



The future of African nowcasting



GCRF African SWIFT satellite dish installed and in use at KNUST, Kumasi, Ghana

Nowcasting (weather forecasting predictions from zero to several hours) has enormous value and potential in Africa, where populations and economic activity are highly vulnerable to rapidly changing weather conditions. Timely issuing of warnings, a few hours before an event, can enable the public and decision-makers to take action. Rainfall radar estimates are not widely available in Africa, nor likely to be in the coming years, and numerical weather prediction (NWP) currently has low skill over the African continent. Therefore, for the delivery of nowcasting in Africa, satellite products are the best practical option and needed urgently (Roberts *et al.*, 2021). Fifteen minute (or faster) updates of MSG (Meteosat Second Generation) images and NWC-SAF (Nowcasting Satellite Applications Facility) products are crucial for nowcasting to warn users (e.g. fisherfolk on Lake Victoria, flooding in urban areas, etc.) on pending severe storms. The possibility to have such products every 10 minutes, as well as data from the forthcoming MTG (Meteosat Third Generation) lightning imager, would be highly beneficial to all African countries, saving lives and livelihoods where high population growth and the most extreme impacts of climate change combine.

Background

The NWC-SAF products have been shown in the GCRF (Global Challenges Research Fund) African SWIFT (Science for Weather Information and Forecasting Techniques) programme to have high quality in tropical Africa. The convective rainfall rate (CRR) product shows good skill relative to satellite rainfall microwave observations (Hill *et al.*, 2020), and the SWIFT operational Testbed (Testbed 1, April 2019) demonstrated the operational value of the

Overview

- In Africa, lives and livelihoods are directly impacted by high impact weather- (HIW) and climate-related risks. 24-hour numerical forecasts for the Mesoscale Convective Systems (MSC) composing HIW are not currently reliable.
- This makes satellite nowcasting vital for Africa, where HIW changes rapidly and alerts can be used to save lives and property, as well as create resilient economies.
- MSG (Meteosat Second Generation)-based solutions including NWC-SAF (Nowcasting Satellite Applications Facility) are actively being used by the South African Weather Service (SAWS) for 16 nations in Southern Africa.
- GCRF African SWIFT has demonstrated the value of these products in West and East Africa, and is supporting major weather services in the regions to establish local generation.
- An 'environment of progress' has been developed by GCRF African SWIFT in developing the capacity and capability of National Meteorological Services (NMSs), Regional Training Centres (RTCs) and universities to access and develop NWC-SAF data into user-tailored products.
- Solutions for data dissemination from Meteosat Third Generation (MTG) to Africa must take into account the progress made in securing NWC-SAF data dissemination to a significant number of partners across the continent and the growing potential.

products to forecasters in real-time. Our current research is showing that forward extrapolation up to 6 hours in advance has useful skill for the very large, long-lived Mesoscale Convective Systems (MSC), which characterise the West African rainfall system.

The Meteosat series of satellites provides world-leading data from which powerful nowcasting products can be derived. These products are being used actively in Africa now and led by the South African Weather Service (SAWS). SAWS is a Regional Specialized Meteorological Centre (RSMC) as part of the World Meteorological Organization (WMO) and forms part of the ongoing WMO Severe Weather Forecasting Programme (SWFP). As such, SAWS has the responsibility to support southern African countries

(16 nations) whereby, amongst others, several NWC-SAF and derived products are provided to NMSs in Southern Africa on the RSMC website. SAWS is the only NMS in Africa that has and carries out a standard operating procedure (SOP) for nowcasting. The provision of limited satellite data will heavily impact the service that SAWS provides. The NWC-SAF output data also feeds into several products and systems at SAWS including (amongst others) flash flood guidance systems, water management systems provided to hydrological sectors, multi-sensor storm tracking systems for the public, disaster management clients, and forecaster systems.

