



Promoting Cooperative Solutions for Space Sustainability

Fostering Cooperative Decision Making Among Global Stakeholders in Space

Case Study of Latin American Approaches to Space Sustainability

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Promoting Cooperative Solutions for Space Sustainability

About SWF

- SWF is a private operating foundation dedicated to the secure and sustainable use of space
- ***Why space sustainability?*** Increasing reliance on space assets coupled with potentially destabilizing trends
- SWF Focus Areas
 - Space Sustainability
 - Space Law and Policy
 - Human and Environmental Security



Screenshot from [Stuffinspace.net](#); cover of Apogeo Spatial spring issue;
panelists at “Challenges in Sharing Weather Satellite Spectrum with Terrestrial Networks” event held in Wash. D.C.

Background: Space in Latin America

- Range of space development across the region, recent emphasis on formalization and diversification
- Development steps vary; active mix of industry, government, and academic activities
- Some programs had military beginnings in the 1960s, others a more recent emergence (2000s)
- Two main trends:
 - *Challenge of making the case for space*
 - *Strong linkage with practical goals of development agenda*



ACAE's PRELIMINARIES

- 1989: Foundation of ACAE
- 2009: Foundation of CONAE
- 2010: Creation of DANEALUS Initiatives
- 2011: 5th IAC Naples, Italy
- 2012: MoU ITC-Acae
- 2013: 6th IAC Beijing, China
- 2014: President of the Republic's declaration / ITCA's funds application
- 6th IAC Toronto, Canada



SUCCESSFUL EXPERIENCES

LANDSLIDE HAZARD MAP FOR YATERAS MUNICIPALITY AT GUANTANAMO PROVINCE. NIPE SAGUA BARACOA OFFICE.

(RED > HIGHER LEVEL OF HAZARD)

The map shows a coastal area with red shading indicating higher landslide hazard levels, particularly along the northern coast. A blue circle highlights the 'BELTRAN' area, with an inset photo showing a person walking on a path near a hillside.



IAF

- IAC 2016



The map shows the outline of Mexico with a red dot indicating the location of Guadalajara. A circular inset provides a detailed view of the Guadalajara area.

Slides from SWF-ACAE workshop in 2015 by representatives from Costa Rica, Cuba, and Mexico.

Snapshot of space nations

ARGENTINA



- Since 1960s; civil agency est. 1991
- Latest national space plan for 2004-2015
- Broad range of activities; including Tronador rocket program

BRAZIL



- Since 1960s
- Civilian agency est. 1994
- PNAE issued in 10-year increments (latest 2013)
- Focus on industrial development, and meeting national needs

COLOMBIA



- Momentum with 2002 CEA hosting
- Colombian Space Commission led by Air Force
- Academia a primary player, ex. cubesat university programs (Libertad 1)



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Snapshot of space nations

MEXICO



AGENCIA ESPACIAL
MEXICANA

- Since 1950s – decentralized activities
- Agency est. 2010
- PNAE issued in 2012
- Industry roadmap - Orbit Plan - issued 2013
- IAC host in 2016

PERU



- Est. 1974 (Ministry of Defense), space agency since 2007
- Joined APSCO in 2005
- 2016 est. satellite imagery processing center

VENEZUELA



- Agency est. 2007
- Emphasis: telecomm; Earth observations
- VeneSat-1, VRSS-1
- Progress towards indigenous capabilities



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Space sustainability: Background

- Space sustainability
 - No official definition; Growing awareness of risks to the continued ability to use and derive benefits from space
- International efforts on specific issues (e.g. space debris) and larger question of shared understanding of responsible behavior in space
- Engagement with new space actors key to these efforts for legitimacy, effectiveness, and widespread adoption
- Need for political, legal/regulatory steps, not just technical solutions
- Prior research highlighted role of regional dynamics in common approaches to space sustainability
- Case study of Latin America and Caribbean (LAC) region - Analysis of national statements and documents; expert interviews; participation in relevant international forums



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Adopting a regional lens

International cooperation: A consistent theme

- Captured in the statements and plans of the agencies and country leadership
- Couched as both need (technology transfer) and commitment (political goal)
- Manifest through bilateral, regional, and multilateral (international) engagement

