

Swedish Space Research

- some introductory observations and comments -

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Programmes and projects available for Swedish Space Researchers, Industry and Users of Space Data

ESA Programmes

- The mandatory science programme (astronomy, space physics, astroparticle physics, planetology)
- Earth Observation Programmes: EOEP, CCI, GMES (atmospheric physics and chemistry, vegetation/land/ocean, geodesy, climate etc)
- ELIPS – Life and Physical Sciences in Space (microgravity, space radiation, bed rest studies)
- ExoMars – a series of missions for studies of Mars; 2016, 2018 ...
- Mars Robotic Exploration Preparation – preparations for i.a. Mars sample return

Bi- and multilateral satellite projects (e.g. Odin, Pamela, Fermi, MMS ...)

Balloons and sounding rockets

- Microgravity sounding rockets (within ESA Elips programme)
- Sounding rockets, mainly for atmospheric research
- Balloons for astronomy, planetology and atmospheric research

Research Budget Concerns

- The budget problems encountered during 2009 were due to a significant and unexpected weakening of the Swedish Krona relative to the Euro. Due to the fact that ca 70% of the appropriation from the Ministry of Education and Research is paid in € the SRAC budget was severely eroded with the result that the "fresh money" that came with the 2009 appropriation disappeared all together!
- The situation for 2010 has gradually become better (for several reasons, all difficult to foresee)
- Unfortunately, the outlook for 2011 will remain uncertain until the fall of 2010 (even if we dare to assume that the €cost will stabilize at today's level or lower):
 - There is a potentially very negative impact to expect from a Government effort to secure payments in € to international organisations
 - Not until September 2010 will we know whether the new budget requests to the Government will be met positively

SNSB as a funding body for space research

- SNSB has a "unique" role in supporting active participation in space projects - i.e. participation from mission idea, through instrument development to operations and data exploitation
- The "Euro crisis" forced us to emphasize and elaborate the above role, noting also that the "fresh" money in the research bill from 2008 appears under the heading "Strategic Research/Technical Research"
- But - there has to be a plan (or strategy) for how to justify and secure a lasting support for an active project participation

Arguments for an active project participation

- Swedish research groups and industries have a unique competence in certain areas
- There is a need to pool both financial and intellectual resources on an international scale
- By being a potential contributor to an instrument one gets a much stronger and early say in the design of a mission, which is decisive for the scientific capabilities
- As an instrument PI (or Co-PI) one gets the possibility to influence the scientific programme and one gets a privileged and early access to data through so called guaranteed observing time and key programmes
- By providing payload hardware one gets a good understanding of instrument calibration and reduction algorithms, a knowledge which is becoming more and more important for a quick and elaborated scientific analysis.
- An active project participation helps to build a national strength – scientifically for data exploitation and both scientifically and technically for participation in future missions

How to succeed?

- some suggestions to be discussed here -

- Co-ordinate already existing, good but small and scattered, resources (internal and external) to build a necessary strength:

Planetary studies could be one interesting example... CV1525 projects ... Future astronomy facilities ... Other funding bodies ...

- Exploit - whenever possible - technical (and if appropriate scientific) synergies. SNSB has identified – mainly for non-scientific reasons - *microwave technology and miniaturisation (MEMS technology)* as two technology areas of special interest. *Useful for science, exploration ...*
- Perform tests on nano/microsatellites or suborbital platforms to exploit financial and technical synergies in preparation for scientific participation in bigger missions
- Identify the "future" research areas which for strategic reasons need "space guidance" and early support. *Example: astrobiology/exploration*
.....

Three final overarching questions:

1. What is the most challenging and exciting science that you expect from your discipline in the future?
2. What are the main problem(s) you are faced with or anticipate in being able to take an active part in the above challenges?
3. What are your immediate reactions to the "success suggestions" shown on the previous slide?