A ViewPoint on Africa and Space Sustainability

by

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Africa in Space

Objectives – Right, prestige, basic social & economic needs

Category – 1. Actors with space assets

2. Actors as Users

Most belong to category 2 above

Four (4) countries – Algeria, Egypt, Nigeria and South Africa belong to category 1.

Actors with Assets in Space - Why?

- **Others know more of Africa and Africans than Africa knows of itself and its own people. They followed the paths of previous actors.**
- **Knowledge and data in support of *Africa's fundamental life support systems* – air, land, water, agricultural resources and wholesome environment**
- **What happened to Africa's data of the 1970's to 2000? If something important happened, the story of space in Africa would have been different.**

Actors with Assets in Space – How?

***Small is beautiful*. Satellite manufacturers touted the advantages of micro-satellites over the larger ones at Pre-UNISPACE III era.**

Message - Micro-satellites are indispensable tools of development and they offer the cheapest way for the developing countries to get into space.

No Welcome Wagon for Africa's space aspirants – The essential prerequisites and the science and technology readiness required, at the local level, for getting into space by each purchasing nation, did not feature in the marketing strategies presented by the companies.

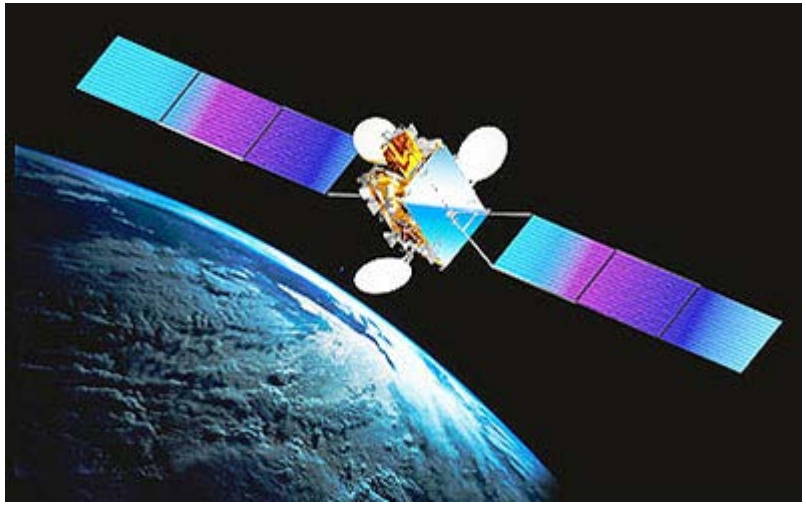
The rest is history – Alsat-1 & -2, NigeriaSat-1 & 2 & EgyptSat-1 and aborted EgyptSat-2 etc., Were these necessary? And were the countries ready?

Communication satellites came later.

