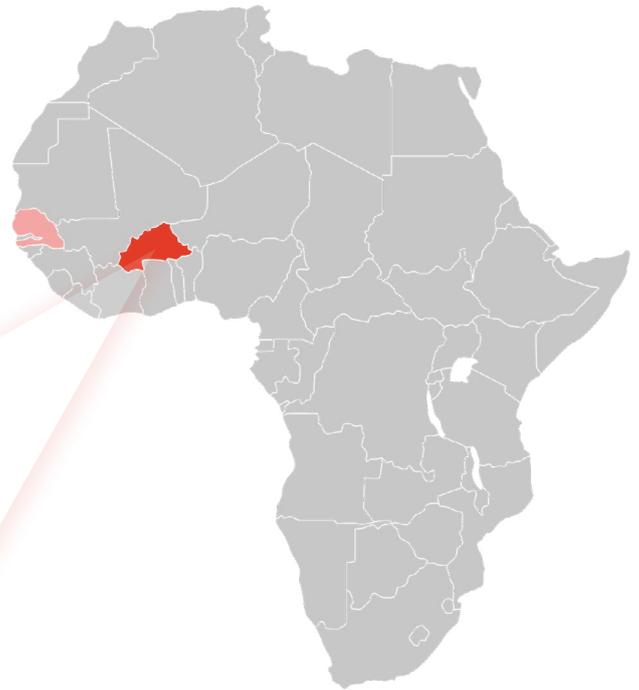


## Summary of FCFA's work in Burkina Faso

[Future Climate for Africa](#) (FCFA) aims to generate fundamentally new climate science focused on Africa, and to ensure that this science has an impact on human development across the continent. FCFA's work in Burkina Faso focused on [AMMA-2050's](#) pilot study to support flood-resilient planning in the country's capital, Ouagadougou. AMMA-2050 combined future climate and land use change projections to inform hydrological models and the mapping of flood risks to inform national and city-level decision-makers.



### Highlights from Ouagadougou

- [Key climate science messages](#) from AMMA-2050 indicate that the Sahel region will continue to become hotter while more intense rainfall will become more frequent.
- The [increasing frequency of extreme rainfall](#) and rapidly expanding urbanisation in Burkina Faso has resulted in rising severity of floods in recent decades.
- AMMA-2050 has introduced and [co-developed with decision-makers](#), a range of tools designed to support flood-resilient planning. These include; a flooding database, a flood-risk map of Ouagadougou, [Intensity-Duration-Frequency](#) (IDF) curves (important tools for informing infrastructural investment), and a policy brief synthesising emerging scientific understanding regarding future climate-related risks tailored for Burkinabé decision-makers.
- AMMA-2050 also collaborated with those involved in complementary climate initiatives, including the Building Resilience and Adaptation to Climate Extremes and Disasters (BRACED) Zaman Lebidi project and the West African Science Service Centre on Climate Change and Adapted Land-Use (WASCAL), working with the institution's Competency Centre in Ouagadougou to [support development of decision-relevant climate services](#).

### About AMMA-2050

**The African Monsoon Multidisciplinary Analysis - 2050 (AMMA-2050)** consortia aimed to increase understanding of the regional climate of West Africa and how it will change, applying this knowledge to practical development questions.

AMMA-2050 aimed to improve understanding of how the West African monsoon will be affected by climate change in the coming decades and help West African societies prepare and adapt. AMMA-2050 conducted pilot studies that are focused on the issues of urban flooding in Ouagadougou, Burkina Faso and climate-smart agriculture in Senegal, both issues of significant **societal concern**.

## Enhanced understanding of current and future flood risks in Ouagadougou

The increasing severity of recent floods in Ouagadougou, particularly in 2009, has become a growing concern for stakeholders in the City. Stakeholders have been interested in understanding how storms and flooding are being impacted by climate change and rapid unplanned urbanisation, and the future flood risks expected for the City.

AMMA-2050 brought together an international multi-disciplinary team of researchers to analyse historical trends of climate and flooding. The work developed fundamental new understanding of how global warming is [already driving more frequent intense Sahelian storms](#), and highlighted linkages to increasing [occurrence of floods in Ouagadougou](#). Socio-economic surveys also furthered understanding of the climate-related risks facing people living in flood-prone areas, as well as their responses to floods. A [detailed case-study on the 2009 flood event](#) provided a cross-disciplinary platform for considering climate change impacts at the city scale and communicating science for decision-makers' needs.



