ESESA EGNOS Service Extension to South Africa

EU-South Africa Space Cooperation

ESESA 2nd Workshop 2,3 March 2011

ESESA is a project co-funded by the EU 7th FP and South Africa

South Africa and Europe: Partners in space

- Operating as part of CNES S-band network since 1984
  - ✓ Tracked Ariane 4 launches from Guyana
  - ✓ Tracks French LEO and GEO satellites for transfer orbit and operations
  - ✓ Tracks Mini and Micro missions
  - ✓ Tracks ESA spacecraft
- Receiving data from European EO satellites
- Hosting European ground infrastructure for space missions
- Collaborating in the EC Frame Program in earth observation and navigation

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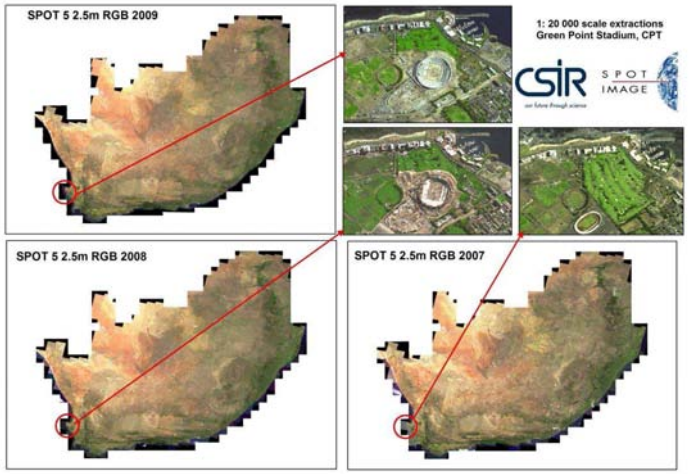
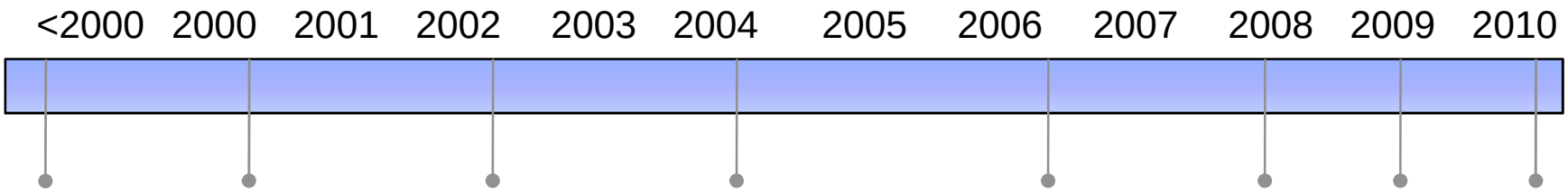
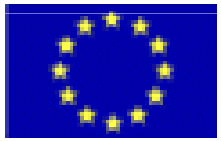
CENTRE NATIONAL D'ÉTUDES SPATIALES