Competition on Ownership of Space Assets

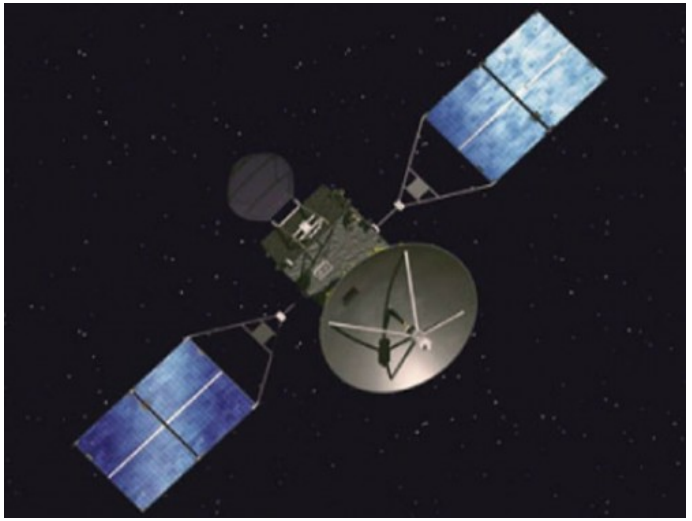
Rascom QAF – 1R

Africa's first satellite

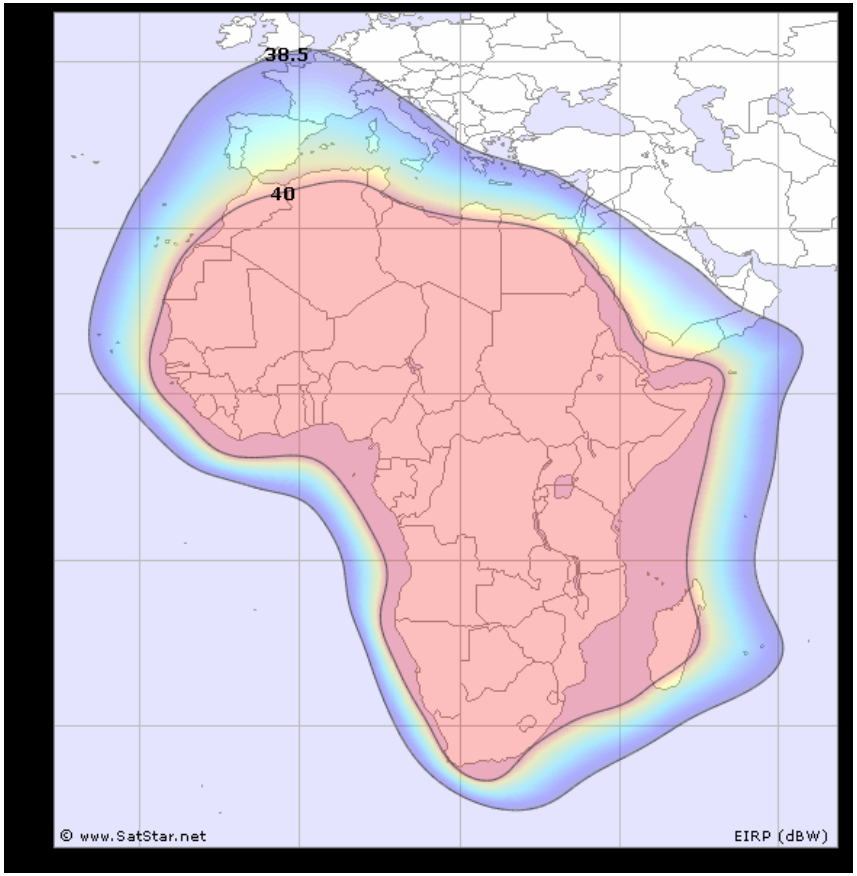


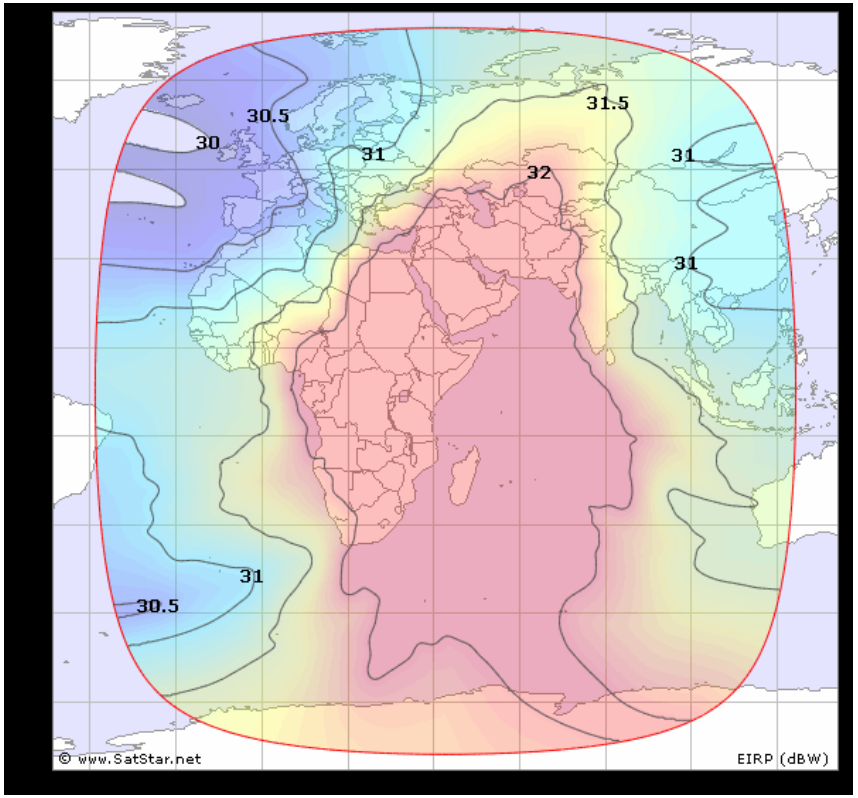
