



Promoting Cooperative Solutions for Space Sustainability

FROM THE EXECUTIVE DIRECTOR



This has been a very busy year.

It has also been productive. After eight years of work in partnership with the UN Committee on the Peaceful Uses of Outer Space (UN COPUOS) and the Association of Space Explorers (ASE), we were pleased to see the UN General Assembly (UNGA) adopt a plan of response to potential asteroid threats.

In many ways this success is representative of who we are and how we work.

We believe that the world can be a more peaceful place if predictable problems have reliable systems of shared decision making and governance to solve them. As Tunguska taught us in 1908 and Chelyabinsk reconfirmed this year, Earth can expect to be struck by large pieces of space rock fairly often. As we looked at this reality, we recognized that humanity had made more progress detecting potentially hazardous asteroids (PHA) and identifying creative ways to deflect them than it had in deciding what it should do about them. This meant that a potential threat was most likely to be met by separate, opaque decision making processes in individual countries. That in turn opened up the possibility that the greatest threat posed by an approaching asteroid would be the apprehension, misconception, and hostile reaction of countries to each other's independent responses.

With our support, ASE assembled a panel of experts and produced a working paper outlining a transparent, international decision making process that could not only avoid hostility, but also employ the synergy of multiple space experts from around the world if a PHA threatened Earth. This document was forwarded to UN COPUOS in 2008.

For the next 5 years, we worked with the UN system to advance and hone this document. During that time we also conducted important workshops on the issue, including one for journalists that addressed the challenges of communicating about such a threat.

The fruit of this persistent work was a resolution of the UN General Assembly this autumn endorsing an international asteroid warning network (IAWN) and a space mission planning advisory group (SMPAG), institutions that provide a cooperative, transparent system of governance where one had been absent before.

This success story says a lot about the kinds of things we do. We identify gaps in space policy that could lead to needless conflict. We pursue solutions by facilitating broadly based discussions and policy

development. We are persistent. We keep nudging policy makers toward good solutions. We listen carefully to feedback. We often work in the background without much publicity. We build relationships of trust. Ultimately, we get things done and often more rapidly than many would predict.

In 2013 alone, we made substantive contributions to the work of the Group of Governmental Experts (GGE) on Transparency and Confidence Building Measures (TCBMs) for outer space activities. We were the only non-governmental organization to respond to the GGE request for input from civil society. The consensus report of the GGE was reported to the UNGA in October and included key elements of our input. Along the way we facilitated important contacts between the GGE, UN COPUOS, and the UN Institute for Disarmament Research (UNIDIR).

In the area of human and environmental security, we worked with the Committee on Earth Observation Satellites (CEOS) to initiate a series of regional workshops to train operators to use once restricted data being released by the U.S. government for civil use. Part of the "data democracy" concept that seeks to make more earth observation data available in support of economic development, these workshops reflect our objective of supporting good political decisions that advance the use of space applications to improve the human condition.

During the year we organized the first international panel on space sustainability at the National Space Symposium in Colorado Springs, conducted an ambitious series of outreach events in Brussels, Washington, and Colorado, initiated a highly successful Policy Forum in connection with the Advanced Maui Optical and Space Surveillance Technologies Conference (AMOS) on Space Situational Awareness, co-sponsored and participated in the European Satellite Day conference and organized the European Space Conference in Belgium.

As you will see as you read through the pages that follow, these samples are only part of the activity that made 2013 a busy and productive 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, Ph.D.
Executive Director
Secure World Foundation

SUMMARY OF 2013 PROGRAM ACTIVITIES

SPACE SUSTAINABILITY

As humanity learns to derive increasing benefits from assets orbiting in common space around the Earth, it becomes critical to ensure that those assets operate in a physically and politically sustainable environment.

SWF focused considerable attention in 2013 on space debris mitigation, space situational awareness (SSA), and, in partnership with the Defense Advanced Research Projects Agency (DARPA), the emerging field of on orbit servicing (OOS). A key DARPA official noted, "SWF has done more than anyone else to advance thinking on the non-technical challenges with ADR [active debris removal] and OOS."