Hosted Equipment timeline





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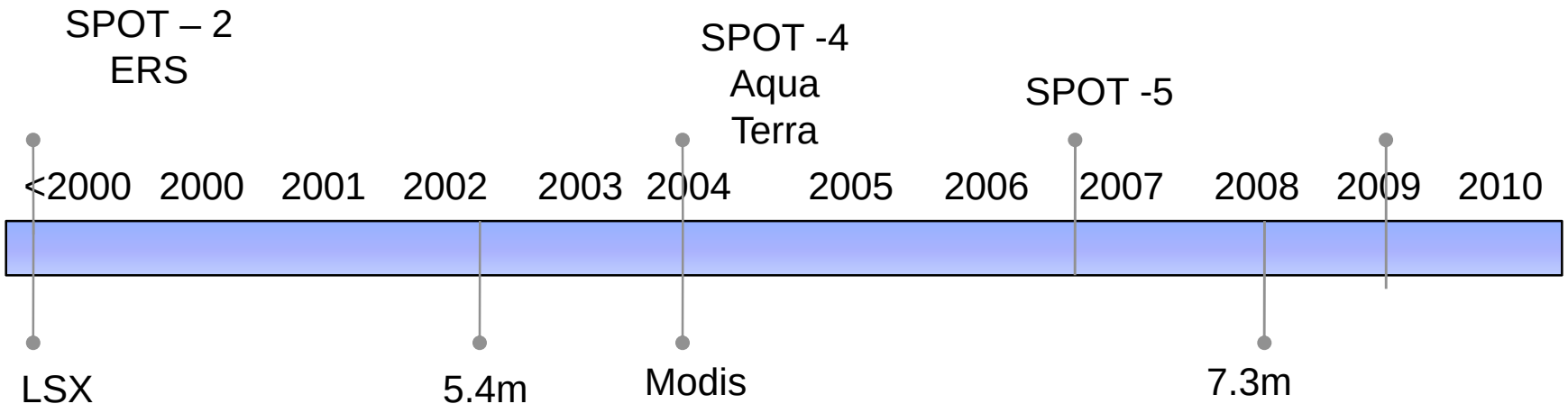
EO reception timeline



EU South Africa Dialogue

- Started due to bilateral in February 2009
- Followed up in:
  - ✓ June 2009 Brussels
  - ✓ November 2009 Pretoria
  - ✓ July 2009 Brussels
  - ✓ November 2010
- Themes:
  - ✓ Earth observation: GMES Africa
  - ✓ Space Science: Astronomy
  - ✓ Navigation: EGNOS Extension
- DG Enterprise in EC want South Africa to commit through DG level letter.

CSIR to SANSA

- South African National Space Agency (SANSA) launched 9 December 2010
- Will become operational on the 1st April 2011
- CSIR SAC and HMO to move in totality to SANSA

Overview of current ‘landscape’

- Space activities in South Africa
  - ✓ Space Policy: the DTI (Trade and Industry)
  - ✓ Space Strategy: DST (Science and Technology)
- The National Space Strategy:
  - ✓ Environmental & Resource Management,
  - ✓ Health, Safety & Security, and
  - ✓ Innovation and Economic Growth.
- CSIR
  - SAC
  - NRE
  - Meraka
- Astronomy
  - SAAO
  - HartRao
  - SKA
- HMO
- Sunspace
- ISSA
- TEI’s

Migration to South African National Space **Agency**

- Space Themes:
  - ✓ Earth Observation
  - ✓ Space Science
  - ✓ Communication
  - ✓ Navigation

- Proposed Centres
  - ✓ Earth Observation Centre
  - ✓ Space Operations Centre
    - ✓ TT&C
    - ✓ Navigation
  - ✓ Space Engineering Centre
  - ✓ Space Science Centre

