



Regional Centre for  
Mapping of Resources  
for Development

# THE 5<sup>H</sup> RCMRD INTERNATIONAL CONFERENCE (RIC 2022)

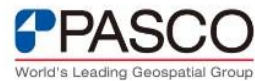
 6<sup>th</sup> —8<sup>th</sup>, September, 2022

 RCMRD Grounds, Nairobi, Kenya

*Theme: Earth Observation Services for Resilient Social System*



Food and Agriculture  
Organization of the  
United Nations



## DAY 1: TUESDAY, 6TH SEPTEMBER, 2022

### THEME | EARTH OBSERVATION SERVICES FOR RESILIENT SOCIAL SYSTEMS

| TIME (EAT)                                  | SESSION           | SPEAKER  | MODERATOR                     |
|---|-------------------|--|-------------------------------|
| 09:00 AM–10:00 AM<br><br><i>(Main Tent)</i> | Opening Ceremony  |  Regional Centre for Mapping of Resources for Development (RCMRD) – Dr. Emmanuel Nkurunziza, Director General<br> Representative from ESRI – David Gadsden, Director Conservation Solutions<br> Representative from Kenya Airways/Fahari Aviation – Hawkins Musili, General Manager<br> Representative from Food and Agriculture Organization (FAO) of UN, Kenya – Ambassador Carla Mucavi<br> Representative from Digital Earth Africa (DEA) – Dr. Thembi Xaba, Managing Director<br> Representative from Centre for International Forest Research (CIFOR) – Robert Nasi, Director General<br> Representative from International Union for Conservation of Nature (IUCN) – Luther Anukur, Regional Director, Eastern and Southern Africa<br> Representative from GMES & Africa – Dr. Tidiane Ouattarra Space Expert and GMES & Africa Program Coordinator<br> Representative from NASA – Dan Irwin, SERVIR Science Coordination Office Global Program Manager.<br> Representative from USAID – Chihenyong Kangara, Regional Climate Change & Resilience Specialist USAID Kenya & East Africa<br> Representative from the United Nation Economic Commission for Africa (UNECA) – Andre Nonguierma, Chief, Geo-spatial Information Management Systems<br> Representative from Governing Council | <b>Paul Idude, RCMRD</b>      |
|   |                   | <b>Official Opening of RIC 2022 – Guest of Honor</b>   |                               |
| 10: 00AM–11:00 AM                           | Keynote Address 1 | <b>Topic  </b> Social Challenges: At A Global Level<br><b>Speaker:</b> CHIHENYO Kangara, Regional Climate Change & Resilience Specialist USAID Kenya & East Africa   | <b>Jane Bemigisha, ESIPPS</b> |
|   | Keynote Address 2 | <b>Topic  </b> Earth Observation Information in Environment and Development<br><b>Speaker:</b> DAVID Gadsden: Director of Conservation Solutions, ESRI Global  |                               |

