



CREWS PROJECT PROGRESS REPORT (January – June 2021)

1. Project title	Seamless operational forecast systems and technical assistance for capacity building in west Africa (CREWS West Africa)	2. Project reference CREWS/RProj/02/West Africa CREWS/RProj/02/West Africa AF
3. Implementing Partners involved in the project	World Meteorological Organization (Lead) World Bank	4. Partners involved in the project Interim RCC Niamey (ACMAD) RTC and future RCC Niamey (AGRHYMET) RSMC Dakar (ANACIM) NAMEE SDS-WAS (AEMET/BSC) GISC Casablanca (DGM Morocco) MISVA (Météo-France)
5. Project Duration/Timeframe	January 2018 – December 2022	
6. Reporting focal point(s)	Jean-Baptiste Migraine – jbmigraine@wmo.int Makoto Suwa - msuwa@worldbank.org	
7. Project overview	<p>Project objective: to strengthen regional entities to engage with national hydrometeorological agencies in the region to improve risk information and early warning services at national level</p> <p>The project develops capacities within existing institutions in line with their mandates : (i) RTC and future RCC Niamey (AGRHYMET) for food security and regional climate services; (ii) RSMC Dakar (ANACIM) for severe weather forecasting and WIGOS coordination; (iii) Casablanca GISC (DGM Morocco) for information and data exchange; (iv) NMHSs for optimal utilization of new regional capacities including flash flood guidance.</p> <p>Beneficiaries are the 19 Members of PRESASS and PRESAGG: Benin, Burkina Faso, Cameroon, Central African Republic, Cap Verde, Chad, Côte d'Ivoire, the Gambia, Ghana, Guinea Bissau, Guinea, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo.</p> <p>The project complements national CREWS projects in Burkina Faso, Chad, Mali, Niger and Togo, and also contributes to demonstrate the feasibility of developing capacities for urban flood forecasting in Sierra Leone.</p>	









	<p>While provision of meteorological, hydrological, climate and early warning services is clearly a national responsibility, a number of support functions can be best performed at regional scale, with economies of scale and enhanced quality of services resulting for specialized regional cooperation, including for cascading approaches for numerical weather prediction (under the leadership of Dakar as regional specialised meteorological center), flash flood guidance (building upon enhanced numerical weather prediction capabilities and AGRHYMET training capabilities), climate watch and climate analysis (building upon ACMAD and later AGRHYMET as regional climate centers), training of meteorological and hydrological staff (with EAMAC and AGRHYMET, both in Niamey), etc.</p> <p>The World Bank is currently preparing hydromet and early warning investments in West Africa under the West Africa Food System Resilience Program (P172769), through which the project outcomes and impacts will be scaled up in Burkina Faso, Mali, Niger, Togo and with the Agrhymet Regional Center during Phase 1, and Chad, Ghana and Sierra Leone for Phase 2; and under the Resilient Urban Sierra Leone Project (P168608). In addition, the CREWS supported the implementation of hydromet activities under the Freetown Emergency Recovery Project (P166075), which has recently been completed.</p>
<p>8. Progress summary</p>	<ul style="list-style-type: none"> ● Partnership Agreements: in addition to the pre-existing ones (HRC, KNMI, UK Reading University, IRI, RSMC Dakar, Météo-France) three new partnership Agreements were signed with INRAE for the development of guidance related to flood forecasting; with AEMET and BSC for the expansion of the sand and dust storm warning advisory service from Burkina Faso to 7 Sahelian countries; and with DGM Morocco to train and support the 24 PRESASS, PRESAGG and PRESAC participating countries on production of standard climatological products and data exchange (WIS and WIGOS); the Agreement with DWD was successfully closed, with the transfer of the climate watch service and the database on climate extremes to AGRHYMET. ● Trainings: A data collection, management, exchange and quality monitoring training workshop was organized between 23 June and 2 July 2020; follow-up support to West African NMHSs will be provided in 2021 by Casablanca GISC; A TAMSAT training workshop was organized in July 2020 by UK Reading University; ● Tools: (i) NMS from Burkina Faso, Mali, Niger, Chad and Togo tested the database developed by DWD for cataloguing of extreme events, and AGRHYMET was trained on how to install onto one of its Linux servers. The country-specific datasets would be isolated with CRUD; (ii) CM SAF satellite- and GPCC-based monitoring products for West Africa are now available into a sub-regional climate watch system developed by DWD; (iii) HRC completed the initial delineation of watersheds for the flash flood guidance system; (iv) a novel method of deriving spatially and temporally contiguous daily rainfall estimates and associated uncertainty estimates, which are consistent with both rain gauge measurements and satellite-based rainfall estimates, has been finalised by UoR with TAMSAT. A historical (1983-2018) version of this dataset is now



