



Solutions from Space

# Space Applications for International Development

Space Foundation  
Rayburn House Office Building  
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**Solutions from Space**

**Space Applications for International Development**

**Welcome**

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# Space Applications for International Development

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# Space and International Development



- Space-applications are particularly relevant to challenges faced by developing countries.
- Space systems, including communications satellites, remote sensing satellites, and navigation satellites, provide relevant benefits
- Investment in space science and technology can be an important driver of development



# Recent News Articles



## **Brazil and Indonesia Using Eyes in the Sky To Safeguard Rainforests**

(Jakarta Globe) November 13, 2009, By Fidelis E Satriastanti

## **Gilat Satcom Enhances Business with Intelsat in Africa**

(TMC Net) November 12, 2009, By Nathesh

## **Satellites can help monitor and manage African droughts**

(SciDev.net) November 11, 2009

## **GPS used to preserve ants' nests**

(BBC) November 4, 2009

## **India's space ambitions taking off**

(Washington Post) November 4, 2009, By Emily Wax

## **Coming soon: Nigerians in space**

(Minn Post) November 2, 2009, By Katrina Manson

## **Space agencies, Google seek ways to save forests**

(Retuers) October 20, 2009, By Alister Doyle

## **Space tech used during Ondoy, Pepeng Typhoons in Phillippines**

(Philippines Inquirer) October 29, 2009

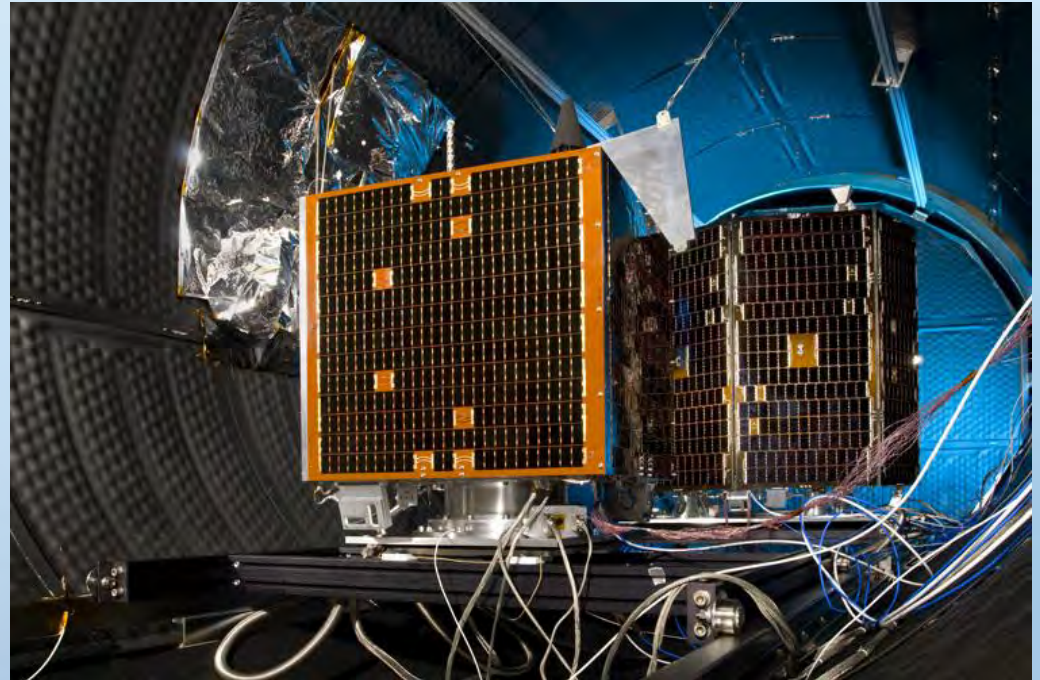
## **Venezuelan president celebrates 1st anniversary of satellite launch**

(Xinhua) October 29, 2009

# Communications Satellites



- Agriculture and Business
- Telemedicine
- Education
- Disaster Relief



NX and NigeriaSat-2, the latest spacecraft manufactured for the National Space Research & Development Agency, under environmental testing at Rutherford Appleton Laboratory, Didcot, UK. Both satellites were manufactured at SSTL Guildford.  
*Picture courtesy of SSTL*



# Remote Sensing Satellites



- Disease Early Warning
- Disaster Early Warning
- Disaster Relief
- Land Use Planning
- Efficient Aid Distribution



Satellite image of a large dust storm off the coast of North Africa.

