Global Monitoring for Food Security

Stereo & Vegetation Meeting, 6 May 2004 - Brussels

“Building capacity for food security

“To provide earth observation based services and encourage partnerships in monitoring Global Food Security and related environmental processes, by concerting efforts to bring data and information providers together, in order to assist stakeholders, nations and international organizations to better implement their policies towards sustainable development”
GMES programme

GMES Mission Statement

To establish by 2008 a European capacity for global monitoring of environment and security, based on:

• Policy and user driven Service-portfolio

• Service-portfolio must have a clear impact on future policy/user decision cycles

=> Joint initiative by the EC and ESA

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Agreement on Joint Plan of Action

EC FP6: Work Programme of the Aeronautics and Space Priority (AERO-2.2)
Space / GMES Call of December 17, 2002

GEOLAND project
started on 1 January 2004

Information on ESA Open Invitation to Tender:
SERVICE CONSOLIDATION ACTIONS OF THE EARTHWATCH GMES SERVICES ELEMENT
Open Invitation to Tender (ITT) Ref: AO/1-4302/02/I-IW.
Item no 02.1AE.12 in the list of ESA Intended Invitations to Tender

GMES Service element (GSE)
10 projects selected in 2003
2 additional projects selected in 2004
EC-6FP GEOLAND

- Pre-operational GMES services
- Belgium: 5% of grant budget

Belgian contribution (VITO, UCL)
GMES Service element (GSE)

2003 - 2004: consolidation phase

.. identify a portfolio of services that can offer a cost-effective response to already established long-term needs for global monitoring information and can serve the public interest in specific environmental & security policy domains..

2005 - 2008: implementation phase

.. Implementation of the services as proposed in the consolidation phase..

> 2008

.. Operational (& sustainable) service..

→ Per phase: ITT + Statement of Work (SoW)

Proposals must fulfill the SoW requirements
GMES Service element (GSE)

Project tasks

Consolidation phase
Statement of Work

2003

- Documentation/research
- Demonstrate Service for selected areas

2004

- Update documentation
- Service delivery for selected areas

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GSE Funding

Countries with GSE Funding:
- Greece
- Canada
- Austria
- Belgium
- Finland
- France
- Switzerland
- Sweden
- Spain
- Norway
- Netherlands
- Italy
- Germany
- United Kingdom
- Canada
- Greece

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GMES Service element (GSE)
12 projects (consolidation phase)

**Terra Firma** (NPA Group, UK) – Information for urban subsidence and risk assessment

**Forest Monitoring** (GAF, Germany) – forest monitoring for forest management and Kyoto reporting (area & land use change)

**SAGE** (Infoterra, Germany) – soil and inland water management (water pollution risk and soil sealing maps for water management and soil protection)

**ROSES** (Alcatel, France) – oil spill monitoring and coastal waters quality assessment

**Northern View** (C-Core, Canada) – ice and arctic monitoring services, arctic environmental management

**Icemon** (Nansen Centre and Met Norway, Norway) – operational ice monitoring for marine operations and climate change (sea ice mapping)

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CoastWatch (EADS, France) - geo-information services in support of integrated coastal zone management

Risk-EOS - EO (Astrium, France) - based risk information services for forest fire and flood management

GUS - Urban Mapping Services (Indra, Spain) - monitoring expansion, land cover change and encroachment into protected areas

RESPOND (Infoterra, UK) - humanitarian aid and development aid

PROMOTE (KNMI, NL) - Atmospheric applications

Global Monitoring for Food Security (VITO, Belgium) – crop monitoring services (food security management)
GMFS: Context and objectives

Food security = major policy issue

– Universal Declaration of Human Rights (1948)
– UN Millennium Declaration (2000)
– World Summit on Sustainable Development (2002)
– Council Regulation (EC) on food aid policy and special operations in support of food security

Responds to user needs

“To provide earth observation based services and encourage partnerships in monitoring Global Food Security and related environmental processes, by concerting efforts to bring data and information providers together, in order to assist stakeholders, nations and international organizations to better implement their policies towards sustainable development”
GMFS: What & Where

