



STEREO II

Presentation of the new national remote sensing research programme

Brussels, 8 March 2008





INTRODUCTION

- Programme approved on 3 February 2006
- Duration: 2006 – 2014
- Budget: 25,85 M€
- First call scheduled for spring 2006





OBJECTIVES

- Increase Belgium's potential in the field of RS
- Stimulate innovation
- Build capacity to prepare Belgian teams for participation in international programmes
- Support Belgium's RS infrastructure
- Increase interaction with users





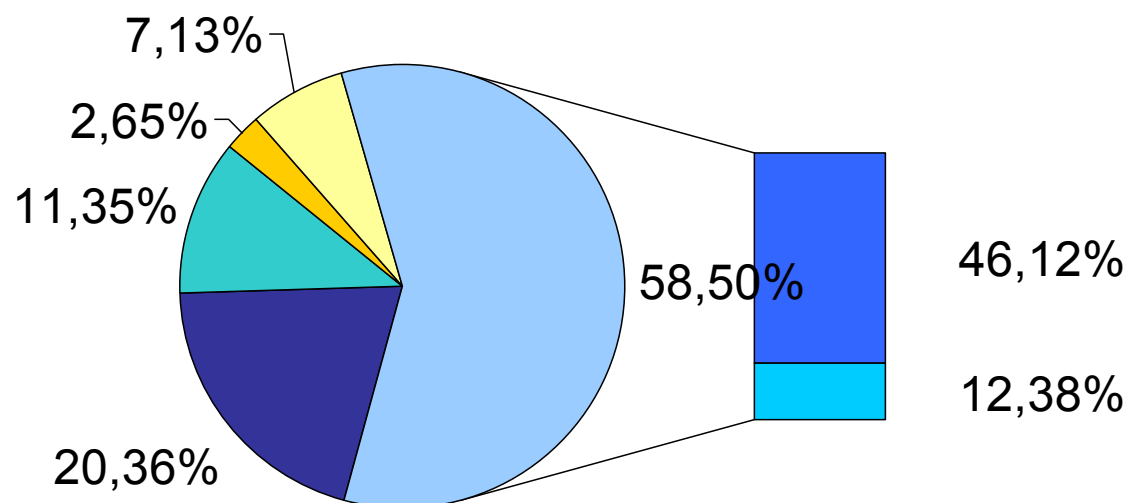
PROGRAMME STRUCTURE

- Scientific Research
 - Thematic poles
 - “Satellite” projects
- Development of products and services
- Scientific support
- Valorisation and promotion





PROGRAMME STRUCTURE BUDGET BREAKDOWN



- PRODUCTS & SERVICES
- SUPPORT TO RESEARCH AND SERVICES
- IMAGE PURCHASE
- VALORISATION, PROMOTION AND MANAGEMENT
- SCIENTIFIC RESEARCH - Thematic poles
- SCIENTIFIC RESEARCH - "Satellite" projects





TOWARDS A LESS UNCERTAIN ENVIRONMENTAL FUTURE...

- By 2020, will deserts cover 40 % of the terrestrial surface?
- Today, 60% of the world ecosystems are loosing their capacity to provide goods and services (M.A.2005)
- Can land become a source of conflict due to increasing competition between different uses?
- In the context of energy crisis, where are the available natural resources?
- Will there be environmental refugees? Who, how many, where, when, why?





GENERAL CONTEXT

- Agenda 21, Kyoto protocol, international agreements
- GEOSS, international organizations
- GMES
 - Monitoring environment and civil protection in EU and Africa
 - Fast track services: emergency response, marine services, land monitoring (at local and regional scales)
- CAP, Sixth Environment Action Programme
- Habitats, Natura-2000, Water Framework Directive
- INSPIRE, FP6 and FP7
- National programme: Science for a sustainable development (2005-2013)





COMMON APPROACH

- Research based on scientific questions
- Research relying on biophysical parameters and processes
- Generic approach (multi-data / multi-sensors / multi-disciplines / multi-scales)
- Interoperability of acquisition and processing systems
- Standardization of methods, techniques, algorithms
- Quality and reliability of results and products
- Robustness and sustainability of methods and services





COMMON TO ALL THEMES

- **Themes open enough to propose new topics, non-restrictive lists of topics !**
- Understanding and modeling human-environment interactions
- Environmental continuum across scales, time, space
- Analysis of long temporal series of spatial data
- Simulation of what-if scenarios
- Near-real time forecasting with data assimilation
- Meeting the needs of int. agreements, national and regional authorities (management and decision tools)
- Assessment of environmental policies' impacts





SCIENTIFIC RESEARCH *THEMATIC PRIORITIES*

- Global monitoring of vegetation and evolution of terrestrial ecosystems
- Management of the local and regional environment
- Health and humanitarian aid
- Security and risk management

Revision of themes in 2008 in tune with FP7, ...





