Private Sector Provision of Radio Occultation and other Satellite Data

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Introduction

- Since 1993 at least 8 private companies have been formed to provide meteorological satellite data for profit.
  - Planet Data (RO)
  - WeatherSat International (lidar winds)
  - GeoOptics (RO)
  - GeoMetWatch (Hyperspectral soundings from GEO)
  - Iridium (RO hosted payload)
  - Tempus (RO)
  - PlanetiQ (RO)
  - SPIRE (RO)
- They have all faced many challenges and none have succeeded so far.
- This presentation examines why commercializing RO data is so difficult.
- It offers recommendations on how to move forward positively

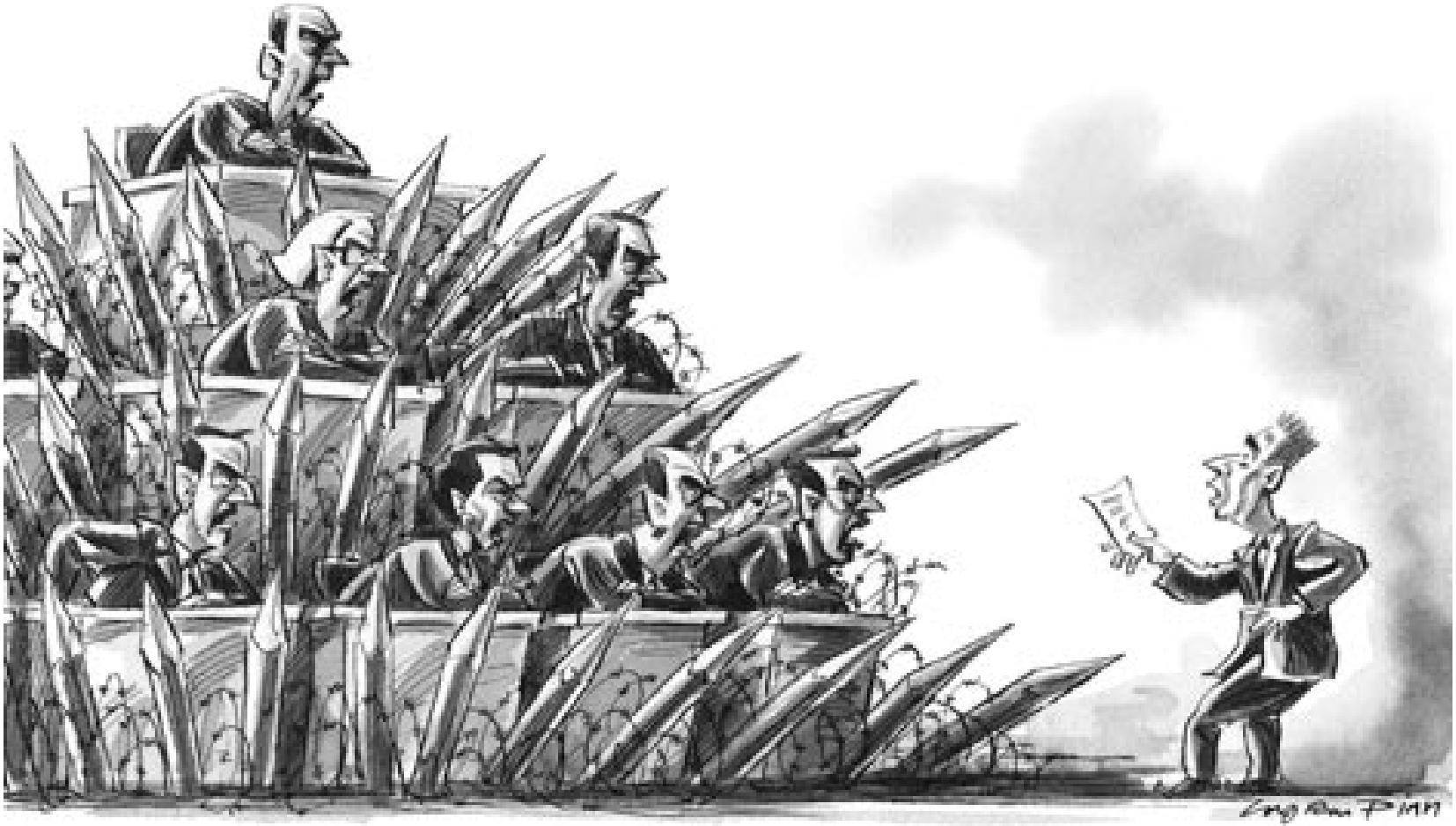
Let me be very clear…

- I support the idea of commercial RO data sales under appropriate conditions.
  - We need as many RO observations as possible
  - A diversity of approaches is healthy
    - more observations
    - competition for best methods
    - risk reduction

Let me be very clear…

- However some of the commercial efforts have engaged in activities that hurt the RO community and the companies themselves
  - Trying to exempt RO observations from free and open exchange guidelines of WMO-40
  - Arguing for more observations while at the same time trying to kill COSMIC-2 Polar through the political process
  - Hype and misleading statements that destroy credibility of efforts and confuses policy makers and funders
- We need to work together

Please don’t shoot the messenger



Why weather data sales and Why RO?

- Delays and cost overruns of large “Government” missions (e.g. GOES, NPOESS, JPSS, NASA missions)
- Low cost, high value and perceived simplicity of RO
- Need for a much larger number of RO observations
  - COSMIC and other missions provided ~3,000 obs/day- and these had a big impact
  - Studies have indicated that benefit increases through at least 100,000 obs/day, perhaps over a million
  - So it appears that a market exists for RO

In fairness...
All missions have cost and schedule issues

- NPOESS
  - Original plan: 6 satellites, 34 sensors, 1st launch late 2012/early 2013
  - Current plan: 4 satellites, 19 sensors, 1st launch 2017
- 10 NASA Missions after start of implementation phase
  - Avg cost growth 18.7%
  - Avg launch delay 15 months
- COSMIC
  - ***EOS*** Oct. 1999-"8 satellites to be launched in 2003" Actual: 6 satellites in April 2006 (delay ~3 years).

