

## INFORMATION & COMMUNICATION DIRECTORATE

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### Young African scientists use cloud computing to innovate solutions to sustainable development challenges facing the continent



The African Union Commission, through the GMES & Africa programme, partnered with Rwanda Space Agency, Carnegie Mellon University Africa and the African Framework for Research Innovation, Communities and Applications (EO AFRICA) to conduct a five-day Earth Observation Hackathon in the context of the GMES & Africa programme. The exercise involved use of Cloud Computing Platform to address the following challenges in Wetlands Vulnerability, Agricultural Monitoring and Marine & Coastal Resources.

About 30 young scientists and researchers were equipped on analyzing satellite data using Machine Learning techniques to create numerical prediction models for early warning systems on the environment.

As classical data processing phases out gradually, the new focus is on cloud solutions, in which spatial data is processed and analyzed in virtual environments, necessitating downloads for only final indicators and for specific applications. This fits the Africa context given the relatively low internet bandwidth which may not support huge data downloads. Cloud processing makes it possible to have analysis ready data (ARD), which is used to build historical data cubes. Scientists can then spend less time building their applications and services.



One of the main pillars of GMES & Africa is the Education and Capacity Development, and the programme has established a Network of Academia as the vehicle to achieve this. The Network has matured to capacitate the implementing institutions as well as support Research and Development on the continent. The Network prepared the instructors for the Hackathon, which was conducted at Carnegie Mellon University Africa in Kigali,

Rwanda, to emphasize the role of Academia in operational projects such as GMES & Africa.

The Hackathon was a training ground for the scientists and researchers to gain knowledge and skills in the value-added-service development chain. Trainees were equipped with skills to navigate and

select the appropriate data, process the data, analyze it and develop statistical results; all in a cloud computing environment. The partnership with EO Africa provided the necessary infrastructure for the Hackathon.

The skills obtained from the Hackathon will contribute to the development of operational Earth Observation services on the continent to support informed decision-making processes for better planning and management of natural resources.

Hackathons and Datathons are part of the GMES & Africa Training Strategy which responds to the priorities of the African Outer Space Flagship on reinforcement of capacities to raise a critical mass of scientists in hardware, software and space services. The Training Strategy is also aligned to the AU Agenda 2063, in prioritizing a skills revolution, with emphasis on soft skills for targeted knowledge-based economies in Africa.

Media Contact: Mr. Meshack Kinyua Ndiritu | Training Officer, GMES and Africa | Department of Education, Science, Technology and Innovation | African Union Commission | Tel: +251 115 517 700 E-mail: [NdirituM@africa-union.org](mailto:NdirituM@africa-union.org) | Addis Ababa, Ethiopia

For further information please contact: Information and Communication Directorate, African Union Commission | E-mail: [DIC@africa-union.org](mailto:DIC@africa-union.org) Web: [au.int](http://au.int) | Addis Ababa, Ethiopia | Follow Us: Facebook | Twitter | Instagram | YouTube