GLOBAL MONITORING OF VEGETATION AND EVOLUTION OF TERRESTRIAL ECOSYSTEMS



- Responses of ecosystems to pressures and drivers
- Impact of natural vs anthropogenic pressures
- Resistance, adaptation, resilience and vulnerability of ecosystems
- Ecosystems integrated approach (e.g. monitoring of ecotones, impacts of ocean on continental areas)
- Modeling availability of natural resources vs demands for settlements, agriculture, timber, grazing



GLOBAL MONITORING OF VEGETATION AND EVOLUTION OF TERRESTRIAL ECOSYSTEMS



- Development of tools to have a near-real time knowledge of natural resources availability
- Regional analysis of long temporal series of world-wide seasonal vegetation indices
- Support to measures for a sustainable development at a global scale: development of indicators, integration of new algorithms into operational processing chains
- Global multi-sensor image synthesis



MANAGEMENT OF THE LOCAL AND REGIONAL ENVIRONMENT

- Coastal zones
- Inland water and soil
- Forests and biodiversity
- Agricultural areas
- Urban and peri-urban areas
- Cartography





COASTAL ZONES

- Health of specific coastal ecosystems
- Integrated management and monitoring of North Sea (transnational approach)
- Eutrophication information services: near-real time high level and high quality products
- Early warning systems of algae blooms and impact on trophic chains
- Impact of offshore activities on sediment movements (dredging, windmill farms)





INLAND WATER AND SOIL

- Soil sealing and soil erosion (linked to hydrological cycle and meteo conditions)
- Assessment of soil organic matter (soil management, CO₂ cycle)
- Quantification of heavy metal soil pollution
- Water quality: mapping risks of diffuse pollution
- Water balance and drought stresses
- Integrated management of hydrological basins (sediments, floods, impervious surfaces)
- Transnational management services of catchments





FOREST AND BIODIVERSITY

- Impact of climate changes on forests
- Greenhouse gas reporting and C stock statistics
- Forest and society: ecologic, economic and social roles
- Forest inventories (species, stem volumes)
- Environmental and biodiversity indicators (fragmentation, dispersion, diversity, degradation)
- Migration indices of fauna and flora
- Monitoring of invasive species
- Tools to manage Natura2000 areas and habitats





AGRICULTURAL AREAS

- Food security
- Food security around the Great lakes in Africa
- Yield monitoring and forecasting (integration or assimilation of meteo and atmospheric conditions)
- Modeling dynamic production systems
- Precision farming: content of soil organic matter, soil moisture, crop nitrogen content
- Geotraceability and food safety





AGRICULTURAL AREAS

- Pests and diseases control for plants and animals
- Development of tools for agricultural ministries:
 - agrienvironmental indicators
 - surface control
 - early warning systems (frost, flood, drought, pest, famine)
 - tools for farmer compensations (damage assessment)
- Land-use changes modeling in Eastern countries related to the CAP
- Sustainable management of natural resources





URBAN AND PERI-URBAN AREAS

- Urban sprawl and degree/rate of dispersion
- Quality of live in urban areas: density of population, quality of infrastructure, green areas
- Identification of man-made structure
- Identification of materials (nature, alteration due to time and meteo conditions)
- Reconstruction of real 3D views of building frontages (floors, windows)
- Development of management tools for local and regional authorities





CARTOGRAPHY

- Assessment of the actualization status of cartographic databases
- High quality time series of LUCC monitoring for a strategic updating of databases
- Error modeling and error propagation in GIS and in image processing chains
- Quality control of cartographic data
- Mapping the availability of natural resources





HEALTH AND HUMANITARIAN AID

- Quantifying and mapping population exposure to atmospheric pollution, industrial risks, noise
- Monitoring of recurrent industrial plumes, volcanic plumes and dust storms
- Decision support systems to develop control strategies for major livestock and zootonic diseases in Africa
- Epidemiological patterns and chimioresistance due to bio-physical and environmental parameters
- Impact of large epidemics on land use and on agricultural practices





HEALTH AND HUMANITARIAN AID

- Development of tools to increase the capacity to respond to crises and emergencies associated with natural and anthropogenic disasters
- Use of new RS data and satellite constellations
- Development of tools to increase the capacity to assess the damages (rapid mapping capability) and to mitigate the populations





