SPACE BRIEF

ROUND THE SPACE-WORLD IN TIME

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INTERNATIONAL COOPERATION

AUC participates in Symposium on Remote Sensing

The 36th International Symposium on Remote Sensing of Environment (ISRSE), took place from May 11-15, 2015, in Berlin, Germany. The AUC delegation was led by Dr. Jolly Wasambo, Project Coordinator in the Department of Rural Economy and Agriculture (DREA). The theme of the symposium was "the use of Earth Observation systems and related Remote Sensing techniques for understanding and managing the Earth environment and resources."

Earth Observation is one of the pillars of the African Union Space Programme. Europe and Africa are long-standing partners in the use of Earth Observation data and products for decision-making and economic-development of Africa. To this end, a special side-event at the symposium with the theme, "EO and Africa: A joint Europe – Africa Perspective" was dedicated to highlight this partnership. Projects that have evolved from this partnership include Preparation for the Use of Meteosat in Africa (PUMA), African Monitoring of Environment for Sustainable Development (AMESD), Monitoring for Environment and Security in Africa (MESA) and the forthcoming "Global Monitoring of the Environment and Security (GMES) & Africa" initiative.

SPACE APPLICATION

Space used for land degradation assessment in West Africa

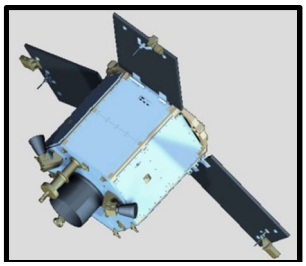
Yahaya Zayyana Ibrahim, an African doctoral student at the University of Leicester, has used space technology to identify regions of West Africa which are vulnerable to the effects of land degradation through climate change. His research work mapped areas affected by land degradation in West Africa from 1982 – 2012 using time-series analysis of vegetation index data derived from satellites. The research found out that soil moisture observation can map land degradation with more accuracy than typical rainfall data as soil moisture directly leads to plant growth. This highlights the importance of soil moisture as the water reservoir directly available to plants in land degradation and desertification studies, which is often overlooked in studies that focus on rainfall.

According to the researcher, "This study is a step further in understanding land degradation in the dryland areas, particularly in Sub-Saharan Africa where the livelihood of millions of people is at risk due to myriad of factors both anthropogenic and natural environmental changes especially climate change." The study proposed that "future studies of land degradation and desertification in drylands should go beyond using rainfall as a sole predictor of vegetation condition, and include soil moisture index datasets in the analysis."

SPACE BUSINESS AND MANAGEMENT

UAE establishes space center

The United Arab Emirates (UAE) has opened the Mohammed bin Rashid Space Center as part of its strategies for the time when oil reserves run out. The center's mandate is to "further research, projects and space investigation, in a manner that supports the UAE's drive to develop this sector and to promote national capacity related to space information and science." It is affiliated to the Emirates Institution for Advanced Science and Technology (EIAST), which was established in 2006, to promote advanced research and technological innovation, particularly in space technologies and applications.



DubaiSat-1: UAE's first Earth Observation Satellite (Credit: Wikipedia)

The UAE, which aims to be the space hub of the Middle East, has indicated its intention to send a robot to Planet Mars by 2021. Soon after the launch of the Mars Mission, it launched the UAE Space Agency to supervise the mission and coordinate other space projects. The UAE Space agency will launch its strategy on 25 May, 2015, as a side-event of the Global Space & Satellite Forum.

The country is also negotiating with Russia to buy the international spacecraft launch platform "Sea Launch". "Sea Launch" is a sea-based launch system that allows launches of commercial freights on specialized rockets. With its acquisition, the UAE would receive technical specialists and an existing infrastructure.

Russian chemist gets patent on transforming Mars

Alexander Popov, a Russian chemist, has received a patent which will transform the atmosphere of Planet Mars and make it habitable. A couple of national space agencies are preparing to luanch missions to Mars, and perhaps create habitable settlements there, but the thin atmospehere of

Mars and the high mean temperature are hindrances to venturing to Mars. To mitigate this, Alexander Popov developed a method to use the greenhouse effect to make the Red Planet's atmosphere thicker and warmer. The proposed method suggests "heating a mixture of clay minerals and table salt while a wind current containing mineral particles of carbonate dust" passes above. The following chemical reaction should release carbon dioxide gas which will accumulate and trigger the greenhouse effect.

The inventor plans to use Martian dust storms as a natural mechanism for the reaction that will ultimately thicken and warm the atmosphere. The scientist said that his unique invention will take centuries to implement, but it should be tried in artificial conditions first.

SPACE EXPLORATION

British singer suspends planned space trip

British singer, Sarah Brightman has suspended her plan to launch into space to perform on the International Space Station (ISS). She was scheduled to launch on 1st September 2015, for a 10-day stay, and would have been the first professional musician to sing from space. Ms. Brightman has being undergoing spaceflight training at Star City near Moscow, along with her backup Satoshi Takamatsu, a Japanese entrepreneur.

(Credit: Press Association)

According to Eric Anderson, co-founder and chairman of Space Adventures, "Since 2012, Sarah has shared her story of a lifelong dream to fly to space. Her international fame as the world's best-selling soprano has enabled her message to circle the globe, inspiring others to pursue their own dreams." The trip is valued at about $52 million.

Ms. Brightman, a member of the Advisory Board for the Challenger Center for Space Science Education once said, "Through my partnership with Challenger Center, I hope to inspire in children, the same wonder and excitement for space exploration that I feel myself. As I prepare for my own space journey, I am proud to work with them to impart the sense of magic that has had me dreaming and looking up at the stars since I was a child."

Space agencies in europe inaugurate altered-gravity aircraft

The European Space Agency (ESA), France's space agency CNES, and the German Aerospace Centre DLR, have refitted an Airbus A310 and made it capable of simulating gravity on extraterrestrial environments such as Mars. The inaugural flight ran 12 scientific experiments. This microgravity environment is achieved by repeatedly putting the plane in an up-and-down, parabolic trajectory, angled at about 45 degrees. During the climb and pulling out of the descent, the occupants endure almost twice normal gravity. For example, a person weighing 70 kg on Earth will feel as if he weighed 140 kg for around 20 seconds. At the top of each curve, the forces on the passengers and objects inside cancel each other out, causing everything to fall freely. This is called 'weightlessness'. This is a similar condition as that in the ISS.

The aircraft offers more than just weightlessness, by changing the thrust and angle of climb and descend, the team of pilots flying the plane can recreate other gravity levels such as those found on the Moon or Mars. As the experiments invariably pass through hypergravity and normal gravity during each flight, researchers can incorporate each phase into their experiment as controls or to compare sets with different gravity levels.

Experiments being conducted inside a Zero-G A300 Airbus (Credits: ESA)

Upcoming activities

6th Session of the AU Space Working Group
21-22 May, 2015
Centurion Lake hotel, Pretoria, South Africa

17th session of the World Meteorological Congress
25 May – 12 June 2015
Geneva, Switzerland

Global Space and Satellite Forum
26 – 27 May, 2015
Abu Dhabi, UAE

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