



Promoting Cooperative Solutions for Space Sustainability

Policy Challenges of Smallsats for Earth Observations

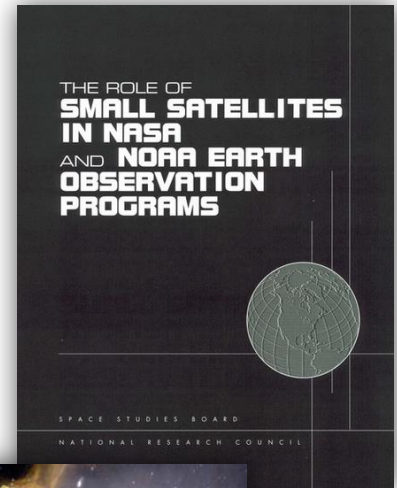
Case study from the United States

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The re-emergence of smallsats

- SWF is a private, endowed operating foundation dedicated to the secure and sustainable use of space
- *Why space sustainability?* Increasing reliance on space assets coupled with potentially destabilizing trends
- Re-emergence of smallsats in a rapidly diversifying and growing space domain
- Euroconsult Feb. 2015 study: 510 smallsats to be launched in next 5yrs.
- Smallsats turning into go-to for actors within the public, academic, and private sectors



Top right: Front matter of book produced by the National Research Council in 2000. Above: Artist depiction of NASA FASTSAT ; NASA/MSFC.

Beyond a demonstration platform?

- Proposals to do more beyond tech demonstration and hands-on training : fill research and observational needs
- Advantages include: higher revisit time, shorter development cycles, lower launch costs
- Emerging challenges
 - No agreed-to technical definition, few standards
 - Research-to-operations issues
 - New, disparate community of developers
 - Regulatory implications
- Two focus areas for operational discussion:
 - **Weather**
 - **Imaging**

Snapshot of the diversity of players



- **National Space Policy – June 2010**
- **Commercial Remote Sensing Policy - April 2003**
- **Also: agency-specific guidance (e.g. NOAA Partnership Policy - 2005), related laws, statements, and memoranda**

Common themes

- Certain tasks defined as governmental responsibility (ex. weather data as a public good)
- Private sector and academia as partners: guidance to use capabilities/ services to “maximum practical extent”
- National security considerations take precedence when it comes to imagery
- Commitment to full and open data access (public/ international)

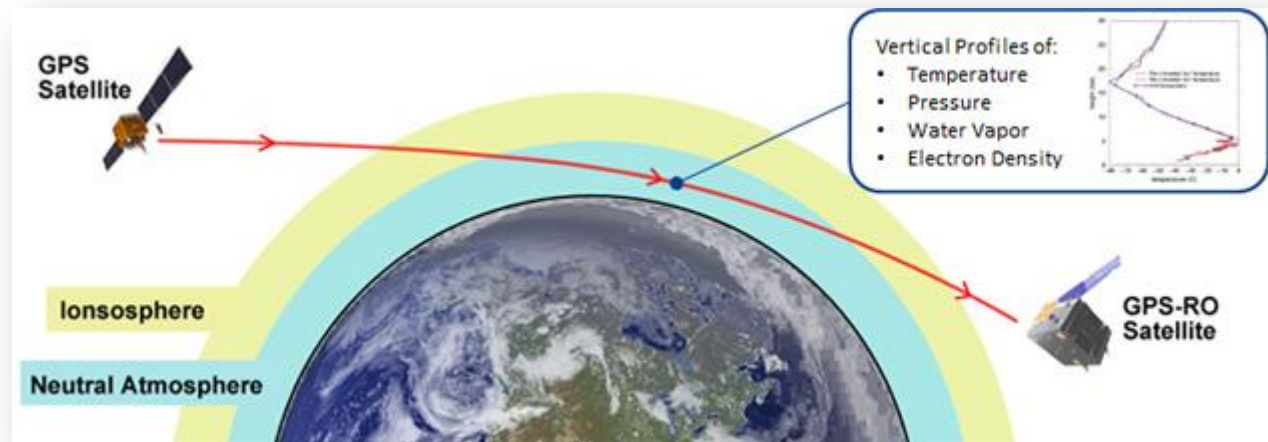
Potential:

- Capabilities developed/launched/operated by private sector as data source for use in development of official models, forecasts, and other weather-related information products