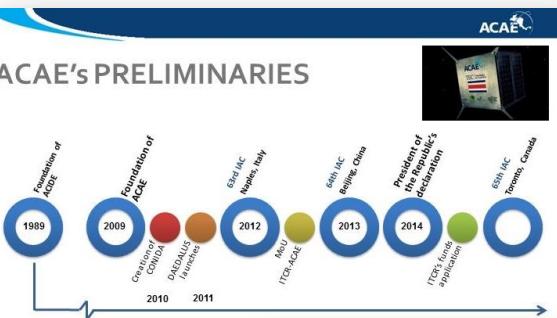
Drivers for regional cooperation

- Shared socioeconomic challenges = drivers for space investment
- Limited resources (financial, institutional, human capital)
- Political commitment to regional development

Multiple cooperation mechanisms

Sustainability in regional context

ACAE's PRELIMINARIES



The timeline shows the following milestones:

- 1989: Foundation of ACAE
- 2009: Foundation of ACAE
- 2010: Creation of CONIDA
- 2011: DANE/LAUS launches
- 2012: 65th IAC Naples, Italy
- 2013: 66th IAC Beijing, China
- 2014: President of the republic's declaration
- 2014: ITC's formal application
- 2014: 67th IAC Toronto, Canada

SUCCESSFUL EXPERIENCES

LANDSLIDE HAZARD MAP FOR YATERAS MUNICIPALITY AT GUANTANAMO PROVINCE. NIPE SAGUA BARAOA OFFICE.

(RED > HIGHER LEVEL OF HAZARD)



The map shows a red-shaded area indicating higher landslide hazard levels, specifically around Beltrán. It includes a north arrow and a scale bar.

IAF

- IAC 2016



67th International Astronautical Congress
MADRID, SPAIN JALISCO MEXICO
Making space accessible and affordable to all countries



AEM AGENCIA ESPACIAL MEXICANA

Clockwise: Slides from workshop presentations by representatives from Costa Rica, Cuba, and Mexico.

- Shared goals and priorities across the region (space applications; international cooperation; capacity development/ tech transfer)
- UNCOPUOS identified as key multilateral space forum, GRULAC as an active regional body
- Link between space sustainability and broader concept of development is shared
- Caveat: Differences in how countries have chosen to organize space activities and how they develop political positions on space issues



Regional engagement in sustainability efforts

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- Leadership within UNCOPUOS (Colombia)
- Membership in Group of Governmental Experts on Transparency and Confidence-building Measures in Outer Space Activities (Brazil)
- Active national and regional participation in Working Group on the Long-term Sustainability of Outer Space Activities
- Participation in consultations of draft International Code of Conduct for Outer Space Activities (several, including Brazil, Cuba, Mexico)
- Sustainability measures emerging nationally (e.g. debris mitigation guidelines)
- Other targets of opportunity: SWF/ACAE hosted regional sustainability workshop in Costa Rica in 2015

The LTS guidelines are an “essential intermediate step towards establishing a legally binding framework that will help ensure that the benefits of outer space activities can be enjoyed by all of mankind for generations to come.” – GRULAC proposal (A/AC.105/C.1/2015/CRP.19/Rev.1.2015)

Discussion of key themes

Involvement at home and abroad

- Substantive involvement internationally
- Sustainability emerging in national discussions/implementation

Procedural concerns

- General support for multilateral initiatives, but significant concerns over process: strong preference for consensus-based, traditional forums, and legally binding mechanisms

Content issues

- Objections to reference to self-defense
- Desire for explicit commitment to exclusively peaceful use of space
- Priority to promote accessibility to space, also viewed as not imposing restrictions on developing countries



SWF-ACAE workshop in Costa Rica.
Credit: Marco Hernández.
swfound.org



Final considerations

- Space in the region: Diversity of experiences, common priorities and areas of interest
- Commonalities manifest in consistency of views on space-related issues (e.g. space security and space sustainability)
- Group dynamics not just defined geographically (e.g. BRICS); strong partnerships also exist with countries outside of the region (e.g Brazil and China)
- Shared challenges impacting space efforts/ cooperation:
 - Lack of resources
 - Lack of sustained political commitment
 - Limited institutional coordination
- Given commitment to regional cooperation, value in Latin American-led sustainability discussions, particularly moving into implementation



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THANK YOU!

Questions? Comments?

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