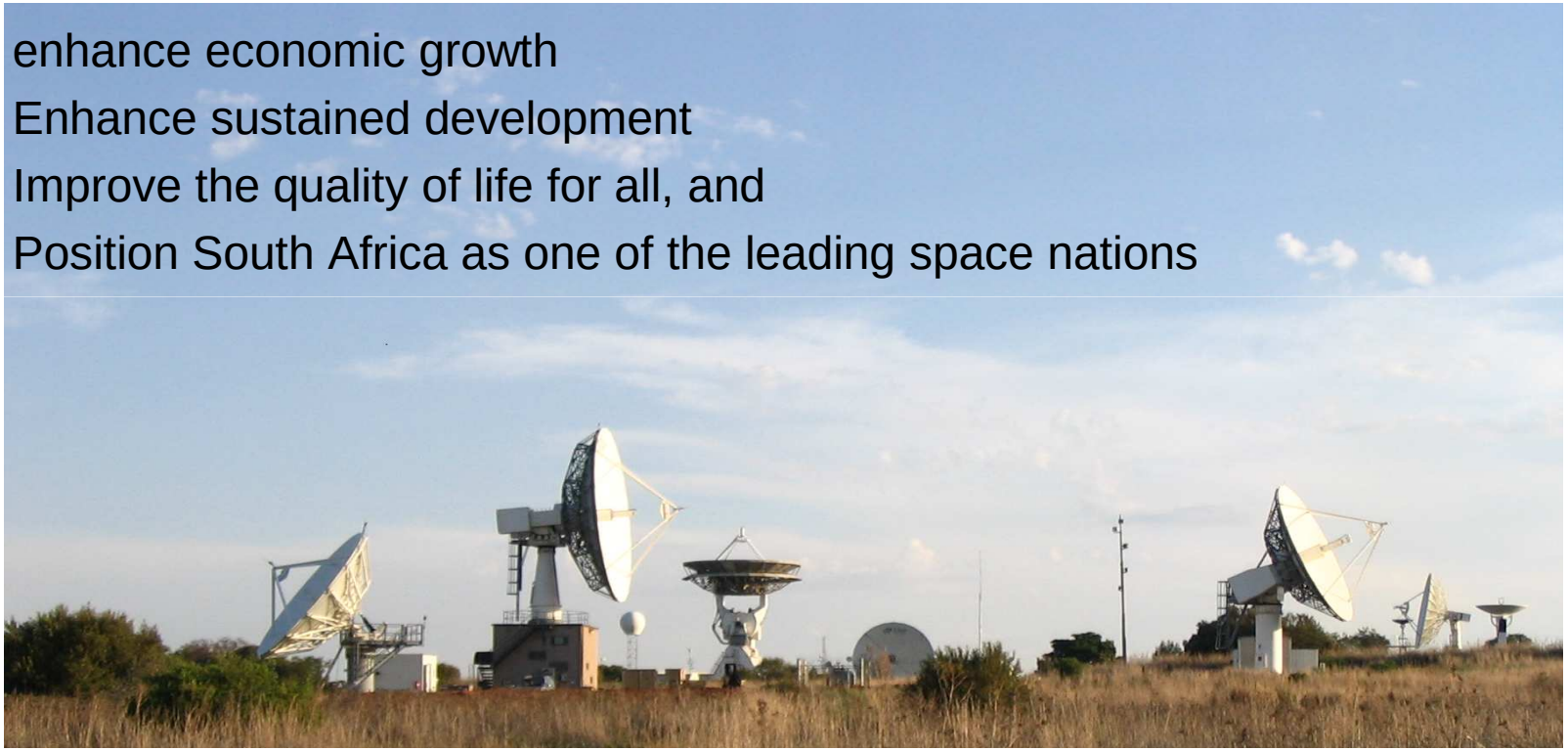
SANSA Mandate

- “To provide for the promotion and use of space and co-operation in space-related activities, foster research in space science, advance scientific engineering through human capital, support the creation of an environment conducive to industrial development in space technology within the framework of national government policy”

SANSA Vision

- To be the hub and the primary driver for the innovative utilisation of space science and technology to:

- enhance economic growth
- Enhance sustained development
- Improve the quality of life for all, and
- Position South Africa as one of the leading space nations



SANSA Mission

SANSA's mission is to use space science and technology to:

- offer services that improve the efficiency, sustained productivity, competitiveness and safety of the country and hence improve the quality of lives of South African, the southern African region and the wider international community