NigComSat-1R

First Pan-African Communication Satellite

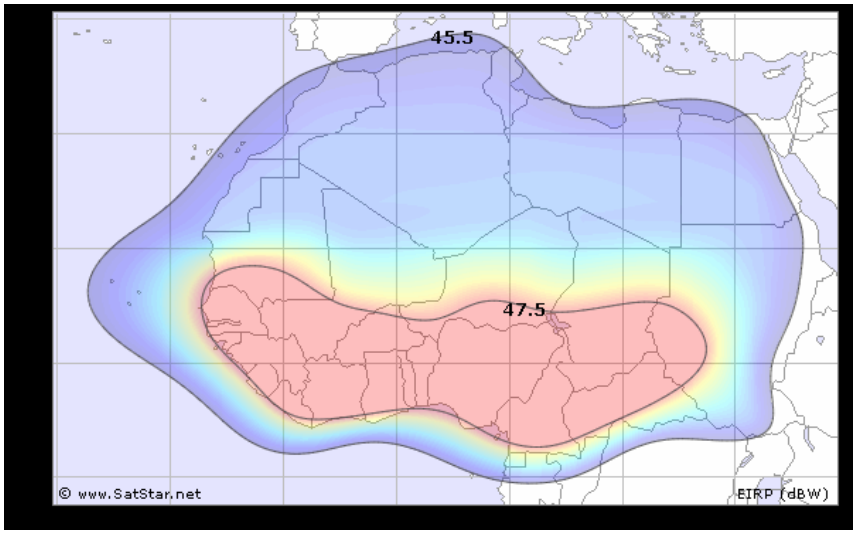


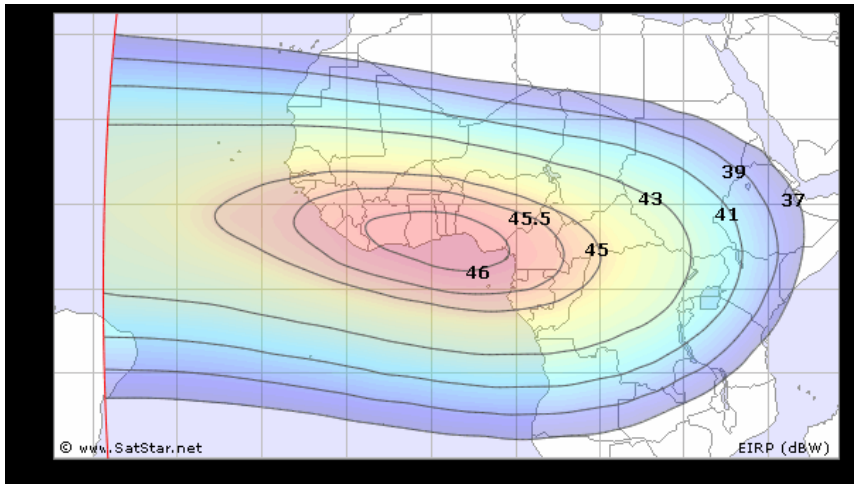
Continental & Cross-continental Footprints of RASCOM QAF-1R & NigComSat -1R