	<p>being created for West Africa and will be shared with each NMHS, before being operationalised in early 2022.</p> <ul style="list-style-type: none"> • Capacity assessment of hydromet services, the alternative options for investment approach as well as the Concept of Operations have been developed and finalized for Sierra Leone. Strategic dialogue is on-going in Sierra Leone to support the integrated design of hydromet investments envisioned under 2 investment projects based on the assessment and investment options; • Support the preparation of the regional Food System Resilience Program, which has a substantive hydromet component to support the agriculture and food security sector in West Africa .
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9. Project Performance

Interpretation of color coding		
	High	Good progress; on track in most or all aspects of delivery
	Medium	Moderate progress or on track in some aspects of delivery
	Low	Less than moderate or poor progress. Not on track in critical areas of its delivery. Requires remedial attention

	Rate of expenditure	Rate of delivery	Alignment of Objectives
Coding			



Narrative	<p>From WMO side: \$824,901 in obligations and \$854,918 in actuals (42% of total \$4,034,555)</p> <p>From WB side: Regional: \$121,794 (26.8% of total) Sierra Leone \$100,092 (13.8% of total)</p>	The progress is satisfactory	Project remains strongly aligned to the initial objectives
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10. Risk Management Status

Risk Status	<p>Risks remain moderate, as identified at the proposal stage, and have evolved in relation with:</p> <ul style="list-style-type: none"> - the undergoing enlargement of AGRHYMET mandate to take over the Regional Climate Center function from ACMAD in the near future; - the growing number of partners involved (IRI, HRC, KNMI, AEMET, BSC, DGM Morocco, ANACIM, Météo-France), thus requiring additional coordination efforts among partners; - Chad and Togo joining as CREWS beneficiary countries since July 2019, resulting in a need to expand the coverage of regional services to additional countries, in a situation of uncertainty related to the access of Chad and Togo to investment financing for early warning; - Travel restriction due to the ongoing Pandemic situation would inevitably slow down some of the activities.
Measures to address	<p>The risks are being addressed with :</p> <ul style="list-style-type: none"> - additional consultations with regional centres; - transfer of knowledge to regional centres; - frontloading activities that can be implemented remotely. <p>Due consideration is given not to compromise the quality of outputs in reprioritizing activities.</p>

11. Contributions to CREWS Output(s)

11.1 National Output(s)



CREWS Output(s) 1: National Meteorological and Hydrological Services service delivery improved, including the development of long-term service delivery strategies and development plans

State Project Output(s) in this section	Overall Project Target	Target for reporting period	Progress by December 2020	Progress by June 2021
New/Enhance weather and early warning information products	System design of integrated system of systems for Multi-hazard warning system	Assessment of current state of SLMet, NWRMA and NDMA	Draft assessment reports developed from remote field visits	Assessment reports of the SLMet and NWRMA completed and reviewed by key Stakeholders.
Enhanced weather and climate information products and services	Customised early warning system product design.	User needs assessment of required products and services.	Draft user needs analysis developed.	Draft concept of operations prepared with options analysis for the development of capacity at the SLMet/ NWRMA.

Narrative: briefly indicate the major issues or challenges faced and mitigation steps taken to addressing them. (150 to 200 words)

The capacity assessment of the SLMet and the NWRMA show that there is a very low baseline of infrastructure and capability available in order for the agencies to discharge their mandate. Although there has been significant investment from the GoSL in the human capacity of these institutions, it is not backed by an overarching strategy to enable the organization's to improve their services and value proposition. The concept



of operations proposes options for the SLMet to improve their capacity through a standard capacity building plan (long time scale) or to implement a radical capacity building plan that involves on the job training from a reputable and knowledgeable service provider. Due to the ongoing pandemic, it is unlikely that in-country missions will be allowed to assist with the development of capacity.

CREWS Output(s) 2: Risk Information to guide early warning systems and climate and weather service developed and accessible

State Project Output(s) in this section	Overall Project Target	Target for reporting period	Progress by December 2020	Progress by June 2021
Output 7.2 - Detailed design and establishment of urban flash flood warning services.	Development of capacity of the NDMA, SLMet and NWRMA to forecast, monitor and manage severe events.	Rehabilitation of infrastructure for the SLMet, NWRMA. Establishment of a meteorological and climate database.	IT Infrastructure to host Climate Database procured. Bidding for Replacement weather stations completed. Final negotiation outstanding. 16 out of 30 NWRMA stations installed.	Contracts for the rehabilitation of 1 site and the establishment of 2 sites was finalised. Groundworks for 2 new sites in progress. 12 stations are currently outstanding for completion by the NWRMA.