Organizing panels at major events and presenting workshops, SWF reached large audiences in the United States, China, Europe, Australia, Japan, and Singapore with its message that space represents a global commons that depends on cooperative best practices to ensure it continues to meet human needs on Earth.

"I believe the greatest benefit that SWF does is allow the U.S., both groups within the U.S. and individuals within those groups, to come up with the wild ideas - those beyond-the-edge thoughts - that will propel not just the U.S. but the world into the next century of discovery, exploration and creation, in space. You do this not by the relatively easy technical discipline of engineering and physics, but by the incredibly hard skills of diplomacy, introduction of disparate cultures and perceptions, and providing a forum for civil and open dialog, to allow transparency to work its magic and inspire the very people that for decades have not trusted one another in (space), the last major domain."

- Dave Barnhart, DARPA

At two major events, the National Space Symposium (NSS) in Colorado Springs and the Advanced Maui Optical and Space Surveillance Technologies Conference (AMOS) in Hawaii, SWF was the primary reason that the issue of space sustainability figured prominently on the agenda. SWF was also responsible for arranging the first official visit to the United States of the European official primarily responsible for diplomatic efforts to create an international code of conduct for outer space activities.

We have adopted a partnership strategy that permits extending the reach, leverage, and salience of our message. In 2013, key partnerships included the UN Committee on the Peaceful Uses of Outer Space (UN COPUOS), the UN Institute for Disarmament Research (UNIDIR), the European Commission (EC), the International Astronautical Federation (IAF), the International Space University (ISU), the World Economic Forum (WEF), the International Academy of Astronautics (IAA), and the International Institute of Space Law (IISL). A long and fruitful partnership with the Ploughshares Fund to produce the Space Security Index (SSI) came to a close in 2013. The speed with which events, technologies and their policy implications unfold has now become so rapid that a print publication is dramatically out of date before the first reader even sees it. We will continue to look at other ways to fulfill the role originally intended for the SSI going forward.

In 2014 we expect to partner with the organizers of AMOS and the Japan Space Forum to organize a session on space sustainability in Japan at a time when Japanese policy makers are considering the

possibility of investing in important space situational awareness infrastructure. We will also continue our work with our other partners as we continue to increase decision maker awareness of space sustainability issues and objectives.

SPACE SUSTAINABILITY PROJECTS

- International Dialogue on Rendezvous and Proximity Operations and OOS – [Singapore](#) and [DC Capstone](#) events
- [AMOS SSA Discussions](#) and [AMOS Dialogue](#) side event
- [Space Security Index](#) Development Support – [2013 Full Report](#)

SPACE POLICY AND LAW

Bringing policy makers, experts, and practitioners together to discuss meeting the need for structured cooperation in the use of space has been a very successful strategy for SWF.

This year SWF took a very active role in support of the Group of Governmental Experts (GGE) on Transparency and Confidence Building Measures (TCBMs). We were the only non-governmental organization (NGO) to submit [comprehensive suggestions](#) to this UN body, and our work was specifically praised by Victor Vasiliev, the Group's Chairman, on several occasions. The final consensus report of this GGE includes language indicating that our ideas were respected, influential, and well considered.



Agnieszka Lukaszczyk gives the SWF Exchange of Views Statement at the UN COPUOS Scientific and Technical Subcommittee meeting in Geneva, February 13, 2013.

Highly visible for many years at UN COPUOS and as a principle organizer with UNIDIR of the annual Space Security Conference in Geneva, Switzerland, SWF extended its policy reach in 2013 with increased visibility at the Space Symposium in Colorado Springs; organization of a policy forum at AMOS; close partnership with UNIDIR, the European External Action Service (EEAS) and the U.S. State Department on broadening discussions over a proposed International Code of Code for Outer Space Activities; and partnership with the German Marshall Fund's Brussels Forum.

