

2019 ANNUAL REPORT



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Promoting Science for Sustainable Development



2019

IN PICTURES



Vision, Mission and Strategic Objectives

• Vision

To be a leading regional centre in integrated climate change and adaptive land management science services for an improved quality of life in southern Africa.

• Mission

To strengthen the regional capacity to generate and use scientific knowledge products and services for decision making on climate change and adaptive land management through research management, human capital development and services brokerage.



Strategic Objectives

- to manage and coordinate research in adaptation to climate change and for sustainable land management
- to provide products, services and information for decision-making
- to contribute to the creation of a knowledge-based society through academic and non-academic capacity development programmes

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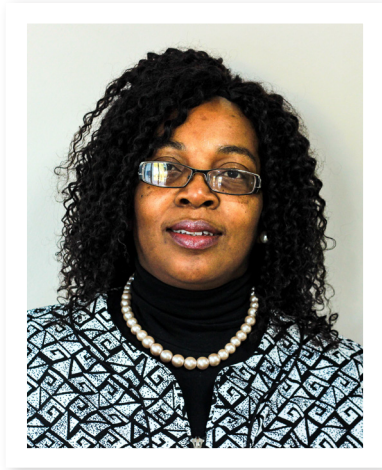
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Acronyms

AA	German Federal Foreign Office
AKTC	Zambian - German Agricultural Knowledge and Training Centre
ARC	African Climate Risks Conference
AWS	Automatic Weather Station
BMBF	The Federal Ministry of Education and Research
BMEL	The German Federal Ministry of Food and Agriculture
CBO	Community-Based Organisation
CDKN	Climate and Development Knowledge Network
COP	Conference of the Parties
CSIR	Council of Scientific and Industrial Research (South Africa)
DAAD	German Academic Exchange Service
DIP	Data Information Portal
DRFN	Desert Research Foundation of Namibia
EC	Eddy Covariance
EIF	Environmental Investment Fund
FEROSA	Future Earth Regional Office for Southern Africa
GART	Golden Valley Agricultural Research Trust
GHG	Green House Gas
GMES	Global Monitoring for Environment and Security
Hon.	Honourable
HZG/GERICS	Helmholtz-Zentrum Geesthacht Climate Service Centre
IBSFSA	The Innovation Bridge Technology showcasing and matchmaking event and Science Forum South Africa
InTeCRes	Innovative Technologies to Improve Climate Resilience in the Zambian Agricultural Sector
IPCC	Intergovernmental Panel on Climate Change
IWRM	Integrated Water Resources Management
MAWF	Namibia Ministry of Agriculture Water and Forestry
MoU	Memorandum of Understanding
MSU	Midlands State University
MURD	Ministry of Urban and Rural Development
NDCs	Nationally Determined Contributions
NGO	Non-Governmental Organisation
NRSC	National Remote Sensing Centre of Zambia
NUST	Namibia University of Science and Technology
OADC	Open Access Data Centre
ORI	Okavango Research Institute
PIK	Potsdam Institute for Climate Impact Research
RPA	Research Priority Areas
SADC	The Southern African Development Community
SAEON	South African Environmental Observation Network
SASSCAL	Southern African Science Service Centre for Climate Change and Adaptive Land Management
SDG	Sustainable Development Goal
SDG/CA	Sustainable Development Goals Centre for Africa
SEACRIFOG	Supporting EU-African Cooperation on Research Infrastructures for Food Security and Greenhouse Gas Observations
SGSP	SASSCAL Graduate Studies Programme
SME	Small-Medium Enterprises
SPI	Standardised Precipitation Index
SU	Stellenbosch University
UB	University of Botswana
UHH	University of Hamburg
UNAM	University of Namibia
UNFCCC	United Nations Framework Convention on Climate Change
UNZA	University of Zambia
UWC	University of Western Cape
WASCAL	West African Science Service Centre on Climate Change and Adapted Land Use
WeMAST	Wetlands Monitoring and Assessment Platform for Transboundary River Basins in Southern Africa
WMO	World Meteorological Organization
ZARI	Zambia Agricultural Research Institute
ZASTI	Zambia Air Services Training Institute
ZMD	Zambia Meteorological Department

Message from the Chair of the Governing Board



Mrs Jane Mubanga Chinkusu

Most countries within the African continent are among the most vulnerable to, and least prepared for climate change impacts under all climate scenarios above 1.5 degrees Celsius. This vulnerability is further exacerbated by many factors including poverty and a high dependence on natural resources. According to the Food and Agriculture Organization of the United Nations (FAO) report on the State of Food Security and Nutrition in the World, climate variability and extremes are negatively affecting all dimensions of food security, food availability, access, utilization and stability leading to increased global hunger.

The Southern African community is largely dependent on climate conditions with most populations relying on rainfall for food production. Climate change is already considered a threat multiplier, intensifying existing challenges. 2019 registered some of the most severe impacts in the region. Cyclone Idai which made landfall in Mozambique in March 2019 has been noted to be the region's biggest disaster with the United Nations (UN) describing it as 'one of the worst weather-related disasters in Africa'. After it made landfall,

Idai cut a deadly path across the South East African region. Its peak windspeed of around 200km/hr resulted in catastrophic damages in Mozambique, Malawi and Zimbabwe. With more than 600 deaths and an estimated USD 2 billion in damages, Idai is the deadliest cyclone to be recorded in the South East Indian Ocean.

Large parts of the Southern Hemisphere including Africa burn with regularity every year. Wildfires have also caused massive destruction and deaths across Africa. NASA has estimated that Africa is home to at least 70% of world fires across the world daily. Most occurrences are in Angola and the Democratic Republic of Congo.

While Africa is among the most vulnerable regions to the impacts of climate change, it should also be noted that it also holds the key to many of the solutions. Scaling up and speeding up the implementation of climate action remains a regional priority. Regional Initiatives like SASSCAL are premised on International Partnerships and provide support through Research, Capacity Building and Provision of Services and Products for climate action. Even with such external support, building climate resilience in Africa will take a significant paradigm shift. Countries need to prioritize climate action, political will and resource allocation. In September 2019 SASSCAL Member States reaffirmed their political and financial commitments towards the attainment of the SASSCAL mandate by signing the SASSCAL Treaty and the Joint Declaration.

The need to align climate plans and to ensure adequate national and international funding to implement national climate action plans cannot be overemphasized. The ability of African countries to deliver on, and increase their Nationally Determined Contributions is fundamental to foster cooperation globally to meet the 1.5°C temperature goal of the Paris Agreement.

Message from BMBF



Prof Rene Haak

If you carefully read the reports on the establishment and further development of our common institution SASSCAL, you will soon realize that 2019 was a very important year, marking the transformation of the Section 21 company into an international organization. Starting in 2017, it took a total of two years until the process was completed with the signing of the new Treaty and the Joint Political Declaration. The documents were officially signed at the meeting of the Council of Ministers under the leadership of Namibia. Today, SASSCAL looks forward to a successful future, even if the challenges remain the same: keeping SASSCAL attractive for the member countries by contributing essential knowledge to the priority topics of the member countries, including Germany. Only in this way, will the current member countries be able to take full ownership of SASSCAL and thus ensure its sustainable financial development.

With the new commitment from the German Federal Ministry of Education and Research, of €10 million for the new research programme, €3 million for the new capacity building programme and various budget support measures for administrative activities, my Ministry is not only making a decisive contribution to the financial stabilization of SASSCAL, but also to ensuring the future of key programmes. We see this commitment as part of Germany's global contribution to combating climate change and achieving the SDGs in the next few years. It is our

belief that the impacts of climate change can only be tackled effectively through international efforts and with strong scientific and economic partners working hand in hand.

In order to successfully manage its new areas of responsibility, SASSCAL has been restructured in terms of personnel, both at the regional secretariat and country level. This reorganization will make it more efficient and help meet the demands of an international organization. We will also equip the working environment with new infrastructures and implement construction measures. SASSCAL will be supported by excellent German partners, who will not only organize knowledge transfer in both directions, but will also provide active personnel support.

We see the launch of the research projects and the graduate school in Namibia as highlights in SASSCAL's story to date. In the long run, utilizing a partnership-based approach to transform the nodes into Centres of Excellence with research activities that focus on regional priority topics will help to position SASSCAL as a model institution in southern Africa. Thus, based on its own expertise, SASSCAL will provide specific answers to the imminent challenges of climate change.

We will continue to be affected by extreme weather phenomena and the dangers posed by climate change in the coming years. It is considered certain that the changes provoked by climate change will have far-reaching effects on stability and security in many regions of Africa, especially in southern Africa. For the BMBF, the reduction of greenhouse gases within the framework of an active climate protection policy is therefore a "moral and economic necessity".

In light of our successful cooperation over the past years, I would like to thank the Council of Ministers for its very wise decisions, all my colleagues on the Governing Board for the passionate debates about the direction of our joint institution, and finally, the Executive Management for its leadership. I wish SASSCAL itself great tenacity and every success for the future.

Message from the Executive Director



Dr Jane M. Olwoch

Welcome to SASSCAL 2019 Annual Report.

SASSCAL completed the year 2019 on a very high note. Since its inception in 2013 and the signing of the 1st Joint declaration from Member States and the Funder, there was an expectation that SASSCAL will transform to international organisation. The official signing of the SASSCAL Treaty by African Member States and the Joint Declaration by African Member States and the Funder (BMBF) on 27th September paved a way for the follow up steps to ratification and SASSCAL'S transformation to an International organisation. The official signing of the SASSCAL Treaty and Joint declaration also resulted in the official formation of the SASSCAL Council of Ministers and their first meeting. Both these very high level outputs have ensured SASSCAL's strategic placement in the region and its future programmatic and financial sustainability.

2019 was also a very special year for SASSCAL in which the long awaited SASSCAL 2.0 Research Call was announced . The parallel announcement of the call in German and Namibia signified the reliable partnership that BMBF has built over the years with African partners .

This 10,000.00 EURO research program is the follow up to SASSCAL 1.0 in which SASSCAL successfully coordinated over 88 research projects and provided bursaries to 400 postgraduate students. SAASCL 1.0 was made possible by over 23,000,000 EURO grant from BMBF. In 2019, SASSCAL Human Capital Development programme was also strengthened by yet another commitment and announcement by BMBF that a new Graduate Studies Programme will be supported to a value of EURO 3,000,00. The SASSCAL Graduate Studies Programme in Integrated Water Resources Management (SGSP-IWRM) to be hosted by the Namibia University of Science and Technology (NUST) is positioned to be a Centre of Excellence with excellent facilities , international rated lecturers. It will recruit the best from the region and prepare them to come up with solutions in managing the dwindling water resources.

A product of partnerships itself, SASSCAL continues to pursue strategic collaboration and 2019 wasn't the exception. In 2019 SASSCAL signed an MoU with the Helmholtz-Zentrum Geesthacht Climate Service Centre (GERICS). Through the MoU, SASSCAL and HZG/GERICS have established a formal link between both institutions to provide a framework for the performance of joint programs, projects and other joint activities in the field of climate science, climate service provision, knowledge transfer and capacity building. Furthermore and closer to home SASSCAL also signed an MoU with the Environmental Investment Fund (EIF). The MoU lays a foundation for joint obligations for an envisaged long-term relationship to develop complementary research, climate data sharing, educational activities as well as the institutional capacity to enhance awareness and mutual understanding.

