth Committees of the UN General Assembly (UNGA) in New York.

In May we co-sponsored the Manfred Lachs Conference on Space Governance in Montreal. Working in collaboration with McGill University's program on Air and Space Law we addressed some of the governance issues emerging with the growth of the commercial space industry and then agreed to participate in the planning for a global conference on space governance for 2016.

We were able to continue our relationships built in Europe via an event in Brussels that was co-hosted with our long-term partner, the Institut français de relations internationales (Ifri). The one-day event built upon the 2013 SWF-Ifri event and addressed many aspects of RFI. The event was mentioned in three separate SpaceNews articles, and attendees were appreciative of the opportunity to discuss these issues prior to the World Radiocommunications Conference in 2015.

A particularly satisfying accomplishment for 2014, was the organization of a workshop in the U.S. on Earth observation data sharing between the United States' National Academy of Science

*"My thanks for SWF's efforts to focus attention on the interference issue. This October's conference in Brussels, in conjunction with IFRI, was ideally timed. It occurred just before the ITU Plenipotentiary, it attracted a number of industry representatives, broadcasters, regulators, ITU and EU officials. It put the issue squarely on the table, and invited people to stake out positions – which they did. I believe that the SWF-Ifri conference helped bring attention to the issue, and in some measure set the stage for what happened at the ITU.*

*Thank you for your support, and that of the staff here in Washington. They've been exceptionally open and supportive, and we are indeed grateful."*

*Gary Thatcher,  
Broadcasting Board of Governors*

and the China Academy of Sciences. The meeting reinforced the message that scientific cooperation is still possible even in times of political tension and ended on the encouraging note of mutual interest in undertaking a joint data sharing and capacity building project in the developing world.

### SPACE POLICY AND LAW PROJECTS

- UNCOPUOS – Exchange of Views Statement at [Scientific and Technical Subcommittee](#) and [Plenary Session](#)
- CRETEALC Collaboration – [Use of Open-Source Software and Satellite Data in the Prevention of, and Response to, Disasters in Mesoamerica](#)
- [Annual Space Security Conference](#) – with UNIDIR
- [National Academy of Science & China Academy of Sciences Earth Observation Data Sharing Workshop](#)
- [Manfred Lachs Space Governance Conference](#)
- European Space Conference – [Orbital Slots and Spectrum Use in an Era of Interference](#) – with Ifri
- [UN General Assembly First and Fourth Committee Meeting Side Event](#)

### HUMAN AND ENVIRONMENTAL SECURITY

If we were to pick a best case example of the many ways our projects are integrated across the focus areas into which we group them, our Human and Environmental Security (HES) portfolio would probably lead the list. It was also in this area that we had one of our biggest successes of the year.

As an active participant in the efforts of the Committee on Earth Observation Satellites (CEOS) to expand the data being shared with developing countries, we have contributed to the planning and execution of capacity-building efforts while also advocating for the release of Shuttle Radar Topography Mission (SRTM) data acquired in the 1990s. In September, we were pleased to be among the small group of non-governmental organizations (NGOs) invited to participate in the [U.S. government’s release event](#) that included this data in the tools that the U.S. will make available to assist in the effort to improve climate change resilience in the developing world. In 2015 we plan to be very active in supporting efforts to train local experts in the use of this data for this goal and many others for which the data is uniquely suited.

During the year we were also honored to be elected as a participating organization in the Group on Earth Observations (GEO). At our first plenary meeting in January 2014, we organized a standing-room-only side event on the role of Earth observation on disaster management, preparation, and mitigation. As has become our trademark, this event brought together many communities that do not regularly meet with each other and consistent with GEO’s current intent, included representatives of users and first responders. Our disaster management work

#### [From The WHITE HOUSE FACT SHEET: President Obama Announces New Actions To Strengthen Global Resilience To Climate Change And Launches Partnerships To Cut Carbon Pollution](#)

##### [Releasing Powerful New Data to Enable Planning for Resilience](#)

*“The datasets being released today, and during the course of the next year—which are based on data collected by sensors designed by an international partnership and carried on the U.S. Space Shuttle—resolve to 30-meters and will be used worldwide to improve environmental monitoring, climate change research including sea-level rise impact assessments, and local decision support. These datasets are being made available via a user-friendly interface on [USGS’s Earth Explorer website](#). With a commitment from the Secure World Foundation, and in collaboration with the Committee on Earth Observation Satellites, USGS, NOAA, and NASA plan to offer online training and regional workshops to further enable users to take advantage of these data resources.”*

also included participation in the UN Platform for Space-based Information for Disaster Management and Emergency Response's (UN-SPIDER) expert group meeting in Bonn and one of its capacity building workshops in Latin America.

