



Promoting Cooperative Solutions for Space Sustainability

Building Appropriate Institutions to Support the Use of Earth Observations for Human Security

Agnieszka Lukaszczyk
alukaszczyk@swfound.org



Promoting Cooperative Solutions for Space Sustainability

The Secure World Foundation (SWF)
is a private operating foundation
dedicated to the secure
and sustainable
use of space
for the benefit of Earth
and all its peoples



Promoting Cooperative Solutions for Space Sustainability

What Does the Foundation do?

Engages with academics, policy makers, scientists and advocates in the space and international affairs communities to support steps that strengthen global space security.

Promotes the development of cooperative and effective uses of space for the protection of the Earth's environment and human security.

Acts as a research body, convener and facilitator to advocate for key space security and other space related topics and to examine their influence on governance and international development.



Promoting Cooperative Solutions for Space Sustainability

Key Governance Focus Areas

Space Sustainability

- Protection of continued utility of space resources

Human security

- Development and disaster assistance
- Environmental and climate change
- Countering degradation of land, air, water, and ice

Planetary threats

- Mitigating the threat of collision from a Near-Earth Object (NEO) through the establishment of effective governance for response

- Non-profit operating foundation founded in 2004
- Funding comes from a private endowment
- Offices in Colorado, Washington DC and Brussels
- Dedicated to ensuring the long-term sustainability of the space
- Strong role in policy development in both the international and domestic policy communities



Promoting Cooperative Solutions for Space Sustainability

Remote Sensing for Disaster Response

Where are we now?

Technological Progress

- Vastly improved access to data
 - Faster delivery to data analyst after collection
 - More data sources in the works (aerial/satellite)
 - Electro-optical
 - Variety of resolutions, Single satellites, constellations
 - Synthetic aperture radar (SAR)
 - Radarsat II (Canada). TerraSar (Germany)
 - Aerial lidar
- Many, more powerful, analytical tools
 - Rapid, automatic change detection
- Related tools, such as PNT, GIS more powerful than ever
- And more RS technology on the way

International Institutional Progress

- International Charter; Space and Major Disasters

Successes in providing data rapidly to distressed countries

- What happens on the ground in the affected area?

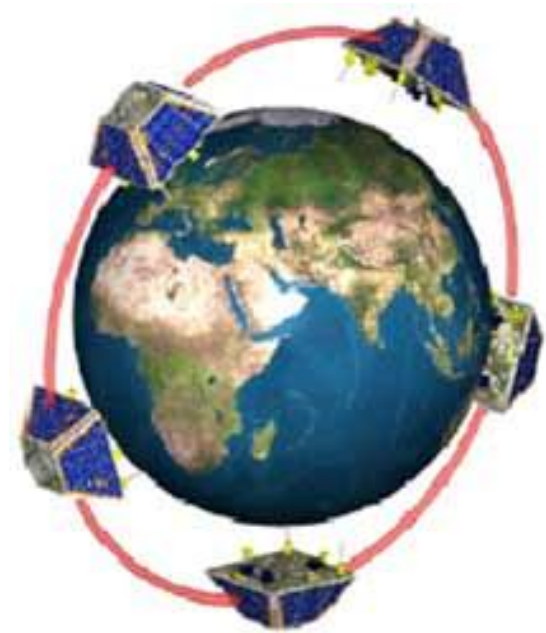
- UNSPIDER Capacity Building

- Disaster Monitoring Constellation

Five 32 m resolution satellites in constellation

Leading the way forward for developing countries to gain access to RS data, capabilities

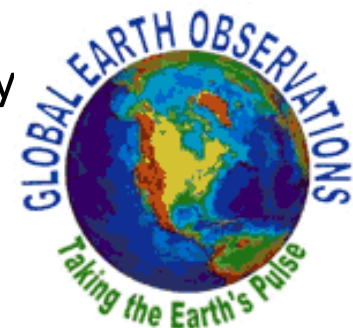
- How are these data used?



- Joint initiative of EC and ESA to establish a European capacity for space-based operational information
- Develop Europe's capability to supply independent and permanent access to reliable and timely information on the status of Earth's environment at all scales, from global to regional and local, in support of EU policy and sustainable development



- Created in July 2003, GEOSS is designed to help all nations involved produce and manage their geospatial information to benefit the environment as well as humanity by taking a pulse of the planet.
 - Builds on and add value to existing EO systems by coordinating their efforts, addressing critical gaps, supporting interoperability, sharing information, reaching a common understanding of user requirements, and improving delivery of information to users
- Participants created an ad hoc intergovernmental Group on Earth Observations (ad hoc GEO) to develop a 10-Year Implementation Plan, agreed to on February 16, 2005
- The success of GEO for response to disasters will depend heavily on the ability of the GEO Secretariat and the member nations to organize and produce data and information in forms that are appropriate to these applications





Promoting Cooperative Solutions for Space Sustainability

Yet, Many Challenges Remain: Primarily Institutional

- Uncoordinated use of data collected
 - Does the information reach first responders in the local community?
 - Can the user make use of the information available?
 - Loss of communications
 - Lack of electricity
 - Lack of experience & training
 - Lack of coordination
- Lack of understanding of the needs of the user
- Lack of data format standards
- Slow turn around from data to useful information

- Unclear communication
- Unclear roles, responsibility, and authority
- Unclear and inconsistent requirements and specifications
- Unclear purpose and understanding of end-user needs
- Wrong data format
- Difficulties obtaining the right data
- Data with little value for GIS analysis
- Lack of complete post disaster imagery

Challenges Ahead

- EO still not sufficiently well coordinated
- Geospatial data valuable for...
 - Build the business case for better information, faster
- Clarify roles of different participants
 - International agencies
 - Government agencies
 - Private sector
- What about preplanning?
 - Some disasters are really surprises, many are not
 - Need data delivery systems in place
 - Need to work with government agencies ahead of time



Promoting Cooperative Solutions for Space Sustainability

Future Opportunities for the R&D Community

- Continue to do first-rate research
- Help to educate potential users about the value of the data and analysis you do
 - Not enough to publish in books & scholarly journals—important to reach out to a broader public
- Help to educate policymakers about the value of Earth observations for recovering quickly and rebuilding effectively
- Extend applications to developing world



Promoting Cooperative Solutions for Space Sustainability

Thank you for your Attention!