

# FACTSHEET

## WASCAL COMPETENCE CENTRE

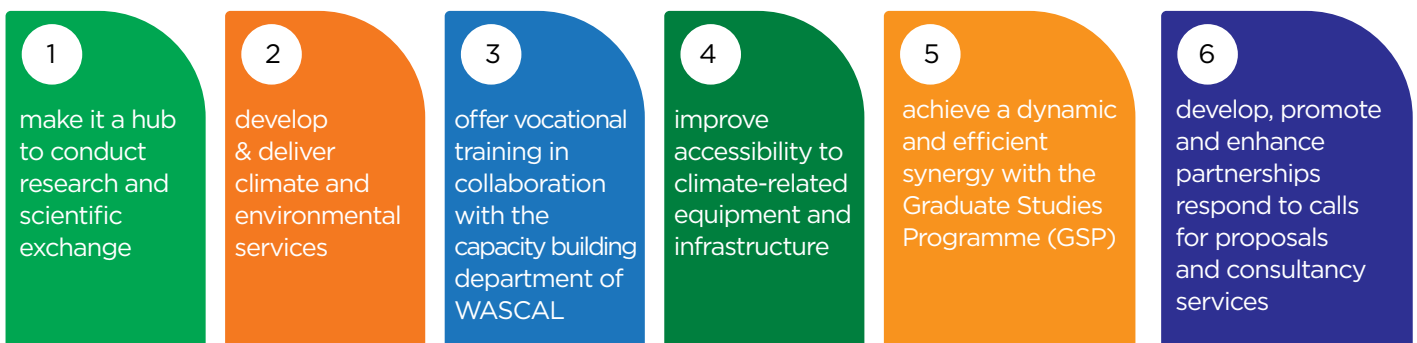
[www.wascal.org](http://www.wascal.org)

### ABOUT THE COMPETENCE CENTRE

The WASCAL Competence Centre (CoC) is a Regional Scientific Hub for Africa, built for Research and Innovation, Data Management, and Climate & Environmental Services Provision.

As the research and services department of WASCAL, it conducts research and delivers scientific advisory, climate & environmental services to West African countries in various thematic areas. The delivery of these services require both spatial and non-spatial data because the centre is equipped with a data infrastructure and management system supporting research and innovation actions in the region.

**Pillars of the Competence Centre-** The operations of the centre are designed to:



### RESEARCH & INNOVATION

#### WASCAL Research & Action Plan (WRAP2.0)

Research and Innovation activities are rolled out under the Strategic Mid-term Research and Action Plan (WRAP2.0), adopted at the third WASCAL Ministerial Council meeting 2019. WRAP2.0 is founded on five Priority Research Themes (PRT).

a. PRT 1 - Land use and Land Cover/Land

Degradation / Climate Change Nexus (LDC). Research under this RPT aims at generating updated high-resolution West African time-variant Land Use/Land Cover database along with their thermal and physical parameters. Under LDC, two Research-Innovation projects, CONCERT

and LANDSURF, are executed. The results of this PRT will improve the representation of surface conditions in climate models and ultimately contribute to the development of a tailored dynamical vegetation model for the region.

- b. PRT 2 - Risks and Vulnerability to Climate Extremes (RiVEx). Harmonizing information on climate extreme events, vulnerability, and potential risks. It specifically develops tools and metrics to understand, quantify and mitigate present-day and future risks associated to multi-hazards and compound events induced by climate, climate variability and change. The FLURIFLOOD project is executed under RiVEx .
- c. PRT 3 - Rural-urban and Cross Border Migration in West Africa (RUM). This PRT aims at investigating the interlinkage between climate and environmental changes,

population dynamics, gender, conflicts, livelihood opportunities and migration. Under RUM, two Research-Innovation projects, MIGRAWARE and MiTra-WA, are executed .

- d. PRT 4 - Sustainable Agriculture/Climate Smart Landscapes Nexus (SA). Improving food and nutrition security and livelihoods through sustainable intensification of agriculture while contributing to Green-House-Gas mitigation efforts and carbon sequestration potential. The WRAP2.0 funded project GreenGaDe is executed under this PRT.
- e. PRT 5 - Renewable and clean Energy (REN). Providing a wide range of research and services portfolio in areas of energy efficiency, hydrogen energy, waste-to-energy, solar, wind, hydropower energy and their mixes. It provides science-based solutions to increase the adoption of renewable energy and

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## WRAP2.0 Projects

innovative technologies under a changing climate.

**CONCERT** (Greenhouse gas emissions and mitigation options under climate- and land use change in West Africa: A concerted regional modeling and observation assessment): (Lead: University of Augsburg, African partners: United Nations University Institute for Natural Resources in Africa, Kwame Nkrumah University of Science and Technology (KNUST), Centre for Atmospheric Research Agency NASRDA/FUTA and AGRHYMET Regional Centre.