**11:00 AM – 11:30 AM - HEALTH BREAK AND EXHIBITIONS**

|                    |                  |   |  |  |
|--------------------|------------------|---|--|--|
| 11:30 AM – 1:00 PM | Parallel Session | <p><b>Thematic Area   Agriculture &amp; Food Distribution Systems</b></p> <p><i>VENUE: Conference Hall located at the Ground floor RCMRC Complex</i></p>  |  |  |
|                    |                  | <p><b>Session Description:</b> "Healthy, sustainable, and inclusive food systems are critical to achieving the world's development goals. Agricultural development is one of the most powerful tools to end extreme poverty, boost shared prosperity, and feed a projected 9.7 billion people by 2050. Growth in the agriculture sector is two to four times more effective in raising incomes among the poorest compared to other sectors "(World Bank, 2022). Earth Observation technologies have enabled precision agriculture and even much more, through the development of yield estimation methods, land agricultural potential, and models that promote efficient planning, monitoring of land productivity, and efficiency all along the agricultural value chain. Simple but pertinent decisions have to be made on planting (decisions on crop type and coverage), growing (tracking plant growth), and harvesting (yield predictions)</p>   |  |  |
|                    |                  | <p><b>Session Outcomes:</b> A working Group on Agriculture and Food Distribution Systems</p>  |  |  |
|                    |                  | <p><b>Partner Session Lead: FAO and DRSRS</b></p>   |  |  |
|                    |                  | <p><b>Presentations:</b></p> <p>1: Biophysical Drought Risk Analysis in Kenya's ASALS. Author: Tara Ippolito</p> <p>2: The potential of Sentinel-1 SAR and machine learning algorithms for mapping paddy rice in Kenya. Authors: <b>Victoria Neema:</b> Pamela Ochungo</p> <p>3: Comparative analysis of RGB based vegetation indices in crop health and soil nutrient content assessment on a tea plantation. Authors: <b>Charles Chisha Kapachika,</b> Robert Suya, Save Kumwenda, Ishmael Kosamu, Ansley Kasambara</p> <p>4: Exploring Spatial Temporal Patterns of Rain fed and Irrigated Agricultural Lands using Time Series Earth Observation in Baringo County – <b>Faith Kandie</b></p> <p>5: Elaboration participative du plan d'adaptation aux effets du changement climatique du périmètre hydro-agricole de Niofila/Douna. Authors: <b>Nebninga Alain Franck KABORE,</b> Justine HAFING, Fatoumata KANAO</p> <p>6: Gender Responsive Agriculture Systems for Persons with Disabilities that Enhance Inclusive Food Systems. Author: <b>Nancy Marangu</b></p> |  |  |
|                    |                  | <p><b>Thematic Area   Water Resources and Blue Economy</b></p> <p><i>VENUE: Room B10, Second floor, RCMRD Complex</i></p>   |  |  |
|                    |                  | <p><b>Session Description:</b> According to the World Bank (2022), water touches every aspect of development and it is linked with nearly every Sustainable Development Goal (SDG). It drives economic growth, supports healthy ecosystems, and is essential and fundamental for life itself. Approximately 2.2 billion people worldwide do not have access to safe drinking water; 4.2 billion do not have access to safe sanitation services; and 3 billion do not have access to basic handwashing facilities.</p> <p>Gaps in access to water supply and sanitation, growing populations, more water-intensive patterns of growth, increasing rainfall variability, and pollution are combining in many places to make water one of the greatest risks to economic progress, poverty eradication, and sustainable development. Optimizing the use of water through better planning through the use of technology has proven to help to improve welfare and increase economic growth in urban and rural setups.</p>   |  |  |
|                    |                  | <p><b>Session Outcomes:</b> A working Group on Water Resources and Blue economy</p>   |  |  |
|                    |                  | <p><b>Partner Session Lead: Digital Earth Africa &amp; Partner GMES &amp; Africa</b></p>  |  |  |

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|  |  | <p><b>Presentations: 1:</b> Rising with temperature! Reconstructing the hydroclimatic record of Lake Naivasha with Earth Observation: <i>Authors: David Ongo, Dr.Ir Salama Suhyb, Dr.Ir Rogier van der Velde, Dr. Majambo Gamoyo, Dr. Vincent Odongo</i></p> <p>2: Monitoring the monthly surface area variations of Tono Dam, Ghana using Sentinel 2 Imagery. <i>Authors: Jesse Buyungo, Benjamin Wullobayi Dekongmen, Isaac Mawuli</i></p> <p>3: Monitoring Coastlines from Space: Validation of early results from Digital Earth Africa. <i>Authors: David Ongo, Rose Waswa, Pauline Ogola, Lamine Ndiaye, Moussa Sall, Amadou Sall Robbi BishopTaylor, Stephen Sagar, Joseph Tuyishimire, Cedric Jorand, Fang Yuan, Nikita Gandhi, Edward Boamah.</i></p> <p>4: Assessing the Impact of Landuse on Water Quality Using GIS and Remote Sensing: A Case Study of Mudi River Blantyre, Malawi. <i>Author: Sarah Chananga Chirwa</i></p> <p>5: Monitoring changes in water extent in Lake Ngami, Botswana using Digital Earth Africa: <i>Authors: Kenneth Mubea, Kelebogile Mfundisi, Edward Boamah, Lesego Peter</i></p> <p>6: Identification of Potential Fishing Zones Using Remote Sensing and GIS Techniques Along the Kilifi Coastline. <i>Author: Teddy Gregory Lenga</i></p> |  |
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**1:00 PM – 2:30 PM LUNCH AND EXHIBITIONS**