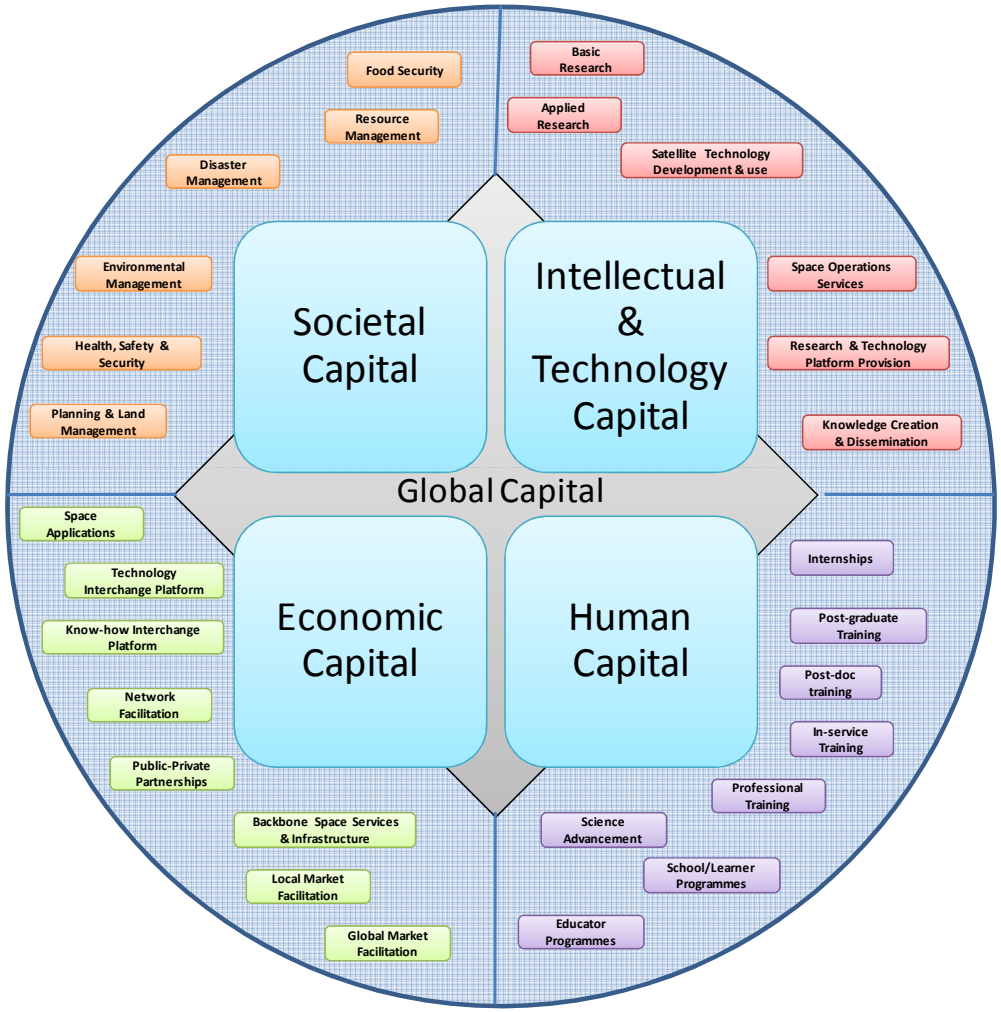
- conduct research, create new knowledge and information and apply them in innovation, technology and service provision

- stimulate interest in science, develop skills and knowhow for a better South African workforce and competent SANSA client base

