



Mapping of African Stakeholders to include into Networks

Deliverable 5.1.



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Executive Summary

This deliverable aims to develop a comprehensive list of the potential stakeholders that are operating on the African Continent, with the aim of a list of potential stakeholders to be used by the various work packages. In this mapping we have gathered information about over three hundred (300) potential stakeholders covering the fields of

- 1) Nationally declared contributions and adaptation
 - UNFCCC National Focal Points
- 2) Climate Policy
- 3) Meteorological services
- 4) Disaster risk reduction and adaptation
- 5) Observations, including
 - Carbon exchange between the atmosphere and the land surface,
 - Atmospheric observations
 - Ocean observations
 - Air Quality Observations, management and research
- 6) Modelling capacity
 - High performance computing capacity
 - Earth system models
 - Meteorological and climate models
 - Hydrological models
 - Ocean models
 - Remote sensing

In this mapping, it is expected that during the first iteration it will not be possible to identify all of the relevant stakeholders. Some participants and project partners in this deliverable have well established networks in South Africa, West Africa and Kenya. This has undoubtedly skewed the identification of the stakeholders listed here. However, as other work packages deepen their work, the KADI project also updates the list of stakeholders with whom engagement will expand. Therefore, it will be necessary to approach stakeholder mapping as an iterative process with regular revisions of this document throughout the project.

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Introduction

This deliverable aims to develop a comprehensive list of the potential stakeholders that are operating on the African Continent, with the aim of a list of potential stakeholders to be used by the various work packages.

Due to the nature of this task, it can by no means be comprehensive and capture all of the stakeholders that may be appropriate for this project. Through our engagements across the project team, we are confident that most of the significant stakeholders have been identified, however it is necessary to treat this as a living document and regular updates will be needed to review the list of potential stakeholders and include any newly identified stakeholders as they are identified or engage with the project.

Methodology

The methodology utilised for developing this deliverable consisted of developing an outline of the key sectors of interest as per the description of the deliverable as follows: meteorological services, organisations operating climatological observations, inventory agencies and policy makers. At this point in the development of the project it was felt that the requirement would primarily be to develop as broad an overview of the stakeholders as possible. This would allow for the individual work packages to select the most appropriate individuals or organisations to contact. Therefore, the information provided about each stakeholder is purposefully kept reasonably brief along these lines:

- the geographical scale at which they operate,
- the organisation,
- the website of the organisation,
- a contact person where possible,
- an email address of the contact person,
- a brief description of the organisation, taken as self-described on the organisation website.

The tables were developed and initially populated by the leads of the deliverable, then meetings were held with the other project partners during which additional organisations were highlighted. For the project participants who were not able to attend the meetings the document was shared in a collaborative space and they were given the opportunity to provide input over a 2-week period.

The project partners then filled in gaps in the information that may have existed.

Potential use case

A potential use case of more detailed stakeholder mapping has been developed in WP 2.3 in based on a more detailed stake holder mapping which would be needed to guide each of the other work packages as the stakeholders are engaged Table 1.

Table 1 Detailed Stakeholder analysis as described in WP 2.3 as a use case

[Your KADI pilot climate service]								
Stakeholder name	Contact information	Organisation type	Application field	Contribution	Motivation	Existing /potential	Categorization	Communication
<i>If specific organisations or individuals cannot yet be identified, you may write down the type or sector that contains potential stakeholders.</i>		<i>Governmental organisation / NGO / private business / civil society member / academic institution ...</i>	<i>Does the stakeholder work in a specific field (e.g., water management, urban planning, disaster risk management, healthcare...)?</i>	<i>What is the stakeholder contributing to the project, when and how?</i>	<i>Why does the stakeholder contribute to the project?</i>	<i>Is the stakeholder already part of the project activities, or is it a potential partner?</i>	<i>Categorize the stakeholders in relation to their levels of interest and influence to the project. Should the stakeholder be involved, collaborated, informed or consulted?</i>	<i>How should the stakeholder be contacted? Create a communication plan based on the categorization.</i>

National GHG inventories and Nationally Declared Contributions

This section of stakeholders includes those that are involved in the development of the Nationally Declared Contributions (NDCs) and the development of National or regional Greenhouse gas inventories and where available the National focal points for policy making and negotiations in the IPCC framework.

Table 2 National Greenhouse Gas Inventories and NDCs

National Greenhouse Gas Inventories and Nationally Declared Contributions						
Region /country	Subgroup	Website	Contact person	email	Sector	Notes
Continental Groups						
Continental	African Group of Negotiators	https://africangroupofnegotiators.org/	Head of expert team that provides support to the team of African negotiators George Wamukoya	wamukoyageorge@gmail.com	Continental/ Intergovernmental	<p>The African Group of Negotiators on Climate Change (AGN) was established at COP1 in Berlin, Germany in 1995 as an alliance of African member states that represents the interests of the region in the international climate change negotiations, with a common and unified voice.</p> <p>It is the technical body of the three-tier African negotiating structure that engages in the technical negotiations during the Conferences of the Parties and the intersessional negotiations. The AGN prepares and drafts text and common positions, guided by decisions and key messages from Committee of African Heads of State and Government on Climate Change (CAHOSCC), and the African Ministerial Conference on Environment and Natural Resources (AMCEN), and prepares text for adoption by Ministers during the COPs.</p>

National Greenhouse Gas Inventories and Nationally Declared Contributions						
Region /country	Subgroup	Website	Contact person	email	Sector	Notes
	Africa Adaptation Initiative	https://africaadaptationinitiative.org/ Climate services report States and Trends in Adaptation Report		info@africaadaptationinitiative.org	Continental/ intergovernmental	Africa Adaptation Initiative (AAI) aims to strengthen collaboration on adaptation across the continent through high-level pan-African and regional dialogues, adaptation action on the ground, and addressing the adaptation financing gap. It is designed as the initiative for Africa driven by Africa. To address the increasing challenges of climate change, in 2015, the 25 th African Union Summit provided a mandate to the African Ministerial Conference on Environment (AMCEN) to develop a proposal for enhancing support to Africa on adaptation together with the African Group of Negotiators. As a result, in December 2015, African Heads of States launched the AAI at the COP21 in Paris.
	Regional Carbon Cycle Assessment and Processes (RECCAP2 Africa)	https://www.globalcarbonproject.org/reccap/	Dr Yolandi Ernst	yolandi.ernst@wits.ac.za	International/ Research	Scientific Objectives of RECCAP2: <ul style="list-style-type: none"> To establish the GHG budgets of large regions covering the entire globe at the scale of continents (or large countries) and large ocean basins, including their

National Greenhouse Gas Inventories and Nationally Declared Contributions						
Region /country	Subgroup	Website	Contact person	email	Sector	Notes
						<p>component fluxes (2010-2019 or later).</p> <ul style="list-style-type: none"> To produce new synthesis of global land, ocean and their interface GHG fluxes. Policy-relevant objectives of RECCAP2: To contribute to the global, stocktake and tracking towards net zero emissions of anthropogenic and natural GHG sources and sinks. To quantify and further constrain anthropogenic greenhouse gas emissions. To develop robust observation-based estimates of changes in carbon storage and greenhouse gas emissions and sinks by the oceans and terrestrial ecosystems.

National Greenhouse Gas Inventories and Nationally Declared Contributions						
Region /country	Subgroup	Website	Contact person	email	Sector	Notes
						<ul style="list-style-type: none"> To improve our knowledge of the processes driving changes in GHG sources and sinks. To gain science-based evidence of the response of marine and terrestrial regional GHG budgets to climate change and direct anthropogenic drivers.
Africa Hub	NDC	https://africandchub.org/			International/ Continental	The Africa NDC Hub serves as a collaborative platform set up through joint investments and partnerships to support African countries implement their Nationally Determined Contributions (NDCs).
	Algeria	https://africandchub.org/country/algeria				
	Angola	https://africandchub.org/country/angola				
	Benin	https://africandchub.org/country/benin				
	Botswana	https://africandchub.org/country/botswana				

National Greenhouse Gas Inventories and Nationally Declared Contributions						
Region /country	Subgroup	Website	Contact person	email	Sector	Notes
	Burkina Faso	https://africandchub.org/country/burkina-faso				
	Burundi	https://africandchub.org/country/burundi				
	Cabo Verde	https://africandchub.org/country/cabo-verde				
	Cameroon	https://africandchub.org/country/cameroon				
	Central Africa Republic	https://africandchub.org/country/central-african-republic				
	Chad	https://africandchub.org/country/chad				
	Comoros	https://africandchub.org/country/comoros				
	Congo	https://africandchub.org/country/congo				
	Cote d'Ivoire	https://africandchub.org/country/cote-divoire				
	Djibouti	https://africandchub.org/country/djibouti				

National Greenhouse Gas Inventories and Nationally Declared Contributions						
Region /country	Subgroup	Website	Contact person	email	Sector	Notes
	DR Congo	https://africandchub.org/country/dr-congo				
	Egypt	https://africandchub.org/country/egypt				
	Equatorial Guinea	https://africandchub.org/country/equatorial-guinea				
	Eritrea	https://africandchub.org/country/eritrea				
	eSwatini	https://africandchub.org/country/eswatini				
	Ethiopia	https://africandchub.org/country/ethiopia				
	Gabon	https://africandchub.org/country/gabon				
	Gambia	https://africandchub.org/country/gambia				
	Ghana	https://africandchub.org/country/ghana				
	Guinea	https://africandchub.org/country/guinea				

National Greenhouse Gas Inventories and Nationally Declared Contributions						
Region /country	Subgroup	Website	Contact person	email	Sector	Notes
	Guinea-Bissau	https://africandchub.org/country/guinea-bissau				
	Kenya	https://africandchub.org/country/kenya				
	Lesotho	https://africandchub.org/country/lesotho				
	Liberia	https://africandchub.org/country/liberia				
	Libya	https://africandchub.org/country/libya				
	Madagascar	https://africandchub.org/country/madagascar				
	Malawi	https://africandchub.org/country/malawi				
	Mali	https://africandchub.org/country/mali				
	Mauritania	https://africandchub.org/country/mauritania				
	Mauritius	https://africandchub.org/country/mauritius				

National Greenhouse Gas Inventories and Nationally Declared Contributions						
Region /country	Subgroup	Website	Contact person	email	Sector	Notes
	Morocco	https://africandchub.org/country/morocco				
	Mozambique	https://africandchub.org/country/mozambique				
	Namibia	https://africandchub.org/country/namibia				
	Niger	https://africandchub.org/country/niger				
	Nigeria	https://africandchub.org/country/nigeria				
	Rwanda	https://africandchub.org/country/rwanda				
	Sao Tome and Principe	https://africandchub.org/country/sao-tome-principe				
	Senegal	https://africandchub.org/country/senegal				
	Seychelles	https://africandchub.org/country/seychelles				
	Sierra Leone	https://africandchub.org/country/sierra-leone				

National Greenhouse Gas Inventories and Nationally Declared Contributions						
Region /country	Subgroup	Website	Contact person	email	Sector	Notes
	Somalia	https://africandchub.org/country/somalia				
	South Africa	https://africandchub.org/country/south-africa				
	South Sudan	https://africandchub.org/country/south-sudan				
	Sudan	https://africandchub.org/country/sudan				
	Tanzania	https://africandchub.org/country/tanzania				
	Togo	https://africandchub.org/country/togo				
	Tunisia	https://africandchub.org/country/tunisia				
	Uganda	https://africandchub.org/country/uganda				
	Zambia	https://africandchub.org/country/zambia				
	Zimbabwe	https://africandchub.org/country/zimbabwe				

National Greenhouse Gas Inventories and Nationally Declared Contributions						
Region /country	Subgroup	Website	Contact person	email	Sector	Notes
National Focal points						
South Africa	Directorate Climate Change and Air Quality	https://www.dffe.gov.za/branches/climatechange_air-quality	Deputy Director-General Climate Change and Air Quality Management: Mr Maesela Kekana	MJKekana@dffe.gov.za	National Government	Branches within the South African Department of forestry, Fisheries and Environmental responsible for climate change and air quality
	Climate Change Monitoring and Evaluation		Chief Directorate - Climate Change Monitoring and Evaluation: Mr Jongikhaya Witi	JWITI@dffe.gov.za		
	Climate Change Adaptation		Chief Directorate - Climate Change Adaptation : Mr Tlou Ramaru			
	Air Quality Management		Chief Directorate - Air Quality Management: Dr Patience Gwaze	pgwaze@environment.gov.za		
South Africa	South African Atmospheric Emission	https://saaelip.environment.gov.za/SAAELIP/SAAELIP_FACILITY/GovEnt/	Chief Directorate - Climate Change Monitoring	JWITI@dffe.gov.za	National/Government aimed at industry reporting	The National Atmospheric Emission Inventory System” or “NAEIS” is an internet-based emissions reporting

National Greenhouse Gas Inventories and Nationally Declared Contributions						
Region /country	Subgroup	Website	Contact person	email	Sector	Notes
	Licensing and Inventory Portal (SAAELIP)	Shared/Pages/Main/Logi n.aspx	and Evaluation: Mr Jongikhaya Witi Chief Directorate - Air Quality Management: Dr Patience Gwaze	pgwaze@environment.gov.za		system which is a component of the South African Atmospheric Emission Licencing and Inventory System (SAAELIP) portal https://saaelip.environment.gov.za/SAAELIP/home/ . NAEIS allows for regulated industries as well as authorities to report atmospheric emissions from all sectors for the purpose of compiling a national atmospheric emission inventory profile.

National Greenhouse Gas Inventories and Nationally Declared Contributions						
Region /country	Subgroup	Website	Contact person	email	Sector	Notes
Continental Groups						
Continental	African Group of Negotiators	https://africangroupofnegotiators.org/	Head of expert team that provides support to the team	wamukoyageorge@gmail.com	Continental/ Intergovernmental	The African Group of Negotiators on Climate Change (AGN) was established at COP1 in Berlin, Germany in 1995 as an

National Greenhouse Gas Inventories and Nationally Declared Contributions						
Region /country	Subgroup	Website	Contact person	email	Sector	Notes
			of African negotiators George Wamukoya			<p>alliance of African member states that represents the interests of the region in the international climate change negotiations, with a common and unified voice.</p> <p>It is the technical body of the three-tier African negotiating structure that engages in the technical negotiations during the Conferences of the Parties and the intersessional negotiations. The AGN prepares and drafts text and common positions, guided by decisions and key messages from Committee of African Heads of State and Government on Climate Change (CAHOSCC), and the African Ministerial Conference on Environment and Natural Resources (AMCEN), and prepares text for adoption by Ministers during the COPs.</p>
	Africa Adaptation Initiative	https://africaadaptationinitiative.org/ Climate services report		info@africaadaptationinitiative.org	Continental/ intergovernmental	Africa Adaptation Initiative (AAI) aims to strengthen collaboration on adaptation across the continent through high-level pan-African and regional dialogues, adaptation action on the ground, and addressing the adaptation financing gap.

National Greenhouse Gas Inventories and Nationally Declared Contributions						
Region /country	Subgroup	Website	Contact person	email	Sector	Notes
		States and Trends in Adaptation Report				It is designed as the initiative for Africa driven by Africa. To address the increasing challenges of climate change, in 2015, the 25 th African Union Summit provided a mandate to the African Ministerial Conference on Environment (AMCEN) to develop a proposal for enhancing support to Africa on adaptation together with the African Group of Negotiators. As a result, in December 2015, African Heads of States launched the AAI at the COP21 in Paris.
	Regional Carbon Cycle Assessment and Processes (RECCAP2 Africa)	https://www.globalcarbonproject.org/reccap/	Dr Yolandi Ernst	yolandi.ernst@wits.ac.za	International/ Research	Scientific Objectives of RECCAP2: <ul style="list-style-type: none"> To establish the GHG budgets of large regions covering the entire globe at the scale of continents (or large countries) and large ocean basins, including their component fluxes (2010-2019 or later). To produce new synthesis of global land, ocean and their interface GHG fluxes.