GCRF African SWIFT partners in Africa have made significant progress in installing and running the NWC-SAF software. Products are now being generated in real-time at Kwame Nkrumah University of Science and Technology (KNUST), Ghana and African Centre of Meteorological Application for Development (ACMAD), Niger. KNUST has supported its national weather service, GMet, in installing the same system and is developing tools for use of the products. The remaining SWIFT partners in Senegal, Nigeria and Kenya are benefiting from this knowledge and experience and are in the process of installing systems locally, with assistance from Ghanaian colleagues, to make the NWC-SAF tools available in operational mode. We expect that this expertise and capacity developed during the SWIFT programme will be expanded upon and become a self-sustaining pan-African network of scientific support after programme-end. Installation has been delayed somewhat by Covid-19, but throughout 2020-21, these systems are becoming operational in the SWIFT partner weather services, in time for SWIFT Testbed 3, whose training event occurs in May 2021. An example of the usage of this software is that Agence Nationale de l'Aviation Civile et de la Météorologie (ANACIM), Senegal (a Regional Specialized Meteorological Centre) in the framework of the WMO SWFP for West Africa, is planning to provide NWC-SAF products on the RSMC website. In light of this, maintenance of the satellite data is needed and will have a big impact on the ambitions of Senegal, Ghana, Nigeria and Kenya, to generate, use and share nowcasting products. Note that in Senegal, Nigeria and Kenya, each NMS has regional forecasting responsibilities beyond its own borders, and the benefits of the nowcasting products will be felt widely.

Status and plans for nowcasting in Africa

For nowcasting in Africa, there is a gap in awareness of forecasters of the opportunity and the potential use the products already available. It is desirable for forecasters to receive and generate products locally, a task SWIFT has started in four African nations of Senegal, Ghana, Nigeria

and Kenya. Forecasters need adequate training in use of nowcasting products, and the opportunity to develop links with users to generate a market for these products, as well as sufficient government funding for staff time to generate and issue public warnings based on a nowcast process. The financial model to support nowcasting by weather services is therefore key, both for public warnings, and bespoke forecasts for particular users.

Senegal



*Intense dust storms precede torrential rain in the Sahel.
Photo by Françoise Guichard / Laurent Kergoat / CNRS*

ANACIM (National Agency for Civil Aviation and Meteorology)

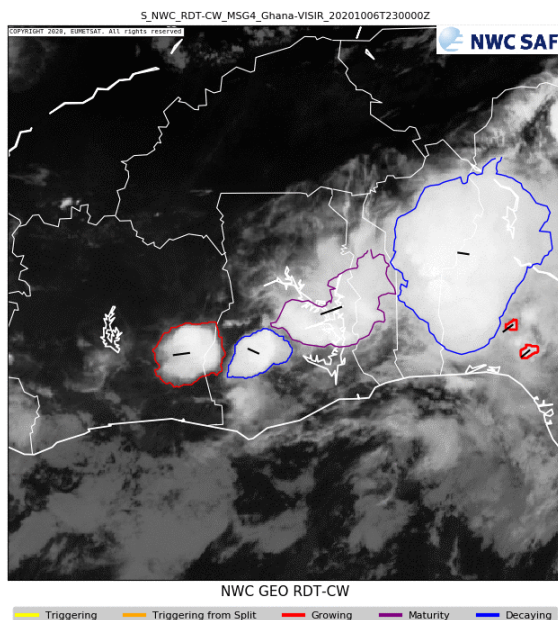
- The NWC-SAF software has been installed and is being configured to be fed with the HRIT data available from the MSG receiving station in an optic to make it operational.
- Meanwhile, NWC-SAF products from the SWIFT catalogue are used, such as CRR, RDT, CTHH, PC, etc., for tracking MCSs and to strengthen the short-term forecasts of thunderstorms.
- NWC-SAF products are used to document case studies that will be published in peer-reviewed journals and in SWIFT Testbed 3.
- NWC-SAF products are being combined with the Nowcasting Flood Impacts of Convective Storms in the Sahel (NFLICS) nowcasts for a better interpretation and tracking of convective storms.
- NFLICS, in collaboration with the SWIFT project, has trained ANACIM forecasters on the use of satellite products (NFLICS and NWC-SAF) for nowcasting purposes.
- ANACIM plans to disseminate NWC-SAF products in the countries involved in SWFP-West Africa, as Dakar is a WMO RSMC.
- The Department of Meteorology of the Agency for the Safety of Air Navigation in Africa and Madagascar (ASECNA) in Senegal have shown a great interest in using the NWC-SAF products for nowcasting after they were showcased by forecasters from ANACIM. As

there is no operational meteorological radar in many African countries, these products will be of a great value in the ASECNA member states for nowcasting and air traffic management activities.