SECURITY AND RISK MANAGEMENT

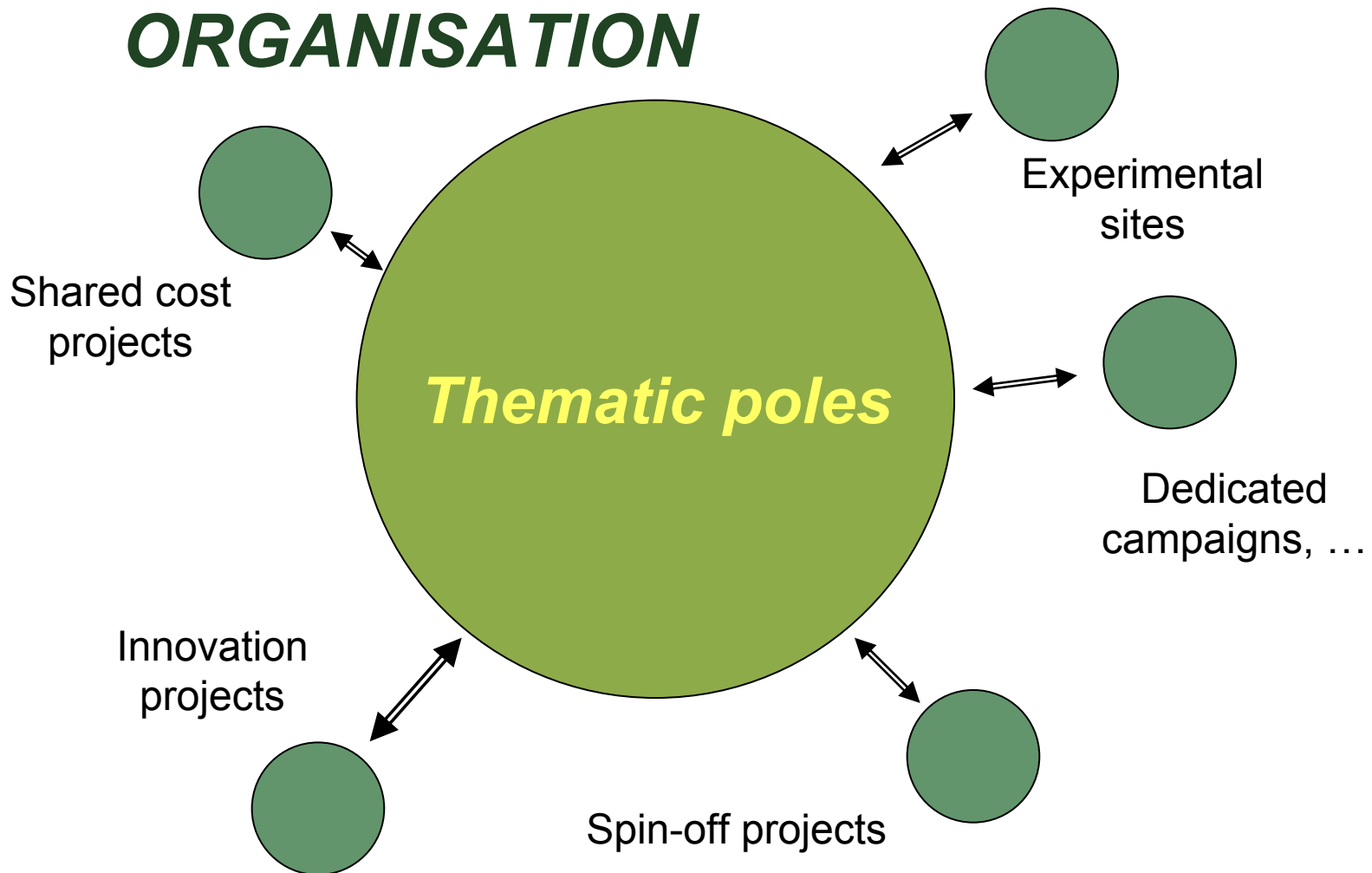


- Vulnerability maps (risk assessment)
- Preparation of spatial and socio-economic data in areas at risks
- Early warning systems of meteorological hazards (floods, forest fires, storms)
- Long-term monitoring and early warning systems of areas at risks of geological hazards (subsidence, landslides, seismic movements)
- Long-term monitoring and early warning systems of areas at risks of man-made disasters or industrial incidents (forest fires, SEVESO sites)