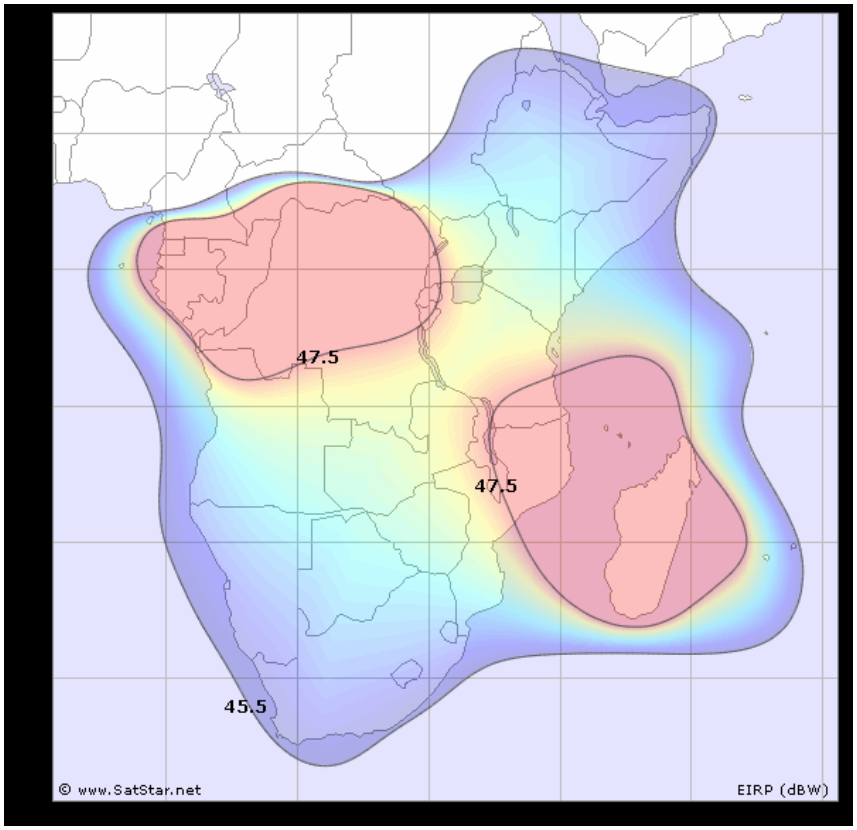


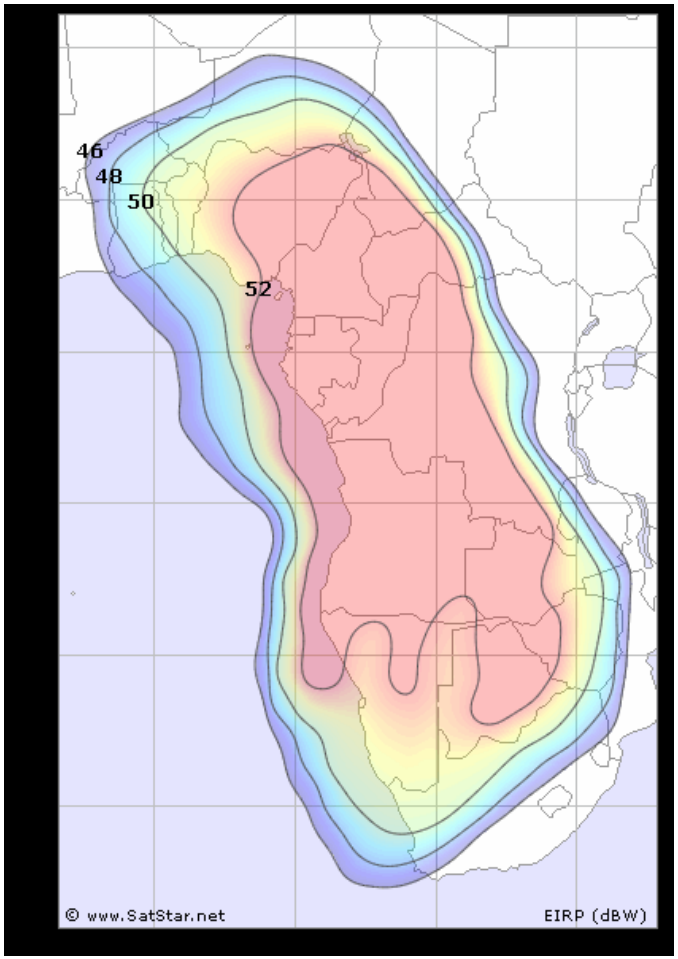
West African beams of Rascom QAF – 1R & NigComSat – 1R