Narrative: briefly indicate the major issues or challenges faced and mitigation steps taken to addressing them. (150 to 200 words)
 CREWS has been supporting the procurement and installation of stations financed under the Freetown Emergency Recovery Project. The constant delays in the acquisition management process, coupled with the ongoing pandemic has caused the delay of the key milestones of the rehabilitation of the Lungi station and the establishment of the two new sites. The installation and operationalization of the MCH database will be delayed to Q3 of 2021.

CREWS Output(s) 3: Information and Communication Technology, including common alerting protocol, strengthened

State Project Output(s) in this section	Overall Project Target	Target for reporting period	Progress by December 2020	Progress by June 2021
Countries enhance data sharing with the objective to enhance global numerical weather prediction products and limited area models	Enhancement of 10% of daily records in WIS	10% (contract signed with DGM Morocco)	0%	10%

Narrative: briefly indicate the major issues or challenges faced and mitigation steps taken to addressing them. (150 to 200 words)
 An Agreement was signed with Morocco DGM in order to support all 19 countries with production of standard climatological products and support in relation with registering existing stations in OSCAR Surface and connecting existing stations to WIS.

CREWS Output(s) 4: Preparedness and response plans with operational procedures that outline early warning dissemination processes developed and accessible

State Project Output(s) in this section	Overall Project Target	Target for reporting period	Progress by December 2020	Progress by June 2021



<p>Narrative: briefly indicate the major issues or challenges faced and mitigation steps taken to addressing them.</p>				

CREWS Output(s) 5: Knowledge products and awareness programmes on early warnings developed

State Project Output(s) in this section	Overall Project Target	Target for reporting period	Progress by December 2020	Progress by June 2021

Narrative: briefly indicate the major issues or challenges faced and mitigation steps taken to addressing them. (150 to 200 words)

CREWS Output(s) 6: Gender-sensitive training, capacity building programmes provided



State Project Output(s) in this section	Overall Project Target	Target for reporting period	Progress by December 2020	Progress by June 2021
Narrative: briefly indicate the major issues or challenges faced and mitigation steps taken to addressing them. (150 to 200 words)				

11.2 Regional Output(s)

CREWS Regional Output(s): Institutional and human capacities at Regional WMO and Intergovernmental organizations to provide regional climate and weather services to LDCs and SIDS increased

State Project Output(s) in this section	Overall Project Target	Target for reporting period	Progress by December 2020	Progress by June 2021
<i>1. Proposal for a data and metadata exchange collaboration framework outlining stations to be included in the regional dataset, including recommendations for incorporating missing or new stations into the WMO WIGOS and WIS systems (OSCAR/Surface, WDQMS, GTS and WIS/GISCs) and forward looking plan for establishing a regional WIGOS center - A regional workshop on data collection, management, exchange was organized in July 2020. As</i>	100%	50%	40%	50%



<p>a follow-up, an Agreement was signed with DGM Morocco in March 2021 to provide support to all West African NMHSs.</p>				
<p><i>2. West Africa Climate Assessment & Dataset (WACA&D) system open to use for NMHSs and regional institutions, with supporting training at regional level and tools materials in French and English - A local version of the tool is available, hosted in KNMI (see presentation).</i></p>	100%	90%	80%	90%
<p><i>4. West Africa hydro-met and Climate Extreme database (WACE), involving a standard typology of high-impact event types and the assignment of a Universal Unique Identifier (UUID), with supporting training and guidance materials in French and English -</i> The database was created and transferred to AGRHYMET in May 2021. Single events can be reported with an online interface (see progress report).</p>	100%	100%	55%	100%
<p><i>5. Climate Watch Service (with automatic update) -</i> Visualized CM products are included in the demonstrator application. Monitoring products are available in the form of climate watch advisory drafts. The user can decide which products to include. Additionally, ERA5T reanalysis data can be included on day 5 for the previous month. TAMSAT and river</p>	100%	100%	80%	100%