|                   |                   |   |  |
|-------------------|-------------------|---|--|
| 2:30 PM – 4:00 PM | Parallel Sessions | <p><b>Thematic Area   Geo Innovations in Health</b></p> <p><i>Venue: Conference Hall located at the Ground floor RCMRC complex</i></p>  |  |
|                   |                   | <p><b>Session Description:</b> According to the World Health Organization (2017), the health goal (SDG 3) is broad as it entails ensuring healthy lives and promoting the wellbeing of all at all ages. To achieve the overall health goal, governments are putting in place universal health coverage (UHC) policies and strategies. The basic question that relates to health-related information dissemination and linkages to spatial information draws its origin from the case study of the cholera outbreak in London in the year 1854. A simple map by Dr. John Snow helped to see the pattern and determine the source of the outbreak. GIS and RS have in the recent past been used in health facility location, sharing of COVID-19 information through GIS powered dashboards, among other areas.</p>   |  |
|                   |                   | <p><b>Session Outcomes:</b> A working group on GEO Innovations in Health</p>  |  |
|                   |                   | <p><b>Partner Session Lead: Open Mapping Hub and Kenya Space Agency</b></p>   |  |
|                   |                   | <p><b>Presentations:</b> 1: Nairobi Air Quality Monitoring for Health and Planning as a Geo-Innovation: A Geohealth Project (Kenya). <i>Author: Prof. Augustine Afullo</i></p> <p>2: A COVID-19 Hub for Zimbabwe. <i>Author: Kumbirai Matingo</i></p> <p>3: Satellite-based modelling of potential tsetse (<i>Glossina pallidipes</i>) breeding and foraging sites using teneral and non-teneral fly occurrence data. <i>Authors: Stella Gachoki, Thomas Groen, Anton Vrieling, Michael Oka, Andrew Skidmore and Daniel Masiga</i></p> <p>4: Geospatial mapping of access to health services to support health service redesign. <i>Authors: Paul Elvis Onyango Ouma, Sanam Roder De-Wan</i></p> <p>5: Bacterial Food Poisoning and Associated Risk Factors among Patients Attending Thika Level 5 Hospital, Kiambu County, Kenya. <i>Author: Nduta Karanja</i></p> |  |
|                   |                   | <p><b>Thematic Area   Early Warning and Disaster Preparedness</b></p> <p><i>Venue: Room B10, Second floor, RCMRD Complex</i></p>  |  |
|                   |                   | <p><b>Session Description:</b> The concern by various countries about the huge impacts that natural disasters have on societies is increasing. The destruction, loss of life and livelihoods has in the recent past led to an increased allocation of funds to building a resilient society. Technology to share information, predict and forecast such disasters like floods and tsunamis has also been improving and getting more efficient over time. The various aspects of risk knowledge, warning services on a sound scientific basis, communication and</p>   |  |

dissemination, and response capabilities are critical in putting in place an early warning system. Earth Observation technologies have enabled the development of risk profiling and pre-post analysis of hazards.

**Session Outcomes:** A working group on Early Warning and Disaster Preparedness

**Partner Session Lead: ESRI and DRSRS**

**Presentations:** 1: Establishing the Relationship Between LULC Changes, Temperature, Precipitation and the Lake Water Level Rise: Case Study of Lake Nakuru Basin, Kenya. Authors: James Magige **David Siriba**  
 2: Soil Erosion and Sediment Yield Estimation in Lake Baringo Basin. Authors: **Francis Oloo, Hussein Farah, Pamela Onchugo, Richard Onchaga, David Kitavi Oscar Lino Technical University of Kenya**  
 3: Crop yield Estimation using Remote Sensing Technology for Food Security Assessment & Monitoring in Kenya. Author: **Vincent Imala**  
 4: Women adaptation strategies to dry-season shelter stress in dryland Communities, Northern Uganda. Author: **Hisinya Fatuma**  
 5: Enhancing Environmental Monitoring at Scale Using GIS: Gully Erosion Mapping in Mwatate Watershed, Kenya. Author: **Francis Gitau Dickson Wachira Godfrey Makokha, Nashon Adero**  
 6: Drought Risk analysis in Turkana and Narok. Author: **Tara Ippolito**

**Capacity Building Session | Showcase on Geospatial Web Map Services**  
 Venue: B7 the training lab, 1st floor RCMRD complex

**Session Description:** The session aims to introduce the participants to the fundamental theories and technologies for disseminating and processing geographic information using the Internet and World Wide Web. It's focused on the most important technologies for transferring, process and visualizing geographic data via the Internet. Exercises are mainly directed toward creating Internet-based GIS services using different free and open-source software, programming languages and API libraries.