We also brought policy issues to the fore with a workshop and international forum seeking to incorporate space sustainability into policy, with side events in New York during the UN General Assembly Committee meetings, and through staff participation in numerous invited panels and addresses on six continents. Although most of these events were highly productive in terms of bringing our message to policy makers and networking international

conversations on critical issues of cooperation, we found that inserting our message into some well-established events can be very challenging. We were unable, for example, to attract a large audience to

our dinner event at the Brussels Forum. For 2014 we have decided to not repeat that event while focusing on others such as AMOS, the NSS, and the evolving partnership with the Japan Space Forum. We also expect to play an important role facilitating international and citizen efforts to advance implementation of the list of TCBMs included in the GGE report.

SPACE POLICY AND LAW PROJECTS

- UN COPUOS – [Exchange of Views Statement](#)
- [National Space Symposium](#)
- [Annual Space Security Conference](#) – with UNIDIR
- [Symposium on Legal and Policy Aspects of Space Cooperation between Europe and BRICS Countries; Inventory, Challenges and Opportunities](#)
- German Marshall Fund Partnership – [Brussels Forum](#)

HUMAN AND ENVIRONMENTAL SECURITY (HES)

Although we divide our projects into focus areas in order to manage them more effectively, SWF has a well-earned reputation for integrating its projects and demonstrating their interconnectedness. This is especially true with HES where we regularly point out that applying space technologies to human needs requires cooperative policy decisions and that the reason we seek space sustainability is to permit uninterrupted service to humanity on Earth.

In 2013 we continued our advocacy for data democracy leading to wider sharing of remote sensing images in support of economic development and followed up some initial success by running a workshop in partnership with the U.S. National Oceanic and Atmospheric Administration (NOAA) in Nairobi, Kenya that trained Somali and Sudanese operators to use the first data sets we had helped to get released. A similar workshop was organized late in the year in Chiapas, Mexico using data sets for Central America. We followed up our election as the only official NGO observer to the intergovernmental Group on Earth Observations (GEO) by organizing a highly successful conference with them and in cooperation with the European Commission on space contributions to food security

Our work with the UN’s agency dealing with space-based disaster mitigation (UN SPIDER), our sponsorship of a Space Generation study project on disaster communication, our support of the UN Office of Outer Space Affairs in its HES applications workshop, our support for the African Leadership Conference on space applications, and our partnership with the UN regional center for science education in Latin America (CRECTEALC) all advanced the HES agenda and often demonstrated concrete progress in capacity building.

“Tiffany Chow has been an integral part of the reconstitution and initial success of the CEOS Working Group on Capacity Building and Data Democracy. She has helped guide the WG, helping to take somewhat disparate ideas and goals and molding them into concrete, achievable outcomes. Nowhere was this more apparent than when she stepped in and led the WGCapD presence at the Nairobi DEM Workshop. In a period where government agencies were facing restrictions in international travel, Tiffany was able to step in as the organizer and leader of the workshop ultimately leading to a highly successful activity.”

- Jacob Sutherlun, NOAA Satellite and Information Service

In 2014 we intend to continue this work supporting more capacity building workshops and working to improve communication among different institutions in the international disaster management community.

While attending the 64th International Astronautical Congress in Beijing, SWF Executive Director Dr. Michael Simpson and CRECTEALC Secretary General, Dr. Sergio Camacho, sign an MOU ensuring future collaboration.



HES PROJECTS

- UN SPIDER Cooperation – [Bonn Expert Meeting](#)
- [Space Generation Congress](#)
- European Space Conference – [International Meeting on Food Security, Earth Observations and Agricultural Monitoring](#) – with GEO and the European Commission
- [United Nations Office of Outer Space Affairs Belarus Workshop on Space Technology Applications for Socio-Economic Benefits](#)
- [CRECTEALC Collaboration](#)

PLANETARY DEFENSE

Eight years ago we knew far more about detecting asteroids and deflecting them than we did about how we would make a broad-based decision to address an eventual threat. Now SWF's longest running project has contributed substantially to the creation of two institutions to ensure that decisions in this area are effective and inclusive.