*Picture courtesy of GeoEye Satellite Image*



## Levels of Investment and Corresponding Benefits

Increasing Investment

### **No National Investment in Space**

- May benefit from space applications created by developed nations

### **Cultivate Space Expertise**

- Informed voice in international space application efforts
- Able to form strategic partnerships regarding space applications

### **Trained Space Professionals and Research Facilities**

- Able to apply other nations' satellite data to national priorities
- Promote science and technology capacity building

### **Indigenous Space Hardware (Satellites)**

- Able to focus asset entirely on national priorities
- Further develop science and technology capacity



# Recommendations



- **Communications Satellites**
  - Consider cultural, social issues of implementation
  - Define and develop local markets for satellite communication
  - Simplify or reform regional regulatory issues
  - Invest in affordable ground station technology
- **Remote Sensing**
  - Further commit to data sharing, particular for emergencies
  - Further develop early warning models
  - Encourage creation of local geo-information systems
- **Capacity Building**
  - Focus on programs with direct benefit to society
  - Engage in regional and international partnerships
  - Identify and use common principles to develop space policies

# Additional Information



To download a copy of the paper and to see other Space Foundation Research Documents, visit:  
[www.spacefoundation.org/research](http://www.spacefoundation.org/research)

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## Space Applications for International Development

**Executive Summary**

Space-related activities generate \$257 billion each year and are often thought of as the domain of wealthy and technologically advanced nations. This perspective is misleading, however, as science and technology increasingly help address many of the challenges faced by developing countries. Space systems, particularly communications satellites and remote sensing satellites, have the potential to play a large role in these efforts.

### Communications Satellites and Applications

Communications satellites play an important role in increasing the information and communication technology infrastructure of developing nations. A high percentage of the population in many developing nations is located in remote, rural areas that are least likely to have access to terrestrial communication infrastructure. Satellites can provide voice and data broadband service, and the market for satellite communications is high due to the lack of traditional alternatives in rural areas. Communication technology can be used to provide farmers with information that aids productivity. It can enable telemedicine or tele-education in remote areas. After a disaster has occurred, satellite communication may provide the only reliable communication method during the response and rebuilding efforts. The following recommendations would enable the realization of these benefits in a more efficient and effective way:

1. Commercial satellite companies operating in developing nations should work closely with experts in international development and with local government and/or non-governmental organizations (NGOs) to ensure that space solutions are culturally appropriate. This will allow solutions to be more readily adapted and accepted by these communities.
2. Studies should be initiated to continue to define the market for communications satellite services in developing nations. This will provide an understanding of the complexities and differences in various areas and suggest the best ways to proceed in introducing new technology. This may be done by governments interested in understanding the most efficient method for investing in communications infrastructure, or by companies interested in identifying potential new markets.
3. Governments in developing nations and commercial communications satellite operators should work together to develop a logical regulatory scheme in developing nations. In addition, clear guidance should be provided by governments on how to work within existing regulations.

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## Panel: Communications Satellite and Remote Sensing Satellite Applications

*Moderated by Marty Hauser*

Kalpak Gude, Vice President and Deputy General Counsel, Intelsat

Daniel Irwin, Project Manager, NASA SERVIR

Emil Cherrington, Senior Scientist, CATHALAC

Mariel John, Research Analyst, Space Foundation

Question and Answer





## Panel: Capacity Building

*Moderated by Mariel John*

Dr. Carlos Ganem, President, Brazilian Space Agency

Ken Hodgkins, Director, Office of Space and Advanced Technology,  
U.S. Department of State

Dr. Kai-Uwe Schrogl, Director, European Space Policy Institute

Question and Answer



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# Closing Remarks

Brendan Curry

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Government Affairs