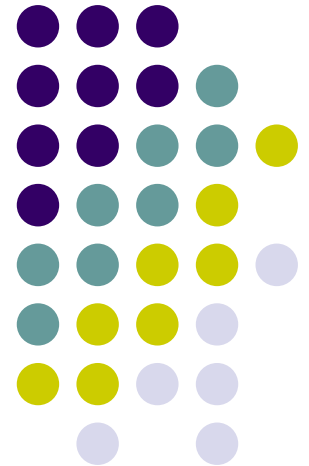


Capacity Building for Space Applications in South Africa

Peter Martinez
secretariat@space.gov.za



Space and National Development



National Development Imperatives

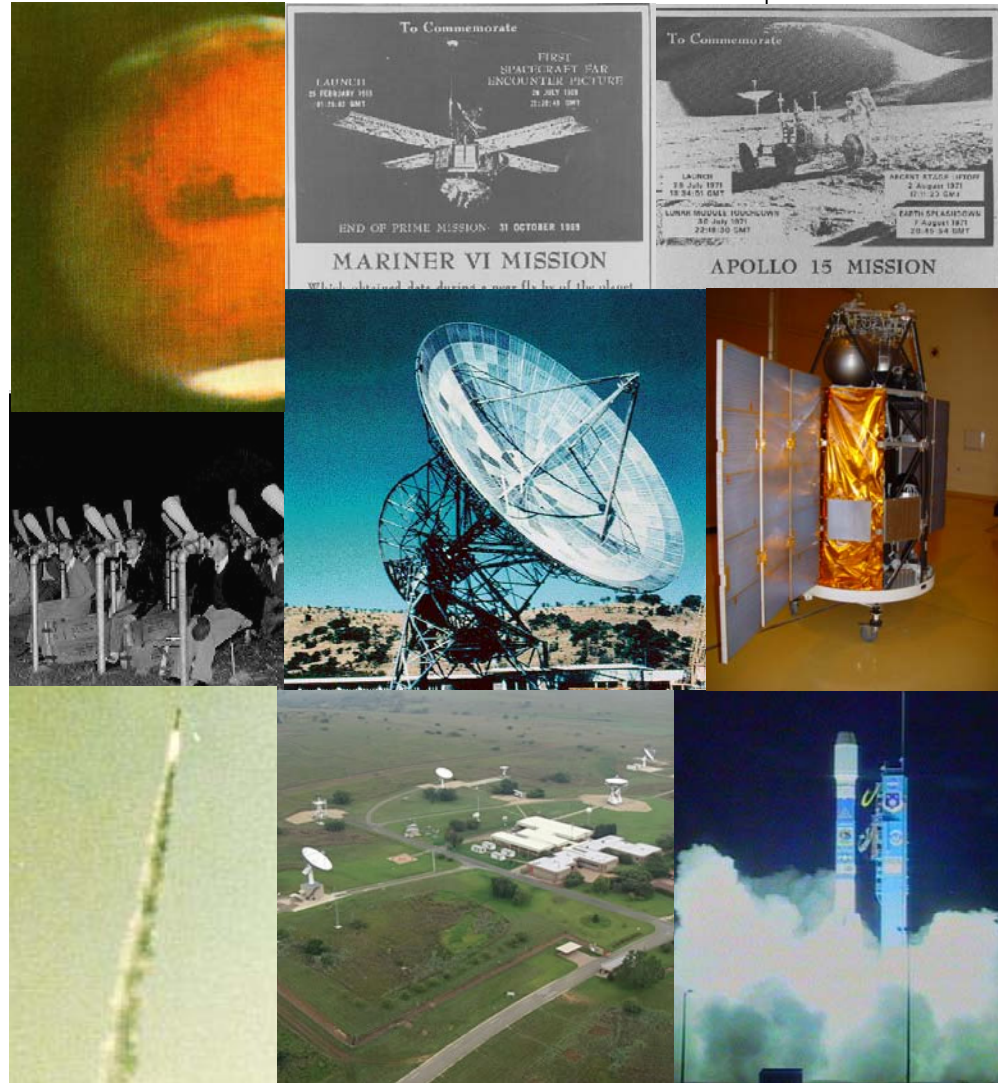
National R&D Strategy
Various Sectoral Policies