discharges from GloFAS are also selectable (see progress report).				
6. <i>West Africa Severe Weather Forecasting System online, in line with SWFDP guidebook, with RSMC Dakar Training Desk and supporting training and guidance materials in French and English</i> - Implementation arrangements were signed with RSMC Dakar and Météo-France for 2021-2022. A review of forecasters' use and expectations with regards to SWFP and MISVA was conducted by an independent consultant and 2 trainings were provided to forecasters (operational subseasonal forecasting , 1 May 2021; severe weather forecasting, 25 May 2021).	100%	75%	60%	75%
7. <i>West Africa Flash Flood Guidance System online, with supporting training and guidance materials in French and English</i> - During the reporting period, HRC begun the implementation of the West Africa FFGS (WAFFGS) with requests for data from the countries of Burkina Faso, Mali and Niger, delineation of flash flood prone basins in the domain of the three countries, the establishment of secure FTP sites for downloading the ICON NWP from DWD and the H03B satellite precipitation product from EUMETSAT, and the opening of the instructional portal with online courses (in	100%	60%	50%	60%

English and French) to support the Step 2 online e-course training on the FFGS (see progress report).				
<p><i>8. Flood forecasting feasibility studies in West Africa.</i> This in order to propose an operational methodology for flash flood forecasting, and options for urban flood at pilot areas.</p> <p>Implementing arrangement signed with INRAE and IRD. Those partners started the preparation of questionnaires for surveys and interviews with the ANACIM / AGRHYMET regional centers, as well as the coordination of interviews with EFAS -GlofaS and CHMI - FFG to deepen knowledge about the operational use of their systems.</p>	100 %	20%	0%	40%
<p><i>9. Development of CREWS West Africa Community of Practice.</i> The matrix on synergies between CREWS and related projects was further updated to ensure optimal use of funding available for severe weather (CREWS, CDSF), climate (ACP-EU, CREWS), civil protection and food security.</p>	100%	30%	20%	30%
<p><i>10. Recommendations and technical specifications for the development pilot services on early warnings for agricultural severe drought in West Africa.</i> In the framework of the Implementation Agreement signed with UK Reading University in Feb 2020, a training</p>	100%	90%	60%	90%



workshop on “Satellite rainfall estimation and validation for Africa” was organized with the 5 countries in July 2020 (see flyer and report) and a user forum in November 2020 (see flyer).				
11. Recommendations related to dissemination of seasonal and monthly prediction products and services in West Africa. Python tools for subseasonal forecasting have been developed by IRI and tested for West Africa, based on the S2S and SubX model forecast databases and IRI tools. Guidance has been provided by IRI for the April-May RCOFs (PRESASS and PRESAGG). See report .	100%	20%	20%	100%
12. Service delivery strategy, the concept of operations and business model for AGRHYMET. A consultant has developed a draft.	100%	10%	10%	80%
<p>Narrative: briefly indicate the major issues or challenges faced and mitigation steps taken to addressing them. (150 to 200 words)</p> <p>The focus of CREWS activities for the last 6 months has been to leverage the regional hydromet/EWS component of the Food System Resilience Program. The basic design has now been completed emphasizing the delivery of services and sustainability and we expect the World Bank board approval of the proragm within the next half year.</p>				

12. Contributions to Value Propositions

Gender Responsive	The project considers gender equality in itself a key development objective, with direct demonstrated impacts in terms of increasing productivity, improving the impact of development for future generations, and
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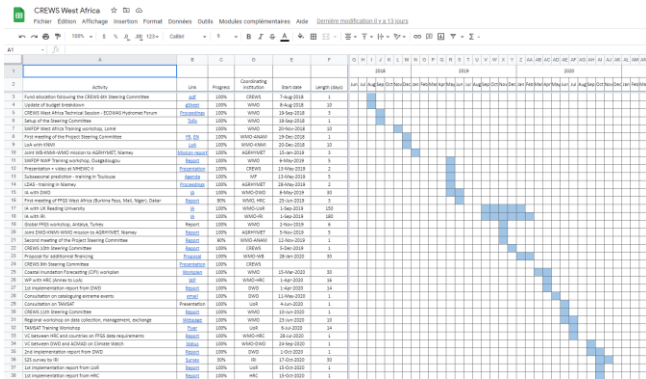