2003-2004

“Crop Monitoring system”

- Areas under cultivation
- Yield forecasting and historical trends
- Production forecasting and trend analysis

Geographic coverage

- Sub-Saharan Africa
- Selected sites:
  Senegal, Malawi, Kenya, Zimbabwe

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GMFS: Approach

- **Timely delivery of indicators & statistics**
  - Vegetation indices
  - Yield
  - Area
  - Productions (yield x area)

- **Decentralized service aimed at fostering, facilitating and optimizing:**
  - Capacity building and know-how transfer
  - Generation of local information
  - Data transfer, processing and, ultimately, infrastructure costs
  - Collection, storage and processing of information
  - Validation of the product’s quality
  - Generation of vulnerability information
GMFS: Users

- Early Warning Systems
- Development Agencies
- Food Aid Agencies
- Policy making institutions
- Research institutions
- Direct Beneficiaries
- Indirect Beneficiaries

Socio-Economic Data

Field Data

...
GMFS: Products / Service

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Crop calendar: April

Maize

Growing
Harvest
Sowing
Second/short rains

Agricultural areas, Senegal, Louga, Linguerie: Dafra

Sources: MAEGMFS.info
GMFS organisation / structure
Role of VITO

Co-ordination / Project Office

SARMAP  Synoptics  EARS  VITO  users

FAO  WFP  Min. of Agriculture  EWS

“Service providers”

VITO

“Users”

no centralized system or infrastructure

no centralized system or infrastructure
GMFS: Strategic importance

- **International level**
  - TIGER initiative: GMFS = demonstrator project
  - PUMA Task: distribution of GMFS products via Eumetcast

- **Belgian level**
  - Co-ordination office for food security
  - Attraction of new applications / research
  - Possible attraction of other PAFs
  - Wide distribution and promotion of SPOT-VEGETATION data
GMFS: Strategic importance

Belgian level

Multispectral Earth observation business model: EO value chain

Instrument Satellite

SPOT-VEGETATION

Receiving + PAF
Data provider satellite images
standard products
PAF CVB P, S1, S10

Service provider Value-added products/services
GMFS, MARS, GEOSUCCESS

End-user Customer
National authorities
European authorities
ESA
FAO, DG-DEV
Local administrations

R&D feedback

R&D
GMFS: Challenges

• At institutional level: Defining a niche in food security and early warning systems (FAO, MARS-FOOD...)

• Networking
  • Service providers (SARMAP, Synoptics, IBIMET...)
  • Data providers (VITO, ESA, DMC, SAC...)
  • USERS! Establishment of a long-term relationship, customer care

• Complex management:
  • Conflicts of interest
  • Extensive administrative overhead

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GMFS: Challenges

Set-up of an operational service and acceptance by other EWS

⇒ complementary with existing FS systems
⇒ act as “support service”
⇒ local integration with users (national ministries, EWS)
GMFS: Challenges

Complex structure and organisation

- ESA Technical Officer
  - Prime Contractor
    - VITO
  - Strategy Group
    - FAO, CGIAR
    - DG-DEV, EC/JRC, WFP/VAM
  - Consultancy
    - Avia-GIS
  - Operational Service Providers
    - VITO
    - sarmap
    - Synoptics
    - EARS
  - Promotion & Training
    - GIM
  - Cost Benefit Analysis
    - ESYS
  - System Developers
    - sarmap
    - Trasys
    - Synoptics
  - R&D Partners
    - SADC
    - CGIAR/CIMMYT
    - MARS-FOOD
    - Alterra
    - IBIMET

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GMFS: Challenges

• 40 (!) documents:
  - High requirements from ESA
  - Strict deadlines
  - Yearly update
  - Linked documents

Example: documents at management level
  - management plan
  - quality plan
  - monthly progress reports
  - actions database
  - project anomaly reports, recovery action plans
  - anomaly close-out plans
  - history report

Statement of Work:
1 SoW for all 12 projects: General!
More information?

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