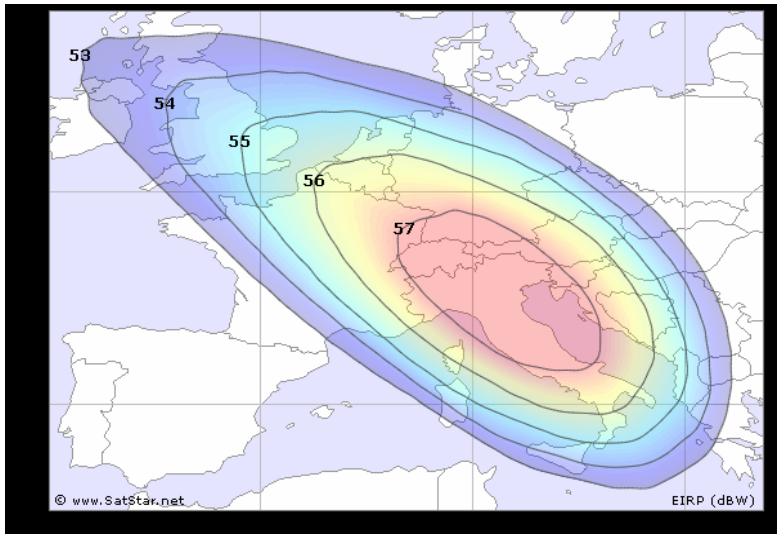


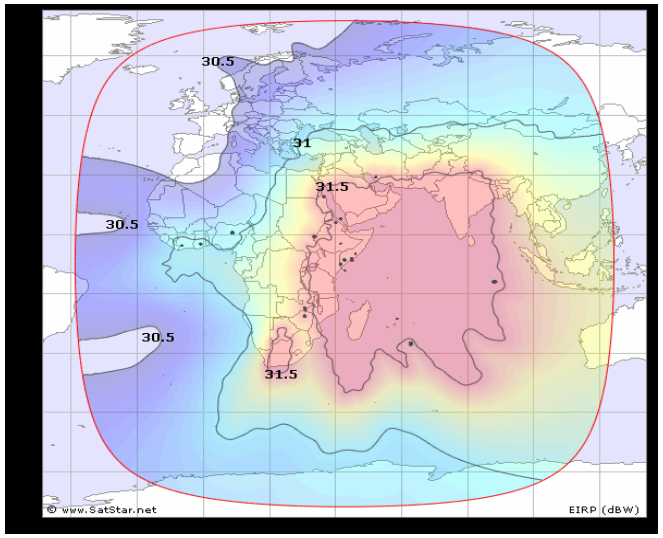
Southern African beams of Rascom QAF - 1R & NigeriaComSat – 1R

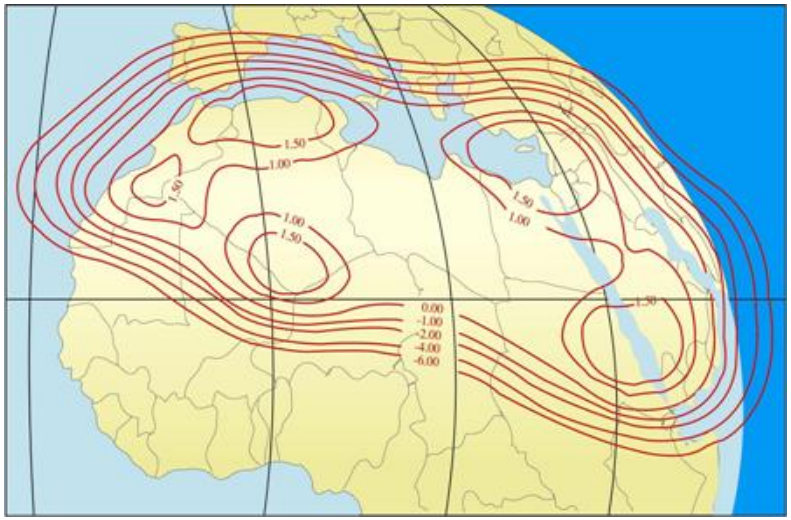




NigComSat – 1R & NileSats -1 &-2 footprints over Europe, Southern & East Africa & East Asia







Lessons learnt (1)

The right approach - For many of those countries that have bought and are still buying micro-satellites in the open market, it is becoming apparent, today, that the route to indigenous capability development in space may demand a different approach – first, you develop a vision and assess your current capabilities to attain the goals of the vision; thereafter build upon what you have by first investing in knowledge generation in the enabling technologies.

Man-made space objects that re-entered South Africa in 2000

- **USA's Delta rocket debris that survived re-entry in April 2000, and landed in South Africa. Such objects can hit a person, a home or homes, mobile or immobile objects including buildings, stationary or moving vehicles and aircraft. Should the falling debris carry enough heat, it can also initiate a conflagration, particularly in an oil field or create radiation hazards if it is nuclear-powered.**

Trajectory of Delta second stage reentry, which left debris in South Africa.