SASSCAL continues to expand its visibility at relevant regional and global high level meetings and conferences. The highlights in 2019 were at the Science Forum South Africa and COP 25. At the Science Forum South Africa, SASSCAL hosted

exhibition stand which registered more than 1200 visitors. Similarly, participated in a side event during COP 25 on 13 December in the EU Pavilion. The joint side event with Potsdam Institute for Climate Impact Research (PIK) and West African Science Service Centre on Climate Change and Adapted Land Use (WASCAL), SASSCAL's sister organisation in western Africa titled 'Challenges and solutions for agricultural adaptation planning in Sub-Saharan Africa' attracted key institutions in Africa and Europe.

In the midst of these activities and success stories for the year 2019, climate change continues to devastate populations and economy around the world and SADC in particular. Life-threatening and pro-longed extreme events such as droughts and floods are daily occurrence and are linked to climate change. The number of severely food insecure people in Southern Africa is rising. Water levels in dams and other reservoirs are dwindling to vanishing point. These and others are derailing our Governments' economic development plans. But SASSCAL remains hopeful that building, strengthening and maintaining partnerships as the one between SADC member States and German is the best way to share resources, expertise, technology and

information in order to tackle such a complex issue like climate change that goes beyond all National Borders. 2019 also saw SASSCAL taking an active role in Future Earth and in particular the Future Earth Regional Office for Southern Africa (FEROSA).

I would like to thank the Council of Ministers and SSSCAL Governing Board for their unwavering support to SASSCAL and in particular their continued funding of SASSCAL's operations and providing the much needed political support that makes SASSCAL a recognised climate change centre in the region. Special thanks go to BMBF for their commitment to financing the second research programme and the SASSCAL Graduate Studies Programme in Integrated Water Resources Management to be hosted by NUST.

To all SASSCAL staff that made all the outcomes be realised, thank you for your dedication excellent work. In 2019, a lot of progress was made, but it is not the end. The responsibility is now on us to provide our stakeholders in the region with timely, relevant, and accurate science-based information to aid than make effective decisions.



SASSCAL Council of Ministers

The SASSCAL Council of Ministers is the highest organ of SASSCAL and is constituted by the Ministers responsible for SASSCAL in the Member States and the German Federal Minister of Education and Research as the initial funding partner.

Members of the Council of Ministers as at December 2019

Hon. Alpheus !Naruseb	Council Chairperson	Namibia
Hon. Brian Mushimba	Vice-Chairperson	Zambia
Hon. Anja Karliczek	Council member	Germany
Hon. Maria do Rosário Bragança Sambo	Council member	Angola
Hon. Phildah Kereng	Council member	Botswana
Hon. Blade Nzimande	Council member	South Africa



Pictured during the Inaugural SASSCAL Council of Ministers closed meeting: From left - Mrs Jane Chinkusu – SASSCAL Board Chair, Her Excellency Stella Libongani – High Commissioner of the Republic of Zambia in Namibia, Prof Gabriel Miguel – Board member (Angola), Honourable Minister, Maria do Rosario Braganca Sambo – Angola Minister of Higher Education, Science, Technology and Innovation, Honourable Anna Shiweda – SASSCAL Deputy Board chair and Deputy Minister of Agriculture, Water and Forestry Namibia, Honourable Alpheus. G !Naruseb – Namibia Minister of Agriculture, Water and Forestry, Her Excellency Tshenolo Modise - High Commissioner of the Republic of Botswana in Namibia, Mr Balisi Gopolang - Alternate Board member (Botswana), Professor Rene Haak – Board Member Germany and representative of the German Federal Ministry of Education and Research and Dr Jane M Olwoch – SASSCAL Executive Director.

The Council guides the political orientation of SASSCAL and endorses decisions related to the sustainable development of the institution as a reference Science Service Centre in the southern African region.

The Ordinary meetings of the Council are held every two years. Extraordinary sessions may convene at the request of the Governing Board. The Council held its inaugural meeting on 26 September 2019 during the second Ministers meeting, in Namibia, after the SASSCAL Treaty and Joint Declaration signing ceremony. Member States’ line Ministers/representatives and SASSCAL’s German funding partner were all in attendance. By signing these two documents, Member States have accorded SASSCAL their political and financial commitment towards the attainment of its Mandate. Out of the six Member States, five have signed the Joint Declaration, whereas Angola, Namibia and Zambia have signed the Treaty.

Signatories			
Joint Declaration		SASSCAL Treaty	
Angola	✓	Angola	✓
Botswana	✓	Botswana	
Namibia	✓	Namibia	✓
South Africa		South Africa	
Zambia	✓	Zambia	✓
German	✓		

List of SASSCAL Member States that are signatory to the Joint Declaration and the SASSCAL Treaty.



SASSCAL Governing Board

The Governing Board provides strategic oversight to SASSCAL. Guided by the Vision, Mission and Values, the Governing Board executes its functions according to the Board Policies and Procedures Manual. The Governing Board is appointed for a term of up to three years and membership is renewable. The office of the Executive Director serves as the Board Secretariat. While the Board remains accountable to the Council of Ministers, the Governing Board delegates certain functions to committees for proper discharging of its duties. These committees are the Scientific Advisory Committee, Executive Committee and Audit and Risk Committee. Each committee acts within agreed terms of reference. The chairperson of each Board committee provides reports and makes recommendations to the Governing Board for resolutions to be passed.

Committees of the Governing Board

The Executive Committee

The Executive Committee (EC) is a three-person committee made up of the Board Chairperson, the Vice-Chairperson and the SASSCAL Executive Director. The Executive Committee acts in matters of urgency in which the Executive Director requires to have a decision voted by the Board. The Executive Committee reports any such occurrences to the Board for approval at the first available opportunity.

The Scientific Advisory Committee

The Scientific Advisory Committee (SAC) consists of up to 11 ordinary members nominated by the SASSCAL Member States or Funding partner and formally appointed by the Governing Board. The SAC provides scientific advice on research activities that inform and guides the decision making and policy implementation. The advisory committee is appointed for a period of three years and the chairperson of SAC is a member of SASSCAL Governing Board. Among others, the SAC conducts assessments on the scientific progress of the institution, provides recommendations and scientific advice on research activities and ensures that it supports the regional and national level priorities set by the SASSCAL member countries. That SAC also ensures institutional alignment to the national, regional and international research agendas.

Audit and Risk Management Committee

Members of the Audit and Risk Committee are appointed on a three-year cycle by the Governing Board. To ensure the objectivity of the committee, the Executive Director and the Board Chairperson do not qualify to be members of the Audit Committee. The Audit and Risk Committee recommends for approval by the Board an independent accounting firm to conduct the audit of SASSCAL's financials. It also serves as liaison with the external auditor and is responsible for the assessment of risks affecting the organisation.

*The Governing Board provides
strategic oversight to
SASSCAL*

Board Membership

The SASSCAL Governing Board is comprised of six members representing the five Member States and the funding country.



Mrs Jane Mubanga Chinkusu
 Governing Board Member and Chairperson
Zambia: Director - Ministry of Higher Education



Hon Anna Shiweda
 Governing Board Member and Vice-Chairperson
Namibia: Deputy Minister - Ministry of Agriculture, Water and Forestry



Prof Dr Rene Haak
 Governing Board Member and Funder (representative)
Germany: Head of division 723 BMBF "Global Change"
 Federal Ministry of Education & Research



Prof Gabriel Luis Miguel
 Governing Board Member
Angola: General Director for the National Technology Center-Ministry of High Learning, Science, Technology and Innovation



Mr Felix Monggae
 Governing Board Member
Botswana: Deputy Permanent Secretary
 Ministry of Environment, Wildlife & Tourism
Alternate - Mr Balisi Gopolang
 Meteorologist - Department of Meteorology



Dr Yonah Seleti
 Governing Board Member
South Africa: Chief Director: Science Missions -Department of Science and Technology
Alternate - Mr Dumisani Mthembu
 Senior Specialist Multilateral Relations - Department of Science and Technology



Dr Jane M Olwoch
 Ex-officio Member
 SASSCAL Executive Director

Board Activities

Attendance

The SASSCAL Board met twice in 2019 (Table. 3). An Ordinary Board meeting was hosted in Leipzig, Germany with full attendance of all board members, and one Extra Ordinary Board meeting took place in Phalaborwa, South Africa where five of the six members were present.

Board Meetings		
	8 th Extraordinary board Meeting	11 th Ordinary Board Meeting
Board Members	22 - 23 rd January 2019, Phalaborwa, SA	29 - 30 th August 2019 Leipzig, DE
Mrs Jane Chinkusu	✓	✓
Hon. Anna Shiweda	✓	✓
Prof. Rene Haak	×	✓
Prof. Wilfried Kraus (DE alternate)	✓	✓
Dr Gabriel Miguel	✓	✓
Mr. Balisi Gopolang (BW alternate)	×	✓
Dr Yonah Seleti	✓	✓

SASSCAL Governing Board meeting attendance in 2019.

Resolutions and status of implementation

In 2019, the Board took sixty-three (63) resolutions of which forty nine (49) have been implemented successfully, six (6) were in progress and eight (8) have no progress due to various factors.

	11 th Ordinary Board Meeting	8 th Extra-Ordinary Board meeting	Total number of resolutions	Status %
Completed	17	19	36	57%
Ongoing	1	5	6	10%
In progress	9	1	10	16%
No progress	5	6	11	17%
Cancelled	0	0	0	0%
Totals	32	31	63	100

SASSCAL Governing Board resolutions and status of these resolutions for the year 2019.

RESEARCH

SASSCAL 2.0 Research Call

Based on the preparatory work in 2018, the SASSCAL 2.0 Research Call was published in April 2019. A Press Conference was held on 21 May 2019 at the SASSCAL Regional Secretariat to further publicise the call. Various media houses attended the Press Conference. The Press Conference is envisioned to have informed a wider audience about the launch of the SASSCAL II Research Programme, as well as the establishment of the SASSCAL Graduate Studies Programme in Integrated Water Resources Management (IWRM).

The Press statement was delivered by Prof Rene Haak – Head of Division 723, Global Change and Germany Board Member. The panel for the press conference was constituted by Prof Rene Haak, Hon Anna Shiweda – Deputy Minister – Ministry of Agriculture, Water and Forestry (MAWF) and SASSCAL Deputy Board Chair who was represented by Mr Joseph Hailwa – Director of Forestry and Dr Jane Olwoch – SASSCAL Executive Director.



SASSCAL 2.0 Press Conference Panel_ From Left: Mr Joseph Hailwa - Director of Forestry, Prof Rene Haak - Head of Division 723, Global Change and Germany Board Member and Dr Jane Olwoch - SASSCAL Executive Director.

Research is a key driver to addressing the challenges of climate change.

The **Conference of the Parties (COP)** has highlighted the need for more experts to address global challenges.

Launch of **SASSCAL 2.0** is a further task that contributes to the Paris Agreement.