SCIENTIFIC RESEARCH ORGANISATION





SCIENTIFIC RESEARCH *THEMATIC PROJECTS*

- Big projects
- 3 to 5 years
- For networks only (2-5 teams)
- From basic research to application development
- Cross-thematic proposals apply





SCIENTIFIC RESEARCH “SATELLITE” PROJECTS - I

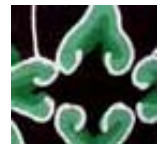
- Small projects (12-36 months / 1-3 teams) designed to:
 - Look into specific problem or topic which came up during previous/current project
 - Gain expertise concerning new methods, technologies or instruments
 - Support exploitation/development of “Belgian” instruments, e.g. through dedicated campaigns





SCIENTIFIC RESEARCH *SATELLITE PROJECTS - II*

- Co-finance Belgian teams selected in other programmes
- Projects can be fundamental or applied
- Projects must cover one/several of STEREO II's thematic priorities





DEVELOPMENT OF PRODUCTS AND SERVICES - I

- Two mechanisms:
 1. Partnerships between research organisations and private companies
 2. Partnerships between research organisations and public administrations (Belgian or international) / Belgium-based NGO's





DEVELOPMENT OF PRODUCTS AND SERVICES - II

- Projects must cover one/several of STEREO II's thematic priorities
- Research partner gets STEREO funding – other partner finances min. 25% of project budget himself
- Both type of projects selected on basis of call for proposals
- Max. 3 scientific teams
- Project duration: 12-24 months





SCIENTIFIC SUPPORT

- Management of dedicated expert website
 - restructuration / simplification
 - mailing list
- Purchase & archiving of RS data
- Creating a test site metadatabase
- Addressing / redirecting technical issues





VALORISATION AND PROMOTION

- Valorisation of Stereo I projects
 - All final reports on-line on the Telsat Guide <http://telsat.belspo.be>
 - Elaboration of a final publication
 - 1 sheet/ project except for Hyperspectral projects
 - Public: scientists, administrations, public at large
 - Attractive/Comprehensible
 - Other suggestions





VALORISATION AND PROMOTION

- Promotion of RS to public at large
 - Improvement of educative website EO Edu <http://telsat.belspo.be/beo>
 - Development and distribution of own didactic products (mainly for secondary schools) : new educative CD Rom, new exercises based on projects results
 - Contribution to development of products by third parties





PROGRAMME PLANNING



<i>in kEURO</i>	2006	2007	2008	2009	2010	2011	2012	2013
RESEARCH	TOTAL 13.700							
Thematic poles	7.400			3.400				
“Satellite” projects								
<i>Spin-off projects</i>	300		300		300		300	
<i>Innovation</i>	300		300		300		300	
<i>Shared-cost actions</i>	C							
PRODUCTS & SERVICES	TOTAL 4.760							
Research-public partnerships	595		595		595		595	
Research-private partnerships	595		595		595		595	
SUPPORT TO RESEARCH AND SERVICES	TOTAL 2.659							
<i>Airborne campaigns</i>	TBD							
<i>Support to operational services</i>	C							
<i>Experimental sites</i>	TBD							





CONTENT OF FIRST CALL

- Supercall worth **9,2 M€**
- Proposals to be submitted for **5** types of projects:
 - Thematic poles
 - Spin-off projects
 - Innovation projects
 - Partnerships research-public administrations
 - Partnerships research-private sector





