Space Technology Can Transform Africa

by Marsha Freeman

No continent on Earth is in more desperate need of space science and technology than Africa. Dramatically raising the standard of living of Africa's peoples requires a brute-force, great-project approach, a leap-frog over 20th Century methods, to directly employ the most advanced technologies that are available, and those that are on the cusp of development.

As part of the global extension of the North American Water and Power Alliance (NAWAPA), the LaRouche Political Action Committee has proposed the Transaqua project, which would supply water to Lake Chad, and to the surrounding region, and be the centerpiece of economic infrastructure projects to unlock the potential of Africa. (www.larouchepac.com/node/15817). Transforming the continent through projects of the scope of Transaqua, requires mapping resources, comprehensive water management, geographic and geologic analysis, land use planning, the tracking of disease, and agricultural monitoring—all of which are done most efficiently using space-based technologies. Land remote-sensing satellites have long been recognized by numerous African nations as a necessary tool for scientifically informed economic development.

Communication satellites, which can connect rural and remote communities to educational programs, and health and other government services, also help to knit together a coherent national culture. Such satellites also connect African nations with each other, enabling international development projects with a continental impact.

GFSC/NASA/SeaWiFS

The African continent is at the center of this global visualization, which was produced with data collected by NASA's SeaWiFS instrument. Dark green on land, and red, yellow, and green on the ocean, show where life is most productive.

But more than any specific economic benefit from space technology applications, such national programs create a cadre of scientists, engineers, technicians, and highly skilled machine-tool and manufacturing operatives, who can then take the lead in creating quantum jumps in productivity throughout the economy, and laying the basis for the breakthroughs by the next generation of Africans.

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Nigerian engineers working on NigeriaSat-X at Surrey Satellite Technology, Ltd.

Enormous Potential

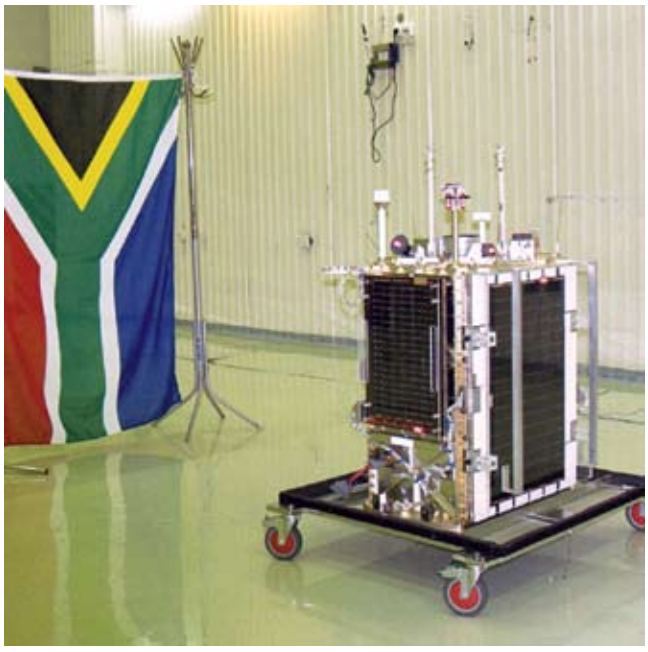
At present, only a handful of nations in Africa participate in the application of space technology, such as the use of remote-sensing and satellite communications capabilities. But the need, and the potential, are enormous.

South Africa, which has developed the most extensive space capability in Africa, announced the establishment of its South Africa National Space Agency on Dec. 9 of last year. It will bring together disparate space-related efforts in the country, and will also aim to revive space facilities that have been mothballed since the 1990s. The new agency plans to create a satellite-design and building capacity, using local expertise, building on its successful Sumbandila micro-satellite, and circumventing its reliance on satellites from abroad. This year, it will begin a feasibility study to assess the state of the facilities left over from its medium-range ballistic missile program, with the view toward creating a satellite launch vehicle, and will extend its participation in international astronomy projects.

Nigeria established its National Space Research and Development Agency in 1999. The nation's first satellite, Nigeriasat-1, was part of an international microsatellite Disaster Monitoring Constellation, and was built by Surrey Satellite in England. It was launched by Russia in 2003, and produces high quality remote-sensing images. Nigeria's first communications satellite, the Chinese-built

NigComSat-1, was launched by China in 2007. But the satellite failed on orbit a year later, and will be replaced later this year. Nigeria's NigeriaSat-2 is also scheduled for launch later this year, along with a training model, which was undertaken by Nigerian scientists and engineers.

The Algerian Space Agency was created in 2002, and soon after, saw the launch of its Alsat-1 remote-sensing satellite, also part of Surrey Satellite's five-satellite Disaster Monitoring Constellation. In July 2010, the European-built Alsat-2 was launched by India, which included an intensive training program for Algerian engineers and scientists.



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South Africa's Sumbandila micro-satellite before its launch in September 2009, from the Baikonur Cosmodrome. Sumbandila means "lead the way" in the Venda language.

Egypt has operated its own European-built communications satellite since 1998. A follow-on, Nilesat-2, of similar design, was launched two years later. A next-generation communications satellite, Nilesat-201, was launched in August of last year. For Earth remote-sensing capabilities, Egypt has teamed up with Ukraine's Yuzhnoy Design Bureau, and EgyptSat-1 was launched in 2007. The contract with Ukraine included the training of Egyptian satellite operators, and Egypt's ground receiving stations capture the satellite images.

Egyptian scientists, both at home and abroad, have participated with NASA and other international scientists in studies of the North African desert, the location of ancient subterranean water channels, and existing underground water resources. In 2004, an international team took deep radar sounding measurements at the Bakareza Oasis, testing instruments that could be used to find subsurface water on Mars.

Going Regional

Various regional African space organizations have been proposed, and some have been created, to pool Africa's limited resources devoted to space applications. Nairobi, Kenya, hosts the Regional Center for Mapping of Resources for Development, which has the participation of 15 African member-states. Satellite data are used to predict floods, as an early warning tool for disasters, to track water-borne diseases, and for infrastructure planning, continent-wide.

In 2009, former director of the space program of Egypt, Dr. Mohamed Argoun (see accompanying interview), speaking at the Global Space Technology Forum in Abu Dhabi, proposed that there be a Pan-Arab space agency in the future, when there is a concrete, multilateral program in place, with industrial and university participation. Middle Eastern and African Arab nations, he suggested, should develop a space technology industry, to contribute to a new, high-resolution Earth regional observation satellite.

Another regional initiative came in August 2010, when the Ministers of Communication and Information Technologies of the African Union agreed to conduct a feasibility study on the formation of an African Space Agency. Its focus would be on telecommunications capabilities.

More recently, Dr. Argoun has proposed an AfricaSat, to bring together, and enhance, the technical and industrial capabilities of Africa. After his presentation at the 61st International Astronautical Congress, held in Prague, the Czech Republic, in September 2010, he was interviewed by *EIR*'s William Jones about this proposal, and the importance of bringing water to the African deserts.

Science can still save Africa. This must start with a global financial and economic reorganization that begins in the United States, with the replacement of the bankrupt financial system through a Glass-Steagall policy, the return to a credit-based economic growth policy, and international agreements to make that policy global. In this way, Africa can finally be free of hundreds of years of colonial rule, and decades of international financial strangulation, and ready to truly enter the Space Age.

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Sumbandila image of the South African city of Stellenbosch, home of the university that helped design the satellite.