SASSCAL 2.0 is funded by BMBF for Euro 10 million.

The Call closed on 16 August 2019.

*As highlighted by the reports of the **Intergovernmental Panel on Climate Change (IPCC)**, underpinned by the previous **United Nations Framework Convention on Climate Change Conferences of the Parties (UNFCCC COPs)** agreements by signing the **Paris Agreement**, there is consensus among governments, decision-makers and researchers that **climate change** is an **imminent threat** to societies and the environment. There is an urgent need for scientifically informed **mitigation** and **adaptation** actions, **policies** and **strategies** around the world. To address challenges and threats posed by climate variability and change, decision-makers at all levels need **scientifically sound information** and **knowledge** to develop adaptation and mitigation strategies and to sustainably develop the southern African **environment, economies and societies**.*

The overarching goal of the SASSCAL 2.0 Research Call is to provide scientific inputs into SASSCAL's strategic research framework that builds on the achievements of the first phase of SASSCAL and is in alignment with the SASSCAL Mission and Vision. The SASSCAL research framework addresses regional research needs and imperatives within the context of the 2030 Agenda for Sustainable Development, the Paris Agreement, the AU 2063 Vision and Action Plan, the African global change research initiatives, national policies as well as the various SADC action and development plans, especially on science, technology and innovation as well as on climate change.

After the successful announcement of the research Call, SASSCAL embarked on national stakeholder workshops in member states. The national workshops provided the ideal platform for sharing of information and encouraged interaction of researchers to allow for discussions and to build

possible contacts and networks to respond to the call. The first workshop was held in Angola on 11 June 2019, followed by Namibia on 17 June 2019, Zambia 21 June 2019 and lastly in Botswana on 25 June 2019.

Participants for the workshops were drawn from various sectors including government departments, universities, independent researchers, CBOs, NGOs, SMEs as well as various media houses. Member States' Board members as well as line Ministries supported the workshops and re-affirmed their commitment to the regional initiative.

Potential applicants received in-depth information on the aims and particularities. The workshops had question and answer sessions. The workshops were also used to facilitate consortia building by assisting stakeholders in the partner countries to identify potential partners in other SASSCAL countries.

*The **workshops** provided an ideal platform for providing **technical** clarity on the call. **Prospective grantees** received an in-depth overview of the call guidelines and clarity on the submission mechanisms. The workshops supported the **building of consortia**, including the support for identifying **German and Regional** partners.*



Angola Participants stand for the national anthem



Botswana Stakeholders



National stakeholder workshop in Zambia



Angola Participants

Publications

Various publications under SASSCAL 1.0 Research portfolio continued to be produced during the reporting period. These include:

Gaodirelwe, I., Masunga, G. S., & Motsholapheko, M. R. (2018). Community-based natural resource management: a promising strategy for reducing subsistence poaching around protected areas, northern Botswana. *Environment, Development and Sustainability*, 1-19 (Volume not yet assigned)

Gontse, K., Mbaiwa, J. E., & Thakadu, O. T. (2018). Effects of wildlife crop raiding on the livelihoods of arable farmers in Khumaga, Boteti sub-district, Botswana. *Development Southern Africa*, 35(6), 791-802.

Tlhalerwa K., Mulalu M. (2019). Assessment of the concentrated solar power potential in Botswana. *Renewable and Sustainable Energy Reviews*. Volume 109, July 2019, Pages 294-306.

Science & Conservation: A Modern Synthesis: Editors: Huntley, B.J., Russo, V., Lages, F., Ferrand, N. (Eds.) <https://www.springer.com/gp/book/9783030030827>

The herpetofauna of Bicular National Park and surroundings, southwestern Angola: a preliminary checklist 1,2,3,*Ninda L. Baptista, 1,4Telmo António, and 5,6,†William R. Branch

Serrano, Artur R. M., Rúben A. Capela & Carmen van- . N. Santos. 2019. Biodiversity of tiger beetles from Angola with the description of a new species of the genus *Neochila* Basilewsky, 1953 (Coleoptera: Cicindelidae).

Beck, J, A López-Ballesteros, W Hugo, R Scholes, M Saunders and J Helmschrot. 2019. Development of a Climate Forcing Observation System for Africa: Data-Related Considerations. *Data Science Journal*, 18: 42, pp. 1–11. DOI: <https://doi.org/10.5334/dsj-2019-042>

Biodiversity of tiger beetles from Angola with the description of a new species of the genus *Neochila* Basilewsky, 1953 (Coleoptera: Cicindelidae) in the *Zootaxa* Journal. The journal is a peer-reviewed scientific mega journal for animal taxonomists. It is published by Magnolia Press.

Oupa E. Malahlela, Adjorlolo C., Olwoch J.M (2018): Mapping the spatial distribution of *Lippia javanica* (Burm. f.) Spreng using Sentinel-2 and SRTM-derived topographic data in malaria-endemic environment. *Ecological Modelling*, 392: 147-158.doi: <https://doi.org/10.1016/j.ecolmodel.2018.11.020>

A.M. Kalumba, J.M. Olwoch, I. Van Aardt, A.M. Adeola, O. Malahlela; F.W.N. Nsubuga (2018). Assessing Industrial Development Influence on Land use/ Cover Drivers and Change Detection for West Bank East London, South Africa. *International Journal of Applied Engineering Research* ISSN 0973-4562 Volume 13, Number 14 (2018) pp. 11609-11624

Oupa E. Malahlela, Jane M. Olwoch, Clement Adjorlolo (2018). Evaluating Efficacy of Landsat-Derived Environmental Covariates for Predicting Malaria Distribution in Rural Villages of Vhembe District, South Africa. <https://doi.org/10.1007/s10393-017-1307-0>

F.W. N. Nsubuga, Joel O. Botai, Jane M Olwoch, C.J.deW Rautenbach, Ahmed M. Kalumba, Philemon Tsela, Abiodun M. Adeola, Ausi A. Sentongo; Kevin F. Mearns (2017). Detecting changes in surface water area of Lake Kyoga sub-basin using remotely sensed

imagery in a changing climate. *Theoretical and Applied Climatology*, January 2017, Volume 127, Issue 1–2, 327–337

A.M. Adeola, J.M. Olwoch, J.O. Botai, C.J. deW Rautenbach, A.M. Kalumba, P.L. Tsela, O.M. Adisa & F.W.N. Nsubuga (2017). Landsat satellite derived environmental metric for mapping mosquitoes breeding habitats in the Nkomazi Municipality, Mpumalanga Province, South Africa. *South African Geographical Journal*, Volume 99, 2017 - Issue 1

State of Climate Change Science and Technology in South Africa (2016). 1st Bi-ennial Report to Cabinet. Prof RJ (Bob) Scholes (Chair), Prof Roseanne Diab and Dr Jane Olwoch (Panel)

Baptista N., Conradie W., Vaz Pinto P., Branch W.R. (2019) The Amphibians of Angola: Early Studies and the Current State of Knowledge. In: Huntley B., Russo V., Lages F., Ferrand N. (eds) *Biodiversity of Angola*. Springer, Cham

Branch, W. R., Baptista, N., Keates, C. W., Edwards, S. (2019) Rediscovery, taxonomic status, and phylogenetic relationships of two rare and endemic snakes (Serpentes: Psammophinae) from the Angolan Escarpment. *Zootaxa*. Vol 4590 No 3.

Branch W.R., Vaz Pinto P., Baptista N., Conradie W. (2019) The Reptiles of Angola: History, Diversity, Endemism and Hotspots. In: Huntley B., Russo V., Lages F., Ferrand N. (eds) *Biodiversity of Angola*. Springer, Cham



Services and Products

SASSCAL supports the implementation of mitigation and adaptation strategies against climate variability and climate-related extreme events in Southern Africa by providing science-based products and services to inform decision making and improve the knowledge economy of the region in climate change. SASSCAL's regional data, information and knowledge platform – the Open Access Data Centre (OADC) provides open access to science data from SASSCAL-supported research, SASSCAL networks of automatic weather stations (AWS), biodiversity observatories, and other environmental and socio-economic data harvested from various open-data providers of in situ and remotely sensed data. Through the OADC, SASSCAL ensures that data from various data sources are safeguarded, processed and analysed into regionally relevant data and information, which serve as a basis for the development of demand-driven products and services.

In 2019, SASSCAL assumed full ownership and hosting of two web applications supporting the provision of two important science services: the regional SASSCAL-funded research data and information service and the regional climate monitoring data service. The two web applications are the SASSCAL Data and Information Portal (DIP) <http://www.sasscal.org/sasscal-data-and-information-portal/> and the WeatherNet www.sasscalweathernet.org, respectively. This was done jointly with implementing partners from the Geographic Information Science Group of the University of Jena, Germany, for the DIP; and the University of Hamburg (UHH), Germany, for the WeatherNet. In line with this, SASSCAL upgraded the OADC infrastructure to improve its capacity to securely provide the required compute, network, storage and backup resources. Both tools are now hosted and managed by SASSCAL within the OADC at the Regional Secretariat.

SASSCAL continued with the operation of existing services which were developed in technical

collaborative projects. This includes the SEACRIFOG Collaborative Inventory Tool as well as the WeMAST Geoportal. SASSCAL also started with the design and prototyping of new services such as the Dam and Reservoir Atlas for Southern Africa which will be available in 2020. New products such as the Climate Fact Sheet and Policy Briefs were released.

SASSCAL Regional Research Data and Information Service

The SASSCAL Data and Information Portal is a metadata standards-based web application for managing, analysing and presenting research outputs in the form of documents, geospatial data, time-series data, space-time data and publications. The portal, accessible at <https://data.sasscal.org>, is openly available for use in the region to contribute to the knowledge economy for the research and application for communities, academia, the private sector and the general public.

The portal was upgraded during the 2019 reporting year with support from SASSCAL partners from the University of Jena in Germany. The upgrade will further enable the research community to plot time series data associated with a station, and to monitor additional precipitation indicators including standardized precipitation index (SPI) and discharge indicators.

SASSCAL also added and published various new datasets on the portal including the “Vegetation classification along a hydrological gradient: The Gomoti tributary of the Okavango Delta and “The vegetation and wildlife habitats of the Savuti-Mababe-Linyanti ecosystem, Northern Botswana”; as well as various thesis documents and publications. All these new updates can be accessed online via the SASSCAL data portal.