**Session Outcomes:**

- understand SDI concepts and FAIR Principles
- know how to publish geospatial web services
- know how to consume geospatial web services

**Partner Session Lead: GMES and Africa, Makerere University**

**BREAK AND EXHIBITIONS: END OF DAY 1**

**DAY 2: WEDNESDAY, 7TH SEPTEMBER, 2022**  
**THEME | EARTH OBSERVATION SERVICES FOR RESILIENT SOCIAL SYSTEMS**

| TIME  | SESSION                  |  | MODERATOR              |
|---|--------------------------|--|------------------------|
| 09:15AM –10: 45AM<br><br><b>(Main Tent)</b> | Keynote Address 1        | <b>Topic  </b> Unmanned Aircraft Systems (UAS) for Improved Decision Making<br><b>Speaker:</b> Hawkins Musili, Fahari Aviation General Manager   | Charles Mwangi,<br>KSA |
|   | Keynote Address 2        | <b>Topic  </b> Earth Observation Services for Resilient Social Systems<br><b>Speaker:</b> Lizzell Boshoff, Commercial Director of HEAD-AEROSPACE |                        |
|   | Keynote Address 3        | <b>Topic  </b> Earth Observation Information Processing<br><b>Speaker:</b> Dr. Kohei Yamamoto, PASCO Corp  |                        |
|   | Synthesis and Discussion |  |                        |

**10:45 AM – 11:15 AM HEALTH BREAK, POSTERS AND EXHIBITIONS**

|                    |                   |   |  |
|--------------------|-------------------|---|--|
| 11: 15AM –12: 45PM | Parallel Sessions | <p><b>Thematic Area   Agriculture &amp; Food Distribution Systems: OPEN DATA</b><br/> <i>Venue: Conference Hall located at the Ground floor RCMRD complex</i></p> <p><b>Session Description:</b> This session looks at efforts that promote open agricultural data systems and tools through consultations, capacity building, practical implementation of best practices and dialogues. The session will look at efforts to streamline field data collection by improving data collection protocols for agricultural agencies; to enhance availability of Analysis Ready Data, infrastructure &amp; interoperable Systems; and to disseminate and share widely best practices on agricultural data collection and management, all these with the main aim of improving agricultural data openness and interoperability through standardization. Main focus countries that have been reached by these efforts are Kenya, Uganda, Tanzania, Rwanda, Zambia and Malawi.</p> <p><b>Session Outcomes:</b> Increased awareness and understanding on agricultural data standards, metadata, openness and interoperability.</p> <p><b>Partner Session Lead: SERVIR Eastern and Southern Africa</b></p> <p><b>Presenation: 1:</b> Insights from a tracking 30 years of change in agro-ecologies in Lower eastern Kenya. Authors: <i>Lilian Ndungu, Dr. J.B.K. Kiema, Dr. Ing. D. Siriba</i></p>   |  |
|                    |                   | <p><b>Thematic Area   Land Administration and Managements Systems</b><br/> <i>Venue: Room B10, Second floor, RCMRD Complex</i></p> <p><b>Session Description:</b> Land management and administration concerns putting land resources to efficient use, namely, for agricultural use, housing, preserving the environment, and sustainable use of natural resources, among others (Global Land Tool Network, 2022). Land administration is traditionally and still perceived as the responsibility of the government; governments at local and central levels enforce land policies and legislation through land administration. The production, dissemination, and use of land information is necessary to inform different land administration aspects, such as tenure security provision, regulation of property markets, promotion of effective land use planning and taxation, and land conflicts, among others. The concepts around fit-for-purpose land administration tools to support the government and the integration of robust decision support tools to provide reliable for all in the land administration value chain</p> <p><b>Session Outcomes:</b> A working group on Land Admistration and Management Systems</p> <p><b>Partner Session Lead: International Land Coalition Africa</b></p> <p>Presentations: 1: Development of Regional Policy Guidelines for Sharing of Earth Observation Data and Geoinformation. Authors: <b>Hussein Farah</b> and <b>Degelo Sendabo</b></p> |  |