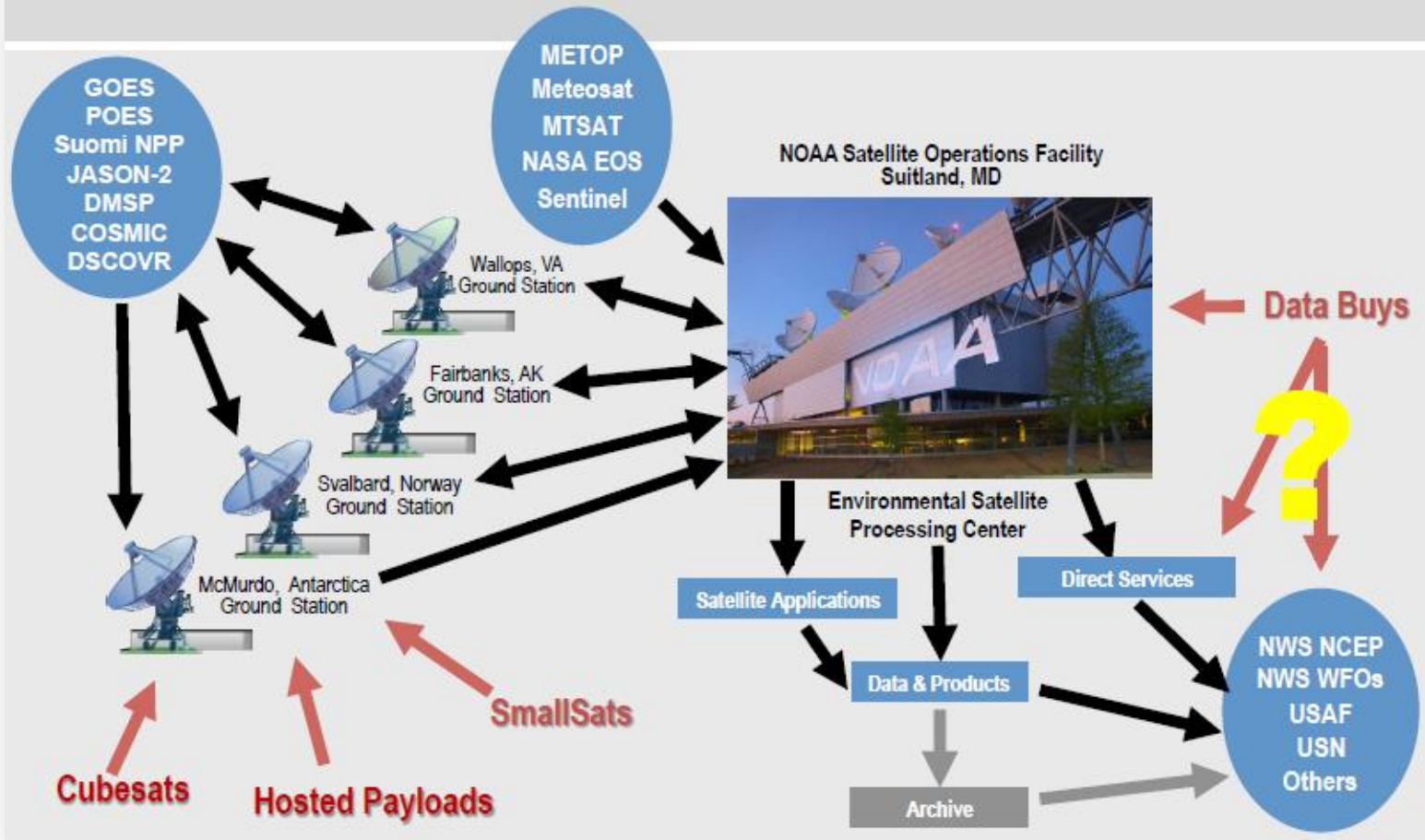
Key challenges:

- Data quality, validity and reliability (including archiving)
- Access/reusability restrictions
- Demonstration of capability
- Definition of roles

Right: Depiction of GPS radio occultation. Source: PlanetiQ website



Future Data Sources



Above: Slide from presentation of Dr. Stephen Volz, NOAA, during Goddard Memorial Symposium, Feb. 2015

New questions – Imagery/Geospatial

Potential:

- Capabilities incorporated into growing suite of data sources to fill specific U.S. government intelligence needs, allowing for more efficient tasking of national reconnaissance satellites

Key challenges:

- Defining the mission – when is *good enough* good enough?
- National security considerations
- Access/ reusability restrictions w/ respect to allies
- Regulatory/ licensing challenge



Above: Hanja-Ri, South Korea;
Hulun Buir, China. March 2015
Credit: PlanetLabs

Legislation

- Budget process
- Commercial Remote Sensing Act
- Weather Forecasting Acts

Policy Reviews

- Commercial Remote Sensing Policy (expected 2015)
- NOAA Commercial Data Policy (expected 2015)

Agency Efforts

- Workshop on NOAA Consideration of Commercial

Satellite Data

- NGA-issued RFI: NextGen Commercial Imagery Strategy and Architecture to Acquire Commercial Imagery Products and Services
- Future architecture studies

Multi-stakeholder Discussions

- USGIF Working Group on Small Sats
- Leadership statements, op-eds, media discussion

- Push and pull elements at play
- Capabilities considered promising to **augment** not replace national systems
- Cultural, paradigm shift – traditional roles being questioned
- Result will be a mix of approaches
- Examples from other industries/ other kinds of data may suggest way forward
- Pending questions about real market opportunities/ response – *Is this another bubble? Are there enough non-government customers?*
- Space sustainability challenge – how to take advantage of the positive while meeting regulatory/oversight responsibility
- International repercussions to decisions taken at national level



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THANK YOU

Comments? Questions?
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