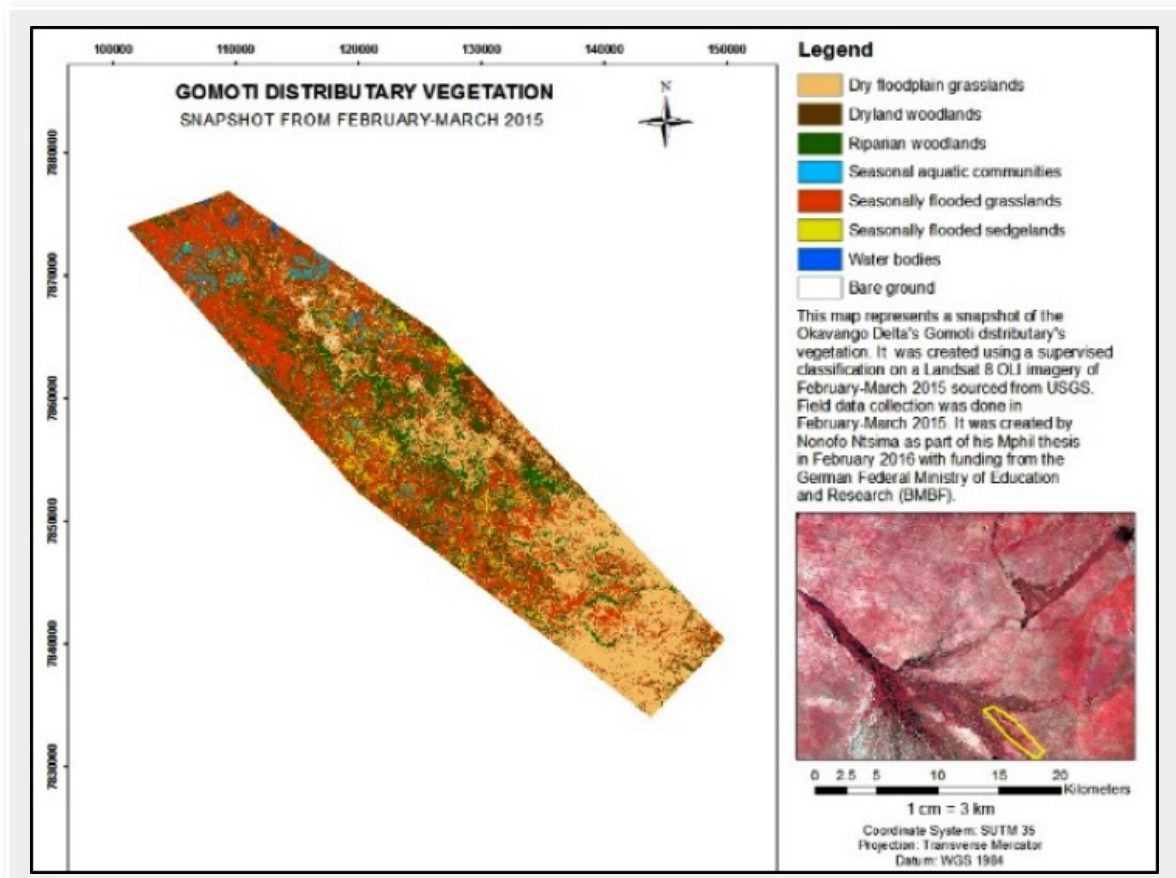
Interval statistics and actions

Time interval/ Parameter:	Month Year Start: <input type="text" value="10"/> <input type="text" value="1963"/> End: <input type="text" value="9"/> <input type="text" value="1974"/> <input checked="" type="checkbox"/> discharge [cbm/s]
Plot:	<input type="button" value="show plot"/> <input type="button" value="show interactive plot"/>
Export database data:	<input type="button" value="database data"/>
Export aggregated:	<input type="radio"/> yearly <input type="radio"/> hydrolog. year <input type="text" value="January - December"/> <input type="button" value="download"/> <input checked="" type="radio"/> sum <input type="radio"/> average <input type="checkbox"/> max <input type="checkbox"/> min

General actions

Actions:

Example of interval statistics which are available online on the SASSCAL data portal



"Vegetation classification along a hydrological gradient: The Gomoti distributary of the Okavango Delta" dataset available on the SASSCAL data portal.

Regional Climate Monitoring Data Service

SASSCAL provides a climate data service to support the regional coverage of near real-time and in-situ weather observations through a network of 160 automatic weather stations (AWS) in the region, whose data is managed and accessible through the SASSCAL WeatherNet web application (<http://sasscalweathernet.org>). The WeatherNet supports the monitoring, data management and dissemination of station data on variables such as rainfall, air temperature, solar radiation, pressure, relative humidity, wind speed/direction, soil

temperature, ground temperature and leaf wetness.

As part of the transfer of the WeatherNet, from the University of Hamburg (UHH) to SASSCAL OADC, two OADC staff were trained on the maintenance and data management of the WeatherNet system, at UHH in Germany. The on-the-job training covered topics in data processing, data publishing, general architecture, design, operation, and maintenance of the WeatherNet system thereby ensuring knowledge transfer to SASSCAL.



SASSCAL OADC staff at the University of Hamburg, Germany receiving training on the maintenance and data management of the WeatherNet system.

Furthermore, SASSCAL facilitated and worked with Namibia Ministry of Agriculture Water and Forestry (MAWF) and consultants from Central Technical Supplies (Pty) Ltd in Namibia to install three (3) new

AWSs in the Cuvelai Basin at Okalongo and Omafo Agricultural Centre; and in the Zambezi Basin at Dudukave Agricultural Centre near Lake Liambezi.



SASSCAL OADC staff installing the newest automatic weather stations at Omafo, Oshana region, Namibia.

As part of the InTeCRes project, SASSCAL supported the installation of a weather station and two soil moisture stations at the GART Chaloshi farm in Chibombo district, Zambia. The weather station has been integrated into the SASSCAL WeatherNet and has been contributing to the data made available online since October 2019. The data is also available to users via the Zambia Meteorological Department (ZMD) weather data portal. The Agricultural Knowledge Transfer Centre (AKTC) has access to the ZMD weather data portal and crop-specific weather products and services delivered through the portal. AKTC can share the accessed service throughout their network of emergent and commercial farmers.

In addition to SASSCAL contributing to continental rainfall products and 15-day rainfall forecasts such as CHIRPS 2.0 and CHIRPS-GEFS, there has been a notable increase in data requests from several end-users in the region. These data users mainly constitute of research institutions, farmers, student researchers, government ministries, parastatals and the private sector.

SASSCAL continues with its endeavours towards strengthening national and regional monitoring and information service networks and bodies. At the national level, the Namibia node, the National Meteorological Services, relevant ministries and other partners conducted a one-day Technical WeatherNet System Operations and Maintenance Workshop in October 2019. The workshop brought together key Namibian stakeholders in line ministries and relevant institutions dealing with weather observation and data provision. Stakeholders shared information highlighting the importance and value of weather observation and the need for a

national automatic weather station (AWS) inventory which will provide an overview of the current status of AWSs in the country. Discussion on the current operational status and maintenance needs of the AWSs, which feeds data to the WeatherNet system, in Namibia, where among the issues addressed. Additionally, partners and institutions that own AWSs in Namibia recognised the importance of shared responsibility and collaboration to ensure AWSs remain operational for consistent and quality data provision in the country. A key outcome from this workshop was the establishment of an online AWS inventory tool, which not only records the physical attributes (functionality, location, model) of AWSs in the country but provides additional meta-information such as type of data being collected by each station.

Factsheets

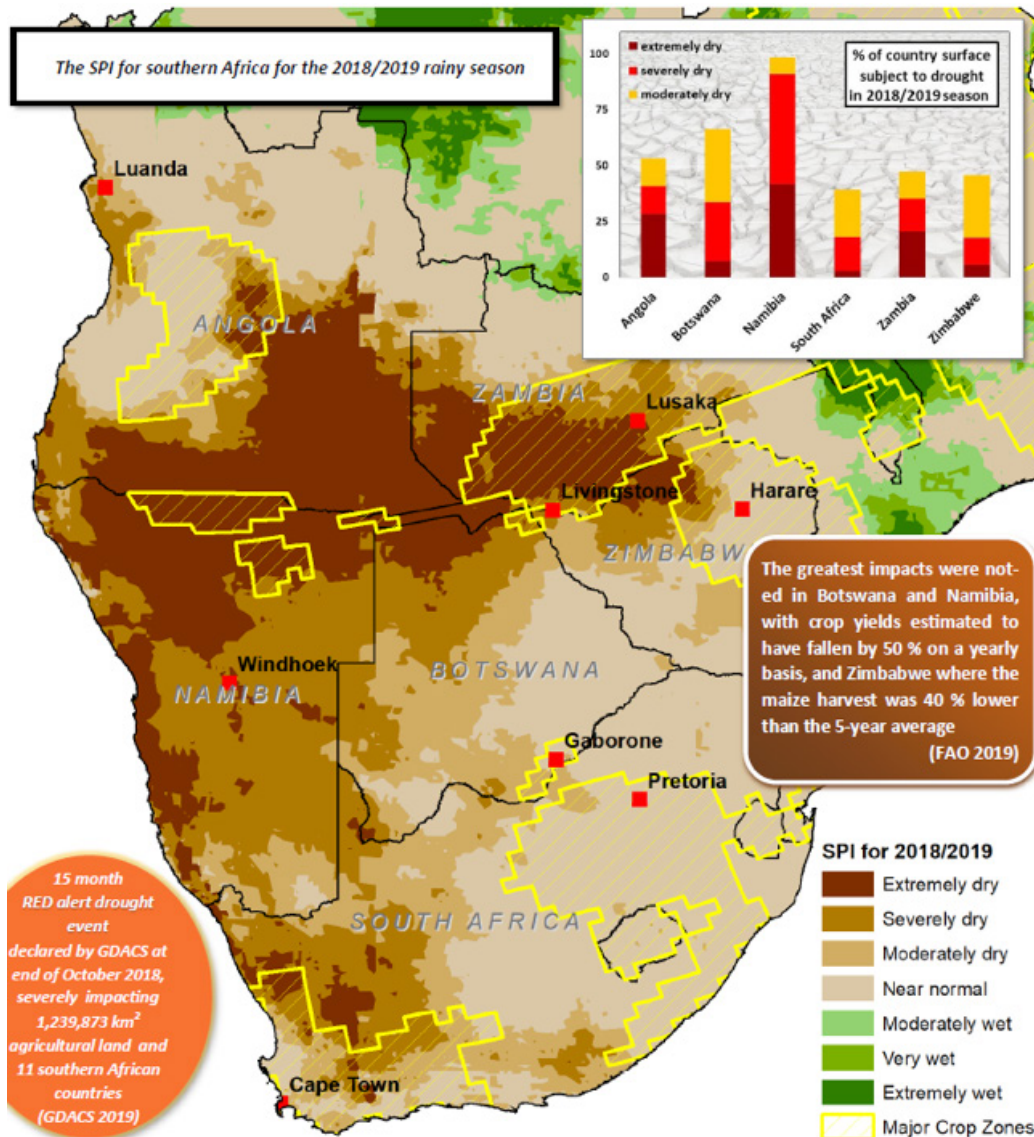
SASSCAL regularly produces factsheets to fulfil its mandate of providing relevant and quality data to the region. Such products are envisioned to provide sound scientific evidence and information to aid decision making for various stakeholders such as policymakers, project managers, farmers, and to inform the general public at large. SASSCAL factsheets aim to provide users with detailed advisory information on observed trends of current seasons in comparison to the historic trends. The recently published “2018/2019 Draught in southern Africa” factsheet provides information about:

- Seasonal precipitation of the current season in view of long-term historic averages
- The severity of drought compared to historic events and implications for decision making

- Impact of water shortage on urban areas, agriculture, and hydropower generation due to insufficient rains, water flow and drought in the current season
- Visual maps and time-series graphs of the total precipitation at various temporal and spatial scales
- The assessment of the Standardised Precipitation Index (SPI) recommended by the World

Meteorological Organization (WMO) as a standardised measure of drought severity to aide decision making.