AMMA-2050 Mayoral Meeting in 2018. Credit: AMMA-2050

To further the understanding of future flood risks, AMMA-2050 developed unique modelling chain methodologies to meet decision-maker needs that combined state-of-the-art regional climate projections capable of representing intense storms, with land-use change projections, to inform detailed flood modelling. In collaboration with the [RainCell project](#), AMMA-2050 was able to use rainfall and flow data as inputs to hydrological framework modelling to simulate flooding in Ouagadougou. To represent the return period for intense rainfall events, AMMA-2050 also developed [Intensity-Duration-Frequency \(IDF\) Curves](#) to inform infrastructural planning in the city. AMMA-2050 convened a [meeting in 2018](#) with national and city decision-makers to discuss and further develop the range of products being developed within the project and explore the most accessible formats and approaches to communicate this information to guide planning. AMMA-2050 has also undertaken research on the impacts of

climate change on urban water, sanitation and hygiene (WASH), with surveys across flood-prone areas to understand how people respond to and are impacted by flooding and investigate the evidence that the combination of poor drainage and sanitation has on the health of affected populations. This complementary research has shown that people living in flood-prone areas develop forms of resilience that range from backfilling the yard, to diking areas around gates that create a barrier against flooding of dwellings, to digging trenches for the evacuation of rainwater.

## Improving scientists' capacity to produce relevant climate information for Ouagadougou

Along with producing high quality climate science, AMMA-2050 engagement was also aimed at improving the [technical and engagement capacities](#) of researchers to produce decision-relevant climate information. This included [strengthening the ability of African researchers](#) to deliver climate metrics using tools that can directly support flood planning in Ouagadougou.

The approach to research taken by AMMA-2050 resulted in researchers having strengthened capacity; engage with decision-makers, co-produce relevant climate information, work across institutions and disciplines, undertake and manage research projects, and to communicate and evaluate scientific results. Over the course of the project, AMMA-2050 researchers have facilitated a series of workshops and discussions with mayors and national decision-makers from across a range of ministries. Stakeholder engagements have encompassed a [joint forum](#) with the BRACED Zaman Lebidi project on how climate information can support local government decision-making, a meeting with mayors, city and national technical advisors, and a [joint workshop](#) with WASCAL on operationalising the links between researchers and policymakers in West Africa. Continued training to support co-production and uptake of co-developed outputs is proposed in 2020- 2021, over the course of the AMMA-2050 project extension.

## Climate Metrics

Bringing together respective expertise from across disciplines and institutions, AMMA-2050 researchers identified [climate metrics](#) important in enabling decision-making to be informed by climate-related risks. Across project partners and together with decision-makers, researchers reviewed important metrics for the region including; annual rainfall, change in extreme precipitation days, change in frequency of dry spells and monthly temperature trends. Two researchers from each AMMA-2050 partner university in West Africa were invited to a week-long training on python coding. This equipped African researchers with key skills to produce in-country climate information that can support specific decision-making processes (see [Climate Atlas](#)). Those trained have already [contributed to informing national infrastructural and adaptation planning](#), and have sought to share the technical expertise acquired through the project more widely within their respective institutions.

## Selected Additional Resources

- Bamba, A., Fitzpatrick, R., Sane, Y and Ndoye, S. 2018. [Strengthening scientists' capacities to develop decision-relevant information](#). AMMA-2050 Impact Case Study.
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- Visman, E., Bologo/Traoré, M, Jankowski, F and Affholder, F, Barnaud, A, Audia, C., and Ngom Basal, Y. 2019. [Technical Report No. 7 Considering how Gender and Inclusion have been addressed within AMMA2050](#). AMMA-2050 Technical Report.
- Visman, E, Audia, C, Crowley, F, Ilboudo, J, Sanou, P, Henley, E, Victor, M, Ritchie, A, Fox, G , Bologo/Traoré, M, Fowe, T., Diarra, A, Warnars W, Klein, C, Fitzpatrick R, Pelling, M and McOmber, C. 2017. [Developing decision-relevant climate information: Learning from the Zaman Lebidi BRACED consortium in Burkina Faso and collaboration with AMMA2050](#). AMMA-2050 Learning Paper.
- Visman, E. and Fowe, T. 2019. [Technical Report No. 6: Assessing the impact of AMMA-2050 through Key Informant Interviews with partnering decision-makers and scientists](#). AMMA-2050 Technical Report.
- Visman, E. and Audia, C. 2019. [Strengthening the development of decision-relevant climate information: The impact of engaging in AMMA-2050 on partnering researchers](#). AMMA-2050 Impact Case Studies.
- WASCAL & UK Centre for Ecology and Hydrology, 2019. [Operationalising the links between researchers and policymakers in West Africa: A joint WASCAL-AMMA-2050 workshop to share emerging learning and inform the development of a clear road map to bridge existing gaps](#). AMMA-2050 Workshop Report.

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