Convergence of SA
Space Science activities

Space in South Africa



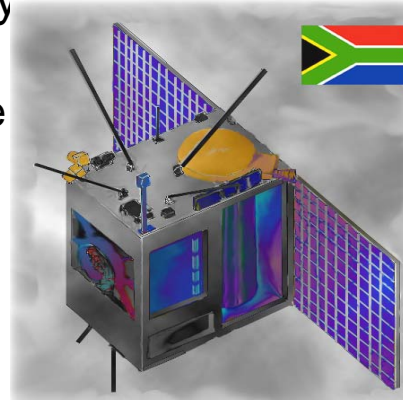
- Satellite tracking & reception
 - 1957 – 1970s
- Support of lunar & planetary missions
 - 1960s – early 1970s
 - Still ongoing
- Greensat programme
 - Late 1980's – 1994
- Space Affairs Act (1993, 1996)
- Sunsat launch 1999
- Shuttleworth flight 2002



Growing involvement in basic and applied space science



- Attractiveness of Southern African Region for Large Scale Astronomy Projects
 - Southern African Large Telescope (optical)
 - A partner in HESS
 - Bid to host SKA (radio)
 - Developing the Karoo Array Telescope (radio)
- SA one of the co-chairs of GEO
- New SA satellite to be launched in late 2006
- Proposed African Resource Management Constellation



NEED CAPACITY ACROSS A WIDE RANGE OF AREAS

University Training

ASTROPHYSICS/SPACE SCIENCE



- National Master degree - started in 2003
 - 12 months coursework in space science & space technology
 - 6-8 months mini-thesis
- A bridging course starts one month before
- Visiting faculty from all over country
 - 8 Universities & 3 National Laboratories
- Hosted at University of Cape Town
- Full scholarships cover
 - Tuition, Travel, Living allowance
- Students from all African countries are welcome to apply
- Applications from women are especially encouraged.
- Emphasis is on skills development



Graduations 2003 - 2005

- 31 Honours graduates (10 women)
- 6 Masters graduates (6 women)
- Students from Ethiopia, Gabon, Kenya, Mauritius, Uganda, Sudan & Zambia

University Training

PROGRAMME STRUCTURE



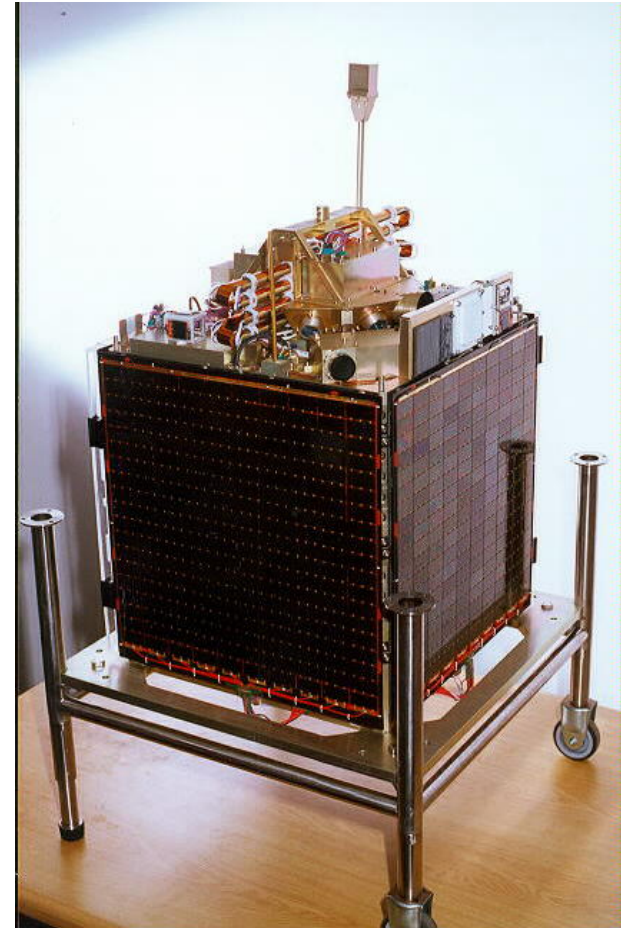
- Programme length - 18 months
 - Senior Undergraduate Segment (Honours)
 - Course work with examinations
 - Project
 - Masters Segment
 - Elective advanced courses
 - Mini Dissertation
 - Possibility of conversion to PhD
- Exit points
 - 1 year
 - BSc (Honours)
 - 1.5 to 2 years
 - MSc
 - 3 to 4 years
 - PhD