Moreover, this information aims to assists decision-making by users such as subsistence and commercial farmers to develop mitigation strategies to minimise agricultural losses.



The Botswana Node in collaboration with a research team from the Botswana University of Agriculture and Natural Resources published three factsheets (SASSCAL Task 335). This task addressed the need for diversification of agriculture through domestication of indigenous high-value plant species and commercialization of these for increased crop plant

species, on-farm biodiversity, income generation and employment creation. The overall objective of the project is to cultivate, add value and market selected indigenous species to contribute towards enhancing food security and poverty eradication in Botswana.

CAPACITY DEVELOPMENT

SASSCAL contributes to the regional knowledge economy by way of facilitating capacity development at the level of people, infrastructure and institutions. SASSCAL capacity development is aimed at both academic and non-academic programmes and initiatives.

Implementation of collaborative regional PhD graduate programmes

SASSCAL envisions to establish five graduate studies programmes in accordance with its Research Priority Areas (RPAs) in all five Member States. The first of such programmes is the SASSCAL Graduate Studies Programme (SGSP) in Integrated Water Resources Management (IWRM) to be established under the Capacity Development pillar of SASSCAL. The programme will be hosted in Namibia by the Namibia University of Science and Technology (NUST). The Germany Federal Ministry of Education and Research (BMBF) has pledged Euro 3 Million towards this initiative.

SASSCAL in collaboration with Namibia University of Science and Technology (NUST) hosted a stakeholder engagement workshop on 21 May 2019 in Windhoek, Namibia marking a major milestone towards the establishment of the SGSP in IWRM.

The establishment of the SGSP in IWRM is envisioned to strengthen national and regional

capacity in water resources management. The IWRM Graduate Programme will be the first step in the process of establishing the SASSCAL Graduate Centres of Excellence in the region. This effort is complemented by regional and international collaborating institutions in academia, the public and private sector. The programme will initially target postgraduate studies with a specific focus on PhD and Masters education. Students will have the opportunity to collaborate with Germany Universities.

There is a need for the region to develop technical and managerial expertise that can respond to the complex environmental challenges that plague Southern Africa. With the current climate change projections, it has become imperative for the region to be well equipped with the right expertise to address these challenges. The Paris Agreement refers explicitly to international research cooperation first and foremost to help the most affected countries to adapt to climate change and to reduce global carbon emissions. To address challenges and threats posed by climate variability and change, decision-makers at all levels need scientifically sound information and knowledge to develop adaptation and mitigation strategies and to sustainably develop the southern African environment, economies and societies. The IWRM programme is key in addressing the gap in regional expertise to improve the effective management of water resources.

*SASSCAL is well suited and has adequate **structures, collaborations and partnerships** to strengthen the **regional capacity** through training of professionals. The programme will generate and provide scientifically sound and relevant research to enhance the **quality and value of water resources management capacity** thereby contributing to improved water security of the region. The programme will provide an ideal platform for **knowledge sharing, policy development and advice**, thereby strengthening regional collaboration in integrated **water resources management**.*



SGSP in IWRM stakeholder Workshop Group Picture. Front Row: 4th from right Prof Rene Haak – Head of Division 723, Global Change and Germany Board Member, 5th from the right Dr Jane Olwoch – SASSCAL Executive Director, next to her Mr Abraham Nehemia – CEO NAM Water, 2nd from left Professor Pramanathan Govender –NUST Vice Chancellor-Research and Innovation.

SASSCAL Contribution to the Knowledge Economy

Several SASSCAL funded students through various tasks under SASSCAL 1.0 graduated during the reporting period. They include 3 PhD (2 Botswana and 1 Namibia), 5 Masters (3 Angola and 2 Botswana) and 4 Bachelors (Botswana). In March 2019, six SASSCAL funded students were awarded their academic degrees to mark the successful completion of their studies in Botswana. Two students graduated from Okavango Research Institute (ORI), Mr Keoikantse Sianga was awarded his PhD, while Mrs Poifo Jibajiba received her MPhil degree, the remaining four, from the Botswana University of Agriculture and Natural Resources, received Bachelor of Science degrees.

Three additional students graduated in October 2019, two from the University of Botswana and one from the University of Namibia. Ms Bernice Ewetse Setomba who was funded under Task 341 successfully graduated with an MPhil. Mr Mooketsi Bitsang who was funded under Task 344 successfully received his PhD and Mr Jesaya Nakanyala funded under Task 73 obtained his PhD from the University of Namibia. All the theses and dissertations of the graduates are available on the SASSCAL Open Access Data Centre (OADC).



Mr Mooketsi Bitsang (PhD graduate) from the University of Botswana.

*At the beginning of the year, **SASSCAL** sought information on the current status of its **alumni**. Through this exercise, the current status of about **30% of SASSCAL graduates** was established. The information revealed that **86% of SASSCAL graduates** whose whereabouts were established are **presently employed** mainly in national government departments and institutions, in academia as lecturers and researchers, teachers in secondary schools, non-governmental organizations and in consultancy firms. Some of them have gone on to do **higher qualifications**.*



Pictured during the Alumni fact-finding mission in Lusaka, Zambia. From the left:) Manoah Muchanga (PhD student), Darliet Mwiinde (MSc graduate), Kochelani Saili (MSc graduate), Prof Henry M Sichingabula (PI) and Kevin Stephanus, SASSCAL HCD Coordinator

Since June 2019, SASSCAL has been collaborating with the German Academic Exchange Service (DAAD) on the CLAP Africa programme for postdocs and alumni of all German-funded programmes. CLAP Africa brings high-potential African researchers in climate change research and protection together with African alumni of German funding initiatives like SASSCAL 1.0 Research Portfolio. It seeks to catalyze uptake and use of research outputs through a vibrant, highly connected network to facilitate the development of regional solutions. SASSCAL participates in

CLAP Africa by circulating research calls and as an observer at the selection committee meetings for applicants.

Building and Improving Internal Human Capacities

Internal capacity building is fundamentally about improving effectiveness and efficiency at various organizational levels. Capacity building focuses on furthering an organization's ability to do new things and improve what they currently do. Most simply, capacity building improves the organization's performance and enhances its ability to function and continue to stay relevant within a rapidly changing environment. To strengthen internal human capacities, SASSCAL held a knowledge transfer session on R programming and R studio on 10 October 2019 for technical staff members of the OADC. Drawing on experiences gained from the SEACRIFOG project, the session focused on introduction, sample applications, and possibilities offered by R in statistical computing as well as R Studio in the development of statistical programs in the context of SASSCAL. The session was attended by the SASSCAL OADC team. It is envisioned that this capacity building effort will result in the adoption of new skills and knowledge as well as a better understanding of systems to sustain and expand these improvements over time.



SASSCAL OADC staff in a knowledge transfer session. (Fltr) Johannes Beck (facilitator), Sylvia Thompson, Tuwilika Nangobe, Samson Mwinga (OADC Coordinator) and Albano dos Sandos

Resource Mobilisation

Realising the SASSCAL Mission and Vision requires the mobilisation and effective use of all types of development resources especially financial resources. Financial sustainability is vital for the long-term sustainability of SASSCAL. A resource mobilisation technical committee was set-up during the reporting period. The mandate of the committee is to support the regional initiative's efforts in identifying and providing support to achieving sufficient and sustainable financial resources. Committee members have excellent expertise in proposal writing and reviewing among others.

Mutually beneficial Strategic partnerships play a fundamental role in strengthening the effectiveness of the regional initiative, boosting its Research and Capacity Development impact, supporting country-level, regional and international implementation and advancing sustainable development. Strategic partnerships provide a multi-stakeholder platform for effective development co-operation that is envisioned to advance the effectiveness of development efforts by all stakeholders, to deliver

results that are long-lasting and contribute to the achievement of sustainable development. SASSCAL successfully partnered with strategic institutions to strengthen its mandate.

SASSCAL and the Environmental Investment Fund

A Memorandum of Understanding (MoU) was charted between SASSCAL and the Environmental Investment Fund (EIF). The MoU lays a foundation for joint obligations for an envisaged long-term relationship to develop complementary research, educational activities as well as the institutional capacity to enhance awareness and mutual understanding. The MoU will also enable SASSCAL to access relevant EIF-funded projects while the EIF will tap and gain unlimited access to the regional and international climate data. The ultimate goal is to generate and apply accurate climate data on which Namibia's climate change strategies will be founded. The MoU is effective for an initial period of five years and may be renewed for a period and on terms to be agreed upon by the Parties.



Chief Executive Officer of the EIF, Benedict Libanda, and SASSCAL Executive Director, Dr Jane Olwoch during the signing ceremony.

SASSCAL and Helmholtz-Zentrum Geesthacht Climate Service Centre

A Memorandum of Understanding was signed with the Helmholtz-Zentrum Geesthacht Climate Service Centre (GERICS). Through the MoU, SASSCAL and HZG/GERICS have established a formal link between both institutions to provide a framework for the performance of joint programs, projects and other joint activities in the field of climate science, climate service provision, knowledge transfer and capacity building.

The established agreement includes, among others, efforts to train mainly young scientists and to develop climate service products to support the countries of southern Africa in their efforts to adapt to climate change. SASSCAL, through its Human Capacity Development, is in the process of establishing its Alumni Programme. The Programme is expected to nurture and provide further support to former SASSCAL scholarship holders and graduates. The Agreement will thus augment SASSCAL's pursuit of strengthening the regional human and institutional capacity development.

Furthermore, the MoU will provide a platform for the exchange and joint use of equipment that should expose SASSCAL researchers to international ground-breaking technologies. The exchange of data, tools and information relevant to research priorities of both institutions will further strengthen

the regional capacity to participate in international climate change conversations. The MoU also provides ground for SASSCAL to receive training from GERICS on development and publication of Policy Briefs and Fact sheets.

Funding Collaborations InTeCRes

The German Federal Ministry of Food and Agriculture (BMEL) invested € 154,600.00 towards the Innovative Technologies to Improve Climate Resilience in the Zambian Agricultural Sector (InTeCRes) project. The project is implemented in collaboration with the Zambian – German Agricultural Knowledge and Training Centre (AKTC), Golden Valley Agricultural Research Trust (GART), National Remote Sensing Centre (NRSC), Stellenbosch University (SU), Zambia Agricultural Research Institute (ZARI), Zambia Air Services Training Institute (ZASTI) and the Zambia Meteorological Department (ZMD).

National collaborations

Namibian Node, through SASSCAL Regional Secretariat, entered into an agreement with the University of Namibia (UNAM), effective from October 2019 until 30th September 2020. The purpose of this agreement is to strengthen regional (sub-national) climate governance through the integration of gender-responsive climate action into regional development plans and projects. The University of Namibia (UNAM) in collaboration with the Desert Research Foundation of Namibia (DRFN), the Ministry of Urban and Rural Development (MURD) and Ministry of Gender Equality and Child Welfare through the Climate and Development Knowledge Network (CDKN) held an inception meeting in October to launch the project. SASSCAL committed to the Namibia National Rural Development Strategy review to mainstream gender-responsive climate action into the updated strategy. The Namibia Node will implement this activity underpinned by an Agreement between SASSCAL and the University of Namibia.