FIRST CALL

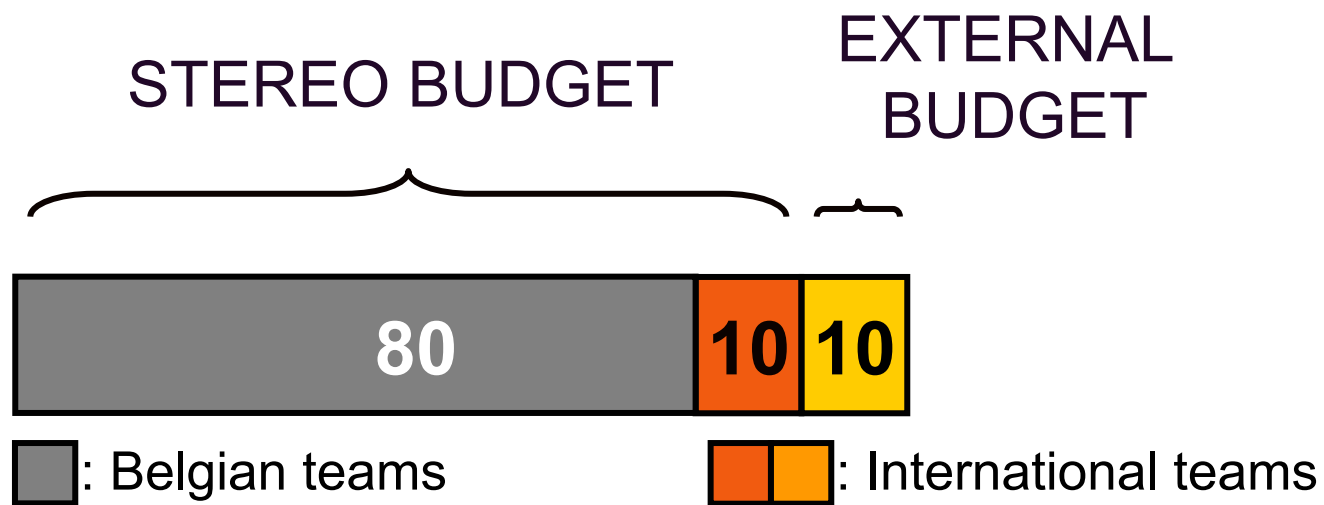
BELGIAN TARGET ORGANISATIONS

- Financed by STEREO II:
 - Universities
 - Public research institutions
 - Non-profit research centres
 - *Consultancies* (possessing unique expertise – share in project budget < 25% - cannot coordinate a project)
- Selffinancing:
 - Private enterprises, public administrations and NGO's





FIRST CALL *INTERNATIONAL COOPERATION I*



- International teams
 - Cannot coordinate a project
 - Must get 50 % external co-financing





FIRST CALL INTERNATIONAL COOPERATION II

STEREO BUDGET

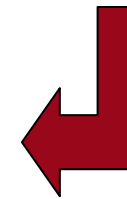
LUXEMBURGIAN
BUDGET



■: Belgian teams

■ ■: Luxemburgian teams

- Cannot coordinate a project
- Can get >> 50 % external co-financing
- Also apply for development of products & services





FIRST CALL *CALENDAR*

- Publication of call: Mid April 2006
- Submission DOI: 15 May 2006
- Submission proposals: 17 July 2006
- Submission evaluation: 25 September 2006
- Submission proposal for funding to Minister: 17 October 2006
- Start contracts: 1 December 2006





FIRST CALL

CONTENT DECLARATION OF INTEREST

- Project type
- Concise concept
- Name partners / Profile of wanted partner(s)
- Key-words
- Test sites
- Image requirement
- Estimated budget





EVALUATION OF PROPOSALS

- Evaluation for all proposals carried out by international experts
- Programme Committee proposes selection to Minister based on this evaluation ► **proposal coordinator must be on standby for questions on 13 October 2006**
- “New” evaluation criteria:
 - Interdisciplinarity
 - International cooperation
 - Number and impact of peer reviewed papers

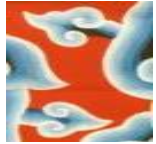




EVALUATION OF PROJECTS

- For all projects:
 - Yearly meeting of Steering Committee
- For thematic poles:
 - Mid-term evaluation by extended Steering Committee
 - Decision go/no go on basis of evaluation





PROJECT MANAGEMENT

WHAT'S NEW?

- Budget available for coordination
- One report/year
- Training abroad encouraged, but project researcher must work in Belgium
- Even stronger focus on papers and PhD's
- Project website

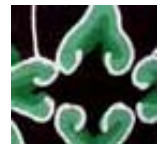




RECAPITULATION

WHAT'S NEW IN STEREO II?

- “New” research themes
- International cooperation
- Role Luxemburg in programme
- Focus on interdisciplinarity
- Funding of consultancies to be considered
- Development of products and services extended
- Submission proposals in E only

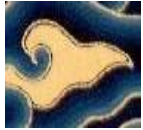




CLOSURE STEREO I

- All final reports on-line
- Design and production of project sheets
- Two-pronged external programme evaluation
 - Scientific results
 - Socio-economic merits
- Final workshop beginning of 2007





OTHER ACTIVITIES 2006

- ORFEO programme
 - Start 6 projects March 2006
 - Workshop 23-24 March
- Hyperspectral workshop: 10 October 2006
 - Results of 2005 AHS campaign
 - Evaluation of 4 years of Belgian campaigns



THANK YOU FOR YOUR ATTENTION & GOOD LUCK



The STEREO team:

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QUESTIONS?