In 2013, concepts emerging from an SWF partnership with the Association of Space Explorers were incorporated into a UN General Assembly resolution. Shepherded by Action Team-14 of UN COPUOS, of which SWF was an invited expert member and in which we invested hundreds of hours of staff time, a structure permitting cooperative, transparent, international response to potential asteroid threats took shape slowly and deliberately as multiple political sensitivities were addressed.

U.S. Astronaut Tom Jones, Association of Space Explorers – specifically thanked SWF, Ray Williamson and Mike Simpson for their role in moving the proposal for asteroid threat mitigation through the UN System. Both ASE and SWF are official observers at COPUOS.



As we look forward to 2014, our role in planetary defense will shift to focus to developing the operational terms of reference for the new institutions, and documenting a history of the process that holds many important lessons for structuring effective partnerships between civil society, technical experts, and policy makers to improve humanity's ability to function cooperatively in the face of common challenges.

PLANETARY DEFENSE PROJECTS

- UN COPUOS Action Team-14
- [IAA Planetary Defense Conference](#)

EDUCATION AND OUTREACH

At the far horizon where even the keenest vision becomes dim, what matters most is that we have taught the next generation to see. This is particularly true in the areas on which we focus since the scale is so large and the temptation to see extraordinary technology as independent of the issues and possibilities it raises is so strong that human impact can be overlooked. For this reason we invest sponsorship support and considerable staff time helping to ensure that young professionals see the bigger picture and have their opportunity to contribute ideas to the quest for solutions to human problems.

This past year we supported Space Generation's Fusion Forum, which gathered a stellar group of people age 35 and under during the Space Symposium, sponsored events for the Space Foundation's Next Generation group of folks 40 and under, participated directly in the Space Generation Congress in Beijing, funded the travel of the



SWF staff and recipients of the 2013 SWF Young Professional Travel Scholarships at the 64th IAC in Beijing. First row, left to right: Olojo Olabamiji Oluwaseun, Agnieszka Lukaszczyk, Natassa Antoniou, Noemie Bernede, Zhuoyan Lu, Juliana Macedo Scavuzzi dos Santos, Scott Dorrington. Second row: Brian Weeden, Victoria Samson, Mike Simpson.

North American regional championship team to the international Moot Court competition in China, provided travel support permitting five young authors to personally present accepted papers at the International Astronautical Congress (IAC) and provided direct assistance to students studying the application of space technology to the needs of humankind through the Ray Williamson Future Fund. We also recognize that professionals more advanced in their careers need opportunities for continuing development, so we have sponsored numerous outreach events to bring new developments or innovative thinking to issues of growing importance to the space community. We also worked with a print publication, APOGEO, and podcast, The Space Show, to present information on the importance of cooperative solutions to the commons of earth orbit.

A challenge for 2014 will be how to continue the highly successful outreach events we have organized in Europe in the absence of the Brussels office and how to extend the reach of our work to geographic areas in which we have been less visible. Fortunately some of our partners, notably Space Generation, Space Foundation, and the European Commission, also share a commitment to expanding both the conversation and the search for good governance to a wider audience. As we continue the work we have been doing, we look forward to facilitating more partnership activity in this area in 2014. This may be an area where we could seek additional funding from beyond our endowment because of the added value of experience we could promise donors seeking to advance the next generation of space leadership.