SASSCAL Executive Dr Jane Olwoch and GERICS director Prof Daniela Jacob pictured at BMBF during the signing of the MoU

Marketing

The formation and ongoing sustainability of SASSCAL is evidence of international partnerships as well as cultivation and nurturing of mutually beneficial relationships. SASSCAL engages at local, regional and international platforms with many institutions that include stakeholders and non-stakeholders. SASSCAL co-operated with other agencies and partners such as Future Earth, World Bank, GERICS, German Research Institutions, Commonwealth Group of Windhoek and SADC in line with SASSCAL's Mission and Vision to support and engage other regional co-operations and programmes on climate change issues to share best practices and incorporate them in SASSCAL activities.

High-level stakeholder engagements allow SASSCAL to directly share information with the policymakers. Such platforms further enable SASSCAL to champion science diplomacy and also strengthen the science to policy interface. These engagements further provide a platform for SASSCAL to establish new networks, partnerships and collaborations. Establishing such links is vital for knowledge and technology transfer. There are other various synergies to be derived from collaborations and partnerships including strengthened regional cooperation. As already stated, 'the formation of SASSCAL is the best example of such benefits'.

The Innovation Bridge Technology showcasing and matchmaking event and Science Forum South Africa (IBSFSA)

SASSCAL operates in a huge southern African expanse and accordingly, cannot engage and interact with its stakeholders as frequently and as interactively, as would be desired. Therefore, participating at such platforms such as the IBSFSA provides SASSCAL with a rare opportunity of face to face interaction with its stakeholders and partners. SASSCAL hosted a successful and interactive exhibition stand at the 2019 joint event under the theme "Igniting Conversations about Science for Innovation with Impact", that was held at the

CSIR International Convention Centre from 4 to 6 December 2019 in Pretoria, South Africa.

The Forum attracted participants from all corners of the globe and the SASSCAL exhibition booth registered more than 1200 visitors. Stakeholders from various sectors such as scientists, government officials, industrial leaders, students and representatives from the broader civil society visited the booth. SASSCAL staff actively engaged with stakeholders at the stand and also created new networks with other exhibitors.





The exhibition booth was an ideal platform that showcased our achievements and created visibility for our services and products. Visitors to the booth engaged in interactive discussions about SASSCAL's Research portfolio. Amongst others, the WeatherNet platform was presented to interested visitors at the booth. Data from the WeatherNet is available openly and freely accessible at www.sasscalweather.net.org.

In addition to hosting a booth, the SASSCAL Executive Director chaired the SASSCAL side event titled 'International Partnerships for Climate Change

Action' on 6 December 2019 at the IBSFSA. The panel explored SASSCAL's Research activities and the importance of building regional and international partnerships, to ensure effective adaptation and mitigation measures in response to Climate Change. The panel speakers were Dr Lisette Andreae, Head of Education, Science, Research and Technology at the German Embassy in Pretoria, Dr Jörg Helmschrot, SASSCAL's Director of Science and Technology & Capacity Development and Ms Hedwig Black, SASSCAL's Namibia Node Programme officer.



Pictured during the panel discussion from left: Dr Jörg Helmschrot, SASSCAL's Director of Science and Technology and Capacity Development, Dr Lisette Andreae, Head of Education, Science, Research and Technology at the German Embassy in Pretoria, Dr Jane M. Olwoch, SASSCAL's Executive Director, Ms Hedwig Black, SASSCAL's Namibia Node Programme officer.

During the discussion, the speakers highlighted how the partnership between the SADC Member States and Germany, facilitated through SASSCAL, has produced excellent products in research, capacity

development and service provision for the region. In addition, the role of politicians and climate activists on the goal of climate change mitigation was emphasised.



The session also went on to explore and discuss the critical role that gender consideration plays in responding to climate change. Women are inherently vulnerable to the adverse effects of climate change but have a lower adaptive capacity due to higher poverty rates in this demographic and limited access to resources in comparison to their male counterparts. Thus, gender consideration

ensures those with the greatest need for adaptation are not left out.

The panel concurred that international partnerships for climate action are required to address global challenges. There is an urgent need for joint efforts that prioritise a collective response to climate change challenges.

The speakers highlighted how the partnership between the SADC Member States and Germany, facilitated through SASSCAL, has produced excellent products in research, capacity development and service provision for the region.

SASSCAL at the Conference of Parties (COP-25)



The UN Climate Change Conference (COP25) was held from 2 to 13 December in Madrid, Spain, under the presidency of Chile. COP 25 was the 25th edition of the summit and was held under the theme: Time to act, a call to all countries to scale up their commitments to fighting climate change.

The COP25 had as objective to raise ambition to go beyond the targets in the Paris Agreement, which set out to keep global warming to below 2 °C and to assert the need to move toward climate and energy scenarios that ensure that this increase stays below 1.5 °C.

*The **Conference of the Parties (COP)**, is the supreme decision-making body of the **United Nations Framework Convention on Climate Change (UNFCCC)**. All States that are Party to the Convention are represented at the COP. Its **195 member countries** meet annually for 2 weeks to discuss the **challenges of climate change** and review the **implementation of previously agreed measures**. Parties also assess the implementation of the **Convention** and **any other legal instruments** that the COP adopts. The COP further takes necessary decisions to promote the **effective** implementation of the Convention, including **institutional and administrative arrangements**.*

COP maintains an inclusive and transparent process, where all countries need to be involved to ratify and ensure the final outcome. Therefore, participants of the COP 25 came from around the world and included civil society, governments, international organisations, businesses, bankers, scientists, academia and many others. Most of the negotiations during COP 25 were aimed at supporting countries

to implement the Paris Agreement. COP 25 has been seen as a stepping stone on the road to the official 2020 start date for the Paris Agreement. In this regard, one major deadline is the finalisation of the market mechanism and other such “cooperative approaches” for the Paris Agreement. This step is vital to help countries implement the Paris Agreement when it begins in 2020.

The COP also serves as a platform for increasing momentum for greater climate action. There is widespread understanding that we need to do more to reduce emissions and build resilience, but countries have yet to formalize this understanding into new Nationally Determined Contributions (NDCs). It has been agreed by the parties that 2020 is the deadline for countries to submit new, more ambitious NDCs.

It is against this background that SASSCAL convened

and participated in a side event during COP 25 on 13 December in the EU Pavilion. SASSCAL held the joint side event titled 'Challenges and solutions for agricultural adaptation planning in Sub-Saharan Africa with Potsdam Institute for Climate Impact Research (PIK) and West African Science Service Centre on Climate Change and Adapted Land Use (WASCAL), SASSCAL's sister organisation in western Africa.



Session Panellists at CoP 25: Dr Karsten Hess (BMBF), Dr Savadogo Moumini (WASCAL), Dr Christoph Gornott (PIK) Dr Kira Vinke (PIK), Dr Jane Olwoch (SASSCAL), Dr Joerg Helmschrot (SASSCAL) and Lisa Murken (PIK)

The panel thoroughly interrogated the role of international partnerships for regional capacities for climate adaptation. The establishment and successes of WASCAL and SASSCAL were cited as practical and successful platforms for mutually beneficial international partnerships. These Regional Initiatives have enhanced the visibility of science in Africa, through the successful completion of their first research portfolios. Both Regional Initiatives are at the second phase of their research portfolios that aim to meet the immediate research needs of their regions.

The United Nations Framework Convention on Climate Change (UNFCCC) has recognized the different capabilities and differing responsibilities of individual countries in addressing climate change in its several principles and mechanisms such as the Common but Differentiated Responsibility principle in responding to climate change. No-one nation can do it alone, but strong and sustained partnerships between people, institutions and nations are required both for mitigation and adaptation.



Some of the panel discussion participants

The session concurred that education and research are decisive for addressing global challenges. There is an urgent need for innovative capacity development to overcome global challenges. Co-production and co-ownership were also identified as pivotal to addressing these global challenges and consequently the need to focus on designing adaptation strategies that are specific to local needs. Co-production was also identified as a catalyst for the science - community interface.

Other selected Stakeholder Engagements

SASSCAL served in the Interim Steering Committee of Future Earth Regional Office for Southern Africa, providing support, guidance and oversight in operationalizing the Southern Africa Future Earth Office. <https://www.nrf.ac.za/tags/ferosa>. SASSCAL assumed the lead authorship of the guiding document in the formation and operational framework of the FEROSA.



Members of the Future Earth Interim Steering Committee. Far Left: SASSCAL Executive Director, Dr Jane M Olwoch

SASSCAL also participated in the tour of Germany's leading research centres focusing on renewable energy from 20 to 26 March 2019. BMBF hosted the tour and initiated partnerships between numerous German and African scientists as well as the heads of research institutions from Ghana, Benin, Togo, Nigeria, Niger, Gambia, and Namibia to analyse the

potential of renewable energy and its prospects of implementation. Participants engaged in dialogue and exchanged ideas about renewable energy and toured various Germany leading research centres. This tour and subsequent discussions have ignited the Green Hydrogen Energy Project funded by BMBF to be implemented by SASSCAL and WASCAL.



Participants of the Building Bridges Tour

SASSCAL participated at a panel discussion at the "SDGs Implementation in Africa - Reflections on A Three-Year Journey" conference held from 11 to 13 June 2019 in Kigali, Rwanda. The conference was convened by the Sustainable Development Goal (SDG) Centre for Africa (SDG/CA). Over two thousand participants convened in Kigali and engaged in effective dialogue on the optimal functioning of the SDGs systems in Africa. In addition to Presidents Paul Kagame of Rwanda, Edgar Lungu of Zambia and Vice President Taylor of Liberia,

the conference participants included representatives from various stakeholders including leaders from governments across Africa, Ambassadors and High Commissioners, the United Nations, bilateral institutions, international and other non-governmental organizations, universities and research institutions, civil society and the private sector. Dr Jane Olwoch, SASSCAL Executive Director was also in attendance. SDGs are global goals in which all countries have signed to implement.



Pictured at the Berlin workshop among other delegates is SASSCAL Executive Director Dr Jane Olwoch (second from right at the second row)

SASSCAL participated at 'The Expert Workshop on Future African-German Cooperation in Education, Science and Research' held in Berlin from 18 to 19 June 2019. The workshop was hosted by the German Federal Ministry of Education and Research (BMBF) and the German Federal Foreign Office (AA). The aim of the workshop was to identify and discuss major aspects of advancing interministerial synergy projects from African viewpoints. Links to existing African-German science structures (i.e. DAAD Centres of Excellence) and the development of further capacities in the areas of academic training, research, and vocational training were also discussed. Such links enhance

technology and knowledge transfer which are key for capacity development under SASSCAL 2.0.

SASSCAL participated in the African Climate Risks Conference (ARC) organized by Future Climate for Africa and SouthSouthNorth. The conference was held in Ethiopia from 7 to 9 October 2019 under the theme 'Dismantling barriers to urgent climate adaptation action'. As a regional strategic organisation in managing and coordinating research in Southern Africa, SASSCAL also participated in a panel discussion on "The state of climate research for development in Africa." at the African Climate Risks Conference.