## HES PROJECTS

- [CEOS Working Group on Capacity Building and Data Sharing](#)
- [Group on Earth Observations Initiative and Side Event](#)
- [Apogeo Spatial](#)
- UN-SPIDER Cooperation – Latin America Meeting in El Salvador, [Bonn Expert Meeting](#)

## PLANETARY DEFENSE

Although last year's success in getting UN endorsement for the International Asteroid Warning Network (IAWN) and Space Mission Planning Advisory Group has permitted us to devote more attention to other areas of focus, we nonetheless continued to devote important attention to the development of cooperative approaches to planetary defense.

During 2014, the Foundation provided counsel and assistance to the UNCOPUOS Action Team 14 as it concluded its work and helped establish terms of reference for the two new institutions. SWF also organized a conference on risk communication challenges in cooperation with IAWN and its member states.

Although Planetary Defense no longer occupies as large a part of our commitment in staff time and financial resources as it once did, it presents a fine example of the kind of progress we seek to make as we endeavor to provide greater structure, reliability, and effectiveness to cooperative efforts to address common space-related challenges.

### PLANETARY DEFENSE PROJECTS

- UNCOPUOS Action Team-14 Follow-on
- [IAWN Workshop](#)

## OUTREACH

At the root of our goals in outreach lies the belief that increased cooperation in shared challenges of space sustainability needs to be encouraged through the presentation of interesting, timely and thought-provoking information about emerging and unresolved issues in space policy and space technology. Inspired by this belief, we continued a very active role in this year's International Astronautical Congress (IAC) by presenting four papers, supporting the Manfred Lachs Moot Court Finals, guiding a Space Generation working group of young professional exploring on-orbit servicing, participating in the committee work of the International Astronautical Federation (IAF), presenting to the IAF meeting on the Group of Latin American and Caribbean States (GRULAC), and representing

### [From the Boulder Daily Camera article on the "Broomfield Scale"](#)

Commenting on SWF's work in support of the International Asteroid Warning Network... "I think it's a very credible group," Johnson said. "They are certainly actively involved, they do know a lot of and work with a lot of the very credible players in this area.

"They are involved, for instance, with the [United Nations Committee on Peaceful Uses of Outer Space](#) and have worked with the intelligence community on this and other space issues — space weather, for instance. Space debris is another big issue of theirs, and how to mitigate space debris."

Johnson added. "They are not the world's center of expertise in this area, but they are good about bringing together people who are and leading discussion to try to resolve some of these issues."

Lindley Johnson, Program Executive for the [Near Earth Object Program](#) at NASA

the Foundation in the IAF General Assembly. The Foundation also provided travel support that permitted six young professionals whose abstracts had been accepted for the Congress to present them in person. One of the papers won the International Institute of Space Law (IISL) prize for the best submission by a young author. Increasingly, we realize that the quality of papers supported by these travel grants represents a high return on our investment in the future, and it is one program area where we would willingly accept outside contributions that could permit our granting more awards in the future.

Continuing our commitment to involve young professionals in our research and analytical work and to benefit from their insight into cooperative policy options that can provide enhanced space sustainability as a foundation for their careers, we supported development of a white paper on space applications for disaster management by the students in the International Space University's Southern Hemisphere Summer Space Program (ISU SH-SSP), supported an intern in space law from McGill University, and provided a lecturer, a graduation speaker and a team project evaluator for ISU's Space Studies Program session in Montreal, Canada.

Other important outreach efforts have included, in cooperation with the Space Show, a webinar on international cooperation in the use of space for disaster management, collaboration with the Space Foundation to fund the attendance of Latin American speakers at the Space Symposium, and sponsorship of networking events and speaking engagements in support of the annual meeting of the Space Frequency Coordination Group and the International Symposium for Personal and Commercial Space Flight (ISPCS).