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|  |  | <p>2: Fit-for-purpose technology to support systematic land adjudication and demarcation in Malawi. <i>Authors: Allan Oware, Steve Otiemo, Masida Mbano</i></p> <p>3: Geospatial infrastructure to promote tenure security, personal wealth accrual, and economic growth. <i>Author: Carsten Bjornsson</i></p> <p>4: Growth of Urban Areas and its effects on land use efficiency in Nairobi City County. <i>Author: Ian Duncan Njuguna</i></p> <p>5: Integrated sociospatial and geospatial time-series analysis of urban sprawl and informal settlement development in Windhoek, Namibia from 1990 to 2018. <i>Authors: Priscilla N. Heita, Elisha N. Toteng, Kealeboga Moreri, Bester Tawona Mudereri, Bernhau F. Alemaw</i></p> <p>6: Conformance to Spatial Planning between the Kampala Physical Development Plan of 2012 and the Existing Land Use in 2021. <i>Authors: Nagula Brendah Omolo Fredrick Ssengendo Ronald Bamweyana Ivan</i></p> <p>7: Geographical Information System and Earth Observation for County &amp; Devolved Units own Source Revenue Management; A case of Nakuru County. <i>Author: Franklin Ogwankwa</i></p> |  |
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**12: 45 PM – 1:00 PM: Drone Showcase by Fahari Aviation/Kenya Airways.**

**1:00 PM – 2:30 PM: LUNCH, POSTER AND EXHIBITIONS**

|                    |                   |  |  |
|--------------------|-------------------|--|--|
| 2: 30 PM – 4:00 PM | Parallel Sessions | <p><b>Thematic Area   Natural Ecosystems and Biodiversity Conservation</b><br/><i>Venue: Conference Hall located at the Ground floor RCMRD complex</i></p> <p><b>Session Description:</b> The demands of a growing global population with rapidly changing consumption patterns for food, mobility, and energy are exerting ever-increasing pressure on the Earth's ecosystems and their life-supporting services (European Environment Agency, 2015). Population growth, demand for food, and climate change are expected to create significant stress on the already limited resources, and therefore, this calls for a balance between development and the environment. Deforestation, wetlands destruction, human-wildlife conflicts, among other systems, are threatened by depletion and loss of biodiversity. The conservation of forest and coastal wetlands for infrastructural developments is the new normal, with less concern for alternatives on the same.</p> <p><b>Session Outcomes:</b> A Working group on Natural Ecosystems and Biodiversity Conservation</p>   |  |
|                    |                   | <p><b>Partner Session Lead: BIOPAMA, CIFOR and OFESA</b></p>   |  |
|                    |                   | <p>Presentations: 1: Earth Observation Based Protected National Parks Monitoring and Assessment in East Africa: <i>Authors: Hussein Farah, Robert Nyarondia, Eugene Kayijammahe, Viola Otiemo, Kenneth Mwangi</i></p> <p>2: Analysis of Geospatial Themes in African Art, Poetry and Prose-a Case of RCMRD Library (Nairobi). <i>Author: Alexander Opicho</i></p> <p>3: Evaluation of the dynamics of land use and land cover change towards rotational grazing within watersheds in Lesotho. <i>Author: Moeti Mohapi</i></p> <p>4: Mapping and Characterization of Degraded Mangrove Sites Within Kwale County, Kenya <i>Authors: Fredrick Mungai, James Kair</i></p> <p>5: Utilization of Sepal And Google Earth Engine In Forest Monitoring a Case Study of The Aberdare Forest: <i>Author: Stephen Mugo Macharia</i></p> <p>6: Mapping of fish cage culture suitable sites in Malawi; Case study of Salima District: <i>Author: Mexford Mulumpwa</i></p> <p>7: Global Initiative for National Indicator Reporting Toolkits: Streamlining and Strengthening National Biodiversity Conservation and Reporting: <i>Authors: David Gadsden, Michael Gill,</i></p> <p>8: Changing Land Use and Land Cover in Areas Utilized by Pastoralists for Grazing in Nairobi City. <i>Authors: Walter Magero Wafula Oliver Vivian Wasonga</i></p> |  |
|                    |                   | <p><b>Thematic Area   Smart and Green Cities</b><br/><i>Venue: Room B10, Second floor, RCMRD Complex</i></p>   |  |