EDUCATION AND OUTREACH PROJECTS

- [International Astronautical Congress](#), Beijing
- Travel Support Fund – [IAC Young Professional Travel Scholarships](#)
- The Space Show sponsorship – webinar on [Threat of Near Earth Objects](#), interview discussing [Shut Down of the Space Fence](#)
- [Apogeo Spatial](#) (formerly Imaging Notes)

BRUSSELS OFFICE OUTREACH EVENTS

- [Space Policy Round Table - Space Opportunities and Challenges – A view from Poland, the Newest ESA Member State](#)
- [Space Policy Round Table - Cooperation vs. Competition in Space Activities](#)

COLORADO OFFICE OUTREACH

- [New Generation Space Leaders Program](#)

DC OFFICE OUTREACH

- [Why Does Space Matter to International and National Security?](#)
- [Threats to U.S. Space Investments](#)
- [Radio Frequency Interference and Space Sustainability](#)
- [Near-Earth Objects: Addressing the Current Threat Level](#)
- [Earth Observation Satellite Data-Sharing: Policies and Partnerships](#)
- [International Space Reception](#)
- ["Gravity" in Real Life: Legal and Political Implications of an Accident in Space](#)

SECURE WORLD FOUNDATION OUTREACH

- [The Province of Mankind Providing Sustainable Benefits for All of Mankind –The Role of Industry](#)
- [IAC Young Professional Programme Event on Space Debris](#)
- [European Satellite Day 2013: Global Risks - Satellite Answers: Foresight in European Space Capabilities for Enhanced Global Stability](#)

SWF ORGANIZATIONAL DEVELOPMENT

Working to bring activities in line with available resources, the Foundation took the decision to close the Brussels Office at the end of 2013. Although highly productive, the office bore the burden of sustaining the high cost of doing business in Brussels. A thorough analysis completed in the first quarter of 2013 showed that even without salary savings, closing the Brussels office could save nearly \$200,000 per year, an amount equivalent to nearly 30% of our program budget. Although both employees in the office were offered the chance to transfer to the USA at Foundation expense, they both elected to remain closer to home in Europe.



After they had confirmed this decision we opened a search for two new program officers and had concluded those searches successfully by the end of the year. The new colleagues will begin their work in early 2014. Even with these new hires, SWF will operate with one less program officer in 2014 than it had this year since a member of our Washington, DC team has elected to take a new job close to her family in Los Angeles. Given the background and experience of our two new colleagues, however, we are confident that an ambitious work schedule for 2014 will be well staffed.

ADVISORY COMMITTEE ANNUAL MEETING



First row, left to right: *Ciro Arevalo, Wendy Gordon, Bill Ailor, Board Member Rachel Yates, Agnieszka Lukaszczyk, Cherilynn Morrow.*
Second row: *Art Morrissey, Joan Johnson-Freese, Natassa Antoniou, Cynda Collins Arsenault, Ray Williamson, Richard Tremayne-Smith, Jim Armor, Richard DalBello, Tiffany Chow.* Third row: *SWF Board Member John Arsenault, Brian Weeden, Gérard Brachet, Phil Meek, Victoria Samson, Mike Simpson, Lisa Croy.*

Nine of the ten Advisory Committee members joined the SWF President, 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.

DISCRETIONARY TRAVEL FUND

Staff members are provided with an annual discretionary travel fund to allow them to attend events 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 we may not have been aware of otherwise and allows them to look beyond our current activities to future pursuits. Throughout the year several staff members were invited to speak at events (indicated in *italics* below) where the invitation included payment of travel costs.

Mike Simpson, Executive Director

- [London Space Commerce Conference](#)
- [International Space University Space Studies Program](#)
- [International Symposium on Personal and Commercial Spaceflight](#)

Ray Williamson, Senior Advisor

- International Space University Southern-Hemisphere Space Studies Program
- [Space Equities: the Role of the Americas in Building Norms of Behavior](#), UNIDIR regional event in Mexico

Agnieszka Lukaszczyk, Brussels Office Director

- Guest Lecturer – University of Leiden, the Netherlands
- [Space Equities: the Role of the Americas in Building Norms of Behavior](#), UNIDIR regional event in Mexico
- UN General Assembly – First and Fourth Committee Meeting

- *International Expert Meeting on the International Code of Conduct, European External Action Service event in Bangkok, Thailand.*