#### **OUTREACH PROJECTS**

- [International Space University, Southern Hemisphere Summer Space Program](#)
- Space Generation [Fusion Forum](#) and [Congress Working Group](#)
- [International Astronautical Congress](#), Toronto
- Travel Support Fund – [IAC Young Professional Travel Scholarships](#)
- The Space Show sponsorship – webinar on [The Role of Satellites in Disaster Management](#)
- [Ray Williamson Future Fund Award](#) – Ms. Katrina Laygo, attending the C-SIGMA event in Tokyo; Ms. Danijela Ignatovic Stupar, completing a Research Masters at ISU.

#### **COLORADO OFFICE OUTREACH**

- Travel Support for Space Symposium attendee from Latin America
- Space Frequency Coordination Group Dinner Sponsorship
- [International Symposium for Personal and Commercial Space Flight](#) sponsorship and travel support

#### **DC OFFICE OUTREACH**

- [Monitoring the High Seas: The Increasing Role of Space in Maritime Domain Awareness](#)
- [Beyond MH370: The Evolving Role of Satellites in Aviation Safety](#)
- American Astronautical Society (AAS) Briefing on SWF activities



- U.S. – Japan relations: a reception for Japanese delegates in town to discuss cooperation with U.S. Department of State; plus a workshop for Japanese delegates on satellite export control issues
- [Beyond the Flare: an SWF-AAS briefing on Space Weather](#)
- Seeing into Space: Perspectives and Initiatives for Enhancing Space Situational Awareness

#### **SECURE WORLD FOUNDATION OUTREACH**

- European Commission Space and Security Conference, Athens, Greece
- The Hague Institute for Global Justice Hague, Governance of Space Mineral Resources Event

#### **SWF ORGANIZATIONAL DEVELOPMENT**

This was a year of transition for SWF. In 2014 SWF welcomed and assimilated eight people into the Foundation family, including: one board member, two Advisory Committee members, two Project Managers, and, due to a full-time opportunity a young DC professional could not refuse, three admins. In spite of our decision to close the Brussels office in 2013, SWF's Program staff of five completed over 40 events and engagements in 2014, managing to maintain a high level of visibility in Europe by actively participating in 12 events in 8 countries.

Despite the many internal changes, SWF continues to be seen as a valued resource providing trusted analyses and information with a long-term and global perspective on issues relating to the secure, sustainable, and peaceful uses of outer space. In addition to being asked to testify on SSA and space traffic management before Congress, presenting to the Committee on Foreign Relations, and being acknowledged in a White House Fact Sheet, by the end of November, SWF was interviewed over 70 times resulting in one documentary, two TV interviews, 40 print and online articles, and two National Public Radio interviews.

A comprehensive listing of SWF experts in the media can be found on our [website](#). Highlights of the year include:

- [Discovery Channel documentary](#) on the search for missing Malaysia Airline Flight 370
- [National Public Radio – Here & Now](#) on the space fence and debris
- CNN en Español Panel on the 45<sup>th</sup> Anniversary of the Moon Landing

In addition to the presentations and reports for events SWF hosted or participated in, staff published seven articles, three papers, chapters in two books, and for SWF drafted and published the [Near-Earth Objects: Responding to the International Challenge](#) booklet, the 2014 [Space Sustainability](#) booklet update, and three updated [Fact Sheets](#) to assist in briefing policy makers on current space issues.

## ADVISORY COMMITTEE ANNUAL MEETING



*Row 1, left to right: Jim Armor, Cynda Collins Arsenault, Andrea DiPaolo, Lisa Croy, Laura Delgado López, Richard Tremayne-Smith, Ray Williamson, Gwen Farnsworth, Mazlan Othman, Gérard Brachet, Cherilynn Morrow, Bill Ailor; Row 2: Victoria Samson, Brian Weeden, Michael Simpson, Chris Johnson.*

SWF's Advisory Committee members joined the SWF President, Board, Executive Director and staff for 2 days of meetings in August in Boulder, Colorado. This event provided the opportunity for in-depth discussion on SWF's current and future program activities, input on operational issues and strengthening ties within the organization. We welcomed Dr. Mazlan Othman during this meeting, and Major General Jay Santee (retired) joined the Advisory Committee in September.