**Session Description:** A smart city is a technologically modern urban area that integrates information and communication technologies with physical devices connected to the internet of things (IOT) networks to optimize the efficiency of city operations and connections to citizens. With 55% of the world's population living in cities, the trend is expected to continue, and projections are already indicating that nearly 7 out of 10 people in the world will live in cities. According to the World Bank, 80% of the global GDP is generated in cities. Urbanization can therefore contribute to sustainable growth if managed well through increased productivity, innovations, and the emergence of new ideas. The Geographic Information System provides a platform that integrates every smart city process

**Session Outcomes:** A Working group on Smart and Green Cities

**Partner Session Lead: Kenya Airways and Open Mapping Hub**

Presentations: 1: Assessing ward-level patterns of Land Surface Temperature in Nairobi City using Landsat 8 data in Google Earth Engine. *Authors: Francis Oloo Patricia Mwangi Merab Oyugi Hussein Farah David Kitavi*

2: Megacities and Urban Primacy: Developing a Model of Sustainable Cities and Communities. *Author: Nashon Adero*

3: Integration of Geo-information Systems Technology in Route Optimization and Customer Focus Planning by Purolator (Canada). *Authors: Victor Kazibwe, John Kumekeeta*

4: Understanding growth induced trends in Local climate zones, Land surface temperature and extreme temperature events in a rapidly growing city: A case of Bulawayo metropolitan city in Zimbabwe. *Authors: Terence Darlington Mushore, Onesimo Mutanga John Odindi*

5: Integrating Artificial Intelligence with GIS in an Electric Utility. *Author: Kevin Bwire*

**Capacity Building Session | OPEN DAY, SERVIR EASTERN AND SOUTHERN AFRICA**

*Venue: B7 the training lab, 1st floor RCMRD complex*

**Session Description:** SERVIR Eastern and Southern Africa Project (a joint initiative between USAID, NASA and RCMRD) aims at building the capacity of Institutions within RCMRD Member states and beyond in using Earth Observation technologies and information in Environmental Management and decision making. SERVIR Eastern and Southern Africa offers services in the following thematic areas:

- 1: Weather and Climate,
- 2: Land Use Land Cover and Ecosystems,
- 3: Water and Water Related Disasters
- 4: Agriculture and Food Security

This session aims at:

- 1: Showcase, disseminate and exhibit the tools, product, methods, data that SERVIR has co-developed.
- 2: Facilitate partnerships, networks and stakeholders in the various SERVIR ESA thematic areas.
- 3: Increase awareness and uptake of SERVIR ESA generated products.
- 4: Share lessons learnt and provoke thoughts towards achieving sustainable services.
- 5: Promote data discoverability through the creation and update of data inventories.
- 6: Capture and gather feedback on the products to help improve the products.

**Session Outcomes:** Feedback on the tools demonstrated

**Partner Session Lead: SERVIR Eastern and Southern Africa**

Presentations: Inland Satellite Based Water based Water Quality Indicator tool. 2: Early Warning Explorer, 3: Crop Monitors: 4: SERVIR E&SA and the Youth

**SOCIAL EVENT: NETWORKING & ENTERTAINMENT**



**DAY 3: THURSDAY, September 8**  
**THEME | EARTH OBSERVATION SERVICES FOR RESILIENT SOCIAL SYSTEMS**

| TIME                                   | SESSION                  |  | MODERATOR          |
|--|--------------------------|--|--------------------|
| 09:15 AM – 10:15 AM<br><br>(Main Tent) | Keynote Address 1        | <b>Topic  </b> Earth Observation information in Agriculture and Food Distribution Systems<br><b>Speaker:</b> Husna Mubarak, FAO, Kenya   | Lorien Innes, ESRI |
|  | Keynote Address 2        | <b>Topic  </b> Drought is a global health crisis - capitalism could be a surprising solution<br><b>Speaker:</b> Prof. Evan Thomas Director Mortenson Centre in Global Engineering University of Colorado Boulder |                    |
|  | Synthesis and Discussion |  |                    |