Victoria Samson, Washington Office Director

- [“Space, Satellite, and Strengthening International Security”](#) presented at the Asan Institute for Policy Studies’ Science, Technology, and Security Series of workshops Seoul, South Korea.
- UN General Assembly – First and Fourth Committee Meeting

Brian Weeden, Technical Advisor

- [Panel Session on "The Future of Space" at the World Economic Forum Annual Meeting in Davos](#) with a WEF-released [Insight Video and Blog Summary](#) of the session.
- World Economic Forum meetings – New York City, Montreal, Abu Dhabi

Natassa Antoniou, Project Manager

- City 2020 Municipal environmental legislation and technology" course presented [Local & Regional Authorities - Going Green, Sustainable, and “Spacy”?](#)
- [International Space University Space Studies Program](#) presented "[International Response to Natural Disasters](#)"

Tiffany Chow, Project Manager

- Japan Space Forum – presented “Think Tank’s View on Transparency and Confidence Building Measures (TCBMs) in the United Nations Group of Governmental Experts”
- [Space Situational Awareness 2013](#) conference, London, UK – presented “Examining the Many Non-technical Challenges Associated with On-orbit Servicing and Active Debris Removal Which Can Undermine International Security/Stability”
- *Japan - U.S. Kanazawa Conference – presented “The Changing Security Domain and the Japan-US Alliance”*

SWF MEDIA & PUBLICATIONS IN 2013

MEDIA

SWF was interviewed 34 times over the course of 2013 for 3 TV interviews, 28 print and online articles, 3 radio interviews, and once for a yet to be released documentary.

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

- L.A. Times - [Experts debate North Korea's missile goals and capability](#)
- Reuters - [China's space activities raising U.S. satellite security concerns](#)
- Fox News – [Discussing Reports of Iran Launching a Monkey into Space](#)
- Space.com – [Meteor Explosion in Russia and the Continuing Efforts by the UN to Develop International Responses to Future Events](#)

- Quartz – regarding the GGE Announcement – [UN gets closer to establishing the law of the sea but for space](#)
- Breaking Defense – [Landmark Space Policy Shift As China, Others Agree To Space Code of Conduct Talks](#)

SWF PUBLICATIONS

SWF's premier resource booklet, [Space Sustainability - A Practical Guide](#), was updated and staff collaborated to produce five [Fact Sheets](#) to assist in briefing policy makers on current space issues.

SECURE WORLD FOUNDATION

PROMOTING COOPERATIVE SOLUTIONS FOR SPACE SUSTAINABILITY

LIST OF ACRONYMS

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| ADR | Active Debris Removal |
| AMOS | Advances Maui Optical and Space Surveillance Technologies Conference |
| ASE | Association of Space Explorers |
| BRICS | Brazil, Russia, India, China and South Africa |
| CEOS | Committee on Earth Observation Satellites |
| CRECTEALC | Regional Center for Space Science and Technology Education for Latin America and the Caribbean |
| DARPA | (U.S. Department of Defense) Defense Advanced Research Projects Agency |
| DEMs | Data Elevation Models |
| EC | European Commission |
| EEAS | European External Action Services |
| ESA | European Space Agency |
| EU | European Union |
| GGE | Group of Governmental Experts |
| GEO | Group on Earth Observations |
| HES | Human and Environmental Security |
| IAA | International Academy of Astronautics |
| IAC | International Astronautical Congress |
| IAF | International Astronautical Federation |
| IAWN | International Asteroid Warning Network |
| IISL | International Institute of Space Law |
| ISU | International Space University |
| NGO | Non-governmental Organization |
| NOAA | (U.S.) National Oceanic and Atmospheric Administration |
| NSS | National Space Symposium |
| OOS | On-orbit Servicing |
| PHA | Potentially Hazardous Asteroids |
| SMPAG | Space Mission Planning Advisory Group |
| SSA | Space Situational Awareness |
| SSI | Space Security Index |
| TCBMs | Transparency and Confidence Building Measures |
| UN COPUOS | 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 |
| WEF | World Economic Forum |