National Greenhouse Gas Inventories and Nationally Declared Contributions						
Region /country	Subgroup	Website	Contact person	email	Sector	Notes
						<ul style="list-style-type: none"> • Policy-relevant objectives of RECCAP2: • To contribute to the global, stocktake and tracking towards net zero emissions of anthropogenic and natural GHG sources and sinks. • To quantify and further constrain anthropogenic greenhouse gas emissions. • To develop robust observation-based estimates of changes in carbon storage and greenhouse gas emissions and sinks by the oceans and terrestrial ecosystems. • To improve our knowledge of the processes driving changes in GHG sources and sinks. • To gain science-based evidence of the response of marine and terrestrial regional GHG budgets

National Greenhouse Gas Inventories and Nationally Declared Contributions						
Region /country	Subgroup	Website	Contact person	email	Sector	Notes
						to climate change and direct anthropogenic drivers.
Africa Hub	NDC	https://africandchub.org/			International/ Continental	The Africa NDC Hub serves as a collaborative platform set up through joint investments and partnerships to support African countries implement their Nationally Determined Contributions (NDCs).
	Algeria	https://africandchub.org/country/algeria				
	Angola	https://africandchub.org/country/angola				
	Benin	https://africandchub.org/country/benin				
	Botswana	https://africandchub.org/country/botswana				
	Burkina Faso	https://africandchub.org/country/burkina-faso				
	Burundi	https://africandchub.org/country/burundi				
	Cabo Verde	https://africandchub.org/country/cabo-verde				

National Greenhouse Gas Inventories and Nationally Declared Contributions						
Region /country	Subgroup	Website	Contact person	email	Sector	Notes
	Cameroon	https://africandchub.org/country/cameroon				
	Central Africa Republic	https://africandchub.org/country/central-african-republic				
	Chad	https://africandchub.org/country/chad				
	Comoros	https://africandchub.org/country/comoros				
	Congo	https://africandchub.org/country/congo				
	Cote d'Ivoire	https://africandchub.org/country/cote-divoire				
	Djibouti	https://africandchub.org/country/djibouti				
	DR Congo	https://africandchub.org/country/dr-congo				
	Egypt	https://africandchub.org/country/egypt				
	Equatorial Guinea	https://africandchub.org/country/equatorial-guinea				

National Greenhouse Gas Inventories and Nationally Declared Contributions						
Region /country	Subgroup	Website	Contact person	email	Sector	Notes
	Eritrea	https://africandchub.org/country/eritrea				
	eSwatini	https://africandchub.org/country/eswatini				
	Ethiopia	https://africandchub.org/country/ethiopia				
	Gabon	https://africandchub.org/country/gabon				
	Gambia	https://africandchub.org/country/gambia				
	Ghana	https://africandchub.org/country/ghana				
	Guinea	https://africandchub.org/country/guinea				
	Guinea-Bissau	https://africandchub.org/country/guinea-bissau				
	Kenya	https://africandchub.org/country/kenya				
	Lesotho	https://africandchub.org/country/lesotho				

National Greenhouse Gas Inventories and Nationally Declared Contributions						
Region /country	Subgroup	Website	Contact person	email	Sector	Notes
	Liberia	https://africandchub.org/country/liberia				
	Libya	https://africandchub.org/country/libya				
	Madagascar	https://africandchub.org/country/madagascar				
	Malawi	https://africandchub.org/country/malawi				
	Mali	https://africandchub.org/country/mali				
	Mauritania	https://africandchub.org/country/mauritania				
	Mauritius	https://africandchub.org/country/mauritius				
	Morocco	https://africandchub.org/country/morocco				
	Mozambique	https://africandchub.org/country/mozambique				
	Namibia	https://africandchub.org/country/namibia				

National Greenhouse Gas Inventories and Nationally Declared Contributions						
Region /country	Subgroup	Website	Contact person	email	Sector	Notes
	Niger	https://africandchub.org/country/niger				
	Nigeria	https://africandchub.org/country/nigeria				
	Rwanda	https://africandchub.org/country/rwanda				
	Sao Tome and Principe	https://africandchub.org/country/sao-tome-principe				
	Senegal	https://africandchub.org/country/senegal				
	Seychelles	https://africandchub.org/country/seychelles				
	Sierra Leone	https://africandchub.org/country/sierra-leone				
	Somalia	https://africandchub.org/country/somalia				
	South Africa	https://africandchub.org/country/south-africa				
	South Sudan	https://africandchub.org/country/south-sudan				

National Greenhouse Gas Inventories and Nationally Declared Contributions						
Region /country	Subgroup	Website	Contact person	email	Sector	Notes
	Sudan	https://africandchub.org/country/sudan				
	Tanzania	https://africandchub.org/country/tanzania				
	Togo	https://africandchub.org/country/togo				
	Tunisia	https://africandchub.org/country/tunisia				
	Uganda	https://africandchub.org/country/uganda				
	Zambia	https://africandchub.org/country/zambia				
	Zimbabwe	https://africandchub.org/country/zimbabwe				
National Focal points						
South Africa	Directorate Climate Change and Air Quality	https://www.dffe.gov.za/branches/climatechange_air-quality	Deputy Director-General Climate Change and Air Quality Management: Mr Maesela Kekana	MJKekana@dffe.gov.za	National Government	Branches within the South African Department of forestry, Fisheries and Environmental responsible for climate change and air quality

National Greenhouse Gas Inventories and Nationally Declared Contributions						
Region /country	Subgroup	Website	Contact person	email	Sector	Notes
	Climate Change Monitoring and Evaluation		Chief Directorate - Climate Change Monitoring and Evaluation: Mr Jongikhaya Witi	JWITI@dffe.gov.za		
	Climate Change Adaptation		Chief Directorate - Climate Change Adaptation : Mr Tlou Ramaru			
	Air Quality Management		Chief Directorate - Air Quality Management: Dr Patience Gwaze	pgwaze@environment.gov.za		
South Africa	South African Atmospheric Emission Licensing and Inventory Portal (SAAELIP)	https://saaelip.environment.gov.za/SAAELIP/SAAELIP_FACILITY/GovEnt/Shared/Pages/Main/LogIn.aspx	Chief Directorate - Climate Change Monitoring and Evaluation: Mr Jongikhaya Witi Chief Directorate - Air Quality Management	JWITI@dffe.gov.za	National/Government aimed at industry reporting	The National Atmospheric Emission Inventory System” or “NAEIS” is an internet-based emissions reporting system which is a component of the South African Atmospheric Emission Licencing and Inventory System (SAAELIP) portal https://saaelip.environment.gov.za/SAAELIP/home/ .

National Greenhouse Gas Inventories and Nationally Declared Contributions						
Region /country	Subgroup	Website	Contact person	email	Sector	Notes
			nt: Dr Patience Gwaze	pgwaze@environment.gov.za		NAEIS allows for regulated industries as well as authorities to report atmospheric emissions from all sectors for the purpose of compiling a national atmospheric emission inventory profile.

United Nations Framework Convention on Climate Change (UNFCCC) National Focal Points

Table 3 UNFCCC National Focal Points

Source (Website): <https://unfccc.int/process/parties-non-party-stakeholders/parties/national-focal-point>

Country	Name, Position	Email	Ministry/Organization	Notes
Algeria	Mr. Athmane Mehadji , Deputy-Director	NFP.Algeria.UNFCCC@mae.dz elayoubimanel@gmail.com	Ministry of Foreign Affairs and the National Community Abroad	
Angola	Ms. Cecilia Fernanda Arrada Silva Bernardo , National Focal Point	silva_cec@yahoo.com.br	Ministry of Environment	
Benin	Mr. Wilfried Biao Mongazi , NFP UNFCCC	dgec_mcvdd@cadredevie.bj	Ministère du Cadre de Vie et du	

Country	Name, Position	Email	Ministry/Organization	Notes
		wilmongazi@yahoo.fr	Développement Durable (MCVDD)	
Botswana	Ms. Dorcas Ntiki Masisi , Principal Meteorologist	dmasisi@gov.bw	Ministry of Environment, Natural Resources Conservation and Tourism	
Burkina Faso	Mr. Do Etienne Traore , National UNFCCC Focal Point	doetiennetraore@yahoo.fr	Secretariat Permanent du Conseil National pour le Développement Durable (SP/CNDD)	
Burundi	Mr. Augustin Ngenzirabona , Directeur Général	augungenzi@yahoo.fr	Institut Géographique du Burundi (IGEBU)	
Cabo Verde	Mr. Carlos Alberto Tavares Moniz , UNFCCC National Focal Point	camoniz@yahoo.com.br	National Institute of Meteorology and Geophysics	
Cameroon	Mr. Thémothée Kagonbé , Sous-Directeur du Monitoring Ecologique et Suivi du Climat	kagonbet@yahoo.fr	Ministère de l'Environnement de la Protection de la Nature et du Développement Durable	
Central Africa Republic	M. Igor Gildas Tola Kogadou , Coordonnateur Expert National Climat	climatrca@gmail.com	Coordination Nationale Climat	

Country	Name, Position	Email	Ministry/Organization	Notes
Chad	Mr. Ali Ahmat Brahim , 1st National Focal Point of UNFCCC et Directeur Adjoint des Evaluations Environnementales et de la Lutte Contre les Pollutions et les Nuisances.	mhthanno@yahoo.fr ahmatali.env.92@gmail.com	Ministère de l'Environnement, de la Pêche et du Développement Durable	
	Mr. Hamid Abakar Souleymane , Deputy Director General of Chad National Meteorology and 2nd National Focal Point	chogara11@yahoo.fr	Ministry of Civil Aviation and National Meteorology (ANAM)	
Comoros	Mr. Abdou Salami Mihidjay , Point Focal National de la CCNUCC	amihidjay@yahoo.fr	Ministère de l'Agriculture, de la Pêche, de l'Environnement, du Tourisme et de l'Artisanat	
	Mr. Mohamed Said Mkandzile Abd-El-Malik , Deputy Director General of Environment and Forestry	abdelmalis@gmail.com secretariat@dgef-comores.com	Ministère de l'Agriculture, de la Pêche, de l'Environnement, de l'Aménagement du Territoire et de l'Urbanisme	

Country	Name, Position	Email	Ministry/Organization	Notes
Congo	Ms. Florantine Mapeine Onotiang	secretariatministre@ministere-tourisme.gouv.cg florantinef2bc@gmail.com	Ministère de l'Environnement, Développement Durable et du Bassin du Congo	
Cote d'Ivoire	M. Abé Yapo Eric-Michel Assamoi , Point Focal de la CCNUCC	eric_michel_assamoi@yahoo.fr	Ministère de l'Environnement et du Développement Durable	
Djibouti	H.E. Mr. Mohamed Moussa Ibrahim , Minister	balala_ingenieur@hotmail.fr		
	Mr. Dini Abdallah Omar , Secretary General	dini.omar85@gmail.com	Ministère de l'Environnement et du Développement Durable	
DR Congo	Mr. Rémy Mangani Muzinga , Agent	remymangani1@gmail.com	Ministère de l'Environnement et Développement Durable	
	Ms. Martine Mbombo Badibanga Kamunga , National Focal Point	info@medd.gouv.cd martinebk@yahoo.co.uk	Ministère de l'Environnement et Développement Durable	

Country	Name, Position	Email	Ministry/Organization	Notes
Egypt	Mr. Sherif Abdelrahim , Head of Climate Change Central Department	unfccc_eg.cccu@yahoo.com ccu@eeaa.cloud.gov.eg	Egyptian Environmental Affairs Agency (EEAA)	
Equatorial Guinea	Mr. Pedro Malavo Nsene , Unfccc Nfp	pmalavo@hotmail.com	Ministry of Forest and Environment	
	Sr. José Nsue Ndong Nzang , Punto Focal Adjunto	diobiang@gmail.com josensuendongsang@gmail.com	Ministerio de Bosques y Medio Ambiente	
Eritrea	H.E. Mr. Tesfai Ghebreselassie Sebhatu , Minister	tesgsstesfu@gmail.com	Ministry of Land, Water and Environment	
	Mr. Kibrom Asmerom Weldegebriel , Acting Director General	kibromaw@gmail.com	Ministry of Land, Water and Environment	
ESwatini	Ms. Khangeziwe Mabuza , Principal Secretary	ps_tourism@gov.sz khange@hotmail.com	Ministry of Tourism and Environmental Affairs	
Ethiopia	Mr Sandokan Debebe Jemaneh	info@pdc.gov.et sandokan.ethioclimate@gmail.com	Ministry of Planning and Development	
Gabon	M. Tanguy Gahouma-Bekale , Conseiller Spécial du Président de la République Secrétaire Permanent	conseilclimatdugoabon@yahoo.fr tanguygahouma@gmail.com	Présidence de la République	
Gambia	Mr. Alpha A.K. Jallow , Director, Climate Secretariat	info@mofwrnam.gov.gm	Governmental	

Country	Name, Position	Email	Ministry/Organization	Notes
		a_jallow2010@yahoo.com		
	Mr. Modou Cham , Principal Climate Change Officer	info@meccnar.gov.gm mcham@meccnar.gov.gm	Ministry of Environment, Climate Change and Natural Resources	
Ghana	Mr. Daniel Tutu Benefoh , Deputy Director	daniel.benefo@epa.gov.gh	Environmental Protection Agency	
Guinea	Ms. Oumou Doumbouya , DNAPNCC/Point Focal CCNUCC	oumoudoumbouya1@gmail.com	Government	
Guinea-Bissau	Mr. Viriato Luis Soares Cassama , Minister of Environment and Biodiversity	cassamavilus@gmail.com	Ministry of Environment and Biodiversity	
Kenya	H.E. Ms. Roselinda Soipan Tuya , Cabinet Secretary	cs@environment.go.ke	Ministry of Environment and Forestry	
	Mr. Ali Mohamed , Climate Change Envoy	ali.d.mohamed786@gmail.com	State House, Nairobi	
	Mr. Festus K. Ng'eno , Principal Secretary	cs@environment.go.ke psoffice@environment.go.ke	Ministry of Environment and Forestry	
	Mr. Korir Singo'eir , Principal Secretary	abrahamsingoei@gmail.com	Ministry of Foreign & Diaspora Affairs	

Country	Name, Position	Email	Ministry/Organization	Notes
	Ms. Pacifica F. A. Ogola , Director Climate Programmes Coordination	psoffice@environment.go.ke pogola@environment.go.ke	Ministry of Environment and Forestry	
Lesotho	Mr. Mokoena France , Director (a.i.)	mokoenaf@yahoo.com mokuena.france@gov.ls	Ministry of Environment (MIAMBIENTE)	
Liberia	Mr. Jefferson F. Nyandibo , Coordinator	wtarpeh@epa.gov.lr jnyandibo@epa.gov.lr	Environmental Protection Agency of Liberia (EPA)	
Libya	Mr. Nassir Naser , Environmental Specialist	egainfo@environment.org.ly Nassirega@gmail.com	Ministry of Environment	
Madagascar	M. Michel Omer Laivao , Point Focal National Changement Climatique	omer.laivao@meeft.gov.mg	Ministère de l'Environnement, de l'Écologie et des Forêts (MEEFT)	
Malawi	Mr. Evans Davie Njewa , Chief Environmental Officer and UNFCCC Focal Point	evansnjewa@gmail.com	Government of Malawi	
	Ms. Tawonga Grace Mbale-Luka , Acting Director of Environmental Affairs Department	tawongam@yahoo.com	Government	

Country	Name, Position	Email	Ministry/Organization	Notes
Mali	Mr. Drissa Doumbia , Technical Advisor to the Director	drissd2@gmail.com	Ministère de l'Environnement, de l'Assainissement et du Développement Durable	
Mauritania	M. Sidi Mohamed El Wavi , Chargé de Mission/Point Focal National de la Convention Cadre sur le Changement Climatique	elwavi.sm@gmail.com	Ministère de l'Environnement et du Développement Durable	
Mauritius	Mr. Ravi Shankar Sonea , Permanent Secretary	rsonea@govmu.org menv@govmu.org	Ministry of Environment, Solid Waste Management and Climate Change	
	Ms. Sarita Meeheelaul , Acting Director	menv@govmu.org smeeheelaul@govmu.org		
Morocco	Mr. Bouzekri Razi , Director for Climate Change, Biodiversity and Green Economy	razi@environnement.gov.ma bz.razi@gmail.com	Ministry of Energy Transition and Sustainable Development	
Mozambique	Ind. Eduardo Baixo , Head of Department	mta@gov.mz ebaixo@hotmail.com		
	Mr. Agostinho Fernando , UNFCCC National Focal Point	agostinhofernando@yahoo.com.br	Ministry of Land and Environment	

Country	Name, Position	Email	Ministry/Organization	Notes
Namibia	Mr. Petrus Ileni Muteyauli , Deputy Director	pmuteyauli@yahoo.co.uk	Ministry of Environment and Tourism	
Niger	Mr. Kamaye Maazou , Executive Secretary	bionedd@intnet.ne kamayemaazou@yahoo.fr	Conseil National de l'Environnement pour un Développement Durable (CNEDD)	
Nigeria	Mr. Salisu Dahiru , Director General	info@environment.gov.ng salisu.dahiru@natccc.gov.ng	National Council on Climate Change	
Rwanda	Mr. Faustin Munyazikwiye , Deputy Director General	fmunyazikwiye@rema.gov.rw	Rwanda Environment Management Authority	
Sao Tome and Principe	Mr. Amilcar Afonso , Counselor and Directorate of Foreign Policy	amilcar_afonso@hotmail.com	Ministry of Foreign Affairs, Cooperation and Communities	
Senegal	M. Baba Dramé , Directeur	babadrame@gmail.com		
	Mme Diouf Ep Sarr Madeleine Rose , Chef de Division, Chargée de Programme sur le Climat	rosemediouf@gmail.com	Direction de l'Environnement et des Etablissements Classes (DEEC)	
Seychelles	Mr. Will Agricole , Principal Secretary, UNFCCC National Focal Point	w.agricole@meteo.gov.sc	Ministry of Environment, Energy and Climate Change	