University Training

SATELLITE ENGINEERING



- Postgraduate diploma in courses on a student satellite project at Stellenbosch Univ.
- Internships on the ZA-002 team
- Masters programme in satellite engineering on ZA-002 mission
- Training opportunities in
 - Space segment
 - Ground segment
 - Applications



University Training

REMOTE SENSING



- Under graduate
 - University of Cape Town
 - University of Pretoria
 - University of Johannesburg
- Post graduate
 - Meraka Institute for ICT
 - Formerly also at Institute of Satellite and Software Applications



University Training

POSITION, NAVIGATION & TIMING



- Undergraduate
 - Basic training in land surveying Departments at various universities
- Postgraduate
 - Applications of GNSS for space geodetic applications led by HartRAO



University Training

SPACE POLICY & SPACE LAW



- Undergraduate
 - No courses on space policy or space law
- Postgraduate
 - Witwatersrand University Law School diploma on legal issues of satellite communications



University Training

PARTNERSHIP WITH ISU

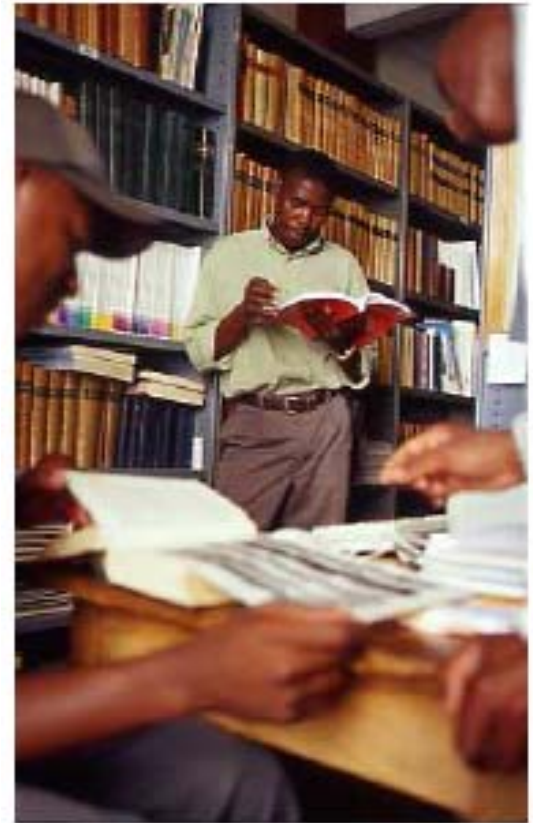


- Dec 2004
 - ISU Introductory Space Course for Government officials
 - 4 Days in Cape Town
- Oct 2005
 - ISU faculty participate in a series of 1-day workshops in Pretoria, Durban & Cape Town
- Jul - Sep 2005
 - One ISU Masters student completes a three-month internship in astronomy at the SA Astronomical Observatory
- Apr 2005
 - One Official at SA Mission in Vienna attends ISU Introductory Space Course
- Apr 2006
 - Six SA government officials attend ISU Introductory Space Course.
- Currently considering possibility to host first ISU Summer Session in Africa in 2009

Challenges for Capacity Building Programmes



- Severe shortage of students in the physical sciences & mathematics, less severe in engineering
- Programmes compete for a very small pool of students
- Heterogeneous and often poor student preparation
- Very few women in scientific & technical careers
- Scientific & technical careers are not seen as lucrative
- Postgraduate training delays earning
- Perceived lack of career opportunities



Public Outreach

WORLD SPACE WEEK



- 2003 – RAISING PUBLIC AWARENESS
“Space is exciting and useful to you”
 - Public awareness campaign
 - Lectures, posters, competitions
- 2004 – RAISING POLITICAL AWARENESS
“Space should be part of the development agenda”
 - Allow the ‘client’ Government Departments to engage with space
 - 3-day ISU Workshop for Government officials
 - *Space for Sustainable Development* booklet widely distributed
 - South African Space Portal launched
 - Public awareness campaign
- 2005 – GOVERNMENT DEMONSTRATES ITS COMMITMENT
“Exciting things are happening”
 - Announcement of ZA-002 Programme by Minister of S&T
 - One-day policy workshop for Government officials (Pretoria)
 - One-day workshop in Durban for educators
 - One-day workshop Cape Town for academia
 - Public awareness campaign