UCAD (Université Cheikh Anta Diop de Dakar)

- UCAD have installed the NWC-SAF satellite dish and set-up is ongoing.
- Currently using NWC-SAF products from the GCRF African SWIFT website.
- Currently carrying out evaluation for NWC-SAF products over Senegal for the convective systems of the rainy season 2019.
- NWC-SAF products are being used to evaluate research case studies.

Ghana



NWC-SAF product captures rapidly developing thunderstorm convection-warning over the Guinea Coast (EUMETSAT image)

GMet (Ghana Meteorological Agency)

- System installed locally in March 2021 with support from KNUST. It is hoped the system will be operational by May 2021 after users training for forecasters as part of SWIFT Testbed 3.
- Jointly with KNUST, developing new approaches to visualisation.
- The agency are planning to make NWC-SAF available for use as part of an early warning system to Ghanaian users.
- Envisaged users include: Ghana Maritime Authority, Ministry of Agriculture Crop Division, Ghana Fishermen's Association, Inland Volta Lake Transport, aviation industry, Ports Harbour Authority, Ghana Irrigation Board, Volta River Authority, Ministry of Health and Peasant Farmers Association.

KNUST (Kwame Nkrumah University of Science and Technology)

- KNUST were the first institution in the SWIFT consortium to install their satellite dish and NWC-SAF.
- Products are being used locally within the Meteorology and Climate Science Unit for research and case study assessments.
- KNUST researchers are conducting research on NWC-SAF products to improve the understanding of tropical weather and to improve early warning systems across Ghana.
- Evaluation of NWC-SAF products is currently ongoing, with research scientists working on specific case studies occurring in Ghana. Further validation of NWC-SAF with Dynamics-Aerosol-Chemistry-Cloud Interactions in West Africa (DACCIWA) optical rain gauges are underway as Masters and PhD research topics.
- As part of the GCRF African SWIFT Testbed 1 (the first of its kind on the African continent), the nowcasting Rapidly Developing Thunderstorm (RDT) product is found to be of benefit in monitoring the evolution of thunderstorms over Ghana. This knowledge is expected to improve nowcasting of severe weather storms over the country.

Nigeria

NiMet (Nigerian Meteorological Agency)

- NiMet is presently installing NWC-SAF.
- Operational verification of Preparation for the Use of MSG in Africa (PUMA) and other satellite products has taken place, such as MSGIADC Multi-Sensor Precipitation Estimate (MPE) (a free and easily accessible product) and RGB composite products (air mass, convection, dust).
- GCRF African SWIFT Testbed 1 aided NiMet to use nowcasting and found that: the RDT product makes it easier to study and track the life cycle of West African squall line/thunderstorms both for forecasters and trainers; cloud Top Temperature and Height (CTTH) helps forecasters easily track active storms and their potential impacts; having access to the raw data helps students at NiMet RTC perform basic research work on their own to test existing theory/knowledge and is therefore very effective in capacity building.

FUTA (Federal University of Technology Akure)

- FUTA have received their SWIFT satellite dish and installation will soon begin.
- There are plans for verification of the data for local conditions in Nigeria through postdoctoral research

investigation of windstorms and extreme precipitation forecasts using NWC-SAF products.

Kenya

KMD (Kenya Meteorological Department)

- NWC-SAF is accessed via the NCAS-SWIFT online catalogue and is used for tracking the path and severity of developing storms in generating more accurate high impact, short-range forecasts.
- Products used include: Cloud (mask, type, top temperature, microphysics); RDT; precipitable water; and atmospheric stability.
- NWC-SAF has been used in tracking extreme weather events such as rapidly developing convective systems and tropical storms in producing weather-related warnings over affected regions. Availability of these high frequency satellite products has enhanced the accuracy and timely generation and dissemination of weather warnings to save lives, property and for environmental conservation.
- NWC-SAF is evaluated on daily and periodical basis alongside the forecast products.