Dr Jane M Olwoch pictured during the panel discussion

SASSCAL attended GERICS Scientific Symposium in Hamburg, Germany to strengthen the long-term partnership between the institutions. The symposium reviewed the work carried out at GERICS over the last ten years and highlighted the strong partnership between GERICS and SASSCAL.

The Commonwealth Group of Windhoek based High Commissioners and Ambassadors

invited SASSCAL to present on, “current challenges and trends of Global warming with special emphasis on Namibia.” in Windhoek, Namibia. The presentation was an informative session to sensitise the high-level delegation on challenges of climate change and mitigation with a specific focus on climate issues surrounding Africa and the SADC region at large.

Global Partnerships

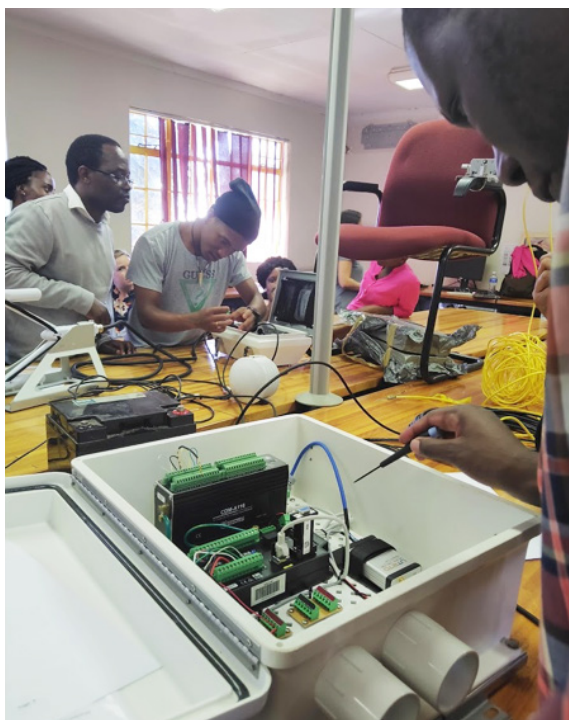
SEACRIFOG

SASSCAL is an implementing partner of the EU-funded project ‘Supporting EU-African Cooperation on Research Infrastructures for Food Security and Greenhouse Gas Observations’ (SEACRIFOG). SEACRIFOG was implemented over three years (February 2017 to February 2020) by a consortium of 16 African and European partner organizations. SASSCAL provides critical project contributions towards the design of a fully interoperable integrated observation network for climate change and other environmental dynamics on the African continent.

SASSCAL actively participated in various stakeholder engagements including SEACRIFOG’s second full annual project meeting (14-15 May, Cape Town, South Africa), a stakeholder consultation workshop on the SEACRIFOG data infrastructure took place at the same venue on 16th May 2019 and the South African Environmental Observation Network (SAEON) intensive exchange of professional expertise, of mutual benefit for both SASSCAL and SAEON as well as the SEACRIFOG project as a whole.

To disseminate the findings from its work in line with SEACRIFOG and the project’s capacity building agenda, SASSCAL co-organized a week-long winter school on terrestrial and atmospheric observations in Africa. To maximise reach and minimise the cost of this event, the SEACRIFOG consortium teamed up with the BMBF-funded project ‘Ecosystem Management Support for Climate Change in Southern Africa’ which is an interdisciplinary research project focusing on the dual impacts of land use and climate change in Southern Africa. The projects jointly organised and implemented the capacity building event titled ‘Winter School on Eddy Covariance Flux Measurements’ between 10 and 14 June 2019 in South Africa. The winter school was hosted by the University of Venda, which is a partner of the EMSAfrica project consortium.

The main purpose of the course was to build capacity and facilitate networking and academic exchange in the field of environmental observation, more specifically greenhouse gas (GHG) observations in Southern Africa. Here, the contribution by SASSCAL focused on the continental perspective in line with the SEACRIFOG project and corresponding methods of GHG observations, whereas the contribution by the EMSAfrica project focused specifically on the eddy covariance (EC) flux measurement technique. The latter is currently the key method for GHG observations at the ecosystem level and applied by scientists around the world for the determination of net ecosystem exchanges and the understanding of underlying processes.



Course participants connecting the various sensors to the data logger in line with the EC flux system hands-on session.

SASSCAL provides critical project contributions towards the design of a fully interoperable integrated observation network for climate change and other environmental dynamics on the African continent.



Winter School on Eddy Covariance Flux Measurements participants.

SASSCAL contributed to the winter school in various ways:

- participation of five early-career scientists from the SASSCAL member countries was fully funded.
- SASSCAL provided a course lecturer on outcomes of SEACRIFOG emanating from the work of SASSCAL and its project partners.
- Participated at a radio interview requested by the local SABC station in Thohoyandou.

A paper titled *'Development of a Climate Forcing Observation System for Africa: Data-Related Considerations'* was published in August 2019 in the Data Science Journal. SASSCAL led this publication in line with its work on the SEACRIFOG project. The publication presents the various steps towards the design of an observation network which aims at reducing most climate forcing components that are associated with large uncertainties, above all the greenhouse gas budget and also discusses the data-related network implications. This includes the formulation of appropriate observational requirements for each variable considered essential to quantify Africa-wide climate forcing as well as an assessment of corresponding available observational infrastructures and data to determine data gaps, needs and priorities

Beck, J, A López-Ballesteros, W Hugo, R Scholes, M Saunders and J Helmschrot. 2019. Development of a Climate Forcing Observation System for Africa: Data-

Related Considerations. Data Science Journal, 18: 42, pp. 1–11. DOI: <https://doi.org/10.5334/dsj-2019-042>

InTeCRes

SASSCAL through the Zambia Node was the coordinating partner of the implementation of the Innovative Technologies to Improve Climate Resilience in the Zambian Agricultural Sector (InTeCRes) project. The project is part of the German Bilateral Cooperation Programme funded by the German Federal Ministry of Food and Agriculture (BMEL). The InTeCRes project, with a budget of € 153,900.00, was financed under the German Bilateral Cooperation Programme within the framework of projects aimed at building capacity of technical staff and farm managers with a scope ranging from transfer of theoretical skills for sustainable crop production, modern and environmentally-friendly animal husbandry as well as farm management skills. The project was implemented from 1 June 2019 and was expected to be concluded by 31 December 2019, but a further one-month extension to 31 January 2020 was granted by the financing agent. The development objective of the project was to strengthen the agricultural sector in Zambia by building scientific and technical capacities in the application of innovative technologies for improved crop production and farm management under climate change conditions.

InTeCREes was implemented in collaboration with the Zambian – German Agricultural Knowledge and

Training Centre (AKTC), Golden Valley Agricultural Research Trust (GART), National Remote Sensing Centre (NRSC), Stellenbosch University (SUN), Zambia Agricultural Research Institute (ZARI),

Zambia Air Services Training Institute (ZASTI) and the Zambia Meteorological Department (ZMD). The InTeCRes project activities were hosted by AKTC at the GART Chaloshi Farm in Chisamba.



InTeCRes partners at the project Inception Meeting, Lusaka, Zambia.

Following the successful project inception meeting, three training sessions were conducted for technical staff from the Golden Valley Agricultural Research Trust (GART), Ministry of Agriculture, the National Remote Sensing Centre, Mulungushi University, the University of Zambia, Zambia Agricultural Research Institute and the Zambian – German Agricultural Knowledge Training Centre (AKTC) and one student each from the University of Hohenheim and the Natural Resources Development College were placed at AKTC.

The training sessions:

- i. Strengthened farm management and planning through enhanced crop monitoring using unmanned aerial vehicles.
- ii. Enhanced soil and fertility management using electromagnetic geophysical survey technology.
- iii. Integrated weather-based crop-specific services in farm planning and management.





Participants pictured during their introduction to the use of the Dualem -1 equipment in soil sensing and analysis.



A Trainee , Chenje Mtonga, presenting the plotted map from the data collected using the Dualem-1 equipment.

The training sessions were conducted in collaboration with the National Remote Sensing Centre, Water Institute at Stellenbosch University, Zambia Air Services Training Institute and the Zambia Meteorological Department and were hosted by AKTC at the GART Chaloshi Farm in Chibombo district. The procured equipment including an advanced unmanned aerial vehicle and accessories;

photogrammetry software; a Dualem-1 geophysical survey instrument and geostatistical software; and a complete automatic weather station and two soil moisture monitoring stations were procured and will be handed over to the Zambia Air Services Training Institute; National Remote Sensing Centre; GART; and the Zambia Meteorological Department respectively in February 2020.



Trainees being introduced to weather instruments

The weather station and two soil moisture stations that were procured under the InTeCRes project were installed at the GART Chaloshi farm in Chibombo district. The weather station has been integrated into the SASSCAL WeatherNet and has been contributing to the data made available online since October 2019. The data is also being made available to users via the Zambia Meteorological Department (ZMD) weather data portal. AKTC has been provided access to the ZMD weather data portal and crop-specific weather products and services delivered through the portal. The accessed service can be shared amongst emergent and commercial farmers networks.

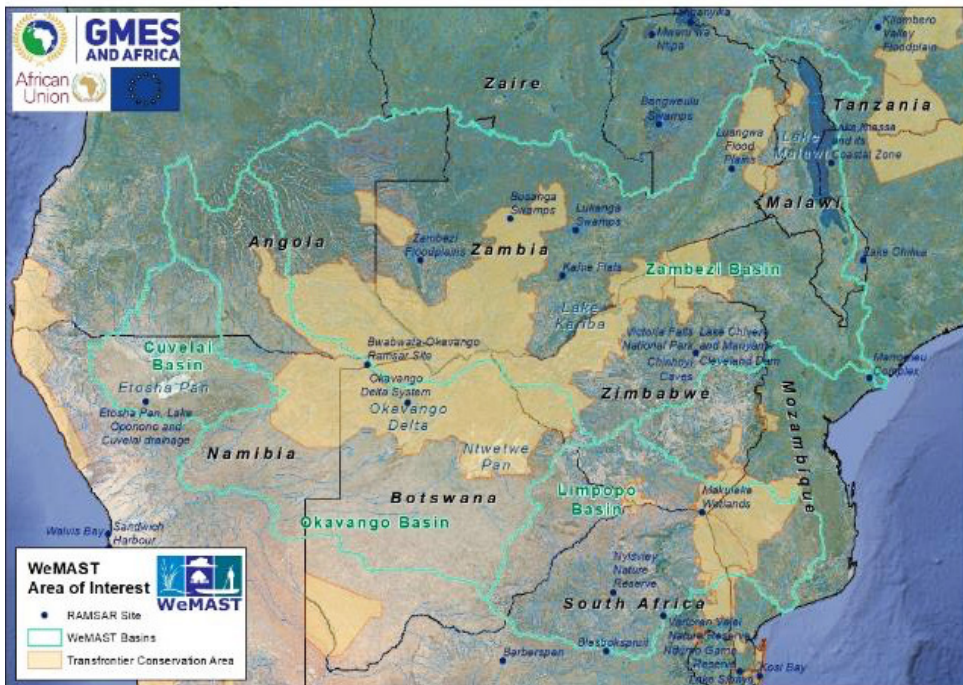
WeMAST

The Wetlands Monitoring and Assessment Platform for Transboundary River Basins in Southern Africa (WeMAST) project was officially launched in October 2018. The WeMAST project is funded under the Global Monitoring for Environment and Security (GMES) and Africa Support Programme, between the Africa Union and the European Union. WeMAST is a consortium of 8 partners and SASSCAL is the lead consortium member.