**10:15 AM – 11:15 AM: HEALTH BREAK, POSTERS AND EXHIBITIONS**

|                     |                  |  |  |
|---------------------|------------------|--|--|
| 11:15 AM – 12:45 PM | Parallel Session | <b>Thematic Area   Agriculture &amp; Food Distribution Systems</b><br><i>Venue: Conference Hall located at the Ground floor RCMRD complex</i>  |  |
|                     |                  | <b>Session Description:</b> "Healthy, sustainable, and inclusive food systems are critical to achieving the world's development goals. Agricultural development is one of the most powerful tools to end extreme poverty, boost shared prosperity, and feed a projected 9.7 billion people by 2050. Growth in the agriculture sector is two to four times more effective in raising incomes among the poorest compared to other sectors "(World Bank, 2022). Earth Observation technologies have enabled precision agriculture and even much more, through the development of yield estimation methods, land agricultural potential, and models that promote efficient planning, monitoring of land productivity, and efficiency all along the agricultural value chain. Simple but pertinent decisions have to be made on planting (decisions on crop type and coverage), growing (tracking plant growth), and harvesting (yield predictions)   |  |
|                     |                  | <b>Session Outcomes:</b> A working Group on Agriculture and Food Distribution Systems  |  |
|                     |                  | <b>Partner Session Lead: Digital Earth Africa and GMES Africa</b>  |  |
|                     |                  | <b>Presentations:</b> 1: Empowering national agencies with information for Agriculture, Food Security and Water: <i>Authors: Dr Kenneth Mubea, Zviko Mudimu, Moses Odeke, Dr Lisa Rebelo, Dr Cedric Jorand, Dr Lisa Hall, Dr Neil Lazarow</i><br>2: An Open-Source Framework for Crop Type Mapping in Africa. <i>Authors: David Ongo, Julius Buyengo, Bako Mamane, Caitlin Adams, Meghan Halabisky, Fang Yuan, Edward Boamah, Kenneth Mubea</i><br>3: Using machine learning and GIS to predict how climate change will impact global wheat suitability and food security. <i>Author: Abigail Fitzgibbon</i><br>4: A Geospatial approach to enhance Food Security, establish a Geospatial Infrastructure and Plan for the Future: <i>Authors: Lorien Innes, Pauline Okeyo</i><br>5: Assessment of Vegetation Loss in Anambra East Local Government of Anambra State: The Need for Environmental Education. <i>Author: Mezie Chinenye</i><br>6: What Opportunities Does the Future Hold for Optimizing Agriculture and Climate Adaptation in Lower Eastern Kenya? <i>Authors: Lilian Ndungu, Dr. J.B.K. Kiema, Dr. Ing. D. Siriba</i> |  |
|                     |                  | <b>Thematic Area   Early Warning and Disaster Preparedness</b><br><i>Venue: Room B10, Second floor, RCMRD Complex</i>  |  |

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|  |  | <p><b>Session Description:</b> The concern by various countries about the huge impacts that natural disasters have on societies is increasing. The destruction, loss of life and livelihoods has in the recent past led to an increased allocation of funds to building a resilient society. Technology to share information, predict and forecast such disasters like floods and tsunamis has also been improving and getting more efficient over time. The various aspects of risk knowledge, warning services on a sound scientific basis, communication and dissemination, and response capabilities are critical in putting in place an early warning system. Earth Observation technologies have enabled the development of risk profiling and pre-post analysis of hazards.</p>  |  |
|  |  | <p><b>Session Outcomes:</b> A working group on Early Warning and Disaster Preparedness</p>  |  |
|  |  | <p><b>Partner Session Lead: Kenya Space Agency and Kenya Airways</b></p>  |  |
|  |  | <p>Presentations: 1: Satellite Geodesy for Climatological Studies in Malawi: <i>Authors: Robert Galatiya Suya, Charles Chisha Kapachika, John Bosco Ogwang Julliet Inyele</i><br/> 2:Satellite-Data Based System for Monitoring and Predicting Rangelands Quality, Quantity and Drought Status in Eastern and Southern Africa: <i>Authors: Cecilia Masemola, Moses Cho, Viola Otieno, Robert Ohuru, Jane Bemigisha5, Henry Massa, and Eugene Kayijamahe.</i><br/> 3:Assessment of spatio-temporal vegetation damage due to desert locust invasion: A case study of Turkana county, Kenya. <i>Authors: Raphael Mongare; Elfatih Abdel-Rahman; Emily Kimathi; Bester Mudereri; Simon Onywere and Tonnang Henri</i><br/> 4: Optimizing GIS based landslide susceptibility modeling using ANN. <i>Author: Tsegaye Chalo</i><br/> 5:GIS solutions to support hazard, vulnerability and risk assessment for better community resilience. <i>Authors: Rahim Dobariya and Olivier Cottray</i></p> |  |