Country	Name, Position	Email	Ministry/Organization	Notes
Sierra Leone	Mr. Gabriel Kpaka , Deputy Director General and UNFCCC NFP	gabrielkpaka@gmail.com	Ministry of Environment (MIAMBIENTE)	
Somalia	Mr. Abdirashid A Ateye , UNFCCC Coordinator	aateye@moecc.gov.so minister-office@moecc.gov.so	Ministry of Environment and Climate Change	
	Mr. Abubakar Hassan Afrah, Personal Assistant of the minister	Afrah@moecc.gov.so coordination@moecc.gov.so		
	Mr. Ahmed Yusuf Ahmed , Director General	dg@moecc.gov.so minister-office@moecc.gov.so	Ministry of Environment and Climate Change	
	Ms. Hafsa Omar Abdilahi , Director	climate@moecc.gov.so coordination@moecc.gov.so		
	Ms. Khadija Mohamed Almahzoumi , Minister	minister@moecc.gov.so minister-office@moecc.gov.so		
South Africa	Mr. Maesela John Kekana , Chief Director International Climate Change Relations and Negotiations	mjkekana@environment.gov.za	Department of Forestry, Fisheries and the Environment	
	Ms. Judith Maria Combrink , Deputy-Director, International Coordination	globalengagements@environment.gov.za jcombrink@environment.gov.za	Department of Environmental Affairs	

Country	Name, Position	Email	Ministry/Organization	Notes
South Sudan	Mr. John Payai Manyok , Deputy Director for Climate Change and UNFCCC National Focal Point for South Sudan	payaijohn2011@gmail.com	Ministry of Environment and Forestry	
Sudan	Ms. Mona Ali Mohammed Ahmed , Secretary General	hcenr2005@yahoo.com	Higher Council for Environment and Natural Resources (HCENR)	
Tanzania	Mr. Kanizio Fredrick Kahema Manyika , Principal Forest Officer1	freddy_Manyika@yahoo.com kanizio.manyika@vpo.go.tz	Vice President's Office	
Togo	Mr. Komla Azankpo , Juriste, Point Focal National de la CCNUCC	julesazakpo7@gmail.com julesazakpo@yahoo.fr	Ministère de l'Environnement et des Ressources Forestières	
Tunisia	Mr. Mohamed Zmerli , UNFCCC National Focal Point	dgeqv@mineat.gov.tn zmerli_mohamed@yahoo.com		
Uganda	Mr. Alfred Okot Okidi , Permanent Secretary	mwle@mwle.gov.ug alfred.okidi64@gmail.com	Ministry of Water and Environment	
	Ms. Margaret Athieno Mwebesa , Commissioner, Climate Change	mwle@mwle.gov.ug margathieno@gmail.com		

Country	Name, Position	Email	Ministry/Organization	Notes
Zambia	Mr. Ephraim Mwepya Shitima , Director	mwepyashitima@yahoo.co.uk emshitima40@gmail.com	Ministry of Lands, Natural Resources and Environmental Protection	
Zimbabwe	Mr. Washington Zhakata , Director	climatechange@environment.gov.zw washingtonzhakata@gmail.com	Ministry of Environment, Climate, Tourism and Hospitality Industry	

Climate Policy Makers

This section highlights the stakeholders involved in climate policy making. It includes stakeholders at the continental level and an example of the stakeholders at the ministerial or government department level from South Africa. It is understood that this is not a comprehensive list of all the government ministries across the continent. However, the list is indicative of the ministries that would be required.

Table 4 Climate Change Policy Makers

Climate Policy Makers						
Country	Subgroup	Website	Contact person	Email	Sector	Notes
Regional and Continental Scale						
Continental	African Ministerial Conference on Environment and Natural Resources (AMCEN)	https://www.unep.org/regions/africa/african-ministerial-conference-environment			International/ Government	The African Ministerial Conference on the Environment (AMCEN) was established in December 1985, following a conference of African ministers of environment held in Cairo, Egypt. Its mandate is to provide advocacy for environmental protection in Africa; to ensure that basic human needs are met adequately and in a sustainable manner; to ensure that social and economic development is realized at all levels; and to ensure that agricultural activities and practices meet the food security needs of the region.
	WMO Regional Office for Africa (ROA) - Ethiopia	https://public.wmo.int/en/our-mandate/how-we-do-it/regional-offices/regional-office-africa#:~:text=The%20Office%20for%20Africa%20is,that%20cause%20lethal%20flash%20floods.	Agnes Kijazi	akijazi@wmo.int	International	

Climate Policy Makers						
Country	Subgroup	Website	Contact person	Email	Sector	Notes
National Focus						
South Africa	Climate Change Monitoring and Evaluation	https://www.dffe.gov.za/branches/climatechange_airquality	Deputy Director-General Climate Change and Air Quality Management: Mr Maesela Kekana	MJKekana@dffe.gov.za	National / Government	
			Chief Directorate - Climate Change Monitoring and Evaluation: Mr Jongikhaya Witi	JWITI@dffe.gov.za		
	Climate Change Adaptation		Chief Directorate - Climate Change Adaptation: Mr Tlou Ramaru			
	Air Quality Management	Chief Directorate - Air Quality Management: Ms Patience Gwaze	pgwaze@environment.gov.za			
	Department of Science and Technology	https://www.dst.gov.za/	Charles Mokonoto Director : Cyber Infrastructure DSI	Charles.Mokonoto@dst.gov.za	National/ Government	The Department of Science and Innovation seeks to boost socio-economic development in South Africa through research and innovation. To achieve its goals, the

Climate Policy Makers						
Country	Subgroup	Website	Contact person	Email	Sector	Notes
	SARIR research infrastructures		Imraan Patel, Deputy Director-General: Research Development and Support Leluma Matooane Director: Earth Systems Science	Imraan.Patel@dst.gov.za Leluma.Matooane@dst.gov.za		<p>Department provides leadership, an enabling environment and resources for science, technology and innovation. Through its Programmes (Administration; Technology Innovation; International Cooperation and Resources; Research Development and Support; and Socio-economic Innovation Partnerships) and several entities that work alongside it, the Department is accomplishing ground-breaking science and enhancing the well-being of all South Africans</p> <p>Amongst other programs the DSI is responsible for the development and rollout of the South African Research Infrastructure Roadmap.</p> <p>https://www.dst.gov.za/images/Attachments/Department_of_Science_and_Technology_SARIR_2016.pdf</p>
	South African National Research Foundation	https://www.nrf.ac.za/	Clifford Nxomani Deputy Chief Executive Officer National Research	clifford.nxomani@nrf.ac.za	National/ Government	The NRF is an independent statutory body established through the National Research Foundation Act (Act No 23 of 1998), following a system-wide review conducted for the

Climate Policy Makers						
Country	Subgroup	Website	Contact person	Email	Sector	Notes
			Infrastructure Platforms			<p>Department of Arts, Culture, Science and Technology (DACST). The new entity incorporated the functions of the research funding agencies that were previously servicing various sections of the research community, namely the former Centre for Science Development (CSD) of the Human Sciences Research Council (HSRC) and the former Foundation for Research Development (FRD) that included several National Research Facilities.</p> <p>As a government mandated research and science development agency the NRF funds research, the development of high-end Human Capacity and critical research infrastructure to promote knowledge production across all disciplinary fields. The goal of the NRF is to create innovative funding instruments, advance research career development, increase public science engagement and to establish leading-edge research platforms that will transform the scientific landscape and inspire a representative research community to aspire</p>

Climate Policy Makers						
Country	Subgroup	Website	Contact person	Email	Sector	Notes
						to global competitiveness. The NRF promotes South African research and innovation interests across the country and internationally, and together with research institutions, business, industry and international partners we build bridges between research communities for mutual benefit that contributes to National Development.
	Department of Water and Sanitation	https://www.dws.gov.za/	Gabriel Lekalakala	LekalakalaR@dws.gov.za	National/ Government	<p>The Department of Water and Sanitation is the custodian of South Africa's water resources. It is primarily responsible for the formulation and implementation of policy governing this sector.</p> <p>While striving to ensure that all South Africans gain access to clean water and dignified sanitation, the department also promotes effective and efficient water resources management to ensure sustainable economic and social development.</p>

Meteorological Services

This set of stakeholders includes those involved in the provision of meteorological services at the organisation and coordinating levels across the continent in a section referred to as “Meteorological Management and Support organisations”. This section includes (Table 4) which consisting of any professional societies and “National Meteorological Organisations” primarily consisting of the Meteorological Service organisations (Table 5).

Meteorological Management and support organisations

Table 5 Meteorological Management or support organisations

Meteorological management and support organisations						
Name/country	Subgroup	Website	Contact person	Email Address	Sector	Notes
Regional or Continental Scale						
Continental	African Ministerial Conference on Meteorology	https://uia.org/s/or/en/1122281250			International/ Government	The African Ministerial Conference on Meteorology (AMCOMET) was initiated in 2010 as a permanent forum where African ministers convene every two years to discuss policy matters related to the development of meteorology and its applications and its contribution to the socio-economic development in Africa.
	Secretariat provided by (WMO) in Geneva.					
	WMO Regional Office for Africa	https://public.wmo.int/en/our-mandate/how-we-do-it/regional-offices/regional-office-africa	Ernest Afiesamama https://aiccra.cgiar.org/people/ernest-afiesimama		International/ Continental	<p>The Office for Africa is headquartered in Addis Ababa, Ethiopia, interfaces with 57 Member States in Africa (WMO Region I), 33 of which are least developed countries.</p> <p>Many African countries are prone to slow onset climate events such as droughts and extreme weather that cause lethal flash floods. The continent's money-strapped countries – 33 of 57 are least developed – already face development challenges and ecosystem degradation. Climate and weather events impose further pressures on economic sectors, such as agriculture and tourism, in addition to impacting health. Africa's adaptive capacity lessens with each new event, increasing its sensitivity to climate change. Strengthening the National Meteorological and Hydrological Services (NMHSs) to provide better weather and climate services,</p>

Meteorological management and support organisations						
Name/country	Subgroup	Website	Contact person	Email Address	Sector	Notes
						as well as to improve the management of hydrological resources, will enhance the adaptive capacity of African Member States. Incorporating better weather and climate risk management into development policies and strategies will enhance socio-economic development and improve the well-being of African peoples.
	WMO Subregion North and West Africa				International/ Regional	Abuja, Nigeria The role of the office is to work with Members, regional institutions and development partners in strengthening capacities, for the provision of weather and climate services and water resources information, to stakeholders in climate-sensitive sectors, in contribution to enhanced socioeconomic development, disaster risk management and sustainable development. The Abuja office represents WMO in several international and regional institutions. The office covers 27 countries, five in North Africa, 15 in West Africa and seven in Central Africa. The Office initiated the provision of a daily weather forecast to the various actors in Sierra Leone during the Ebola epidemic. It conducted a post-disaster assessment of the mudslides in Freetown, Sierra Leone during August 2017.
	WMO Subregion Eastern and Southern Africa				International/ Regional	Nairobi, Kenya The Nairobi WMO Office represents WMO in several International and Regional institutions. The office covers the Eastern and Southern parts of the African continent which has 26 countries.

Meteorological management and support organisations						
Name/country	Subgroup	Website	Contact person	Email Address	Sector	Notes
Continental	ACMAD African Centre of Meteorology applications for development	https://acmad.org/	ANDRE KAMGA FOAMOUHOUE	PL6, 55 avenues des Ministeres bp: 13 184 Niamey – Niger contact@acmad.org	International/ Regional	<p>By its resolution 540 (XX) in 1985, the Conference of Ministers of the United Nations Economic Commission for Africa on behalf of the member States of the United Nations Economic Commission for Africa, resolved that an African Centre of Meteorological Applications for Development should be established for the purpose of:</p> <ul style="list-style-type: none"> • the understanding of atmospheric and climatic processes over Africa; • collecting, analysing and disseminating meteorological and hydrological information; • providing a meteorological watch and early warning system over Africa and; • promoting the training of African scientists and technicians in the application of meteorology for development; <p>Practical and useful actions can presently be taken to alleviate the effects of drought, atmospheric phenomena, tropical cyclones by applying methodologies based on a thorough knowledge of the impact of meteorological factors on food production, on the availability of water resources and on new and renewable sources of energy.</p>
	CGIAR Region continental Africa	https://www.cgiar.org/research/cgiar-regions/continental-africa/				International Regional centre

Meteorological management and support organisations						
Name/country	Subgroup	Website	Contact person	Email Address	Sector	Notes
						and innovation systems, and equipping African farmers with the science and technologies they need to survive and to thrive.
	Accelerating impact of CGIAR climate Research for Africa	https://aiccra.cgiar.org/	Dawit Solomon (Regional Coordinator, eastern and Southern Africa and country coordinator Ethiopia)	d.solomon@cgiar.org	International	
	United Nations Economic Commission for Africa (UNECA)- ACPC African Climate Policy Centre	https://www.uneca.org/acpc	James Murombedzi			The goal of the Africa Climate Policy Centre is to contribute to poverty reduction through successful mitigation and adaptation to climate change in Africa and to improve the capacity of African countries to participate effectively in multilateral climate negotiations.
	AfriGEO: The African Group on Earth Observations	https://afrigeo.africageoportal.com/	Phoebe Odour PoC AfriGEO Secretariat	poduor@rcmrd.org	Continental dissemination of Geo-information	The AfriGEO initiative, developed within the GEO framework, strengthens the link between the current GEO activities with existing capabilities and initiatives in Africa, providing the necessary framework for countries and organizations to access and leverage on-going bilateral and multilateral EO-based initiatives across Africa, thereby creating synergies and minimizing duplication for the benefit of the entire continent. This coordination initiative has been recognized essential to enhance Africa's capacity for producing, managing and using Earth observations, thus also enabling the

Meteorological management and support organisations						
Name/country	Subgroup	Website	Contact person	Email Address	Sector	Notes
	Regional Centre for mapping of regional development Part of AfriGEO	https://www.rcmrd.org/en/about-us/about-rcmrd	Phoebe Odour Thematic Lead- LULC and GHG Inventories Server Eastern and Southern Africa	poduor@rcmrd.org	Generation, Application and dissemination of Geo-information and Allied Technologies for sustainable development.	Region's participation in, and contribution to, the Global Earth Observation System of Systems (GEOSS). The Regional Centre for Mapping of Resources for Development (RCMRD) was established in 1975 under the auspices of the United Nations Economic Commission for Africa (UNECA) and the African Union (AU). It is an inter-governmental organization and currently has contracting Member States in the Eastern and Southern Africa Regions. RCMRD programmes are oriented towards sustainable applications in natural resource management, infrastructure and environmental management utilizing Geo-Information Technologies.
Regional (North and West Africa)	AGRHYMET Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Guinea, Guinea-Bissau, Mali, Mauritania, Niger, Senegal, Chad and Togo	https://agrhyment.cilss.int/	Dr. Mahalmoudou Hamadou Maiga	administration.agrhymet@cilss.int		Created in 1974, the AGRHYMET Regional Centre is a specialized institution of the Permanent Inter-State Committee for Drought Control in the Sahel (CILSS: www.cilss.int) bringing together thirteen countries which are: Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Guinea, Guinea-Bissau, Mali, Mauritania, Niger, Senegal, Chad and Togo. It is an inter-state public institution endowed with legal personality and financial autonomy. It has international status with headquarters in Niamey, Niger.
Regional- West Africa	WASCAL (West African Science Services Center	https://wascal.org/	Dr Moumini Savadogo	info@wascal.org		WASCAL (West African Science Service Centre on Climate Change and Adapted Land Use) is a large-scale research-focused

Meteorological management and support organisations						
Name/country	Subgroup	Website	Contact person	Email Address	Sector	Notes
	on Climate Change and Adaptive Land Use)					Climate Service Centre designed to help tackle this challenge and thereby enhance the resilience of human and environmental systems to climate change and increased variability. It does so by strengthening the research infrastructure and capacity in West Africa related to climate change and by pooling the expertise of ten West African countries and Germany.
Regional- Southern Africa	CAL Southern African Science Services Centre for Climate Change and adaptive land Management	https://www.sasscal.org/	Dr Jane Olwoch	info@sasscal.org	Regional	The Southern African Science Service Centre for Climate Change and Adaptive Land Management (SASSCAL) is a joint initiative of Angola, Botswana, Namibia, South Africa, Zambia, and Germany in response to the challenges of global change.
	SADC Climate Services Centre	https://www.sadc.int/services-and-centres/climate-services-centre http://csc.sadc.int/en/	Prithviraj Booneeady		Regional	The SADC Climate Services Centre provides operational, regional services for monitoring and predicting extremes in climate condition. The Centre develops and disseminates meteorological, environmental and hydro-meteorological products. The Centre's products contribute to improved disaster risk management in the region, and help to ensure Member States are better prepared for weather and climate disasters, conservation and protection of natural resources.