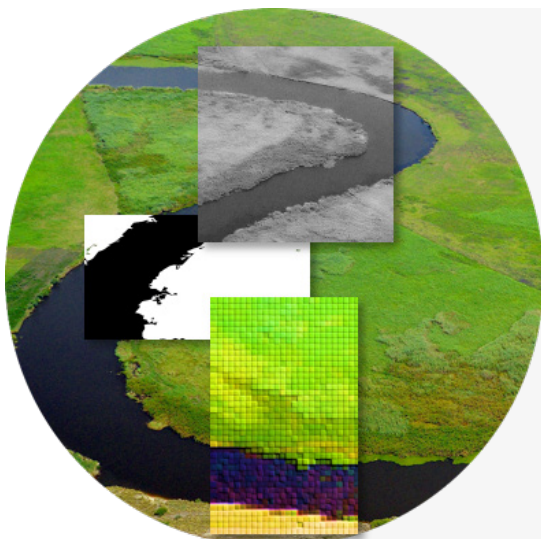
WeMAST is developing and implementing an integrated platform for wetland assessment and monitoring that will support the sustainable

management of selected transboundary river basins. The platform will integrate existing data products and tools to implement a sustainable wetland management system, by drawing on the experience from the SASSCAL-led consortium, partners and other key stakeholders across regional, national and local institutions.

The WeMAST platform is intended to support the assessment and monitoring of four southern African transboundary basins: Cuvetlai, Limpopo, Okavango and Zambezi.



The WeMAST project provides products and services for four southern African river basins: Cuvetlai, Limpopo, Okavango and Zambezi



Earth observation products from the Copernicus programme and other providers will be processed/fused/analysed in line with the use case in order to derive products that provide insight on wetland health and degradation.

WeMAST Stakeholder Engagement

The WeMAST project is conceptualised around the guiding principle of *“with the Users for the Users”*. WeMAST champions and advocates for strong user focus, that will systematically and continually ensure an active interaction and collaboration with the user, and more specifically, the stakeholder.

This strong user-orientated focus is envisioned to promote a sense of trust in the products and services produced. An integral component of the WeMAST project is the user needs assessment and stakeholder engagement.

- A questionnaire was administered to wetland practitioners, at forums such as the WaterNet Symposium in Johannesburg in November 2019. The questionnaire is also available online and can be accessed and completed by a wider diverse user group from grass-root level, to researchers, to decision makers and policy makers.
- The WeMAST consortium includes four universities (University of Botswana (UB), University of Western Cape (UWC), University of Zambia (UNZA) and Midlands State University (MSU)), as well as the National Remote Sensing Centre of Zambia (NRSC), that actively engage communities at grass-root level within the identified wetlands. The close engagement with wetland communities provides a unique perspective and in-depth insight to the stakeholder engagement of the project. The consortium hosted a stakeholder engagement with the Chirumhanzu community at the Driefontein RAMSAR wetland in early December 2019.
- A first User Needs Assessment and Stakeholder Engagement Workshop was conducted in Harare, Zimbabwe in December 2019. During the workshop, wetland stakeholders from all stakeholder levels presented their unique perspectives on their experiences to the WeMAST consortium. The engagement provided the consortium with a good insight into relevant wetland threats and drivers of wetland degradation. Such engagements provide first hand information of stakeholder definitions of wetland health, threats to wetland health and identification and changes in the wetland.



Participants of the User Needs Assessment and Stakeholder Engagement Workshop in Harare, Zimbabwe

Wetland Study Sites

Some WeMAST products and services will be produced at basin scale. Others will be of higher spectral resolution, in particular those derived from the Copernicus Sentinel 1 and Sentinel 2 satellite images, and these will also be subject to more

detailed on-site studies and will therefore be produced at wetland scale. Consortium members have identified a list of wetland study sites, that will be the target of these more detailed studies:



The satellite images of the Driefontein wetland in 1997 (Landsat 4) and the Driefontein wetland in 2019 (Sentinel 2B) show some land-use changes in the area, with more crops in the north-east part of the 2019 image as opposed to 1997, which is explained by higher population density in the area, necessitating crop production for subsistence farming.

For each study site, a wetland fact sheet is produced that provides insight into the specific wetland location, its vegetation, geography and hydrology, its social, economic and environmental value, its

conservation status, and insights into the risks, threats or drivers of change already noted at the wetland. The factsheets are available on the WeMAST website <http://wemast.sasscal.org/>

Capacity Development



Musasa Tatenda one of the students funded under the WeMAST gathering ground truthing information in the field. He will be processing and analysing Landsat and Copernicus Sentinel 2 imagery for his thesis

The WeMAST project has a strong capacity development component that is being facilitated by the University partners of the consortium. Some of

the studies being conducted under the project are tabled below:

Institute	Degree	Thesis Title
MSU	MPhil	Wetland resource utilization patterns in communal areas of Zimbabwe in the Limpopo and Zambezi River Basins
MSU	MPhil	Stakeholders' knowledge and use of Earth Observation (EO) data in wetland assessment and monitoring
UNZA	PhD	Assessment of wetland hydrology and it's ecosystem provision using remote sensing and modelling approaches.
UNZA	MSc	Integrated Ecological River Health Assessments, Based on Water Chemistry, Physical Habitat Quality and Biological Integrity
UNZA	MSc	Assessment of the potential of Sentinel 3 satellite data to identify groundwater discharge into the Barotse Flood Plain
UWC	PhD	Developing an integrated remote sensing framework for wetlands detection and monitoring within the Limpopo Transboundary Basin
UWC	MSc	The use of Remote sensing data, for assessing water quality in wetlands within the Limpopo River Basin (South Africa)
UB	MSc	Application of Geospatial Science for the Assessment of Crop yields under the Molapo Farming scheme: The Case of Okavango Western Plains
UB	PhD	Evaluating the effects of land use/land cover change on streamflow dynamics of the Gaborone dam catchment (Limpopo basin), Botswana

Human Resources & Staff Wellness

Human Resources

SASSCAL cultivates and actively nurtures a conducive working environment to promote staff development, productivity, personal and professional growth. SASSCAL strongly believes that the work environment is the backbone of the attainment of an organisation's Mission and Vision. SASSCAL utilizes and applies a variety of activities and tools to ensure conducive and a responsive working environment. These include:

- Workplace culture
- Physical environment and occupational health and safety
- Fair employee policy
- Team building activities
- Supportive workplace environment
- Health and lifestyle practice

Employees are very important members of any organisation. They are representatives of the organisation and custodians of institutional culture and memory. Having quality employees plays a pivotal role in organisational growth. The following positions were filled during the year.

Data Management Officer	Programming and Software Development Officer
OADC Coordinator	WeMAST Project, Software Developer
Programme Officer - Namibia National Node	

Staff Development

Staff development is vital to the success and growth of an organisation. It presents a prime opportunity to expand the knowledge base of employees in this fast-paced environment. Training provides individuals with the opportunity to acquire and or upgrade knowledge, skills, and attitudes that result in improved work performance. Successful staff development enhances professional proficiency and competence for the attainment of institutional goals.

Ongoing training and upskilling of the workforce is envisioned to encourage creativity. New ideas can be formed as a direct result of training and development. This is especially important for increased innovation in services and product development. The following training programmes were attended by some SASSCAL staff.

Training programmes attended

Rules and regulations on sustainable management of German Grant Allocation

WeatherNet on the job training

Cloud computing applied to Earth Observation

AU Grants Management

Staff development is vital to the success and growth of an organisation. It presents a prime opportunity to expand the knowledge base of employees in this fast-paced environment.

2020 Planning Meeting

The backbone of success is teamwork, planning, commitment and perseverance.



Front row from left: SASSCAL Management team—Dr Jörg Helmschrot, Director Science & Technology / Human Capacity Development; Dr Martin Mbewe, Programme Coordinator, Zambia; Mr Panduleni Hamukwaya, Programme Coordinator, Namibia; Dr Jane Olwoch, SASSCAL Executive Director; Mrs Chimbidzani Bratonozi, Acting Programme Coordinator Botswana; Mr Chipilica Barbosa, Programme Coordinator, Angola; Mr Peter Shisani, Director, South Africa; Mrs Chipu Chirefu-Toto, Director Administration and Finance

Planning enables teams and organisations to achieve efficiency and effectiveness in their operations. SASSCAL held its annual planning meeting from 24 to 26 April 2019 in Namibia and the SASSCAL Regional Secretariat and all National Nodes participated. The two-day planning meeting provided an opportune time to reflect on where we have come from as SASSCAL, our successes, our challenges and lessons learned towards a successful second phase for SASSCAL.

The most successful organisations are those where everyone works together cohesively. Continued full commitment of employee responsibilities is fundamental in the realization of a high impact team. SASSCAL provides a conducive environment for staff growth, productivity, contentment, creativity and

innovation. SASSCAL staff are devoted to advancing the SASSCAL Mission and realization of its Vision. The SASSCAL team possesses a wide range of professional competencies and is thus fully equipped to meet a wide range of needs, expectations and challenges, to contribute to the region's research agenda. This is especially important, considering the unique niche in which SASSCAL is nested. As a regional Science Service Centre, SASSCAL has a unique role in advocating and promoting science diplomacy across the region. SASSCAL's role of providing decision-makers with credible knowledge to inform policy requires the team and the organisation as a whole to continue to ensure its alignment to both the regional and international agendas, as well as the SDG's (Sustainable Development Goals) and requirements in the Paris Agreement. As such,

the team reviewed its existing Operational Plan and ensured its alignment to the regional and international research agendas, as well as the SDG's.

The key drivers of organisational success are its employees. Employee performance is critical to the overall success of the organisation. Employee motivation is an integral aspect which leads to the successful attainment of organisational goals. It is well documented that employees who are motivated are more effective and efficient at their tasks. The Planning meeting was concluded by an

award ceremony in appreciation of long-serving staff members who celebrate more than four years of service. Tracy-lee Van Wyk, Elvi Aron, Charity Angula and Sylvia Thompson were honoured with these awards. SASSCAL provides a conducive working environment that promotes employee growth and development. Long term serving employees are valuable assets of the organization and are custodians of organisational culture and institutional memory. Employees are also valuable marketing assets through advocacy. Thus, SASSCAL congratulates its long-serving employees.



Long term serving employees are valuable assets of the organization and are custodians of organisational culture and institutional memory.

SASSCAL staff engaging in various activities at the 2019 Team Building event



Notes



SASSCAL staff joined the rest of the African continent to celebrate Africa Day by wearing their diverse beautiful African ethnic attires.



Annual Report 2019

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