During this gathering of the SWF family, we bid Dr. Ray Williamson a happy retirement with a great many thanks for his contributions to the space community and especially the shaping of SWF's work within it. Additionally, we thanked Gérard Brachet, Cherilynn Morrow, and Bill Ailor for their many years of service on SWF's Advisory Committee.

### DISCRETIONARY TRAVEL FUND

Staff members are provided with an annual discretionary travel fund to allow them to attend events, present papers, and accept speaking engagements that will expand their professional standing within and understanding of the space policy community. The added value of staff using these travel funds is evident in the creativity with which staff addresses issues of which we might not otherwise have been aware and allows them to look beyond our current activities to future pursuits. These funds also represent an investment in cross-training that can be invaluable when another subject matter expert is unavailable.

Applications to use these funds are approved after evaluating them against three criteria:

- Do they advance the mission and strategic intentions of the Foundation?
- Do they show promise of developing new relationships or partnerships that can advance the Foundation's work?
- Will they contribute to the professional development of our staff?



Throughout the year several staff members were invited to participate in events (indicated in *italics* below) where the invitation included payment of some or all travel costs.

#### **Michael Simpson, Executive Director**

- IAF and IAA Spring Meetings, Paris, France.
- [Manfred Lachs Space Law Moot Court, North American finals](#), Washington, DC.
- [Global Space Applications Conference](#), UNESCO Headquarters, Paris, France
- *International Space University, Space Studies Program, Team Project Evaluator and Graduation Speaker, Montreal, Canada*
- Embry-Riddle Aeronautical University [Space Traffic Management Conference](#), Melbourne, Florida

#### **Ray Williamson, Senior Advisor**

- IAA Spring Meetings, Paris, France
- UN-SPIDER Expert Group Meeting, Bonn, Germany

#### **Victoria Samson, Washington Office Director**

- Council on Foreign Relations meeting and UN General Assembly Committee Events, New York City.

#### **Brian Weeden, Technical Advisor**

- *Independent Television News, Discovery Filming of documentary, "Flight 370: The Missing Links."* London, England
- [CNES Workshop on Orbital Debris Removal](#), Paris, France
- [Council on Foreign Relations Roundtable on "Promoting Space Security and Sustainability."](#) New York City
- McGill University, [Lecturing for program in Strategic Space Law](#), Montreal, Canada
- [World Economic Forum, Global Agenda Council on Space](#), Abu Dhabi, United Arab Emirates
- University of Maryland Center for Orbital Debris Education and Research (CODER) [Space Debris Workshop](#), College Park, Maryland.

#### **Laura Delgado López, Project Manager**

- Global Space Applications Conference, UNESCO Headquarters, Paris, France
- International Astronautical Congress, Toronto, Canada

#### **Chris Johnson, Project Manager**

- *International Space University, Space Studies Program, Politics Economics and Law Department lectures and support of Team Project "AMOOS" (Autonomous Mission for On Orbit Servicing), Montreal, Canada.*
- UN General Assembly Committee Events, New York City.
- UN Office for Outer Space Affairs Workshop on International Space Law, Beijing, China.

**SECURE WORLD FOUNDATION**

PROMOTING COOPERATIVE SOLUTIONS FOR SPACE SUSTAINABILITY

## LIST OF ACRONYMS

AAS	American Astronautical Society
AMOS	Advanced Maui Optical and Space Surveillance Technologies Conference
CEOS	Committee on Earth Observation Satellites
CRETEALC	Regional Center for Space Science and Technology Education for Latin America and the Caribbean
GEO	Group on Earth Observations
GRULAC	Group of Latin American and Caribbean States
HES	Human and Environmental Security
IAA	International Academy of Astronautics
IAC	International Astronautical Congress
IAF	International Astronautical Federation
IAWN	International Asteroid Warning Network
Ifri	Institut français de relations internationales
IISL	International Institute of Space Law
ISPCS	International Symposium for Personal and Commercial Space Flight
ISU	International Space University
NGO	Non-governmental Organization
SH-SSP	(ISU) Southern Hemisphere – Summer Space Program
SRTM	Shuttle Radar Topography Mission
SSA	Space Situational Awareness
UNCOPUOS	United Nations Committee on the Peaceful Uses of Outer Space
UNGA	United Nations General Assembly
UNIDIR	United Nations Institute for Disarmament Research
UN-SPIDER	United Nations Platform for Space-based Information for Disaster Management and Emergency Response