Meteorological management and support organisations						
Name/country	Subgroup	Website	Contact person	Email Address	Sector	Notes
South Africa	GFCS National Framework for Climate Services (NFCS-SA) - DFFE	https://www.dffe.gov.za/sites/default/files/docs/nationalframework_climateservices_proposition.pdf			National Government	/
	Water Research Commission	https://www.wrc.org.za/	Brilliant Patja	brilliantp@wrc.org.za	National Government	/ The WRC was established in terms of the Water Research Act (Act No 34 of 1971), following a period of serious water shortage. It was deemed to be of national importance to generate new knowledge and to promote the country's water research purposefully, owing to the view held that water would be one of South Africa's most limiting factors in the 21st century. In 1971 when the WRC was founded, water research and development (R&D) in South Africa was limited to a few institutions and the funding level inadequate. There was no research co-ordination and an apparent neglect of some key research fields. In addition, there was little strategic direction or leadership that would provide for the identification of priority areas or appropriate technology transfer. It was to address these issues, that the WRC was established.
	South African National Space Agency	https://www.sansa.org.za/	Stuart Bernard	customers-eo@sansa.org.za	National government	/ Earth Observation collects, processes, archives, and disseminates Earth observation data (principally from satellites) to support policy-making, decision-making, economic growth and sustainable development in South Africa. Their activities align with South African and global Earth observation strategies to provide data services and products that

Meteorological management and support organisations						
Name/country	Subgroup	Website	Contact person	Email Address	Sector	Notes
						promote socioeconomic benefits, like environmental and resource management, disaster management and health. Data and value-added remote sensing services produced by the division are used for research and development, human capital development and science advancement in geo-informatics, image and data processing and remote sensing.
	Department of cooperative governance NDMC National Disaster Management Centre	http://www.ndmc.gov.za/Pages/Home-Page.aspx	Dr Elias Sitole	enquiries@ndmc.gov.za	National Government	/ The National Disaster Management Centre is established in terms of Section 8 of the Disaster Management Act, 2002 (Act No 57 of 2002) (DMA). The National Centre functions as an institution within the public service and forms part of, and functions within, a department of state (DCOG) for which the Minister is responsible. The objective of the National Centre is to promote an integrated and co-ordinated system of disaster management, with special emphasis on prevention and mitigation, by national, provincial and municipal organs of state, statutory functionaries, other role-players involved in disaster management and communities. The National Centre is also responsible for the administration of the Fire Brigade Services Act, 1987 (Act No 99 of 1987) (FBSA) Within the South African environment, disaster management is a shared responsibility which must be fostered through partnerships between the various stakeholders and co-operative relationships between the different spheres of government, the private sector and civil society.

Meteorological management and support organisations						
Name/country	Subgroup	Website	Contact person	Email Address	Sector	Notes
	South Africa Presidential Climate Commission	https://www.climatecommission.org.za/	Michelle Hiestermann	michelle@climatecommission.org.za	Government	The Presidential Climate Commission is an independent, statutory, multi-stakeholder body established by President Cyril Ramaphosa. The purpose is to oversee and facilitate a just and equitable transition towards a low-emissions and climate-resilient economy.
	Access	https://www.access.ac.za/	Neville Sweijda	nsweijd@csir.co.za	Research body	The Alliance for Collaboration on Climate and Earth Systems Science, or ACCESS programme, is an instrument of the Global Change Programme of the South African Department of Science and Technology and the National Research Foundation. It is hosted by the Council for Scientific and Industrial Research. The main purpose of the programme is to provide a platform for multi-institutional and trans-disciplinary research on the drivers, mechanisms of manifestation, impacts and applications and responses to the dynamics of earth systems, as they affect the natural world, ecosystem services and human society. ACCESS is also a training programme for emerging researchers and students who are interested in the future of our planet and society.
	UCT African Climate and development Initiative	https://acdi.uct.ac.za/	Mark New	mark.new@uct.ac.za		The ACDI is a university-wide initiative at the University of Cape Town which supports collaborative research and training in climate change and development
Professional Societies						

Meteorological management and support organisations						
Name/country	Subgroup	Website	Contact person	Email Address	Sector	Notes
African Meteorological Society	new group trying to develop national professional organizations/societies	https://africanmetsociety.org/				
South Africa	SASAS (South African Society for Atmospheric Science)	under development	Current President is Francois Engelbrecht VP is Rebecca Garland	Francois.Engelbrecht@wits.ac.za Rebecca.garland@up.ac.za		
Cameroon	Association of Meteorologists of Cameroon (AMECAM)	https://africanmetsociety.org/member/amecam/ To be developed	NDICHOUT MOLOU Emmanuel Lamblun	emmanuel.molou@yahoo.com		Purpose and objective of your Society: a) The defence of the interests of the group; b) The promotion of meteorology in Cameroonian society; c) The creation of cohesion between members; d) The contribution to reducing the impacts of climate change and improving the adaptation of populations to these impacts
Ethiopia	Ethiopian Meteorological Society	https://africanmetsociety.org/member/etms/ Individual website to be developed	Mr. Tafesse Regassa Gurmu	regassa.gurmu8@gmail.com ethiopianmetsoc@gmail.com		Journal of Ethiopian Meteorological Society

Meteorological management and support organisations						
Name/country	Subgroup	Website	Contact person	Email Address	Sector	Notes
	National Water Conservation and Pipeline Corporation (NWCPC)		Eng. Mositet	info@nwcpc.go.ke		
	National Disaster Operations Centre		Col. Kigotho	njagi@ndockenya.org		
	Kenya Civil Aviation Authority	https://kcaa.or.ke/	Francis Mwangi	fmwangi@kcaa.or.ke		
	International Centre for Research in Agroforestry (ICRAF)	https://www.worldagroforestry.org/publication/what-icraf-we-are-international-centre-research-agroforestry	Anne Omollo	icraf@cgiar.org		ICRAF works on governmental policy reform as well as on enlarging farmers technical options in direct collaboration with NGO's, universities, regional and national research and development institutes. In all fieldsites ICRAF collaborates with national partners. Through its global coverage ICRAF contributes and has access to a global knowledge base and can offer solutions proven to be successful elsewhere

Meteorological management and support organisations						
Name/country	Subgroup	Website	Contact person	Email Address	Sector	Notes
Kenya Kenya	East African Farmers Federation	https://www.eaffu.org/	Stephen Muchiri	smuchiri@eaffu.org		<p>The Eastern Africa Farmers Federation (EAFF) is a corporate members-based regional farmers' organization founded in 2001. It is registered in Kenya under the Societies Act, with country chapters in each of its member countries. EAFF's establishment was triggered by the development imperatives of the late 1990s and early 2000, especially the need to strengthen mechanisms for regional collective action. Specifically, the revival of the East African Community (EAC) and the focus on strengthening the Regional Economic Communities by the Africa Union provided an opportunity for farmer organizations to engage at the regional level. Accordingly, EAFF's formation was championed by national farmers' organizations from Kenya, Tanzania, Uganda, Rwanda, and DR Congo. EAFF was formed in 2001 and was registered in 2005 with the following core mandate and functions:</p> <ul style="list-style-type: none"> • Regional farmer empowerment through lobbying and advocacy for pro-poor policies. • Facilitation of trade through the promotion of regional integration and entrepreneurship. • Enhancement of food security, food sovereignty, and poverty alleviation. • Information management through appropriate acquisition packaging and dissemination. • Active engagement of women and youth in agricultural development.

Meteorological management and support organisations						
Name/country	Subgroup	Website	Contact person	Email Address	Sector	Notes
						<ul style="list-style-type: none"> Natural resources and biodiversity conservation.
	The Nuclear Power and Energy Agency (NUPEA), formerly Kenya Nuclear Electricity Board (KNEB)	https://www.nuclear.co.ke/	Nduma Ruwah	jonduma@gmail.com	Government	<p>The Nuclear Power and Energy Agency is a State Corporation established under the Energy Act 2019. It is charged with the responsibility of promoting and implementing Kenya's Nuclear Power Programme, carrying out research and development for the energy sector.</p> <p>Towards attainment of its mandate, the Nuclear Power and Energy Agency shall develop policies and legislation, undertake public education and awareness, identify suitable sites for the construction of Nuclear Power Plants; carry out research, development and innovation on energy technologies as well as capacity building for the energy sector</p>
	The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)	https://www.icrisat.org/	Dr. Lievens Claessens	i.claessens@cgiar.org		

Meteorological management and support organisations						
Name/country	Subgroup	Website	Contact person	Email Address	Sector	Notes
Kenya	National Irrigation Board		Eng. Charles Muasya	nib@nib.or.ke		
	Ministry of Energy and Petroleum	https://www.president.go.ke/ministries-ke/ministry-of-energy-and-petroleum/	Mr. P. Meyo	ps@energymin.go.ke		Kawi House 4th Floor Block 'A' P.O. Box 30582-00100 NAIROBI Telephone: 020-3310112
	Ministry of Agriculture and livestock development	https://kilimo.go.ke/	Veronica Ndetu	nzilani2014@gmail.com	National/ Government	The Ministry's core functions include: i). Formulation, implementation and monitoring of agricultural legislations, regulations and policies ii). Supporting agricultural research and promoting technology delivery iii). Facilitating and representing agricultural state corporations in the government iv). Development, implementation and coordination of programmes in the agricultural sector v). Regulating and quality control of inputs, produce and products from the agricultural sector vi). Management and control of pests and diseases vii). Collecting, maintaining and managing information on agricultural sector

Meteorological management and support organisations						
Name/country	Subgroup	Website	Contact person	Email Address	Sector	Notes
Kenya	Kenya Electricity Generating Company PLC (KenGen)	https://www.ken-gen.co.ke/index.php?view=article&id=1	Willis Otieno	wochieng@ken-gen.co.ke		Kenya Electricity Generating Company PLC (KenGen) is the leading electric power generating company in East Africa. KenGen was incorporated in 1954 under the Kenyan Companies Act as Kenya Power Company (KPC) with the mandate to generate electricity through the development, management, and operation of power plants. The shareholders of the Company later contracted East Africa Power & Lighting Company (EAP&L) to manage KPC. In 1983, EAP&L changed to Kenya Power & Lighting Company.
	Ministry of environment, agriculture, energy, transport, building, health, hydrology, ...			psoffice@environment.go.ke, info@kilimo.go.ke , mohcommunication@health.go.ke	National/ Government	
	Ministry of environment, agriculture, energy, transport, building, health, hydrology, ...			psoffice@environment.go.ke,	Kenya	Ministry of environment, agriculture, energy, transport, building, health, hydrology, ...
	NEMA (National Environmental Management Agency)	https://www.nema.go.ke/			dgnema@nema.go.ke	

Meteorological management and support organisations						
Name/country	Subgroup	Website	Contact person	Email Address	Sector	Notes
						<ul style="list-style-type: none"> ii) taking stock of the natural resources; iii) advising on land use planning; iv) undertaking research, investigation and surveys in the field of environment and disseminating information on the findings; v) mobilizing and monitoring the use of financial and human resources for environmental management; vi) regulating, monitoring and assessing activities to ensure that the environment is not degraded; vii) enforcing environmental standards, viii) undertaking environmental education, public awareness and public participation programmes; developing, publishing and disseminating manuals, codes or guidelines relating to environmental management; ix) preparing the state of the environment report and; development and implementation of the national environment action plans.

Meteorological Services

Table 6 National Meteorological Services

National Meteorological Services						
Country	Organisation	Website	Contact Person	Email Address	Sector	Notes
National Meteorological and Hydrological services						
Information on the following national profiles is found in WMO directory https://contacts.wmo.int/all_members/						
Algeria	Office national de la météorologie (ONM)	http://www.meteo.dz/	Sidi Baika Sidalamine Baika	baik1971@gmail.com sali.assekrem@gmail.com	National Government /	Sidi Baika is Ingénieur chez Office National de la météorologie (METEO ALGERIE), Institut hydrométéorologie de formation et recherche at IHFR Oran. Sidalamine Baika is the technician in charge of the Cimel and Brewer at Tamanrasset station, also in charge of the instrumentation at Assekrem. He is the contact of AEMET.
Angola	Instituto Nacional de Meteorología e Geofísica - INAMET, Angola			Rua do Gamek à Direita, S/N R/C, P.O. Box 1228-C, Luanda	National Government /	
Benin	Agence Nationale de la Météorologie (METEO BENIN)	http://www.meteo-benin.net/			National Government /	
Botswana	Botswana Meteorological Services	http://www.weather.info.bw/	Ms Chandapiwa SEBEELA		National Government /	

National Meteorological Services						
Country	Organisation	Website	Contact Person	Email Address	Sector	Notes
Burkina Faso	Agence Nationale de la Météorologie du Burkina Faso	http://www.meteoburkina.bf/	Nakoulma Guillaume Salif Wandaogo	guinabf@yahoo.fr no email	National Government	<p>Nakoulma Guillaume is a Senior Forecaster In-Charge in the Agence Nationale de la Météorologie du Burkina Faso. He is also a WMO representative</p> <p>Air Quality Sensors installed in the frame of WMO-CREWS/AEMET Project.</p>
Burundi	Institut Géographique du Burundi (IGEBU)				National Government	
Cabo Verde	National Institute of Meteorology and Geophysics	https://www.inmg.gov.cv/	Ester Brito – Meteorologist (INMG coordinator)	ester.brito@inmg.gov.cv	National Government	<p>Broad experience in international campaigns (ASKOS, MacClima) and aerosol instrumentation already deployed over the country.</p> <p>Air Quality Sensors installed in the frame of AEMET-MacClima Project.</p>
Cameroon	Department of National Meteorology	https://meteocameroun.gov.cm/en/	Mr Simplicie TCHINDA TAZO	tchinda9@gmail.com	National Government	Director of National Meteorology
Central Africa Republic	Centre Météorologique Principal de Bangui-M'Poko Direction générale de la Météorologie, République centrafricaine		Mr Rodrigue Aymard LELONG		National Government	

National Meteorological Services						
Country	Organisation	Website	Contact Person	Email Address	Sector	Notes
Chad	National Meteorological Agency		Mr Sakine Youssouf BATCHOMI		National Government /	
			Ministère de l'Hydraulique Urbaine et Rurale, DREM B.P. 429, N'Djamena,			
			Ministère de l'Aviation Civile et de la Météorologie Nationale			
			Abdoulaye Harou	abdoulayeharou@gmail.com		Abdoulaye Harou is a retired meteorologist. Chief of the Data Processing and Forecasting Systems Division for the World Meteorological Organization in Geneva. Forecaster in Canada met. service.
			Djergo Gaya	djergogaya@yahoo.fr		Djergo Gaya, is our focal point in Chad in the frame of WMO-CREWS/AEMET Project. He is also Chef de Division de l'Agrometeorologie, WMO member.
Comoros	Agence Nationale de l'Aviation Civile et de la Météorologie (ANACM)	https://www.anacm-comores.com	Mr Ahmed Youssouf ABDOU	Boulevard de Strasbourg, B.P. 78, Moroni,	National Government /	
Congo Republic	Direction de la météorologie, Congo		Mr Hilaire ELENGA	B.P. 208, Brazzaville,	National Government /	

National Meteorological Services						
Country	Organisation	Website	Contact Person	Email Address	Sector	Notes
Cote d'Ivoire	Direction de la météorologie nationale de l'ANAM		Mr Daouda KONATE	B.P. 614, Bouake	National Government /	
Djibouti	Direction de l'aviation civile et de la météorologie		Mr Mohamed Ismael NOUR		National Government /	
DR Congo	Agence nationale de la Météorologie et de Télédétection par satellite (METTELSAT)		Mr Joseph ITELA Y'ILONDO		National Government /	
Egypt	The Egyptian Meteorological Authority (HQ)	http://ema.gov.eg/	Major General Hesham Hassan Ibrahim Abdelaaty TAHOUN		National Government /	P.O. Box 11784, Koubry El-Quobba, Cairo,
			Zeinab Salah	zeinabsalah@gmail.com		Zeinab Salah is the researcher in charge of modelling, technical performance of instrumentation etc. She is the contact of AEMET regarding the Cimel deployed at Cairo.
			Ashraf Zakey	ashzakey@gmail.com		Ashraf Zakey is the head of the Scientific Research Department at EMA.
Equatorial Guinea					National Government /	Nothing in the WMO website

National Meteorological Services						
Country	Organisation	Website	Contact Person	Email Address	Sector	Notes
Eritrea	Eritrean Civil Aviation Authority		Mr Paulos KAHSAY Mr Asmelash Dawit ANDEBERHAN		National Government /	P. O. Box 252, , Asmara,
eSwatini	ESwatini Meteorological Service		Emmanuel Dumisani DLAMINI Ms Duduzile NHLENGETHWA-MASINA		National Government /	Ministry of Tourism and Environmental Affairs, P.O. Box 2652, , Mbabane,
Ethiopia	Ethiopian Meteorological Institute (EMI)		Mr Fetene TESHOME Mr Endalkachew BEKELE		National Government /	P.O. Box 1090, Addis Ababa
Gabon	Department of Meteorology		Mr Jean ONDO EVOUNG Ms Mathilde ASSENGONO NDONG		National Government /	Cabinet du Ministre des Transports et de l'Aviation Civile, B.P. 377, Libreville
Gambia	Department of Water Resources		Mr Landing BOJANG		National Government /	7, Marina Parade, Banjul
Ghana	Ghana Meteorological Agency Ghana Hydrological		Mr Hubert OSEI-WUSUANSANSA		National Government /	P.O. Box LG87, , Legon