Public Outreach

SOUTH AFRICAN SPACE PORTAL



The screenshot shows the South African Space Portal homepage in Microsoft Internet Explorer. The browser title is "South African Space Portal - Homepage (for WSW) - Microsoft Internet Explorer - [Working Offline]". The address bar shows "http://www.space.gov.za/". The page features a search bar with a "GO" button and links for "Glossary", "Sitemap", and "Contact Us". The main navigation menu includes "Home", "Space in South Africa", "Exploring the Universe", "Improving Our Daily Life", "Protecting Our Environment", and "My Space".

South African Space Portal

SEARCH: GO
Glossary | Sitemap | Contact Us

Home | Space in South Africa | Exploring the Universe | Improving Our Daily Life | Protecting Our Environment | My Space

In this section >>

- [Programmes](#)
- [Facilities](#)
- [Industry](#)
- [Education](#)
- [Media](#)
- [Calendar](#)
- [Government](#)

Space & Development >>

"Who among us has never looked up into the heavens on a starlit night, lost in wonder at the vastness of space and the beauty of the stars?"
- Jeb Bush

Welcome

Welcome to the South African space portal. This website is your gateway to space science and technology in South Africa.

- Space science is the study of everything above and beyond the surface of the Earth, from Earth's atmosphere to the very edges of the universe.
- Space Technology refers to the technology in satellites and ground systems used by space scientists to study the universe (looking up) and the earth (looking down), or to deliver services to users on the ground. The vast majority of satellites are launched into space to provide services to people on Earth.

World Space Week 4-10 October 2005
Find out what's planned in your province!

World Space Week is an international event that recalls the start of the Space Age with the launch of Sputnik in October 1957 and celebrates human accomplishments in space over the past 50 years. This year's theme is "Discovery and Imagination".

Focus On >>

It has rescued a \$400 million satellite, received data from scientific packages left on the moon by Apollo astronauts, and even tracked the BIOS capsule with a monkey on board. The 40 ft (12,19 m) parabolic antenna of CSIR Satellite Applications Centre (SAC) has been providing excellent satellite support services for more than 40 years, dating back to August 1964.

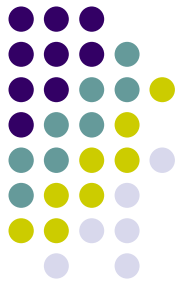
Opportunities >>

[Call for Applications for Postgraduate Diploma Course in Space Space and Technology Applications in](#)

www.space.gov.za

Public Outreach

PROACTIVE MEDIA CAMPAIGN



Cremer Media's Engineering News Online, South African Industry News :: News Today - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <http://www.engineeringnews.co.za/eng/news/today/?show=87758>

Links blank Customize Links Free Hotmail Windows Media Windows

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Cremer Media's ENGINEERING NEWS ONLINE

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- On the Air
- Incentives
- Careers
- Features Library
- Tenders

Economic indicators Source: Mc Gregor BFA 30 minutes delayed.

Gold	\$567.20	▲ 0.30%	Platinum	\$1118.00	▲ 0.27%
Rand/Euro	R8.60	— 0%	Rand/Dollar	R6.83	— 0%

News Today

Liftoff at last for national space policy

LIFTOFF
At last, national space policy being actively developed

South Africa is a country highly dependent on outer space.

South Africa is a country very involved in outer space.

However, South Africa is a country with neither a space policy nor a space agency.

But that will change, and change within the next couple of years.

And South African industry will have a key role to play – indeed, there is even a proposal that a South African space programme should take the form of a public-private partnership (PPP).

Outside a smallish number of space-minded nations (most obviously, but not exclusively, the US and Russia), most people, even well-educated people, have become blasé about how dependent all modern societies, including South Africa, are on space.

Keyword search

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Internet

Next Steps



- Finalisation of space policy
- Ratification of Liability and Registration Conventions
- Development of a national space plan
- Establishment of a South African Space Agency