	<p>making institutions more representative. To this end, the project promotes approaches aimed at eliminating the differences between men and women in accessing economic opportunities and in productivity, as well as to help give women a stronger voice within society.</p> <p>In Sierra Leone, the user needs assessment will fully take into account the gender aspect. In addition, the WB investment projects informed by CREWS West Africa are developing a gender action plan to consider the gender aspects in all relevant activities</p>
Multiplier	<p>The project mobilizes specific expertise to guide investments such as AfDB SAWIDRA, EU Climate Services (8 million EUR) and WB Food System Resilience Program (P172769), which covers Burkina Faso, Mali, Niger and Togo in addition to the Agrhyet Regional Center in its first phase, and Chad, Ghana and Sierra Leone in its second phase [Overall program budget for phase 1: 486 million USD, budget for hydromet activities TBD]. It also supports a component to strengthen emergency management including early warning systems under the Resilient Urban Sierra Leone Project (P168608).</p>
People-centered	<p>The project mobilizes expertise to support AGRHYMET, working directly with countries' multidisciplinary working groups to track food security and nutrition from the community to the regional levels.</p> <p>User engagement is an important aspect of the design of the CREWS West Africa project. While the current global pandemic has made it challenging to conduct on-the-ground consultation, the project incorporates users' perspective through, for example, the development of service delivery strategy.</p>
Promote Coherence	<p>The project integrates expertise from regional and global centers such as Dakar RSMC, Niamey RTCs, Niamey RCCs, Météo-France, DWD, KNMI, ECMWF, UK Reading, HRC, and coordinates frequently with multilateral and bilateral development partners in the sub-region. The major ones are participating in the Steering Committee meetings.</p> <p>Coordination with international partners active in the hydromet domain in West Africa is key to ensuring effective use of funds and sustainability. WMO and WB are actively coordinating with those partners through bi-lateral meetings and workshops to understand their on-going and planned activities and inform them about our plan to seek complementarity and avoid duplication.</p>
Solution-oriented	<p>The project makes available information from global and regional centers to national meteorological and hydrological services. Cascading forecasting is substantially improving the lead time and accuracy of forecasts and warnings.</p> <p>Public private engagement is an integral part of strategic dialogue with governments in the region to ensure innovative business models and solutions are duly considered in considering different options.</p>



Unique	<p>The seamless approach to early warning supported by the project is unique, possible in relation with the multiplier effect and coherence.</p> <p>The project leverages the economies of scale by promoting regional collaboration, and contributes to the development of cost-effective hydromet system regionally. Such an approach will also provide cross-learning opportunities for countries in the region and facilitate a peer-to-peer support system. On-going work with Agrhymet Regional Center on the development of a business model will directly inform more sustainable operation.</p>
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13. Visibility products



Task ID	Task Name	Start Date	End Date	Progress (%)
1	Final discussion meeting the CREWS EA Steering Committee	1 Aug 2018	1 Aug 2018	100%
2	Update of project introduction	1 Aug 2018	8 Aug 2018	100%
3	CREWS West Africa National Session - ECOWAS High Level Forum	1 Aug 2018	18 Aug 2018	100%
4	Start of the Working Committee	1 Aug 2018	18 Aug 2018	100%
5	Finalize the project steering committee	1 Aug 2018	18 Aug 2018	100%
6	First meeting of the Project Steering Committee	1 Aug 2018	18 Aug 2018	100%
7	Work plan 2018	1 Aug 2018	18 Aug 2018	100%
8	Learn from other WMO missions in sub-Saharan Africa	1 Aug 2018	18 Aug 2018	100%
9	Finalize work plan 2018	1 Aug 2018	18 Aug 2018	100%
10	Preparation of report on WMO's role	1 Aug 2018	18 Aug 2018	100%
11	Information gathering regarding technical	1 Aug 2018	18 Aug 2018	100%
12	WMO - Working in West Africa	1 Aug 2018	18 Aug 2018	100%
13	Work plan 2019	1 Aug 2018	18 Aug 2018	100%
14	First meeting of WMO High Level Africa Forum	1 Aug 2018	18 Aug 2018	100%
15	Work plan 2019	1 Aug 2018	18 Aug 2018	100%
16	Work plan 2019	1 Aug 2018	18 Aug 2018	100%
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50	Work plan 2019	1 Aug 2018	18 Aug 2018	100%

Project management spreadsheet



WEATHER CLIMATE WATER
TEMPS CLIMAT EAU

CREWS West Africa project

Maxx Dilley, Jean-Baptiste Migraire (CLPA)
Bernard Gomez, Jay Wilson (DRA)

WMO OMM
World Meteorological Organization
Organisation météorologique mondiale

Updated 12 June 2019

Project presentation

Home > Activity areas > Climate data and monitoring > Meetings
> Regional training workshop data collection management exchange and quality monitoring west and central africa

Regional training workshop on data collection, management, exchange and quality monitoring in West and Central Africa