National Meteorological Services						
Country	Organisation	Website	Contact Person	Email Address	Sector	Notes
	Services Department					
Guinea	Direction nationale de la météorologie, Guinea		Alpha Oumar BALDE		National Government /	B. P. 566, Conakr
Guinea-Bissau	Instituto Nacional de la Meteorología (INM-GB)				National Government /	SETC, Secrétariat d'État au Transport et Communications Av. du Brazil, Cx.P.75 B.P. 398 (Av. 3 A, Bissau,
Kenya	Kenya Meteorological Department Director	https://www.meteo.go.ke/	Mr Peter G. AMBENJE	director@meteo.go.ke	National Government /	Dagoretti Corner, Ngong Road, P.O. Box 30259, Nairobi, 00200,
Lesotho	Lesotho Meteorological Services	https://www.lesmet.org.ls/	Mr Mokoena FRANCE		National Government /	P.O. Box 14515, Maseru 100,
Liberia	Liberia Meteorological Service (LMS)		Mr Arthur GAR-GLAHN		National Government /	P.O. Box 9041, Monrovia,
Libya	Libyan National Meteorological Centre		Mr ABULKHIARAT, Jalal MUSBAH		National Government /	Civil Aviation and Meteorological Office, Eswani - El Krimia, 17 km, P.O. Box 5069, Tripoli,
Madagascar	Direction Générale de la météorologie	https://www.meteo.madagascar.mg/	Dr Tatiana ANDRY ARIVELO		National Government /	Boîte postale 1254, Antananarivo, 101,

National Meteorological Services						
Country	Organisation	Website	Contact Person	Email Address	Sector	Notes
Malawi	Department of Climate Change & Meteorological Services	https://www.metmalawi.com/	Mr Yobu Ezra KACHIWANDA Dr CLEMENT BOYCE		National Government	P.O. Box 1808, Blantyre,
Mali	National Meteorological Agency (MALI METEO), Mali	http://www.malimeteo.ml	Mr Djibrilla Ariaboncana MAIGA		National Government	Boîte postale 237, Bamako, Mali
			Moussa Touré	mositoure@aol.com		Moussa Touré, our CREWS focal point in Mali. Directeur Infrastructures et Prévisions Météorologiques. Agence Nationale de la Météorologie (MALI-METEO). WMO representative. Air Quality Sensors installed in the frame of WMO-CREWS/AEMET Project.
Mauritania	Service de météorologie, Mauritanie	https://www.onm.mr/	Mohamed El Ghali KHTOUR Dr Brahim Baba ALOUEIMINE		National /Government	Boîte postale 1330, Nouakchott
	Office National de la Mauritanie (ONM) - Nouakchott Oumtounsy International Airport	https://fr.meteo-mauritanie.org/	Sidi Mohamed Abdoulaye Gandega Lemine Bobba	sidiloudey2@yahoo.fr gandega8@yahoo.fr sidiloudey2@yahoo.fr		Le chef service de maintenance is Mr Gandéga. Lemine Bobba is Directeur de l'Exploitation et des Prévisions Météorologiques Office National de Météorologie. Air Quality Sensors installed in the frame of AEMET-MacClima Project.
Mauritius	Mauritius Meteorological Service	http://met-service.tnet.mu/	Dr Prithiviraj BOONEEADY		National Government	St. Paul Road, Vacoas,

National Meteorological Services						
Country	Organisation	Website	Contact Person	Email Address	Sector	Notes
Morocco	Direction de la météorologie nationale du Maroc	http://www.maroc-meteo.ma/	Ms Sanae AKRARI Ms Alaouri, Meriem			Face Préfecture Hay Hassani, B.P. 8106 Casa-Oasis, , Casablanca,
			Salama Mohamed	no email		Salama Mohamed is the Chef de la station météorologique de Ouarzazate, belonging to the Direction de la Météorologie Nationale - Maroc Meteo.
			Hassan Ousha	cpmouarz@gmail.com		Hassan Ousha is the technician in contact with AEMET. This station has a Cimel since 2012 as a result of an international agreement Spain/Morocco. However, the contact was lost in 2018 for several reasons.
Mozambique	National Institute of Meteorology	https://www.inam.gov.mz/index.php/pt/	Dr Adérito Celso Félix ARAMUGE		National Government /	Rua de Mukumbura 164, C.P. 256, Maputo,
Namibia	Namibia Meteorological Service	http://www.meteorology.na/	Ms Olga KARUNGA-TJIUEZA		National Government /	Private Bag 13224, Windhoek,
Niger	Direction de la météorologie nationale du Niger	http://www.meteorology.niger.org/	Mr Gaptia Lawan KATIELLOU		National Government /	B.P. 12246, Niamey, Niger

National Meteorological Services						
Country	Organisation	Website	Contact Person	Email Address	Sector	Notes
Nigeria	Nigerian Meteorological Agency (NIMET)	https://www.nimet.gov.ng/	Prof. Mansur Bako MATAZU		National Government	Bill Clinton Drive, Nnamdi Azikiwe International Airport, Federal Capital Territory, Abuja,
			Mr Usman ABDULRAHMAN			Head of International relations
			Oluwaseun Wilfred Idowu	willseun@gmail.com		Principal meteorologist
			Ifeka Adolphus Chinenye	adolphusifeka@yahoo.com ; aifeka@nimet.gov.ng		
Rwanda	Rwanda Meteorological Service	https://www.meteorwanda.gov.rw/index.php?id=2	Mr Aimable GAHIGI		National Government	Ministère des Infrastructures B.P. 898, Kigali,
Sao Tome and Principal	Institut national de météorologie		Mr Aristómenes Amadeu DO NASCIMENTO Mr Cosme DIAS Admar Vera CRUZ		National Government	B.P. 30, Sao Tomé,
Senegal	Agence nationale de l'Aviation Civile et de la Météorologie (ANACIM)	http://www.anacim.sn/	Mr Sidy GUEYE		National Government	Ministère de la Coopération Internationale, des Transports aériens des Infrastructures et de l'E, Dakar,
			Mr Sadibou BA Mr BA, Coutaille			

National Meteorological Services						
Country	Organisation	Website	Contact Person	Email Address	Sector	Notes
			Ousmane Ndiaye	ousmane.ndiaye@anacim.sn		Ousmane Ndiaye is the Directeur de la Météorologie et Exploitation et point focal GIEC Senegal
			Oumar Konte	Oumar.konte@anacim.sn		Oumar Konté is a WMO member (representing member), meteorologist. Ousmane is also WMO representative of Senegal. Air Quality Sensors installed in the frame of AEMET-MacClima Project.
Seychelles	Seychelles Meteorological Authority (SMA)	http://www.meteo.gov.sc/	Mr Vincent Josee AMELIE Ms Beryl Andrade		National Government /	Seychelles International Airport, P.O. Box 1604, Anse Dejeuner, Mahé,
Sierra Leone	Meteorological Department Ministry of Water Resources-Sierra Leone	http://mwr.gov.sl/index.php	Mr Ibrahim Sinneh KAMARA Sylvanus COKER Ahmed KALLON		National Government /	F.18 Charlotte Street, Freetown,
Somalia	Ministry of Energy and Water Resources		Eng. Omar Haji Mohamed SHURIE		National Government /	Federal Government of Somalia, Telecommunication Building, Londre Road, Bondere, , Mogadishu,

National Meteorological Services						
Country	Organisation	Website	Contact Person	Email Address	Sector	Notes
South Africa	South African Weather Service	https://www.weathersa.co.za/	Mr Moegamat Ishaam ABADER Dr Michael A. Barnes		National Government /	
	Agricultural Research Council	http://www.arc.agric.za	Mokhele Moeletsi	moeletsim@arc.agric.za		
	GFCS National Framework for Climate Services (NFCS-SA) - DFFE	https://www.dffe.gov.za/sites/default/files/docs/nationalframework_climate_services_proposition.pdf				
South Sudan			Mr Mojwok Ogawi Modo AYOKER	c/o Permanent Mission of the Republic of South Sudan to the Office of the United Nations	National Government /	
Sudan	Sudan Meteorological Authority		Dr Ahmed Mohamed ABDELKARIM		National Government /	P.O. Box 574, Khartoum,
Tanzania	Tanzania Meteorological Authority	https://www.meteor.go.tz/	Ladislaus Chang'a		National Government /	Acting Director General
Togo					National Government /	

National Meteorological Services						
Country	Organisation	Website	Contact Person	Email Address	Sector	Notes
Tunisia	Institut National de la Météorologie - Systèmes d'observation et de la maintenance	https://www.meteo.tn/	Rafik Chahed Ilyes Zarrouk	rafik.chahed@meteo.tn ilyes.zarrouk@meteo.tn	National Government /	Rafik Chahed is an expert à la Comm de la Météo aéro (CMAé) de l'Organisation Météorologique Mondiale. He is also Sous-Directeur des systèmes d'observation et de la maintenance · Institut National de la Météorologie. Ilyes Zarrouk is the technician in contact with AEMET in charge of operating the Cimel at Carthage.
Uganda	Uganda National Meteorological Authority (UNMA)		Willington AMANYIRE		National Government /	
Zambia	Zambia Meteorological Department		Mr Edson NKONDE W. E. BANDA		National Government /	
Zimbabwe	Meteorological Service Department		Ms Rebecca MANZOU		National Government /	Cnr Hudson & Bishop Gaul Ave.P.O. Box BE 150 Belvedere, Harare

Disaster Risk Reduction and Adaptation

This table consists of the potential stakeholders that are involved in disaster risk reduction and adaptation (Table 6). The list of disaster focal point in the SADC region was obtained from the National Disaster Management Centre Website and provides the names and email addresses of the relevant focal points. Groups operating in the Climate adaptation space were primarily drawn from South Africa, there are certainly similar organisations across the continent.

Table 7 Disaster Risk reduction and adaptation

Disaster Risk Reduction and Adaptation					
Country	Organization	Website	Name	Email	Notes
Disaster Risk Reduction Focal Points in the SADC Region Information from the following website http://www.ndmc.gov.za/SiteCollectionDocuments/SADC%20-%20DRR%20Focal%20Points%20in%20SADC%20Region%20-%20Rev2012.pdf					
	SADC Secretariat		Dr Kennedy Masamvu Mr Tanki Mothae	kmasamvu@sadc.int mothae@sadc.int	
Angola	Department of Civil Protection			bensnyokabilio@yahoo.co.uk	
Botswana	National Disaster Management Office		Mr. Moagi Baleseng Mr Nkosiyabo Moyo	mobaleseng@gov.bw nmoyo@gov.bw	
DR Congo	Directeur National de la Protection Civile		Mr. Jean KITAMBALA	jeankitambala2005@yahoo.fr	
Lesotho	Disaster Management Authority		Ms. Mats'eliso Mojaki	memojaki@yahoo.com	
Madagascar	National Bureau for Disaster Risk Reduction (National de Gestion des risques de catastrophes) - National Office of Disaster Management		Mr RAKOTONIRAINY Louis de Gonzague Mrs. Claire Rahasinirina	sp.bngrc@bngrc.mg Claire.rahasinirina@undp.org cm.nyandza@yahoo.com rijaharivelozoelisoa.rakotoson@undp.org; rakotoson@un.org	
Malawi	Commission for Poverty and Disaster Management Affairs		Mrs Lilian D. Ng'oma Mr James Chiusiwa	relief@dopdma.mw chiusiwaj@yahoo.com	

Disaster Risk Reduction and Adaptation					
Country	Organization	Website	Name	Email	Notes
Mauritius	Central Cyclone and Other Natural Disasters Committee		Mr S.C. Seeballuck	sseeballuck@mail.gov.mu.	
Mozambique	National Institute for Disaster Management - INGC		Dr Joao Tiago Meneses Machado Ribeiro Elias Massicame	jribeiro_moz@yahoo.com emassicame@yahoo.com	
Namibia	National Emergency Management Unit		Mr Japhet litenge Ms Anastasia Amunyela	jiitenge@opm.gov.na Anastacia.Amunyela@opm.gov.na	
Seychelles	Department of Risk and Disaster Management Secretariat		Mr Paul Labaleine	plabaleine@gov.sc	
South Africa	National Disaster Management Centre		Dr Mmaphaka Tau MODIEGI MODDY HILDAH SETHUSHA	ken@ndmc.gov.za ModdyS@ndmc.gov.za	
eSwatini	National Disaster Management Authority		Mr Samkeliso Dlamini	Samkeliso.dlamini@ndma.org.sz	
Tanzania	Disaster Management Department, Office of the Prime Minister		Joseph P.Shiyo	jpshiyo@yahoo.co.uk	
Zambia	Disaster Management and		Mr. Patrick Kangwa Ms Yande Mwape	patkan77@yahoo.co.uk mwapeyande@yahoo.com	

Disaster Risk Reduction and Adaptation					
Country	Organization	Website	Name	Email	Notes
	Mitigation Unit, Office of the Vice-President				
Zimbabwe	Department of Civil Protection		Mr. Madzudzo Spencer Pawadyira	mwapeyande@yahoo.com	
South Africa	Department of cooperative governance NDMC National Disaster Management Centre		http://www.ndmc.gov.za/Pages/Home-Page.aspx	Dr Elias Sitole	enquiries@ndmc.gov.za
Organisations involved in Adaptation					
South Africa	South Africa Presidential Climate Commission	https://www.climatecommission.org.za/	Michelle Hiestermann	michelle@climatecommission.org.za	The Presidential Climate Commission is an independent, statutory, multistakeholder body established by President Cyril Ramaphosa. The purpose is to oversee and facilitate a just and equitable transition towards a low-emissions and climate-resilient economy.
	Access	https://www.access.ac.za/	Neville Sweijd	nsweijd@csir.co.za	The Alliance for Collaboration on Climate and Earth Systems Science, or ACCESS programme, is an instrument of the Global Change Programme of the South African Department of Science and Technology and the National Research Foundation. It is hosted by the Council for Scientific and Industrial Research. The main

Disaster Risk Reduction and Adaptation					
Country	Organization	Website	Name	Email	Notes
					purpose of the programme is to provide a platform for multi-institutional and trans-disciplinary research on the drivers, mechanisms of manifestation, impacts and applications and responses to the dynamics of earth systems, as they affect the natural world, ecosystem services and human society. ACCESS is also a training programme for emerging researchers and students who are interested in the future of our planet and society.
	UCT African Climate and Development Initiative	https://acdi.uct.ac.za/	Prof Mark New	mark.new@uct.ac.za	The ACDI is a university-wide initiative at the University of Cape Town which supports collaborative research and training in climate change and development
	Department of cooperative governance NDMC National Disaster Management Centre	http://www.ndmc.gov.za/Pages/Home-Page.aspx	Dr Elias Sitole	enquiries@ndmc.gov.za	The National Disaster Management Centre is established in terms of Section 8 of the Disaster Management Act, 2002 (Act No 57 of 2002) (DMA). The National Centre functions as an institution within the public service and forms part of, and functions within, a department of state (DCOG) for which the Minister is responsible. The objective of the National Centre is to promote an integrated and co-ordinated system of disaster management with special

Disaster Risk Reduction and Adaptation					
Country	Organization	Website	Name	Email	Notes
					<p>emphasis on prevention and mitigation by national, provincial and municipal organs of state, statutory functionaries and other role-players involved in disaster management and communities. The National Centre is also responsible for the administration of the Fire Brigade Services Act, 1987 (Act No 99 of 1987) (FBSA) Within the South African environment, disaster management is a shared responsibility which must be fostered through partnerships between the various stakeholders and co-operative relationships between the different spheres of government, the private sector and civil society.</p>

Observations of Atmospheric Composition and Carbon exchange

This section consists of a number of tables that are operating in the space of observations these include the following:

- Terrestrial carbon flux observations (Table 7),
- Atmospheric Composition observations (Table 8) these are primarily the groups working on the atmospheric chemical constituents as opposed to regulatory air quality monitoring (which is captured in a separate section (Table 10) there is obviously overlap between the atmospheric composition and air quality monitoring stakeholders, however, in operation there is often a divide which is why this distinction has been maintained, and
- Ocean observations (Table 9).