HIGHWAY project – HIGH impact Weather IAke sYstem

- HIGHWAY is a project which is part of the UK Aid WISER programme, led by the UKMO.
- The project integrated early warning systems (EWS) into regional, national and local weather information over and surrounding the Lake Victoria region in East Africa, with a specifically targeted user group of fishermen on the lake who are at high risk from drowning due to storm activity and propagation from convection.
- HIGHWAY invested resource in developing the use of nowcast products, from the NWC-SAF as part of its activities.
- HIGHWAY found that satellite data (including NWC-SAF) is invaluable in diagnosing pre- and near-storm convection in areas with sparse radars.
- The MTG combination of lightning, imager and sounder products into a seamless provision will be transformative for the Lake Victoria Basin region and African continent.
- An initial analysis has shown that 200,000 people have directly benefited from the improvement in EWS and 1.4 million indirectly, and reduced deaths on the lake by 30%, with an economic benefit estimated to be \$44 million per year and a benefit to cost ratio of 16:1.
- The pilot study has now provided momentum to scale-up the investment as part of the East African

Community (EAC) Regional Early Warning System Vision 2025, which includes six Member States.

FASTA – the Forecasting African STorms Application project (led by the University of Leeds)

- FASTA will make nowcasting data available via an application programming interface (API) for display on smartphone apps or similar.
- Based on the user's location, it is planned that SMS or push notifications could be sent to warn users of an approaching storm.
- FASTA is initially working with Kenya Meteorological Department (KMD) to distribute the products in Kenya.
- During the SWIFT Testbed 3 co-production workshop in May 2021, FASTA will be introduced to potential users in Kenya with the aim of identifying partners with which to run a trial period. Agriculture is one sector that is expected to feel the benefits; nowcasting alerts of an approaching storm could, for example, provide time for farmers to cover crops left to dry in the sun.
- An alert could allow for rescheduling of transport of produce to avoid disruption on the roads or delay the spraying of pesticides to prevent the expensive chemicals being washed away by an unexpected storm event.
- Other sectors that could benefit are transport, including marine, and energy.

University of Nairobi

- UoN has made progress on installing the SWIFT satellite dish.
- While individual lecturers/researchers have always accessed and used European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) satellite data with coarse temporal range, this is an opportunity to run and use the nowcasting products at UoN.
- At the postgraduate level, NWC-SAF products are being used practically in the UoN Weather Systems course at the University of Rwanda.
- UoN SWIFT staff have been involved in routine weather forecast conferences which release the East Africa Severe Advisories under the WMO-SWDP, and also the use and application of the nowcasting satellite products in the East Africa case studies work, which is underway.
- NCW-SAF was successfully deployed in the training and application of nowcasting during GCRF African SWIFT Testbed 1. Coupled with other products from

tools such as models and synoptic charts, the usefulness of NWC-SAF was tested in the preparation and delivery of forecast to the Hydroclimate project for Lake Victoria (HyVic) aircraft operations. Following the Testbed, and with reported positive impact in Kenya and within the region, KMD and UoN have committed to deploying NWC-SAF products in nowcasting operations, and training, respectively.

Pan-Africa

ACMAD (African Centre of Meteorological Applications for Development)

- NWC-SAF software is installed at ACMAD as part of the SWIFT project, providing products complementing RDT regularly generated for operation with support from Meteo France.
- Six sources of nowcasting products are available (PUMA reception station products, RDT, NWC-SAF software installed through SWIFT, NWC-SAF products on SWIFT online platform, US navy satellite products and the WMO sand and dust storm warning and assessment centre).
- Selected RDT products are exchanged in real-time through ACMAD'S THREDDS data server.
- As support to nowcasting briefings at NMSs, ACMAD has demonstrated and established the nowcasting technical note containing relevant NWC-SAF and other products, as well as interpretive guidance for operational forecasters.
- Evaluation of NWC-SAF products is becoming part of routine operations following the experience gained through SWIFT testbeds and ACMAD forecast demonstrations.
- As legacy of the SWIFT programme, ACMAD will use SWIFT generated training materials and products to support the centre's 'on-the-job' and secondment programme performance.

Nowcasting evaluation in Africa

- GCRF African SWIFT scientists conducted a detailed evaluation of two NWC-SAF products: the 'convective rainfall rate' and the 'rapidly developing thunderstorms – convection warning' (Hill *et al.*, 2020). The study demonstrates that both products provide useful information, despite some limitations. The convective rain rate product has valuable skill for predictions at least 90 minutes ahead, which can be used, for example, to inform flood warnings or for disaster response. The RDT product can identify the occurrence of heavy precipitation, correctly identifying around 60% of strong (5 mm of rain per

hour) events at least one hour before they occur. This could be used to inform warnings to fisherfolk and other vulnerable water users. These products will be most beneficial when they are interpreted by trained forecasters.