START DATE
23 June 2020

END DATE
02 July 2020

LOCATION
Virtual Meeting

ACTIVITY AREAS (1)
Climate Data and Monitoring

Documents

- Invitation letter [English] [Français]
- Agenda [English] [Français]
- Concept notes [English] [Français]
- Registration [English] [Français]
- Participants list

Presentations & Recording of the sessions

23 June 2020

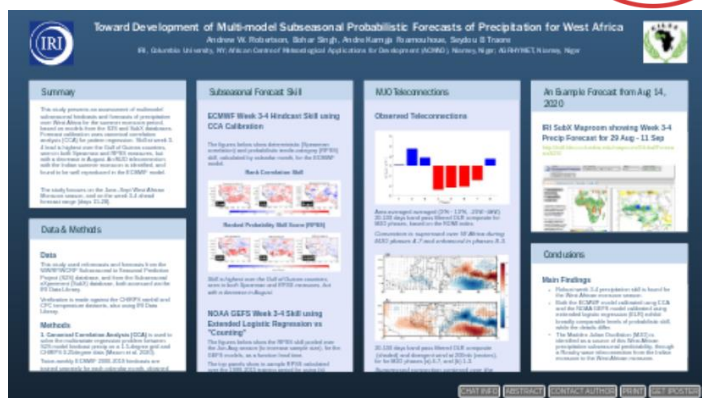
Chair - Mr Ousmane Ndiaye (ANACIM)

- 8h00 (UTC) - Opening (Max Dilley & Peiliang Shi)
- 8h15 (UTC) - ANACIM, RSMC (Sadibou Ba)
- Recording English - French
- 8h30 (UTC) - ACMAD (Léon Razafindrako&Ali Abani)
- Recording English - French
- 9h00 (UTC) - GISC Casablanca (Hassan Haddouch)

[Regional training workshop on data collection, management, exchange and quality monitoring \(June-July 2020\)](#)



[Video message from RSMC Dakar](#)



[Poster prepared by IRI, ACMAD and AGRHYMET](#)

14. Supporting documents

- [Project proposal](#) approved by CREWS Steering Committee (Aug 2018)
- [Additional financing](#) approved by CREWS Steering Committee (Feb 2020)
- Mapping of initiatives relevant for Hydromet, urban development and coastal risk management in [Sierra Leone](#)
- Mapping of initiatives relevant for Hydromet and early warning in [West Africa](#)
- Report of the consultation on the [9 elements of the CREWS West Africa project](#) (Sep 2018)
- Setup of a [CREWS West Africa Community of Practice](#) (Sep 2018)
- Training on interpretation of numerical weather prediction products (Lomé Oct 2018, Ouagadougou [May 2019](#))
- Training on [crop modelling with SARRA model](#) (Ouagadougou, Nov 2018)
- Training on [agricultural land data assimilation](#) (LDAS, Niamey, May 2020)
- Training on agricultural statistical risk assessment with [crop calendars](#) (Ouagadougou, Feb 2020)
- [Regional workshop on data collection, management, exchange](#) (July 2020)
- [TAMSAT Training Workshop](#) (July 2020)
- [SWFDP WA](#) Implementation Plan (Sept 2017)
- [FFGS WA](#) - Report of the Technical Planning Meeting (June 2019)
- [CIFI WA](#) - Proposed workplan
- [MISVA](#) - Terms of reference
- [Terms of reference](#) of the CREWS West Africa Steering Committee
- [Report](#) of the first session of the CREWS West Africa Steering Committee (19 Dec 2018)



- [Draft report](#) of the second session of the CREWS West Africa Steering Committee (12 Nov 2019)
- [Report](#) of the joint KNMI-DWD-WMO mission to AGRHYMET (Nov 2019)
- Partnership agreement with [KNMI](#) - sub-regional climate dataset WACA&D (report)
- Partnership agreement with [DWD](#) - cataloguing of extreme events and climate watch service ([report Oct 2020](#))
- Partnership agreement with [Météo France](#) - MISVA ([report Dec 2020](#))
- Partnership agreement with [UoR](#) - improving use of TAMSAT ([report Oct 2020](#))
- Partnership agreement with [IRI](#) - forecasting subseasonal timescales in PRESASS and PRESAGG ([report Oct 2020](#))
- Partnership agreement with [HRC](#) - flash flood guidance system in Burkina Faso, Mali, Niger ([report Dec 2020](#))
- Partnership agreement with [ANACIM \(RSMC Dakar\)](#) - strengthening SWFP