Terrestrial Carbon Flux and Carbon Exchange Measurements

Table 8 Carbon Flux and Carbon Exchange Measurements

Terrestrial Flux and Ecosystem exchange measurements						
Country	Subgroup	Website	Contact person	email	Sector	Notes
South Africa	Expanded Freshwater and Terrestrial Environmental Observation Network (EFTEON)	https://efteon.saeon.ac.za/	Gregor Feig	gt.feig@saeon.nrf.ac.za	National Government	EFTEON Sites at <ul style="list-style-type: none"> Kimberley- Paired sites in Arid savanna and Karoo vegetation under conservation land management Spioenkop- mesic savanna grassland transition under conservation land management Maputaland, paired rangeland sites under grassland forest mosaic under varying grazing intensity
			Kathleen Smart	kg.smart@saeon.nrf.ac.za		
			Abri de Buys	aj.debuys@saeon.nrf.ac.za		
			Amukelani Maluleke	amukelanimaluleke940806@gmail.com		
	South African Environmental Observation network (SAEON)	https://www.saeon.ac.za/	Michele Toucher	ml.toucher@saeon.nrf.ac.za	National Government	Hydrologist, Cathedral Peak flux tower <ul style="list-style-type: none"> Cathedral peak flux tower mesic grassland under conservation
			Sue Van Rensburg	s.jansevanrensburg@saeon.nrf.ac.za		Node Coordinator Cathedral Peak Maputaland, soil Respiration
			Ryan Blanchard	r.blanchard@saeon.nrf.ac.za		Node Manager Fynbos Node

Terrestrial Flux and Ecosystem exchange measurements						
Country	Subgroup	Website	Contact person	email	Sector	Notes
	North West University Welgegund site	www.welgegund.org	Pieter Van Zyl Kerneels Jaars	Pieter.VanZyl@nwu.ac.za kerneels.jaars@nwu.ac.za	Academia	Welgegund Atmospheric Monitoring site The Welgegund atmospheric measurement station is located on a grazed grassland-savannah approximately 100 km west of Johannesburg (Gauteng) metropolitan area in South Africa. The site is frequently hit by pollution plumes from Johannesburg metropolitan area and the western Mpumalanga industrial Highveld, with frequent clean air injections from the west. The site is operated jointly by the North-West University (NWU), the Finnish Meteorological Institute (FMI) and the University of Helsinki (UH).
	Council for Scientific and Industrial Research (CSIR)	https://www.csir.co.za/	Humbelani Thenga Shingirirai Mutanga Brian Mantlana	HThenga@csir.co.za SMutanga@csir.co.za bmantlana@csir.co.za	Research Organisation	Operation of the <ul style="list-style-type: none"> • Skukuza Flux tower since 2000, • Agincourt Tower since 2017 and • Malopeni Tower since 2014

Terrestrial Flux and Ecosystem exchange measurements						
Country	Subgroup	Website	Contact person	email	Sector	Notes
	University of KwaZulu Natal Center for water resources Research	https://cwrr.ukzn.ac.za/	Alistair Clulow	Clulowa@ukzn.ac.za	Academia	<ul style="list-style-type: none"> Open water evaporation using micrometeorological methods (WRC 2014-2017) Water use of strategic biofuel crops (WRC 2015-2020) Establishment of a more robust observation network to improve understanding of global change in the sensitive and critical water supply area of the Drakensberg
	Stellenbosch University		Guy Midgley Director School for Climate Studies	gfmidgley@gmail.com	Academia	<ul style="list-style-type: none"> Middleburg flux stations, semi-arid Karoo grassland
	Grootfontein Agricultural Development Institute	gadi.agric.za	Justin Du Toit	justindutoit@gmail.com	Academia	
	Agricultural Research Council		Tony Palmer	tonypalmer345@gmail.com	Government	

Terrestrial Flux and Ecosystem exchange measurements						
Country	Subgroup	Website	Contact person	email	Sector	Notes
Germany	Thünen Institute for climate smart agriculture	https://www.thuenen.de/en/institutes/climate-smart-agriculture	Christian Brümmer	christian.bruemmer@thuenen.de	Research Organisation	<p>Involved through the SPACES project and SEACRIFOG</p> <p>Set up Middelburg flux towers and Vuwani and assisted with Agincourt</p> <p>Coordination of the Integrated Carbon Observation System (ICOS) National Network Germany</p> <p>Further development of a measurement device to quantify total reactive atmospheric nitrogen (TRANC)</p> <p>Biosphere-atmosphere exchange of C and N trace gases</p> <p>Micrometeorological measurement techniques</p> <p>Junior research group NITROSPHERE</p>

Terrestrial Flux and Ecosystem exchange measurements						
Country	Subgroup	Website	Contact person	email	Sector	Notes
Kenya	Agroscope	https://www.agroscope.admin.ch/agroscope/en/home.html	Lutz Merbold	lutz.merbold@agroscope.admin.ch	NGO	<p>Mongu Site Zambia during Carbo Africa</p> <p>Former Head of the Mazingira Centre ('Mazingira' means 'environment' in Swahili) at the International Livestock Research Institute in Nairobi, Kenya, he and his team collected environmental data. These were used to highlight solutions for a more sustainable agricultural sector: "I have always been drawn to where research could make an impact."</p>
	Taita Research Station	https://blogs.helsinki.fi/taita-research-station/	James Mwang'ombe Petri Pellika Matti Räsänen	mwangombejames@yahoo.co.uk matti.rasanen@helsinki.fi	Academia	<p>Tata Research Station Kenya, https://doi.org/10.1515/intag-2017-0044 https://www.ilri.org/knowledge/publications/icos-eddy-covariance-flux-station-site-setup-review http://archive.sciendo.com/INTAG/intag.2017.32.issue-4/intag-2017-0044/intag-2017-0044.pdf</p>

Terrestrial Flux and Ecosystem exchange measurements						
Country	Subgroup	Website	Contact person	email	Sector	Notes
	ILRI		Sonja Leitner	s.leitner@cgiar.org	International organisation	Ecologist and biogeochemist working on carbon and nitrogen cycling in natural and agricultural ecosystems. I investigate nutrient transformations and nutrient losses via leaching and gaseous emissions, with a special focus on greenhouse gas emissions (CO ₂ , CH ₄ , N ₂ O). Currently, my research focuses on options for soil and manure management that reduce nutrient losses to improve livestock productivity and help to mitigate climate change. I work in both mixed crop-livestock systems as well as rangelands and am currently involved in projects in Kenya, Ethiopia, Uganda, and Burkina Faso.
	Kenya Forestry Institute	https://www.kefri.org/home.html	David Odee	dwodee@gmail.com	Government	KEFRI undertakes research and provides technologies and information for sustainable management, conservation and development of forests and allied natural resources. The Institute is ISO 14001:2015 Environmental Management Systems (EMS) and ISO

Terrestrial Flux and Ecosystem exchange measurements						
Country	Subgroup	Website	Contact person	email	Sector	Notes
						9001:2015 Quality Management Systems (QMS) certified and therefore conforms to international standards on environmental and quality management and relevant national legislations and its research meets international standards.
Botswana	University of Edinburgh Okavango Flux tower site		Ute Skiba	ums@ceh.ac.uk <ums@ceh.ac.uk>;	Academia	Biogeochemist with focus on soil nitrous oxide (N ₂ O), nitric oxide (NO), methane (CH ₄) and other trace gas fluxes in temperate, arctic and tropical agricultural and natural ecosystems. My work is predominately measurement based and focuses on the following topics:
DR Congo	Congo Flux Site Institut National pour l'Etude et la Recherche Agronomique" (INERA), Research Centre of Yangambi ("Centre de Recherche de Yangambi"	https://www.congo-biogeochem.com/congoflux https://www.frontiersin.org/articles/10.3389/fsoil.2022.883236/full	José Mbifo Institut national d'études et Recherche agronomiques (INERA)/Centre de Recherches de Yangambi, Yangambi, Democratic Republic of Congo Michel Lokonda		Academia	This project is managed by a Belgian delegated cooperation and implemented by the European Union. It strengthens the sustainable participatory management of the Yangambi Biosphere Reserve and implements the first-ever accurate and continuous monitoring of atmosphere-ecosystem greenhouse gas (GHG)

Terrestrial Flux and Ecosystem exchange measurements						
Country	Subgroup	Website	Contact person	email	Sector	Notes
			<p>Département Sol et Eau, Institut Facultaire des Sciences agronomiques, Institut Facultaire Des Sciences Agronomiques-YANGAMBI, Yangambi, Democratic Republic of Congo</p> <p>Thomas Sibret sotope Bioscience Laboratory - ISOFYS, Ghent University, Ghent, Belgium</p> <p>Emmanuel Bulonza Ecole Régionale d'Aménagement et Gestion Intégrés des Forêts et Territoires tropicaux (ERAIFT), Kinshasa, Democratic Republic of Congo</p> <p>Paolo Omar Cerutti Center for International Forestry Research</p>	<p>linkedin.com/in/emmanuel-bulonza-8026b4106</p>		<p>exchange in the Congo Basin Forest. In brief, the fluxes of carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄) and water vapour (H₂O) are measured continuously using the Eddy covariance technique.</p>

Terrestrial Flux and Ecosystem exchange measurements						
Country	Subgroup	Website	Contact person	email	Sector	Notes
			(CIFOR), Nairobi, Kenya Pascal Boeckx Isotope Bioscience laboratory	pascal.boeckx@ugent.be		
Senegal	Centre de Recherches Zootechnique que de l'Institut Sénégalais de Recherches Agricoles (ISRA)	https://www.cassecs.org/	Olivier Roupsar	Olivier Roupsar; olivier.roupsard@cirad.fr Dr Ousmane Ndiaye ousmane.ndiaye@isra.sn	Academia	Flux tower installed in 2001 in Dahra, Senegal; CH4 and NO2 in the frame of the CASSECS project

Atmospheric Observations

Table 9 Atmospheric Observations

Atmosphere Observations						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
Algeria	Assekrem/ Tamanrasset	https://www.meteo.dz/ https://community.wmo.int/en/activity-areas/gaw/research-infrastructure/gaw-stations/gaw-global-stations			WMO/ GAW	
Benin	University Abomey Calavi Cotonou, Benin	https://indaaf.obs-mip.fr/	Pr. Aristide Barthel Akpo	akpoarist@yahoo.fr	Academia	Site of Djougou: Gas and aerosol composition measurements; Precipitation chemistry (Since 2005)
Botswana	Botswana International University of Science and Technology		Gizaw Mengistu Tsidu	mengistug@biust.ac.bw	Academia	FTIR measurements

Atmosphere Observations						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
Cameroon	University of Douala/Yaoundé, Cameroon	https://indaaf.obs-mip.fr/	Dr. Marie-Roumy Ouafou Lumbey	marieroumi@yahoo.fr	Academia	Site of Zoétéélé: Gas and aerosol composition measurements; Precipitation chemistry (Since 2005)
Cape Verde	Cape Verde Atmospheric Observatory	https://community.wmo.int/en/activity-areas/gaw/research-infrastructure/gaw-stations/gaw-global-stations https://oscar.wmo.int/surface/#/search/station/stationReportDetails/0-20008-0-CVO	Ms. Ester Araujo Brito inmg.presidente@gmail.com		WMO/ GAW	
Congo	Wildlife Conservation Society (WCS) Nouabalé-Ndoki Foundation, Congo-Brazzaville,	https://indaaf.obs-mip.fr/	Terry Brnis	terry.brncic@linacre.oxon.org	NGO	Site of Bomassa: Gas and aerosol composition measurements; Precipitation chemistry (Since 1998)

Atmosphere Observations						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
	Brazzaville, Congo					
Ethiopia	Addis Ababa University		Samuel Takele Kenea	samueltake@yahoo.ca	Academia	Professor and responsible of the Fourier Transform Infrared (FTIR) spectrometry station in Addis Ababa.
Ivory Coast	UFHB, Abidjan	https://indaaf.obs-mip.fr/	Pr. Veronique Yoboué; Dr. Money Guillaume Ossohou	yobouev@hotmail.com ossohoumoney@gmail.com	Academia	Super site of the INDAAF Network, Lamto: Gas and aerosol composition measurements; Precipitation chemistry (since 1994); PM10 concentrations; total and wet insoluble deposition fluxes. Surface meteorological parameters (Since 2016) AERONET Station (since 2017)

Atmosphere Observations						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
Kenya	Mt Kenya	https://community.wmo.int/en/activity-areas/gaw/research-infrastructure/gaw-stations/gaw-global-stations			WMO/ GAW	
Mali	Institut d'Economie Rurale	https://indaaf.obs-mip.fr/	Souleyman Sanogo Aly Boubacar	soulysanogo@yahoo.fr alyboubacar02@yahoo.fr		Site of Katibougou: Gas and aerosol composition measurements; Precipitation chemistry (Since 1997); Site of Cinzana: PM10 concentrations; total and wet insoluble deposition fluxes. Surface meteorological parameters (Since 2006). AERONET Station (since 2006)

Atmosphere Observations						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
Morocco	Institut Scientifique de l'Université Mohammed V, Rabat University Mohammed 6 Polytechnique (UM6P), Ben Guerir	http://www.um5.ac.ma/um5/ https://atlas5.org/	Ibrahim OUCHEN Wahid Mellouki	ouchen.ibrahim@gmail.com wahid.mellouki@um6p.ma.		Measurements at the ATLAS Station CO ₂ , CH ₄ , H ₂ O, and meteorological parameters (coll. ICOS-FR, M. Ramonet) since 2018. Sunphotometer Cimel since May 2023 (Coll. e C. Toledano; (Grupo de Óptica Atmosférica, Universidad de Valladolid) - NO _x and O ₃ measurements (UMP6P). - Particles size and composition (coll. H. Herrmann, IFT, Leipzig)
	Centre National du Climat (CNC)		Said EL KHATRI Kenza Khomsi	elkhatri@gmail.com k.khomsi@gmail.com		

Atmosphere Observations						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
Namibia	Gobabeb Namib Research Institute, Gobabeb, Namibia		<p>Martin Handjaba</p> <p>Petrus Amadhila</p> <p>Roland Mush</p> <p>Eugene Marais</p> <p>Paola Formenti (CNRS/LISA, France)</p> <p>Stuart Piketh (NWU, South Africa)</p> <p>Gillian Maggs-Koellig (Gobabeb)</p> <p>Eugene (Gobabeb)</p>	<p>gobabeb@gobabeb.org</p> <p>Paola.formenti@lisa.ipsl.fr</p> <p>Stuart.Piketh@nwu.ac.za</p>		<p>Ground-based observations at the Gobabeb station, in the hyper-arid Namib desert</p> <p>Measurements of PM10 concentrations, aerosol optical properties (scattering and absorption), particle number concentration, chemical composition, ozone</p> <p>The Gobabeb station also hosts an AERONET sunphotometer, solar and IR radiometers, ceilometers, met station</p>
Niger	University Abbou Moumouni, Niamey	https://indaaf.obs-mip.fr/	<p>Dr Laouali Dungall</p> <p>Dr Adamou Abdourhamane Touré</p>	<p>laoualid@yahoo.fr</p> <p>doudu2000@yahoo.fr</p>	Research and education	Super site of Banizoumbou: Gas and aerosol composition measurements, Precipitation chemistry (since 1995); PM10 concentrations, total and wet insoluble deposition fluxes,

Atmosphere Observations						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
						Surface meteorological parameters (Since 2006). AERONET Station (since 1995)
Rwanda	Mt Mugogo	https://agage.mit.edu/stations/mt-mugogo	Dr. Didier Ntwali Earth and Space Science Division, Rwanda Space Agency, Kigali, Rwanda	dntwali@space.gov.rw		MIT and the Government of Rwanda have collaborated to build this world-class observatory on Mt. Mugogo measuring climate change and the atmospheric species forcing climate change. This AGAGE station, the first in all of Africa, is located on the summit of Mt. Mugogo – a rural area about 70 km from Kigali, the capital city of Rwanda, and 13 km away from the nearest town of Musanze. Seven-day back trajectories of air masses sampled at Mt. Mugogo stretch Northeast as far as Saudi Arabia and the Indian

Atmosphere Observations						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
						<p>West Coast. In the Southeast direction the air masses come from as far away as Madagascar. The air masses from the East travel over the East African region characterized by a high population density, urban areas and intense agricultural activities. West of Mt. Mugogo, air parcels come mainly from the equatorial forests in the Democratic Republic of Congo and Central African Republic. Measurements taken at Mount Mugogo are also occasionally influenced by local sources identified by enhanced black carbon aerosol and carbon monoxide levels.</p>

Atmosphere Observations						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
Senegal	Laboratoire d'optique atmosphérique (Univ. Lille)/ Institut de Recherche pour le Développement	https://loa.univ-lille.fr/observations/pla-teformes.html?p=dakar	Philippe Goloub (CNRS/LOA)	philippe.goloub@univ-lille.fr		IRD campus of Bel Air. Extensive measurements with lidar, photometer, fluxmeters, IR radiometer, PM10 concentrations.
	Centre National de Recherche Agronomique de l'Institut Sénégalais de Recherches Agricoles (ISRA)	https://indaaf.obs-mip.fr/	Dr Séraphin Gualbert Dorégo	raphdo@gmail.com		Super site of Bambey: Gas and aerosol composition measurements; Precipitation chemistry (since 2016); PM10 concentrations; total and wet insoluble deposition fluxes. Surface meteorological parameters (Since 2012)
South Africa	Cape Point	South African Weather Service	Dr Warren Joubert Casper Labuschagne	Casper.Labuschagne@weathersa.co.za	WMO / GAW	GAW Site https://community.wmo.int/en/activity-areas/gaw/research-

Atmosphere Observations						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
						infrastructure/gaw-stations/gaw-global-stations
	North West University Welgegund site	www.welgegund.org	Pieter Van Zyl	Pieter.VanZyl@nwu.ac.za	Academia	<p>Welgegund Atmospheric Monitoring site</p> <p>The Welgegund atmospheric measurement station is located on a grazed grassland-savannah approximately 100 km west of Johannesburg (Gauteng) metropolitan area in South Africa. The site is frequently hit by pollution plumes from Johannesburg metropolitan area and the western Mpumalanga industrial Highveld, with frequent clean air injections from the west. The site is operated jointly by the North-West University (NWU), the Finnish Meteorological Institute (FMI)</p>

Atmosphere Observations						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
						and the University of Helsinki (UH).
	North West University Center for Climate Change, Air Quality and Impacts	https://natural-sciences.nwu.ac.za/ccaqi	Roeloff Burger	Roelof.Burger@nwu.ac.za)	Academia	The Air Quality and Impacts sub-programme is aimed at providing key information to support the development of sustainable air quality policies and practices in Southern Africa. The influence of activities associated with human and industrial development as well as natural biogeochemical processes typical of the region (e.g., biomass burning) are the main focus points. A multidisciplinary approach is followed including scientists from chemistry and botany. The studies undertaken are directly linked to key priorities of sustainable development,