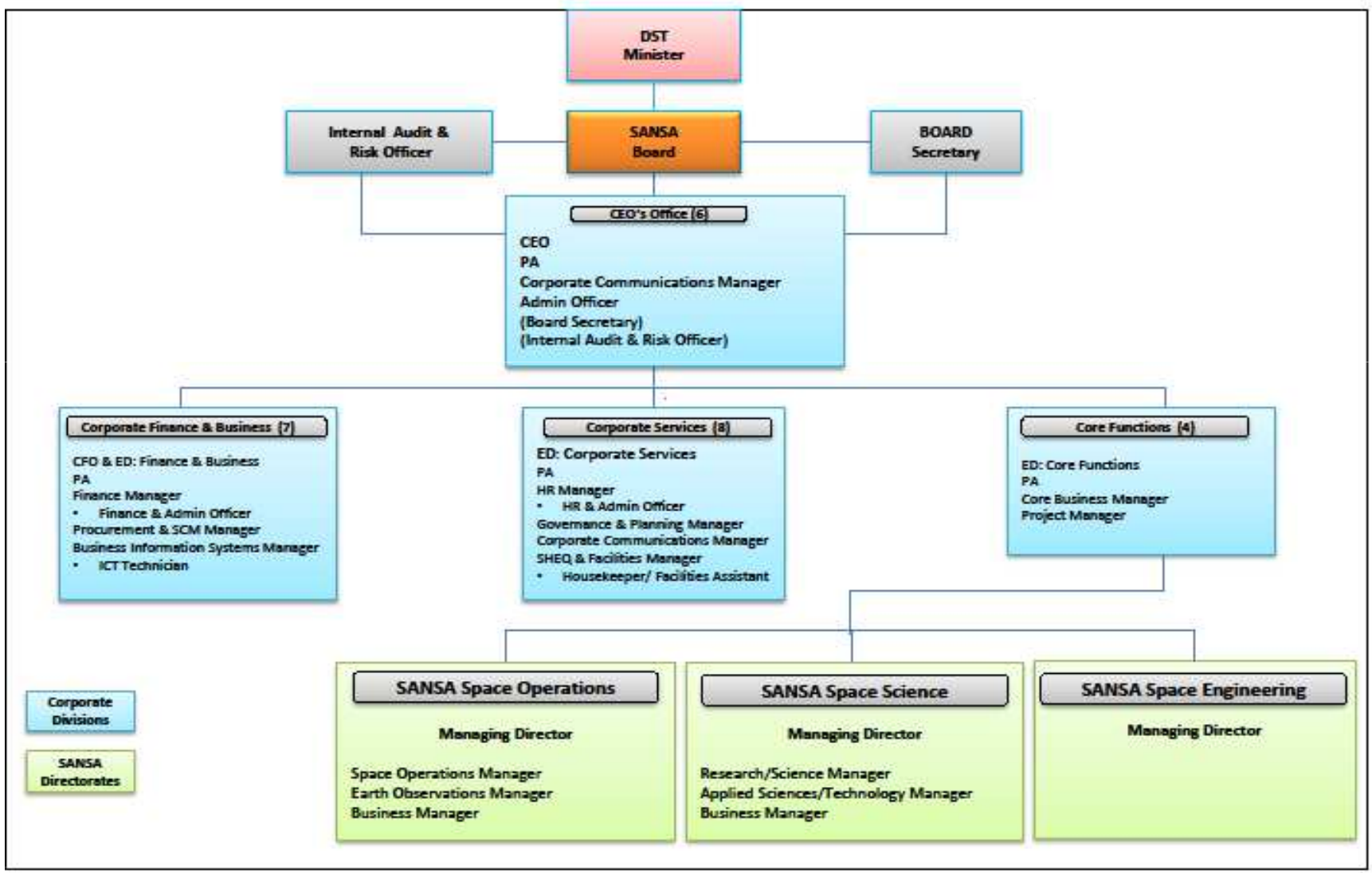
- stimulate and improve the South African economy, industry and increase our share of the global space market

- develop international partnerships so as to better achieve our objectives and enhance South Africa's standing in the community of nations