- The SWIFT operational Testbed 1 demonstrated the operational value of the products in real-time. Our current research is showing that forward extrapolation up to 6 hours in advance has useful skill for the very large, long-lived Mesoscale Convective Systems, which characterise West Africa.
- For an increasingly competitive commercial market for weather prediction products, evaluation is necessary, both for customer confidence and for motivating investment.
- Good evaluation methods for (tropical) deep convective regimes remain a scientific and statistical challenge. This is an ongoing area of research and off-the-shelf methods need care in applying.
- Impact-based evaluation, including user feedback, is needed and is being carried out as part of the GCRF African SWIFT programme. This will include a range of evaluation evidence, from quantitative/statistical to qualitative and consultative.

Barriers and opportunities to NWC-SAF use in Africa

- Satellite-based applications can be overlooked by the international meteorological community in favour of operational radar. However, in Africa, radars often become non-operational after installation due to issues with financing for maintenance. Satellite data is available as a credible alternative, requiring capability development for use.
- Capacity development and investment are needed in order to enable universities and NMSs to develop full expertise in the installation, maintenance, use and application of satellite nowcasting products.
- There is a need to invest in time (continuing and expanding testbeds and forecast demonstrations) for operational forecasters to learn how to use nowcasting products, to carry out in-house evaluation that improves the practical usefulness of the products, and to carry out nowcasting.
- Intermittent power supply and disrupted internet connectivity can be an issue in Africa, hence local generation of products received via satellite dishes is essential for a robust service.
- Threats to data degradation and dissemination (frequency, spatial resolution, coverage area) from MTG would severely limit the opportunity for local

African partnership in the future improvement of products.

The vision for African nowcasting

Universities

- Research capacity and capability will be enhanced through development and verification of nowcasting products and development of user needs and engagement expertise.
- Universities will become centres of excellence in model evaluation through the use of observational data (e.g. precipitation and dust forecasting).
- Taught programmes will be enhanced using NWC-SAF training modules and universities will provide world-leading research opportunities at the doctoral and post-doctoral level. KNUST in Ghana teaches over 600 students at the undergraduate and postgraduate level in nowcasting, and use of NWC-SAF provides invaluable exposure to satellite methods. NWC-SAF products are also being used practically in the Weather Systems course serviced by UoN-Met at the University of Rwanda.
- Universities can become centres of expertise and innovation in use of NWC-SAF to understand and identify local meteorological conditions that initiate convection, such as thunderstorm warning and tracking and dust events, and ultimately provide expertise on the improvement of early warning systems.
- Enhanced capacity between university and NMS partners through collaboration, for example, in providing local university community forecasts, can create a sustainable and mutually beneficial partnership.
- The satellite nowcasting capability can enhance the teaching capabilities for the RTC in Kenya through which the University of Nairobi teaches operational training.
- The methods can contribute to protecting students and staff from the effects of HIW on campus – initiatives such as this can drive local innovation, through the use, feedback and refinement of products.

National Meteorological Services

- NMSs will develop expertise in providing a large number of products, tailored to local, national and regional end-users, including weather parameters that at present, are not accessible, such as: precipitable water, radiances, cloud height and cloud top temperature, brightness temperature, sea surface

temperatures and other marine products, soil moistures.

- Aeronautical Meteorological Forecasters use precipitation, convection and cloud products. They will use NWC-SAF to improve some of their forecast products (e.g. Terminal Aerodrome Forecast, Significant Meteorological Information, trend forecast).
- Products will be applied to wide range of weather applications in aid of nowcasting and forecast projects in order to save lives and property.
- At KMD in Kenya, NWC-SAF has been used in tracking extreme weather events such as rapidly developing convective systems and tropical storms and producing weather-related warnings over affected regions. The availability of these high frequency satellite products enhances the accuracy and timely generation and dissemination of weather warnings, which inform advisories for the safety of lives, property and conservation of the environment.