Atmosphere Observations						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
						improved quality of life and energy use in South Africa.
	Climatology Research Group North West University	https://natural-sciences.nwu.ac.za/climatology-research-group/climatology-research-group	Stuart Piketh	Stuart.Piketh@nwu.ac.za	Academia	Aerosol and gas traces measurements for ambient and indoor air quality, and climate change Monitoring station at Vanderbijl Park (industrial/urban), Metsi (rural), Skukuza (savannah), Upington (arid)
	University of Pretoria School of Geography, Geoinformatics and Meteorology	https://www.up.ac.za/geography-geoinformatics-and-meteorology	Rebecca Garland	rebecca.garland@up.ac.za	Academia	Our research focuses on geographic spaces, such as the physical aspects of the Earth below, on and above the ground; how human society is shaped by the world around us; the spatial patterns and processes that describe the behaviour of animals and humans; the inter-disciplinary study of our

Atmosphere Observations						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
						environment; and how geospatial information and technologies can be used to understand the above.
	North-West University (NWU) Unit for Environmental Sciences and Management Potchefstroom	https://indaaf.obs-mip.fr/	Pieter G. Van Zyl	pieter.vanzyl@nwu.ac.za	Academia	Partner of the INDAAF Network Site of Welgegund: Gas and aerosol composition measurements; Precipitation chemistry (Since 1997)
Tunisia	Institut des Régions Arides	https://indaaf.obs-mip.fr/	Dr. Mohamed Labiadh	mohamed.labiadh@ira.rnrt.tn		Partner of the INDAAF Network Site of Mendenine: PM10 concentrations; total and wet insoluble deposition fluxes. Surface meteorological parameters (Since 2014)

Atmosphere Observations						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
						AERONET Station (since 2014)
Uganda	Uganda National Meteorological Authority	http://www.unma.go.ug	Milton M. Waiswa Manager, Installations and Maintenance	mmwaiswa@gmail.com		FTIR measurements (EM27/SUN)
	National Resources Research Institute (NaFIRRI) of the National Agriculture Research Organization (NARO)	http://www.firi.go.ug/climate_change/index.php	William Okello	wiokello@yahoo.com		

Ocean Observations

Table 10 Ocean Observations

Ocean Observation						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
Global / Africa	GOA-ON Global Ocean Acidification Observation Network	http://www.goa-on.org/ https://www.oa-africa.net/	Carla Edworthy	C.Edworthy@saiab.nrf.ac.za	International	GOA-ON is a collaborative international network designed to address three goals: to improve our understanding of global OA conditions; to improve our understanding of ecosystem response to OA; and to acquire and exchange data and knowledge necessary to optimize modelling for OA and its impacts. Active in Africa W Indian Ocean
South Africa	CSIR SOCCO	https://socco.org.za/	Sandy Thomalla	sthomalla@csir.co.za	Research Body	Southern Ocean Carbon-Climate Observatory The decadal SOCCO science plan focuses on the hypothesis that fine-scale ocean dynamics are key to understanding the role of the Southern Ocean in global century-scale trends of atmospheric carbon dioxide (CO ₂) and regional climate change. Effectively, large-scale climate is driven by the small-scale ocean physics. We use this scale

Ocean Observation						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
						sensitivity approach to understand contemporary variability and project century-scale evolution of carbon fluxes and ocean productivity that will help constrain climate risk and associated societal challenges of the 21st century.
	Department of Forestry Fisheries and Environment		Thato Mtsili	thato.mtshali64@gmail.com	National Government	
	SAEON SMCRI	https://smcri.saeon.ac.za/	Tommy Bornman		Research Body	The Shallow Marine and Coastal Research Infrastructure (SMCRI) is one of 14 large Research Infrastructures developed by the Department of Science and Innovation (DSI) as part of the South African Research Infrastructure Roadmap (SARIR). The SMCRI was established in 2017 to develop an array of instruments and physical research platforms around the coast of South Africa and its sub-Antarctic Islands to collect long-term reliable data for scientific research to help decision makers formulate appropriate environmental policies to

Ocean Observation						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
						lessen the risk and vulnerability of the coastal zone to climate and global change.
	UCT / Biogrip	https://www.biogrip.ac.za/	Sarah Fawcett	Biogeochemistry ocean	Research Body/ Academic	<p>The Biogeochemistry Research Infrastructure Platform (BIOGRIP) is a South African research initiative that drives discovery in how biological, geological, chemical and physical processes interact to shape natural environments over time and space.</p> <p>By broadening research in these vital Earth systems, BIOGRIP contributes to a greater understanding of environmental change and to national goals of access to clean water and sanitation, management of soil fertility, marine ecosystem productivity, and good health and well-being.</p> <p>BIOGRIP was established in 2019 as one of the Research Infrastructures developed by the Department of Science and Innovation (DSI) as part of the South African Research Infrastructure Roadmap (SARIR)</p>

Ocean Observation						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
	Nelson Mandela University Blue Carbon	https://research.mandela.ac.za/Research-Chairs/Chair-in-Shallow-Water-Ecosystems	Janine Adams	Janine.Adams@mandela.ac.za	Academic Institute	conservation and management of estuaries. Ongoing research is investigating blue carbon ecosystems (salt marsh, mangroves, seagrasses) and response to climate change, and water quality management of estuaries and harmful algal blooms.
	Stellenbosch University		Pedro Montiero	pmsmonteiro@gmail.com	Academia	Stellenbosch University
Sudan	Red Sea University, Institute of Marine Research	https://rsu.edu.sd/en/home/	Elsheikh Bashir Ali	sheikhbashirali@yahoo.com	Academia, government	Regular monitoring of coastal areas
Uganda	National Resources Research Institute (NaFIRRI) of the National Agriculture Research Organization (NARO)	http://www.firi.go.ug/climate_change/index.php	William Okello Dr Richard Ogutu-Ohwayo	wiokello@yahoo.com ogutuohwayo@yahoo.com	Government	Relating changes in composition, distribution and life history characteristics of fishes to climate variability and change and working with ATPs on policy issues, Pamoja on communication strategy & Makerere on capacity building

Air Quality Observations, Management, and Research

Table 11 Air Quality Observations and Research

Air Quality						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
Continental	African Group on Atmospheric Sciences (ANGA)	https://igacproject.org/working-groups/anga	Rebecca Garland	ANGA.Mailing@gmail.com	Professional Grouping	<p>With the view that improving the understanding of atmospheric science in Africa would have large impacts on key societal issues for the continent (e.g., air quality, human health, agriculture, climate change), the African Group on Atmospheric Sciences (ANGA) working group has been established. ANGA, which means “atmosphere” in Kiswahili, proposes to focus on uniting atmospheric expertise across Africa and fostering the next generation of atmospheric scientists.</p> <p>The purpose of ANGA is to</p> <ul style="list-style-type: none"> Enhance collaboration between African atmospheric scientists Enhance collaboration between African atmospheric scientists and international atmospheric scientists, Foster and enable the next generation of African atmospheric scientists, Provide a platform to highlight, share and discuss African atmospheric

Air Quality						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
						<p>research in order to improve visibility and impact, and to work towards answering atmospheric research questions</p> <p>Define, develop and promote African led research projects and programmes</p>
Continental	AfriqAir	https://www.cmu.edu/epp/afriqair/	Dr Subramanian	subu@cmu.edu airquality@krcr.rw	Academic	<p>Africa qualité de l'air (AfriqAir) is a new hybrid air quality monitoring network with (as of June 2020) over 50 low-cost sensors and reference-grade monitors mainly in urban areas across 11 African countries. Research objectives include evaluation of sensor performance across the different climates in Africa, integration of ground sensor data with satellite data to expand spatial data coverage, verification of air quality models, and investigation of air pollution health effects.</p>
Continental	Clean Air Monitoring and Solutions Network (CAMS-Net)	https://camsnet.org/project-overview/	Prof Daniel Westervelt	danielmw@ldeo.columbia.edu	Academic	<p>The Clean Air Monitoring and Solutions Network, or CAMS-Net, is a National Science Foundation-funded project aimed at creating an international "network of networks" that will facilitate the exchange of knowledge, ideas, and</p>

Air Quality						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
						data in order to improve the usage and application of low-cost sensor air quality data.
Continental	African Centre for Technology Studies/Africa	https://www.acts-net.org/	Tom Randa	tomranda12@gmail.com	Non-profit	Our Mission is to strengthen the capacity and policies of African countries and institutions to harness science, technology and innovation for sustainable development
Continental	Climate Analytics/Africa	https://climateanalytics.org/about-us/	Winnie Asiti	winnie.khaemba@climateanalytics.org	Non-profit	Climate change/low-cost sensors
Continental	Multi-Angle Imager for Aerosols (MAIA)	https://maia.jpl.nasa.gov			Academic	The Multi-Angle Imager for Aerosols (MAIA) represents the first time NASA has partnered with epidemiologists and health organizations on a satellite mission to study human health and improve lives.
GEIA Africa Working Group	emissions	https://www.geiacenter.org/analysis/working-groups/geia-africa-emissions-wg	Sekou Keita Cathy Liousse Mogesh Naidoo	cathy.leal-liousse@aero.obs-mip.fr mnaidoo4@csir.co.za	Academic	They are working to get points of contact for every country in Africa to do emission inventories.

Air Quality						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
Continental	APIMAMA: Air Pollution for Mitigation Actions for Megacities in Africa	Accueil - APIMAMA	Catherine Liousse	cathy.leal-liousse@aero.obs-mip.fr	Academic	APIMAMA aims to seek solutions to reduce air pollution and health and social risks in major African cities
Continental	WRI	https://www.wri.org/profile/george-mwaniki	George Mwaniki is African AQ head	George.Mwaniki@wri.org	NGO	WRI is a global research organization that works with governments, businesses, multilateral institutions and civil society groups to develop practical solutions that improve people's lives and ensure nature can thrive. We organize our work around seven global challenges: Food, Forests, Water, Energy, Climate, the Ocean and Cities. We analyse these issues through the lenses of our four Centres of Excellence: Business, Economics, Finance and Equity.
Continental	C40cities - AQ and climate linkages, policy	https://www.c40.org/	Seneca Naidoo Regional Technical Advisor, Air Quality, Southern Africa would be a	https://www.c40.org/our-team/seneca-naidoo/ snaidoo@c40.org	NGO	C40 is a global network of nearly 100 mayors of the world's leading cities that are united in action to confront the climate crisis. Mayors of C40 cities are committed to using an inclusive, science-based and collaborative approach to cut their fair

Air Quality						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
			good place to start. Hastings in the lead for Africa	https://www.c40.org/our-team/hastings-chikoko/		share of emissions in half by 2030, help the world limit global heating to 1.5°C, and build healthy, equitable and resilient communities.
Continental	Clean Air Journal	https://cleanairjournal.org.za/	Gregor Feig Rebecca Garland Kristy Langerman	gt.feig@saeon.nrf.ac.za rebecca.garland@up.ac.za klangerman@uj.ac.za	Academic Publishing	Clean Air Journal is the official publication of the National Association for Clean Air, a not-for-profit organisation. Clean Air Journal is a peer-reviewed journal for those interested in air quality, air quality management, and the impacts of air pollution relevant to Africa.
Algeria	Office National de la météorologie	https://www.meteo.dz/home	Sidi Baika Sidalamine Baika	baika1971@gmail.com sali.assekrem@gmail.com	National / Government	Sidi Baika is Ingénieur chez Office National de la météorologie (METEO ALGERIE), Institut hydrométéorologie de formation et recherche at IHFR Oran. Sidalamine Baika is the technician in charge of the Cimel and Brewer at Tamanrasset station, also in charge of

Air Quality						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
						the instrumentation at Assekrem. He is the contact of AEMET.
Burkina Faso	Centre National de la Recherche Scientifique et Technologique (CNRST)	http://www.cnrst.bf/	Kayaba Haro	kayabaharo@gmail.com	Industry	Indoor air pollution
Burkina Faso	Laboratoire de Physique et de Chimie de l'Environnement de l'Université Joseph Ki Zerbo (LPCE/UJKZ)	https://www.ujkz.bf/ufr/laboratoire-de-physique-et-chimie-de-lenvironnement-lpce/	Antoine Béré	berebiya@yahoo.fr	Academia	Air-quality,/low-cost sensors
Burkina Faso Agence Nationale de la Météorologie	https://www.meteoburkina.bf/	Nakoulma Guillaume Salif Wandaogo	guinabf@yahoo.fr no email	National / Government	Nakoulma Guillaume is a Senior Forecaster In-Charge in the Agence Nationale de la Météorologie du Burkina Faso. He is also a WMO representative Air Quality Sensors installed in the frame of WMO-CREWS/AEMET Project.	

Air Quality						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
Cape Verde	Instituto Nacional de Meteorologia e Geofísica	https://www.inmg.gov.cv/	Ester Brito – Meteorologist (INMG coordinator)	ester.brito@inmg.gov.cv	National / Government	Broad experience in international campaigns (ASKOS, MacClima) and aerosol instrumentation already deployed over the country. Air Quality Sensors installed in the frame of AEMET-MacClima Project.
Chad	National Meteorological Agency	no email?	Abdoulaye Harou Djergo Gaya	abdoulayeharou@gmail.com djergogaya@yahoo.fr	National / Government	Abdoulaye Harou is a retired meteorologist. Chief of the Data Processing and Forecasting Systems Division for the World Meteorological Organization in Geneva. Forecaster in Canada met. service. Djergo Gaya, is our focal point in Chad in the frame of WMO-CREWS/AEMET Project. He is also Chef de Division de l'Agrometeorologie, WMO member.
Egypt	Egyptian Meteorological Authority (EMA)	http://nwp.gov.eg/	Ashraf Zakey Zeinab Salah	ashzakey@gmail.com zeinabsalah@gmail.com	National / Government	Ashraf Zakey is the head of the Scientific Research Department at EMA. Zeinab Salah is the researcher in charge of modelling, technical performance of instrumentation etc. She is the contact of AEMET regarding the Cimel deployed at Cairo.

Air Quality						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
Ghana/West Africa	University of Environment and Sustainable Development, School of Built environment	https://www.uesd.edu.gh/collins-gameli-hodoli/	Collins Gameli Hodoli	cghodoli@uesd.edu.gh	Non-profit/Education	Collins is a lecturer at the University of Environment and Sustainable Development in Ghana and the Founder and Director of Operations at Clean Air One Atmosphere – a non-profit using air sensors to revolutionize air quality monitoring and data communication in Ghana and Wider Africa.
Mali	Agence Nationale de la Météorologie (MALI-METEO)	https://malimeteo.ml/ (blocked by firewall)	Moussa Touré	mositoure@aol.com	National / Government	Moussa Touré, our CREWS focal point in Mali. Directeur Infrastructures et Prévisions Météorologiques. Agence Nationale de la Météorologie (MALI-METEO). WMO representative. Air Quality Sensors installed in the frame of WMO-CREWS/AEMET Project.
Mauritania	Office National de la Mauritanie (ONM) - Nouakchott Oumtounsy International Airport	https://fr.meteo-mauritanie.org/	Sidi Mohamed Abdoulaye Gandega Lemine Bobba	sidiloudey2@yahoo.fr gandega8@yahoo.fr sidiloudey2@yahoo.fr	National / Government	Le chef service de maintenance is Mr Gandéga. Lemine Bobba is Directeur de l'Exploitation et des Prévisions Météorologiques Office National de Météorologie. Air Quality Sensors installed in the frame of AEMET-MacClima Project.

Air Quality						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
Morocco	Maroc Météo	https://www.marocmeteo.ma/	Salama Mohamed Hassan Ousha	no email cpmouarz@gmail.com	Government	Salama Mohamed is the Chef de la station meteorologique de Ouarzazate, belonging to the Direction de la Meteorologie Nationale - Maroc Meteo. Hassan Ousha is the technician in contact with AEMET. This station has a Cimel since 2012 as a result of an international agreement Spain/Morocco. However, the contact was lost in 2018 for several reasons.
Morocco	Mohammed V University of Rabat	http://www.um5.ac.ma/um5/ https://atlas5.org/	Najoua Labjar	najoua.labjar@ensam.um5.ac.ma	Academia	She is a professor in the MM5 University strongly involved in atmospheric research. Atlas station, deployed in collaboration with CNRS-ICARE, Orléans and Orléans University. This project has received funding from the European Union's Horizon 2020 research and innovation programme.
Morocco	Centre National du Climat (CNC)		Said EL KHATRI Kenza Khomsi	elkhatri@gmail.com k.khoms@gmail.com		

Air Quality						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
Morocco	University Mohammed 6 Polytechnique (UM6P), Ben Guerir		Wahid Mellouki		Academia	Detached from Orléans (France) to UMP6P to develop an "African Centre on Air Quality and Climate"
Niger	AirQuino Low-cost sensors (Consiglio Nazionale delle Ricerche - Istituto per la BioEconomia)	https://airqino.magenta lab.it/#/map?idProjects=121216137	Maurizio Bacci	maurizio.bacci@ibe.cnr.it		Low-cost sensors for meteorology, gases and PM10/2.5
Senegal	ANACIM (Agence Nationale de l'Aviation Civile et de la Météorologie)	https://www.anacim.sn/	Ousmane Ndiaye Oumar Konte	ousmane.ndiaye@anacim.sn Oumar.konte@anacim.sn	National / Government	Ousmane Ndiaye is the Directeur de la Météorologie et Exploitation et point focal GIEC Senegal. Oumar Konté is a WMO member (representing member), meteorologist. Ousmane is also WMO representative of Senegal. Air Quality Sensors installed in the frame of AEMET-MacClima Project.