**12: 45 AM – 2: 00 PM LUNCH, POSTERS AND EXHIBITIONS**

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| 2:15 PM –3:45 PM | Parallel Sessions | <p><b>Thematic Area   Natural Ecosystems and Biodiversity Conservation</b><br/> <i>Venue: Conference Hall located at the Ground floor RCMRD complex</i></p> <p><b>Session Description:</b> The demands of a growing global population with rapidly changing consumption patterns for food, mobility, and energy are exerting ever-increasing pressure on the Earth's ecosystems and their life-supporting services (European Environment Agency, 2015). Population growth, demand for food, and climate change are expected to create significant stress on the already limited resources, and therefore, this calls for a balance between development and the environment. Deforestation, wetlands destruction, human-wildlife conflicts, among other systems, are threatened by depletion and loss of biodiversity. The conservation of forest and coastal wetlands for infrastructural developments is the new normal, with less concern for alternatives on the same.</p> <p><b>Session Outcomes:</b> A Working group on Natural Ecosystems and Biodiversity Conservation</p> <p><b>Partner Session Lead: BIOPAMA, DRSRS and OFESA</b></p> <p>Presentations:1: Effect of Leaf Phenology, Topography and Wind speed on Forest Canopy Height and Above Ground Biomass Estimation Using Optical UAV Data in Malawi's Miombo Woodlands. <i>Authors: Henry Kadzuwa, Edward Missanjo</i><br/> 2: Impact of Climate Variation on Forest Vegetation Zones in Malawi. <i>Authors: Dr. Edward Missanjo and Dr. Maggie Munthali</i><br/> 3: Greenhouse Gas Emissions and Mitigation Measures within the Forestry and Other Land Use Subsector in Malawi. <i>Authors: Dr. Edward Missanjo and Dr. Maggie Munthali</i><br/> 4: Mapping of Community-owned Fish Protected Areas for Enhanced Fish Diversity and community resilience in Lake Malawi. <i>Authors: Salim M'balaka Maxon Ngochera Meford Mulumpwa</i><br/> 5: ArcGIS Protected Area Management Solution: Addressing the Challenges of Monitoring Protected Areas. <i>Authors: Michael Mole, Andrew Purdon &amp; Dr. Pieter Olivier</i><br/> 6: Monitoring Forest loss using Sentinel 2 Geomedian and Water Observations from Space: <i>Authos: Mawuli Gbekor, Edward Boamah, Adam Lewis, Chad Burton, Meghan Halabisky, Fang Yuan, Lisa Hall, Cedric Jorand, Kenneth Mubea, Joseph Tuyishimire, Zviko Mudimu</i><br/> 7: Influence of Built-up area on the Spatial-Temporal nature of the Urban Heat Island in the Greater Kampala</p> |  |
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|   |  | Metropolitan Area. Author: <b>Ritah Nakanjako</b><br>8: Integrated Solutions for Protected Area Management. Authors: <b>David Gadsden, Pauline Okeyo</b><br>9: Exploring the Use of Earth Observation data for Air Pollution Monitoring in Kampala District, Uganda. Authors: <b>Christine Atuhaire, Anthony Gidudu, Bainomugisha and Allan Mazimwe</b>  |  |
|   |  | <b>Capacity Building Session   DEA showcase</b><br><br><b>Session Description:</b> This session will introduce participants to the digital earth africa platforms. During the session participants will learn how to access and manipulate DEA Analysis Ready Datasets. The participants will also learn how to visualize the datasets available. and eventually generate real time scenarios for their expertise.<br><br><b>Session Outcomes:</b> Understand the Analysis Ready Digital Earth Africa Data, understand DEA cloud computing power, product sharing with the decision makers, report, entry to live sessions.<br><br><b>Partner Session Lead: Digital Earth Africa</b> |  |
| <b>3:45 PM – 4:20 PM : CLOSING CEREMONY</b> |  |  |  |



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#RIC2022

## OUR MEMBER STATES



BOTSWANA



BURUNDI



COMOROS



ETHIOPIA



KENYA



LESOTHO



MALAWI



MAURITIUS



NAMIBIA



RWANDA



SOMALIA



SOUTH AFRICA



SOUTH SUDAN



SUDAN



ESWATINI



SEYCHELLES



TANZANIA



UGANDA



ZAMBIA



ZIMBABWE