Recovered Delta second stage propellant tank

Recovered Thrust chamber

Recovered Pressure sphere

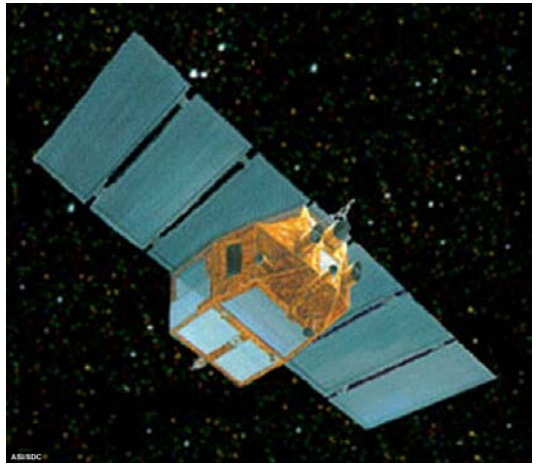
Re-entry of Italy's BEPPOSAX Satellite on April 29, 2003

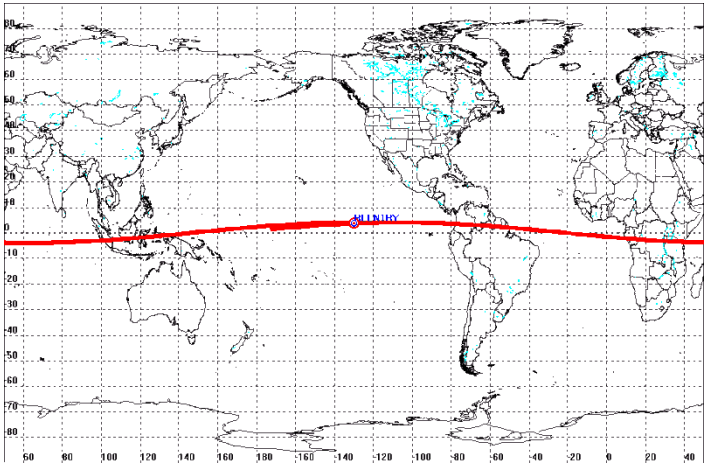
What actually happened to BEPPOSAX?

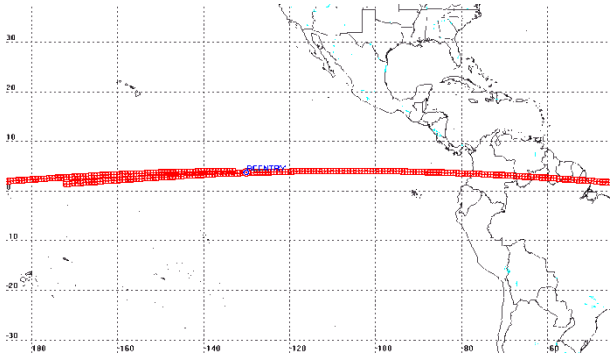
- BEPPOSAX crash-landed in the equatorial Pacific, about 186 miles northwest of Galapagos Island, on April 29, 2003 at 10:57 pm Nigerian time.

BEPPOSAX REENTRY REPORT,
30 April, 2003, 09:30 UTC, No. 25

BEPPOSAX SATELLITE







Lessons learnt (4)

- **Taking responsibility for your space assets – Nigeria's examples**
- **1. Failure of NigComSat-1 in November 2008. Why? Still unknown**
- **NigeriSat-1 - The Joint Space Operations Command (JOSC) of the United States assisted Nigeria to steer NigeriaSat-1 away from a collision path with Space Junk 28955 on January 3, 2010 and again with Space Junk 01716 on March 8, 2010**

The Future

- **Africa's contribution to space sustainability should include:**
  - **Continuing collaboration among African countries with ARMS as the first step. Individual national space activities are not sustainable in Africa.**
  - **The African leadership Conference on Space Science and Technology has a major stake in Africa's space future – Awareness, Education including R&D and space law, Policy evolution & development, technical advisory services**
  - **Africa's collaboration in radio astronomy that can contribute to global efforts in the sustainability of space activities. With their experience, South Africa and Egypt should offer the lead.**

Thank you