Space science and technology in service of humanity

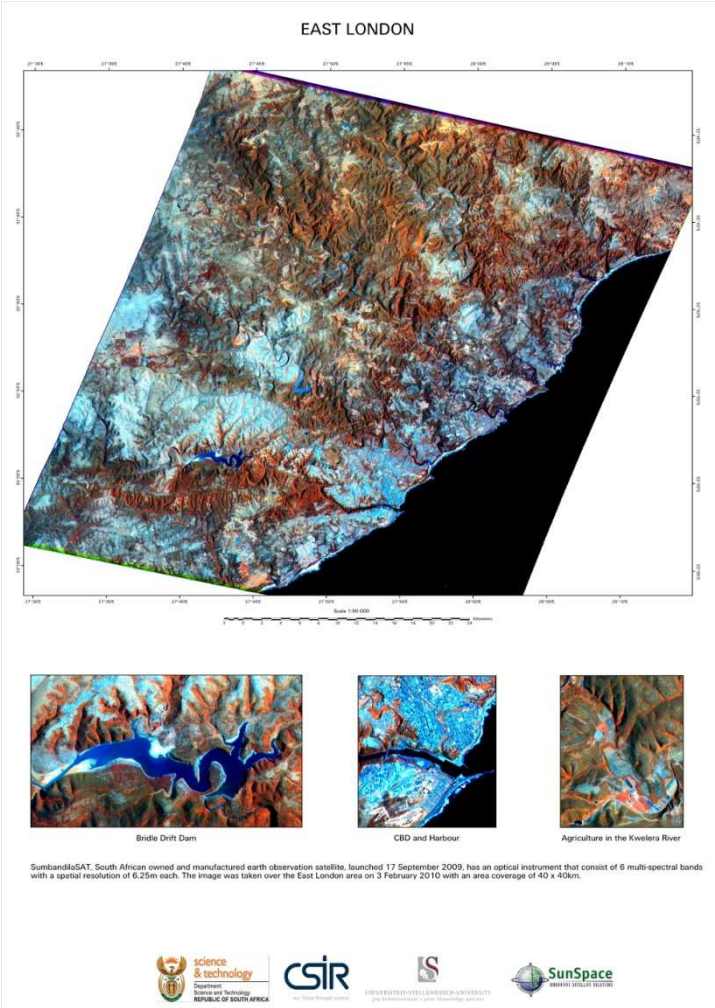


SANSA Structure

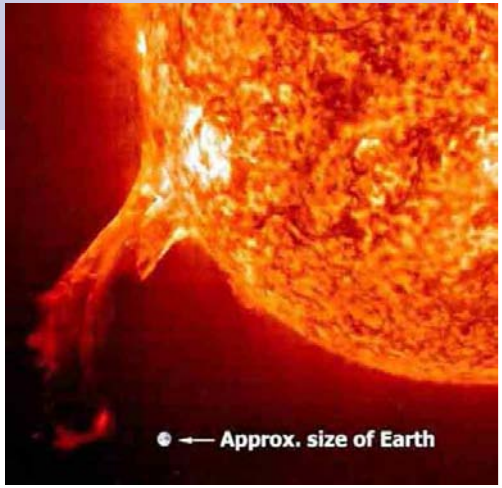


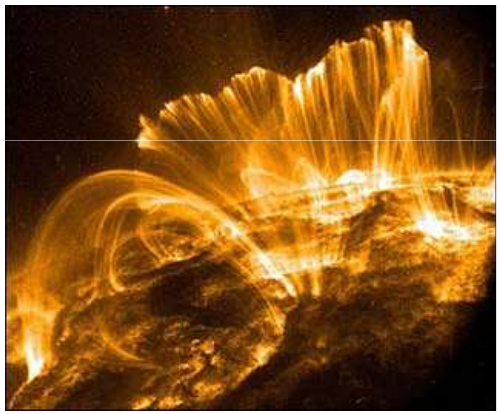
Earth Observation (EO)

- Operations
- Advanced RS Technology
  - ✓ SAR
  - ✓ Image Processing
  - ✓ Infrastructure
  - ✓ Classifications
  - ✓ Geomorphology
  - ✓ Impact Projects
- Examples:
  - ✓ Dwelling inventory
  - ✓ Land use classification



Space Science





- Space weather
  - ✓ Electric power is modern society's cornerstone technology on which virtually all other infrastructures and services depend," the report notes. Yet it is particularly vulnerable to bad space weather. Ground currents induced during geomagnetic storms can actually melt the copper windings of transformers at the heart of many power distribution systems. Sprawling power lines act like antennas, picking up the currents and spreading the problem over a wide area.
  - ✓ The problem is interconnectedness. In recent years, utilities have joined grids together to allow long-distance transmission of low-cost power to areas of sudden demand. It makes economic sense—but not necessarily geomagnetic sense. Interconnectedness makes the system susceptible to wide-ranging "cascade failures."

Communication

- Least developed aspect of SANSA strategy
- Current landscape:
  - ✓ Fibre
    - Rapid expansion of network in Africa
  - ✓ GSM
    - Focussed on population dense areas
  - ✓ VSAT
    - Backhaul overtaken by fibre
    - Focus on broadband ISP's
    - Value added services
    - DTH broadcast
  - ✓ Mobile satellite
    - Asset management
    - Remote access

- Strategy will focus on delivering communications to disenfranchised