Air Quality						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
Senegal	Centre de Gestion de la Qualité de l'air Department of Physics, Université Alioune DIOP, Bambey, Senegal		Aminata MBOW DIOKHANE Chef du Centre de Gestion de la Qualité de l'Air chez Direction de l'Environnement et des Etablissements Classés Bertrand Tchanche	aminata.mbow@environnement.gouv.sn https://sn.linkedin.com/in/aminata-mbow-diokhane-00611521 bertrand.tchanche@uadb.edu.sn	Academia	https://www.thegpsc.org/sites/gpsc/files/webinaire_gpsc_cgqa_dakar_senegal_19_nov_2019.aminata_mbow_diokhane.v4_compressed.pdf Sow, Baïdy; Tchanche, Bertrand; Fall, Ibrahima; Souare, Saliou; Mbow-Diokhane, Aminata. Pollution atmosphérique dans la ville de Dakar, Sénégal. La Météorologie, 116, 48-59, 2022.
South Africa	South African Air Quality Information System (SAAQIS)	https://saaqis.environment.gov.za/	Chief Directorate - Air Quality Management: Ms Patience Gwaze	pgwaze@environment.gov.za	Government	The South African Air Quality Information System provides a common platform for managing air quality information in South Africa. It makes data available to stakeholders, including the public and provides a mechanism to ensure uniformity in the way air quality data is managed
	National Association for Clean Air (NACA)	https://www.naca.org.za/	Roelof Burger	Roelof.Burger@nwu.ac.za	NGO	Non-profit organisation promoting and disseminating information about the status of air quality in South Africa as well as methodologies for measurements and policy development

Air Quality						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
						in collaboration with Universities, government, industries and civil society
	Richards Bay Clean Air Association	https://rbcaa.org.za/	Sandy Camminga	complaints@rbcaa.co.za camminga@iafrica.com	NGO	The Richards Bay Clean Air Association (RBCAA), is a Section 21 (not for gain) company, that was established in 1997 as a result of public concerns regarding the levels of air pollution in Richards Bay, now the City of uMhlathuze. The RBCAA monitors and predicts air quality within the uMhlathuze Municipal area, and makes recommendations on air quality issues. The Association is an advisory body with no regulatory powers. Decisions regarding air quality and compliance monitoring are the responsibility of various Regulatory Authorities
	Council for Scientific and Industrial Research CSIR Climate and Air Quality modelling	https://www.csir.co.za/climate-and-air-quality-modelling	Mogesh Maidoo	MNaidoo4@csir.co.za nsiyakatshana@csir.co.za	Research Organisation	The negative effects of climate change on a global and national scale needs collection of accurate data on the climate system at various spatial and time scales. The CSIR has invested in the development of a capability to perform seamless climate model simulations. This comprises statistical and dynamic downscaling experiments

Air Quality						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
						of climate change projections, medium and short-range numerical weather predictions using a state-of-the-art Earth System Model-based (ESM), framework.
	University of Pretoria School of Geography, Geoinformatics and Meteorology	https://www.up.ac.za/geography-geoinformatics-and-meteorology	Rebecca Garland	rebecca.garland@up.ac.za	Academia	Our research focuses on geographic spaces, such as the physical aspects of the Earth below, on and above the ground; how human society is shaped by the world around us; the spatial patterns and processes that describe the behaviour of animals and humans; the inter-disciplinary study of our environment; and how geospatial information and technologies can be used to understand the above.
	North West University Centre for Climate Change, Air Quality and Impacts	https://natural-sciences.nwu.ac.za/ccaqi	Roeloff Burger	Roelof.Burger@nwu.ac.za)	Academia	The Air Quality and Impacts sub-programme is aimed at providing key information to support the development of sustainable air quality policies and practices in Southern Africa. The influence of activities associated with human and industrial development as well as natural biogeochemical processes typical of the region (e.g. biomass burning) are the main focus

Air Quality						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
						points. A multidisciplinary approach is followed including scientists from chemistry and botany. The studies undertaken are directly linked to key priorities of sustainable development, improved quality of life and energy use in South Africa.
	Climatology Research Group North West University	https://natural-sciences.nwu.ac.za/climatology-research-group/climatology-research-group	Stuart Picketh	Stuart.Piketh@nwu.ac.za	Academia	Aerosol and gas traces measurements for ambient and indoor air quality, and climate change Monitoring station at Vanderbijl Park (industrial/urban), Metsi (rural), Skukuza (savannah), Upington (arid)
	North West University Welgegund site	www.welgegund.org	Pieter Van Zyl	Pieter.VanZyl@nwu.ac.za	Academia	Welgegund Atmospheric Monitoring site The Welgegund atmospheric measurement station is located on a grazed grassland-savannah approximately 100 km west of Johannesburg (Gauteng) metropolitan area in South Africa. The site is frequently hit by pollution plumes from Johannesburg metropolitan area and the western Mpumalanga industrial Highveld, with frequent clean air

Air Quality						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
						injections from the west. The site is operated jointly by the North-West University (NWU), the Finnish Meteorological Institute (FMI) and the University of Helsinki (UH).
	Siva Venkataraman		Siva Venkataraman	venkataramans@ukzn.ac.za		Remote sensing Climatology meteorology
	University of Witwatersrand, School of Public Health	https://www.wits.ac.za/publichealth/	Dirk Brouwer	derk.brouwer@wits.ac.za	Education	Health impacts of air pollution exposure/low-cost sensors
Togo	Université de Lomé, Faculté Des Sciences, Département de chimie	https://univ-lome.tg/universite/organisation/fds	Prof. Kokou Sabi; Hèzouwè SONLA	sabikokou@yahoo.fr; audesonlat@gmail.com	Education	
Tunisia	Institut National de la Météorologie - Systèmes d'observation et de la maintenance	https://www.meteo.tn/	Rafik Chahed Ilyes Zarrouk	rafik.chahed@meteo.tn ilyes.zarrouk@meteo.tn	National / Government	Rafik Chahed is an expert à la Comm de la Météo aéro (CMAé) de l'Organisation Météorologique Mondiale. He is also Sous-Directeur des systèmes d'observation et de la maintenance · Institut National de la Météorologie. Ilyes Zarrouk is the technician in contact with AEMET in

Air Quality						
Name/country	Subgroup	Website	Contact person	email	Sector	Notes
						charge of operating the Cimel at Carthage.
Uganda/ AirQo	Department of Computer Science, Makerere University	https://www.airqo.net/	Prof Engineer Bainomugisha	baino@cis.mak.ac.ug	Education	At AirQo we empower communities across Africa with accurate, hyperlocal, and timely air quality data to drive air pollution mitigation actions. Low cost sensor group

Modelling and Remote Sensing

Modelling is an important component in the provision of climate services, here the stakeholders are grouped into the following categories

- Computational facilities (Table 11), representing the large-scale high-performance computing infrastructure on the continent
- Earth System Models, - those that integrate the land surface, ocean and atmospheric models (Table 12)
- Meteorological and Climate Models (Table 13)
- Hydrological Models (Table 14)
- Ocean Models (Table 15)
- Remote Sensing (Table 16)

High Performance Computational Facilities

Table 12 Computational facilities

Computation Facilities						
Country	Subgroup	Website	Contact person	email	Sector	Notes
South Africa	Centre for high Performance Computing	https://www.chpc.ac.za/	Motheto Sovara	MSovara@csir.co.za	Research	The CHPC is one of three primary pillars of the national cyber-infrastructure intervention supported by the Department of Science and Innovation (DSI). The South African National Research Network (SANReN) and the Data Intensive Research Infrastructure of South Africa (DIRISA) complement the CHPC through the provision of high-speed, high-bandwidth connectivity, and the effective curation of a variety of notably large and critical databases. The CHPC infrastructure is updated and maintained meticulously to comply with international standards.
Morocco	National centre for Scientific and Technical Research	https://www.marwan.ma/index.php/en/services/hpc				<i>High Performance Computing (HPC)</i> The National Centre for Scientific and Technical Research puts forth for the Moroccan researcher's community a remotely accessible High-Performance Computing (HPC) infrastructure.
North Africa	Barcelona Supercomputing Centre - Barcelona Dust Forecast Centre- AEMET (WMO Regional Specialized Meteorological	https://dust.aemet.es/products/daily-dust-products	Ernest Werner	ewernerh@aemet.es		WMO SDS-WAS Regional Centre for Northern Africa, Middle East and Europe, conducting research and providing operational products

Computation Facilities						
Country	Subgroup	Website	Contact person	email	Sector	Notes
	Centre for dust in North Africa)					

Earth System Modelling

Table 13 Earth System Models

Earth System Models						
country	Subgroup	Website	Contact person	email	Sector	Notes
South Africa	Wits Global Change Institute	https://www.wits.ac.za/gci/	Francois Engelbrecht	Francois.engelbrecht@wits.ac.za	Academic	
	CSIR	https://www.csir.co.za/	Mohau Mateyisi	MMateyisi@csir.co.za	Research Body	

Meteorological and Climate Modelling

Table 14 Meteorological and Climate Models

Meteorology and Climate Models					
Name/country	Subgroup	Website	Contact person	email	Notes
Algeria	MetOffice of ALGERIA - ALADIN-Dust	https://www.meteo.dz/home	Abdenour AMBAR	ambar.abdenour@gmail.com	Regional
Egypt	EMA - EMA REGCM4 model	http://nwp.gov.eg/	Ashraf Zakey Zeinab Salah	ashraf.zakey@yahoo.com zeinabsalah@gmail.com	Regional
Ghana	University of Ghana AIMS	https://aims.edu.gh/researcher/dr-nana-ama-browne-klutse-2/	Nana Browne		Prof. Nana Browne Klutse is currently an AIMS-Canada Research Chair in Climate Change Science. The project she is embarking on is focused on understanding the climate dynamics of Africa, climate observations and projections for climate services. She is an Associate Professor at the Department of Physics, University of Ghana. She was a senior research scientist at the Ghana Space Science and Technology Institute of the Ghana Atomic Energy Commission as well as the manager of the remote sensing and Climate Centre at the Institute.
South Africa	Wits Global Change Institute		Francois Engelbrecht	Francois.engelbrecht@wits.ac.za	

Meteorology and Climate Models					
Name/country	Subgroup	Website	Contact person	email	Notes
	SAWS	https://www.weathersa.co.za/	Stephanie Landman Cobus Olivier (Seasonal system)	Stephanie.Landman@weather sa.co.za	CRAY, Unified Model
	University of Cape Town (CSAG)	https://www.csag.uct.ac.za/	Chris Lennard	Lennard@csag.uct.ac.za	CSAG is a leading international climate research centre based in Africa with broad research skills and competency in both physical and social dimensions of climate, a strong experience in engaging with society, and an excellent track record in capacity development. We prioritize societally relevant research to support responses to climate variability and change.
	University of Zululand		Nkanyiso Mbatha	nkanyisombatha5@gmail.com	

Hydrological Models

Table 15 Hydrological Models

Hydrological Models					
Name/country	Subgroup	Website	Contact person	email	Notes
South Africa	Rhodes University ARUA-RESBEN	https://www.ru.ac.za/iwr/people/staffpostdocs/jtanner/	Jane Tanner	j.tanner@ru.ac.za	Dr Jane Tanner undertakes both research and consulting in hydrology, specialising in the modelling and understanding of surface water and groundwater interactions. This includes improving conceptual process understanding as well as hydrological modelling of interactions. She is an expert in the application of the modified Pitman Model (modified at the IWR by Prof Denis Hughes) which integrates both surface water and groundwater. Further interests lie in the types of field work that support the modelling of SWGW interactions, as well as comparisons between simpler and more complex models, and their applicability in various settings.
	South African Environmental Observation Network (SAEON)	https://www.saeon.ac.za/	Michele Toucher	ml.toucher@saeon.nrf.ac.za	
			Julia Glenday	j.glenday@saeon.nrf.ac.za	

Hydrological Models					
Name/country	Subgroup	Website	Contact person	email	Notes
	Wits	https://www.wits.ac.za/staff/academic-a-z-listing/n/johnndirituwitsacza/	John Ndiritu	John.Ndiritu@wits.ac.za	Professor, School of Civil and Environmental Engineering at University of the Witwatersrand. Expertise in stochastic hydrology, operating rules and evolutionary multi-objective optimization. Models: Pitman, Water Resources Yield Model.
	CSIR	https://www.csir.co.za/dr-evison-kapangaziwiri	Evison Kapangaziwiri	ekapangaziwiri@csir.co.za	Senior researcher at the CSIR working on Hydrological and systems modelling, uncertainty analysis in water resources assessments, integrated water resources management and operational hydrology Models: ACRU, Pitman, RIB
	University of Venda	https://www.univen.ac.za/	Rachel Makungo	rachel.makungo@univen.ac.za	Professor of Hydrology and water resources at the University of Venda. Models: Water Resources yield model, SWAT, HECRAS, MIKE-SHE, MIKE Hydro, EARTH model. Expertise in An expert in rainfall-run-off modelling, yield reliability analysis and operating rules.
	CSIR	https://www.csir.co.za/trevor-lumsden	Trevor Lumsden	tlumsden@csir.co.za	Senior Researcher at CSIR Research interests focus on assessing climate impacts on water resources and agriculture. Has a particular

Hydrological Models					
Name/country	Subgroup	Website	Contact person	email	Notes
					interest in the application of hydrological and crop modelling. Models: ACCRU, Model
	DWS	https://www.dws.gov.za/	Khathutshelo Rasifudi	RasifudiK@dws.gov.za	Project Manager / Scientist Manager in the Integrated Water Studies at the National Department of Water and Sanitation. Models: WRSM200 (pitman daily and monthly), Water Resources yield model, Water quality assessment model (WQSAM), Soil Water Assessment Tool+ (SWAT+)
	University of KwaZulu Natal	https://cwrr.ukzn.ac.za/centre-staff/members/ms-kershani-tinisha-chetty/	Kershani Chetty	chettyk@ukzn.ac.za	Dr Chetty is a lecturer at UKZN and co-ordinates the Hydrology programme in the School of Agriculture, Earth and Environmental Sciences. Research interests include hydrological modelling, design hydrology and the use of remote sensing technology for water resources management. Models: ACRU, SEBS
Zimbabwe	University of Zimbabwe	https://www.uz.ac.zw/	Webster Gumindonga	wgumindoga@gmail.com	Dr Gumidonga is lecturer in the Department of Civil Engineering at the University of Zimbabwe. Research focus area includes, hydrology, water resources management as well as earth observations. Models: TOPOMODEL, HEC-HMS

Ocean Models

Table 16 Ocean Models

Ocean Models					
Name/country	Subgroup	Website	Contact person	email	Notes
South Africa	CSIR	https://www.csir.co.za/	Nicolette Chan	nchang@csir.co.za	Ocean Model
			Sarah Nicolson	sarahanne.n@gmail.com	Biogeochemistry modelling
			Marie Smith		Harmful algal blooms
	SAEON SAPRI	https://www.saeon.ac.za/category/sapri/	Juliet Hermes Jenny Vietch	jc.hermes@saeon.nrf.ac.za ja.veitch@saeon.nrf.ac.za	

Remote Sensing

Table 17 Remote Sensing

Remote Sensing					
Name/country	Subgroup	Website	Contact person	email	Notes
Continental	African Association of Remote	https://africanremotesensing.org/	Abel Ramoelo	abel.ramoelo@up.ac.za	Remote sensing community of practice

Remote Sensing					
Name/country	Subgroup	Website	Contact person	email	Notes
	Sensing of the Environment AARSE				
South Africa	University of Limpopo		Frederic Remote sensing Kingsly Ayisi (Spaces meeting)	kingsley kwabena.ayisi@ul.ac.za	Remote sensing
	South African National Space Agency	https://www.sansa.org.za/	Stuart Bernard	customers- eo@sansa.org.za	Earth Observation collects, processes, archives, and disseminates Earth observation data (principally from satellites) to support policy-making, decision-making, economic growth and sustainable development in South Africa. Their activities align with South African and global Earth observation strategies to provide data services and products that promote socioeconomic benefits, like environmental and resource management, disaster management and health. Data and value-added remote sensing services produced by the division are used for research and development, human capital development and science advancement in geo-informatics, image and data processing and remote sensing.

Conclusion

Over three hundred potential project stakeholders have been identified across the continent. While this is undoubtedly an incomplete list it good initial baseline for identifying and engaging with the relevant community. At this stage of the development of the stakeholder mapping there is a strong bias to South and West Africa as this is where the project members are most highly networked. As this project develops and as the work packages progress in their tasks, it is essential that this deliverable is updated to include other identified stakeholders.