**LANDSURF** (Land surface processes as a determinant of climate change in Africa – scenarios, high-resolution modeling and development of a stakeholder data portal): (Lead: University Wuzburg, African partners: University Ouagadougou, Burkina Faso, United

Nations University (UNU), Accra, Ghana, Federal University of Technology Akure (FUTA), Akure, Nigeria, AGRHYMET, Niamey, Niger)

**FLURIFLOOD:** Current and future risks of urban and rural flooding in West Africa – An integrated analysis and eco-system-based solutions” (Lead: Karlsruhe Institute of Technology (KIT) Institute of Meteorology and Climate Research (IMK) 76128 Karlsruhe, Germany, African partners: United Nations University – Institute for Natural Resources in Africa (UNU-INRA), Accra, Kwame Nkrumah University of Science and Technology, Ghana, University of Abomey-Calavi, Benin, University of Lomé (Coordination), University Cheikh Anta Diop, Dakar, Senegal, Université Félix Houphouet-Boigny, Cote d’Ivoire)

**MIGRAWARE:** Rural-urban and cross-border MIGRATION in West-Africa – an integrated assessment framework of drivers, processes and

sustainable REsponses (Lead: KIT, African partners: Cape Coast University, Savanna Agricultural Research Institute (SARI), Hen Mpoano (NGO), Federal University of Technology Minna (FUT Minna) University Nazi Boni, Burkina Faso (UNB).

**MiTra-WA:** Migration and Translocality in West Africa (Lead: Universität Passau (UP), African partners: University of Ghana, Accra Centre for Migration Studies (CMS), Ghana, Université de Ouagadougou, Institut Supérieur des Science de la Population (ISSP), Burkina Faso Kwame Nkrumah University of Science and Technology, Kumasi Department of Planning (KNUST), Ghana, University of Ibadan (UI) Department of Agricultural Economics, Nigeria)

**GreenGaDe:** Greenhouse Gas Determination in West Africa's Agricultural Landscapes (Lead: University of Potsdam, African partners: Laboratory of Plant Biology and Ecology, University Joseph Ki-Zerbo, Ouagadougou/ Burkina Faso, Forestry Research Institute of Ghana, Kumasi /Ghana, Department of Nuclear Physics and Chemistry, University Abdou Moumouni Niamey/ Niger, Institut de l'Environnement et de Recherches Agricoles (INERA) / Burkina Faso).

## DATA MANAGEMENT DEPARTMENT

The Data Management Department (DMD) hosts WASCAL Data Infrastructure (WADI) which is a set of hardware, software, network resources and information technology services to enable the collection, storage, management, discovery, access, sharing, and dissemination of primary & secondary data.

The other components of DMD include the Observation Networks (ONs), the GIS/Remote Sensing Laboratory (GIS/RS-Lab), the High-Performance Computer (HPC) and the Web Repositories and Geoportals (REPs).

### Components of WADI

**Observation Networks (ONs):** The ONs provide a novel high-resolution observation data for the WASCAL member countries based on innovative measurement techniques and improved facilities for data collection. The observation networks and data products are needed to improve the capacities of the national services in meteorology, hydrology, agriculture and other disciplines, and forms the base for stakeholders for better decision-making through the establishment of multi-stakeholder innovation platforms in West Africa.

**High Performance Computer (HPC):** This unique computational facility within WADI provides scientists with the operational CPU time and other computational power in order to enable further developments of regional climate models and carry out numerous projection and simulation experiments.

**GIS/Remote Sensing Laboratory:** The GIS and Remote Sensing Laboratory is a fully functional laboratory that provides scientists and students with the necessary infrastructure for carrying out mapping activities associated with their research projects. The lab also provides value-added GIS and remotely sensed data to projects and offers short training courses in collaboration with the Capacity Building Department of WASCAL.

## CLIMATE AND ENVIRONMENTAL SERVICES

Climate and Environmental Services (CES) at WASCAL are designed, demonstrated, and disseminated from the Competence Centre. They are defined to provide information, engineering solutions, policy guidance and knowledge to support resilience, sustainable development and improve livelihoods. These are “customized” and “integrated” services responding to user needs, to the new challenges posed by global warming and climate change, and bringing together human

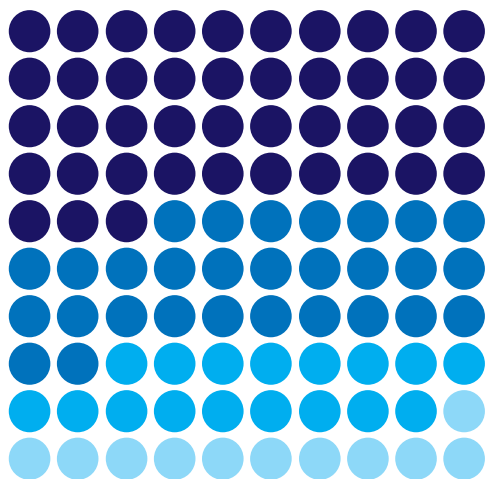
skills, financial investments, information resources, tools, and training to improve the adaptive capacity of nations and the resilience of different sectors.

The majority of the 3D-Services are embedded in the CICLES project and derived from WRAP2.0 projects, Data Management Services and other consortia projects/consultancies jobs of WASCAL.

## THE COMPETENCE CENTRE BY THE NUMBERS



## Annual Rates of Visiting Scientists Received at the Competence Centre



43% PhD Scholars

29% Msc students

17% Undergraduate

11% Post doctoral fellows and Scientists



FOR FURTHER INFORMATION ON OUR ACTIVITIES AND IMPACTS, VISIT [www.wascal.org](http://www.wascal.org)

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