

MODIS Flood Monitoring Assessment Training at Kenyatta University

The training began by a courtesy call to the Dean School of Environmental Studies by the GIS Patron Kenyatta University Prof. Simon Onywere, who introduced the Trainers and briefly explained the importance of the MODIS for providing satellite images of floods, droughts and trees cover. He said the satellite images are there to tell us what is happening in the atmosphere so that we might take the necessary measures. The data from the satellite is well documented but not properly used by the relevant people, so it important that the MODIS partner with more government Ministries, parastals and organizations to put this data in use. For appropriate flood disaster management, there is a need for **real-time** monitoring, such as **National Aeronautics and Space Administration's**(NASA) MODIS Rapid Response System, which makes use of the moderate resolution imaging spectroradiometer (MODIS) on board NASA's Aqua and Terra satellites

Flood disasters in Kenya have become a common phenomenon every time the country experiences Long rains in the months of March to May. This floods result in significant loss of life and economic damage. Remote sensing information systems designed to spatially and temporally monitor floods can help the government county Governments and international agencies formulate effective disaster response strategies during a flood and ultimately alleviate impacts to population, infrastructure, and agriculture. Recent destructive flood events in the Lower Tana River Basin occurred in last year 2016, 2017 and 2018 the worst being April, 2018). The (MODIS) remote sensing makes maps and provides satellite images on spatial distribution of flooded areas and lack of proper gauge data in the region makes accurate monitoring and assessment of impacts of floods difficult. The aim of the training which took place at Kenyatta University GIS lab from 18th to 20th March, 2019 was to sensitize the students on the utility of applying satellite-based Earth observations for improving flood inundation monitoring over the flood prone -areas of the country.

The trainers presented a methodology for determining near real-time surface water extent associated with current and historic flood events by training surface water classifiers from 8-day, 250-m Moderate-resolution Imaging Spectroradiometer (MODIS) data spanning the length of the MODIS satellite record. The Normalized Difference Vegetation Index (NDVI) signature of permanent water bodies (MOD44W; Carroll et al., 2009) is used to train surface water classifiers which are applied to a time period of interest. From this, an operational nowcast flood detection component is produced using twice daily imagery acquired at 3-h latency which performs image compositing routines to minimize cloud cover.

Case studies and accuracy assessments against radar-based observations for historic flood events are presented. The customizable system has been transferred to regional organizations and near real-time derived surface water products are made available through a web interface platform. Results highlight the potential of near real-time observation and impact assessment systems to

serve as effective decision support tools for governments, international agencies, and disaster responders.

MODIS Flood Monitoring Assessment Training Using QGIS Participants from: Kenyatta University March 2019 The exercise introduced the participants (about 70 participants)to QGIS and some of the basic functions of the program. By the end of this training, the participants were expected to be able to: Open a current QGIS file, Set up the layout of your QGIS file , Zoom, move, and navigate a map Turn layers on and off Whenever they work in QGIS Desktop, working with a map document which can contain various layers, which are populated by spatial datasets. A QGIS map document has a *.qgs file extension. The next view shows the individual pieces of the user interface in QGIS. Your QGIS window may look different depending on your settings. This section will taught the participants on how to adjust your layout settings. At the end of the training, all the participants applauded the trainers for imparting very useful knowledge to the participants



Participants listen carefully Abdi Gedi of RCMRD one of the trainers during the MODIS training at the Computer GIS LAB



Participants are taken through hands on experience by one of the trainers during the MODIS training at the Computer GIS LAB

Responses

we are glad to report that the training on flood monitoring and assessment using MODIS data that took place between 18th and 20th March 2019 was successfully concluded. The training attracted participants from the Department of EPM, other departments and even beyond the University, including students, staff members and the general public. In the past, utilization of MODIS data products was low among our students. It is our hope that the training serves as a springboard to quality research and learning. Participants expressed gratitude for the opportunity and vowed to build up on the skills acquired and translate them into tangible impact on the ground.

Acknowledgement

Kenyatta University

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Administrative Assistant

KUNEC Officials