Arguments for Commercialization

1. The private sector is more efficient and can move faster than the government.
2. Less expensive-by spreading costs among a number of customers, costs to any one customer (e.g. NOAA) are small and affordable.
3. Customers pay no money up front-private company takes all risks. Customers pay only for proven high quality data upon delivery.
4. Creates tax-paying private sector jobs.

In addition to fundamental challenges……

- Hype and overpromises
- Lack of transparency
- Misleading statements
- Attacking other RO programs
- Attacking free and open exchange of RO data

The Media is Playing a Big Role in the Hype

- Essentially publishing press releases
- Failing to ask critical questions
- Failing to check claims or interview independent experts
- Allowing misleading statements, such as
  - throwing cost figures around
  - comparing apples to oranges
  - misrepresenting other programs

Ambiguous cost estimates

- What do costs really cover?
  - Annual costs or total costs over some years?
  - Total costs or costs of only parts of system (e.g. launch)
  - Total costs or costs to one customer-latter depends on assumptions and likely assumes cost sharing by other customers

Exempting RO data from free and open exchange of essential meteorological data

Resolution 40 (Cg-XII)

WMO policy and practice for the exchange of meteorological and related data and products including guidelines on relationships in commercial meteorological activities

1) ……..Members should reaffirm their commitment to the free and unrestricted international exchange of basic meteorological data and products, as defined in WMO Programmes.

"WMO commits itself to broadening and enhancing the free and unrestricted international exchange of meteorological and related data and products adopts the following practice on the international exchange of meteorological and related data and products:"

"(1) Members shall provide on a free and unrestricted basis essential data and products which are necessary for the provision of services in support of the protection of life and property and the well-being of all nations, particularly those basic data and products, as, at a minimum, described in Annex 1 to this resolution, required to describe and forecast accurately weather and climate…"

Annex I to Resolution 40 (Cg-XII)
Data and products to be exchanged without charge and with no conditions on use

Purpose

"…..identify a minimum set of data and products which are essential to support WMO Programmes and which Members shall exchange without charge and with no conditions on use."

"The meteorological and related data and products which are essential to support WMO Programmes include, in general…..as many data as possible that will assist in defining the state of the atmosphere at least on a scale of the order of 200 km in the horizontal and six to 12 hours in time."

Annex I to Resolution 40 (Cg-XII)
Data and products to be exchanged without charge and with no conditions on use

(8) “Those data and products from operational meteorological satellites that are agreed between WMO and satellite operators. (These should include data and products necessary for operations regarding severe weather warnings and tropical cyclone warnings).”

“Recognizing further

…

(3) The risk arising from commercialization to the established system of free and unrestricted exchange of data and products, which forms the basis for the WWW, and to global cooperation in meteorology,…”

Annex III to Resolution 40 (Cg-XII)
Guidelines for relations between national meteorological or hydrometeorological services (NMSs) and the commercial sector

Guidelines

"These guidelines apply to the commercial sector engaged in meteorological activities, which includes government organizations engaged in commercial meteorological activities.

In order to enhance the relationship between the two sectors:

1. In the common interest, the commercial sector is urged to respect the international data exchange principles of the WWW and other WMO Programmes;…"

Threatening the free and open exchange of RO data

"Not later than 12 months after the date of enactment of this Act, the Secretary of Commerce shall have published 1) final acceptance standards and verification procedures for the purchase of GNSS RO data from the commercial sector 2) clearly defined a procurement strategy that does not include the requirement for Open Data Distribution by NOAA to its Foreign Weather Forecasting Partners."

Language unnamed commercial sector company is asking Congressman Van Hollen to send to HAC-CJS. March 25, 2015

Strategy could backfire

This language could take away the commercial option entirely. Or even worse, stop U.S. support for RO entirely.
Is NOAA going to risk an international data war over RO?

How could commercialization work?

- Address fundamental flaws in business model
  - Partner with a single customer (e.g. NOAA)
  - Follow US and WMO data policies
  - Establish transparency, independent peer review while protecting IP of companies
- Provide credible detailed plans that can be compared to alternative plans
- NOAA could share in up-front investment

Possible NOAA Upfront Investment

- Establish budget in NESDIS of $20-40M per year for one or even several pilot projects (less than 2% of NESDIS budget)
- Award funding to private sector based on peer review of detailed proposals and plans
- Share in oversight and management of pilot projects

Operational Data Buys
A possible process

- NOAA decide how many RO observations it needs and can afford
- Obtain Congressional funding in advance
- Issue RFPs to obtain these data, perhaps in separate batches, for example:
  - Need 30,000 RO obs/day
  - Issue RFP for this number
  - Select between 1 and 3 proposals to obtain this total
- Let NOAA seek partners to share costs if they wish

Recommendations to Commercial Efforts

- Stop the hype-establish credibility
- Stop trying to kill other RO programs by lobbying-we need all the RO observations we can get
- Support free and open exchange of RO data according to WMO-40 Resolution
- Present credible detailed plans
- Proof of concept
  - Launch one or more demonstration satellites
  - Deliver high-quality data in near real time

Recommendations to NOAA

- Develop a policy for dealing with commercial RO data
  - Seek community (stakeholder) input through workshops and other methods
  - Develop process for considering alternative models of providing data on an equitable basis
  - Perhaps ask National Research Council to make recommendations (e.g. *Fair Weather* Report)
- Consider supporting pilot or proof-of-concept experiments