Regional Training Centres

- Beyond developing training materials for students at NiMet RTC, having NWC-SAF installed at the RTC will offer aspiring forecasters hands-on experience which will help build competency and capability effectively. Students will also have easy access to the data and carry out problem-solving research. The future potential and benefits of NWC-SAF in Africa are limitless.
- Trainers at RTCs can begin to develop training materials such as case studies, workbooks and for research purposes.

Regional Climate Centres

- A core function of RCCs is training of NMHSs with advanced monitoring products.
- Capability will be enhanced at ACMAD to build new bespoke training materials on nowcasting.
- On the job training, secondment and forecasts/watches/warnings demonstrations for operational forecasters will support capability development and exposure to new products on ACMAD's online platforms.
- Case studies including verification are progressively becoming regular activities at the Weather Watch Division at ACMAD.

Societal Impact

For the whole of Africa, the continental-wide use of NWC-SAF will fill the existing gaps in observations, and NMSs will be able to perform quality assessment on observations

using NWC-SAF products, and propose nowcasting solutions for all sectors in need. Access to NWC-SAF will also aid the set-up of a database (or regional/national databases) for early warning for sectors such as ministries for transport and civil protection.

Senegal

Extreme rainfall in Senegal often results in flooding, which particularly impacts low-lying urban areas and can occur frequently during the rainy season. This severe weather poses a crucial problem because it is not well documented by observations, which makes warnings less likely. The use of NWC-SAF will be of great help to better understand the behaviour of thunderstorms and to predict them in short timescales from 0-6 hours. Outside of the rainy season, satellite-based nowcasting products can also be used to provide early warnings of dust and air quality events which are increasingly recurrent in West Africa and have drastic consequences. These products are particularly useful for sectors such as the Ministry of Transport (visibility and detection of thunderstorms, tornadoes, waves, and wind shear); Ministry of Fishing (speed and wind gust, waves, tropical cyclones); Ministry of Energy (renewable energy: wind speed and intensity, solar-energy potential availability); Ministry of Civil Protection (warnings of flash flood, road safety, disaster risk management); Ministry of Agriculture and Hydrology; Ministry of Maritime Transport (safety in maritime transport); and the Ministry of Health (warning on dust episodes and heat waves to prevent respiratory diseases). Setting up a database for monitoring extreme weather events over Senegal using NWC-SAF products will be accessed and used by other research institutes across the country, and into neighbouring nations. Air traffic management activities will also benefit across due to the position of ASECNA in Senegal.

Ghana

Departments such as Civil and Geomatic Engineering, and Construction would benefit from early warning to protect national infrastructure and ultimately economies. The Ghanaian disaster management organisation (NADMO), Road and Aviation Transport, Sports Ministry, and non-governmental functions, such as agricultural and fishing end-users would receive wide-ranging benefits from more reliable and tailored nowcasting services.

Nigeria

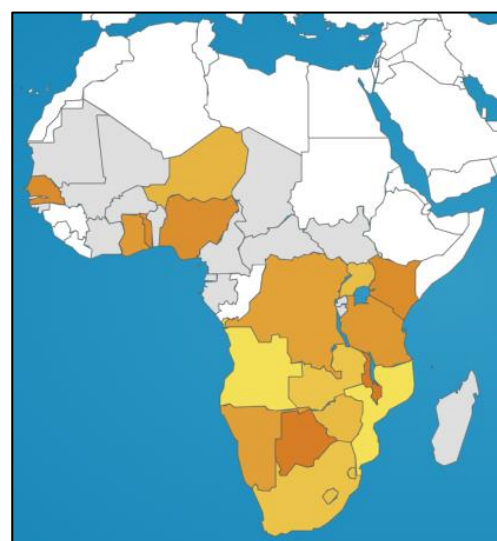
End users in Nigeria likely to benefit from nowcasting include: members of the public; the health sector; agricultural sector; disaster and emergency management agencies; transport sector; and construction. Each of these end users could be getting information from NWC-SAF

facility as frequently as the relevant information are available, allowing detailed and timely monitoring of potentially disastrous weather impacts. Sectors will also be able to use this information to plan ahead of time or to alter the direction of their current activities. Verification and application of NWC-SAF in Nigeria would provide useful feedback to EUMETSAT as more African scientists perform research on the products and data. Forecast skills of NWC-SAF will also be verified for some collated cases of extreme weather events in Nigeria. The outcome of this will provide valuable feedback to EUMETSAT and WMO.

Kenya

Given the usefulness of nowcasting products in very short range forecasting, several sectors stand to benefit: water resources (flash-flood forecasting products and hydropower generation); agricultural (such as horticultural farmers); aviation and public transportation services sectors (RDT product is very useful in forecasting thunderstorm related aviation hazards, flash flooding); and health. At present, disaster risk management authorities, search and rescue authorities, the wider media (print, electronic and social media), vulnerable communities, community based organizations (such as beach management units), non-governmental organizations, civil authorities, national and county government ministries/agencies are all receiving NWC-SAF products from KMD. The advisories are delivered through weather forecast reports from the media (FM radio stations, television, and newspapers), social media (KMD WhatsApp), and the county directors of meteorological services. Daily nowcasts are delivered and supplementary, timely forecasts are also delivered when the prevailing weather condition necessitate issuance of advisories.

Expansion of nowcasting use across Africa



Map of nowcasting use across Africa (oranges = used/applied; greys = second phase of NWC-SAF roll-out)

- GCRF African SWIFT is substantially increasing the capability and capacity of African organisations (universities, NMSs, RCCs and RTCs) through which it partners in the use of NWC-SAF. Over time, there is significant potential for NWC-SAF use and tailored product development to spread throughout the continent, if the access to NWC-SAF in its current form, and training and collaboration activities across Africa, can be maintained. SOPs will be developed with specific user groups and to support training (central aims of SWIFT Testbed 3).
- NiMet will provide nowcasting services to neighbouring nations in the coming years as part of their weather forecast service provision to countries such as Liberia and Sierra Leone – a daily weather forecast under a special arrangement brokered by WMO. There is the potential to expand this provision and include additional neighbouring countries.
- Training and capability-building for African nations not using NWC-SAF can be carried out at a relatively low cost and would support a pan-African network for the installation, use, refinement, delivery and evaluation of a wide range of nowcasting products.
- ACMAD have a pan-African remit and an ‘on-the-job’ training budget, which they can make available for NWC-SAF operationalisation, verification and evaluation.
- ASECNA show a great interest in using NWC-SAF products for nowcasting following introduction through ANACIM. There is potential for the products to therefore be used across all ASECNA member states (17 African countries).
- The FASTA future business plan envisages that commercial partners will be charged a subscription fee for a more bespoke version of the product, with the basic version of the app made freely available through KMD. Ideally, FASTA will be expanded across other countries as the API has been built to make the application easy to scale.
- HIGHWAY project partners are calling for greater investment by international development partners, to build upon the pilot project and support the implementation of the EWS across the EAC.
- Currently, NWC-SAF use has been piloted in seven African partner countries outside of southern Africa (Senegal, Ghana, Niger, Nigeria, Kenya, Tanzania and Uganda).
- A directed and a collaborative programme over the next five years, focused on NWC-SAF regional and national modification, verification, evaluation and application across the ASECNA member community and East African Community, will result in 23 African Member States across sub-Saharan Africa with a sustainable capability and capacity to use and apply nowcasting products and services.
- Support and coordination from SAWS, ACMAD, WMO, EUMETSAT and NWC-SAF will be integral to the success of this vision.
- This will result in thousands of lives saved from high impact weather across Africa and economic benefits amounting to hundreds of millions of dollars per year.

Summary and recommendations

- Throughout Africa, lives and livelihoods are directly impacted by weather- and climate-related risks. Strengthening national meteorological and climate science capacities holds transformational potential for strengthening the continent’s climate-resilience in the coming decade. Nowcasting capability and capacity is a key part of this.
- Systematic and impact-based forecast evaluation is critical to nowcasting improvement, to economic sustainability of nowcasting services, and to the interests of the user – this can only be sustained with continued African access to the full suite of NWC-SAF products at high spatial and temporal resolution.
- This briefing note outlines what has been achieved in the preceding two years, and details a vision for what could be achieved within a five-year timeframe, with appropriate focus on and investment in African nowcasting.
- Therefore, we recommend that the provision of NWC-SAF services for Africa are maintained and enhanced with the launch of the MTG.

References

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For More Information

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