

UNIVERSITY OF NAIROBI
Department of Meteorology

ANNUAL REPORT FOR YEAR 2012

1. Introduction

Weather and climate are widely recognized as crucial in the development of any nation since weather and climate impact on all sectors of economy. Moreover, many of the natural disasters in the world are related to weather and climate. Knowledge of weather and climate is necessary if it has to be appropriately factored into the national development strategic plan. It is because of the importance of the science of meteorology that the Department of Meteorology of the University of Nairobi was established in 1963 at the request of the East African Community (EAC), the World Meteorological Organization (WMO) and the United Nations Development Program (UNDP) to train professional Meteorologists for the English speaking countries of Africa. Ever since its inception, the Department of Meteorology has continued to play a major role in training highly skilled meteorological personnel, most of whom are currently manning National Meteorological and Hydrological Services (NMHSs) of most countries in Africa. In response to the evolving needs the Department has developed several other programs in applied fields that are listed below. The mission of the Department is to maintain a leading role in the pursuit and development of knowledge of Meteorology through quality and relevant teaching, research, consultancy and community service.

2. Programs offered in Meteorology

- B.Sc. in Meteorology
- B.Sc. (Atmospheric Science Option)
- Postgraduate Diploma (PGD) in Meteorology
- PGD in Aviation Meteorology
- PGD in Operational Hydrology
- M.Sc. in Meteorology
- M.Sc. in Agrometeorology
- M.Sc. Aviation Meteorology
- M.Sc. in Climate Change
- PhD in any of the following: Meteorology, Agrometeorology, Hydrometeorology

3. Enrolled students in undergraduate and postgraduate programmes

(a) Undergraduate Programmes

No	Category/ Programme	Year of study	Female	Male	Total
1	BSc in Meteorology	1	13	39	52
2	BSc in Meteorology	2	9	36	45
3	BSc in Meteorology	3	13	43	56
4	BSc in Meteorology	4	17	41	58
TOTAL			52	159	211

No	Category/ Programme	Group	Year of study	Female	Male	Total
1	BSc in Meteorology (ODL)	1 K	1	2	7	9
2	BSc in Meteorology (ODL)	3J	2	4	3	7
3	BSc (Atmospheric Science)	N/A	1	2	9	11
TOTAL				8	19	27

(b) Postgraduate Programmes

No	Category/ Programme	Year of study	Female	Male	Total
1	PGD in Meteorology	1	3	14	17
2	PGD in Aviation Meteorology	1	1	1	2
3	MSc in Meteorology	1	1	4	5
4	MSc in Meteorology	2	2	2	4
5	MSc in Aviation Meteorology	1	0	1	1
6	MSc in Climate Change	1	6	9	15
7	MSc in Climate Change (ODL)	1	0	5	5
8	MSc in Agrometeorology	2	1	2	3
9	PhD in Meteorology	1	1	5	6
10	PhD in Meteorology	2	1	2	3
11	PhD in Meteorology	3	0	4	4
TOTAL			16	49	65

4. International Student Component

Distribution of Student Population by Country

No	Country	Number of Students	
		Undergraduate	Postgraduate
1	Botswana	3	0
2	Liberia	0	1
3	Namibia	5	1
4	République du Congo	1	0
5	Rwanda	7	1
6	Tanzania	3	17
7	Uganda	0	1
8	Zambia	1	0
Total		20	21

Details of Foreign Students

S/No	FULL NAMES	REG. NUMBER	GENDER	COUNTRY OF ORIGIN	PROGRAMME REGISTERED	PERIOD OF STUDY
1	Sabiiti Geoffrey	I80/80585/2010	Male	Uganda	PhD (Meteorology)	2009-2013
2	Gahigi Aimable	I56/62101/2011	Male	Rwanda	MSc (Agrometeorology)	2010-2012
3	Ashipala Sarafia Ndapandula	I56/71911/2011	Female	Namibia	MSc (Agrometeorology)	2011-2013
4	Mulbah Jr. David Mawolo	I54/76311/2012	Male	Liberia	MSc (Climate Change)	2012-2014
5	Ame Hassan Khatib	I45/80695/2012	Male	Tanzania	PGD (Meteorology)	2012-2013
6	Athuman Ahmed	I45/84333/2012	Male	Tanzania	PGD (Meteorology)	2012-2013
7	Binda Juma Hamisi	I45/84338/2012	Male	Tanzania	PGD (Meteorology)	2012-2013
8	Emmanuel Johnson L.	I45/84341/2012	Male	Tanzania	PGD (Meteorology)	2012-2013
9	Jecha Suleiman Haji	I45/84344/2012	Male	Tanzania	PGD (Meteorology)	2012-2013
10	Kapakala Isaya	I45/80695/2012	Male	Tanzania	PGD (Meteorology)	2012-2013
11	Kasenga Leonard Michael	I45/84347/2012	Male	Tanzania	PGD (Meteorology)	2012-2013
12	Kavishe golden M.	I45/84340/2012	Male	Tanzania	PGD (Meteorology)	2012-2013
13	Levira Pamela william	I45/84350/2012	Female	Tanzania	PGD (Meteorology)	2012-2013
14	Miraji miraji khamis	I45/84342/2012	Male	Tanzania	PGD (Meteorology)	2012-2013
15	Mking'imule Veronica	I571/84348/2012	Female	Tanzania	PGD (Meteorology)	2012-2013
16	Mohamed H. Mohamed	I45/84346/2012	Male	Tanzania	PGD (Meteorology)	2012-2013
17	Musiba Musiba M.	I45/84334/2012	Male	Tanzania	PGD (Meteorology)	2012-2013
18	Mwakilembe Amani Burton	I45/84343/2012	Male	Tanzania	PGD (Meteorology)	2012-2013
19	Nkuba Abel M.	I45/84335/2012	Male	Tanzania	PGD (Meteorology)	2012-2013
20	Tuju Peter Enos	I45/84345/2012	Male	Tanzania	PGD (Meteorology)	2012-2013
21	Tunsume Gideon M.	I45/84339/2012	Female	Tanzania	PGD (Meteorology)	2012-2013
22	Kaligirwa Jeanne	I10/30762/2011	Female	Rwanda	BSc (Meteorology)	2010-2013
23	Nyiranteziryayo Esperance	I10/30922/2011	Female	Rwanda	BSc (Meteorology)	2010-2013
24	Ngabonziza Athanase	I10/30763/2011	Male	Rwanda	BSc (Meteorology)	2010-2013
25	Mbati Mathieu Mugunga	I10/30921/2011	Male	Rwanda	BSc (Meteorology)	2010-2013
26	Odillo Usile Kgobetsi	I10/44542/2012	Male	Namibia	BSc (Meteorology)	2011-2014
27	Sebastiano D.J. Laurinda	I10/44561/2012	Female	Namibia	BSc (Meteorology)	2011-2014
28	Masaka Hendrick	I10/44562/2012	Male	Namibia	BSc (Meteorology)	2011-2014
29	Somses Sieglinde	I10/44543/2012	Female	Namibia	BSc (Meteorology)	2011-2014
30	Haindongo Israel Ndaendako	I10/42366/2011	Male	Namibia	BSc (Meteorology)	2011-2014
31	Anande Doreen Mwara	I10/41650/2011	Female	Tanzania	BSc (Meteorology)	2011-2014
32	Nsonga Joseph	I10/41025/2011	Male	République du Congo	BSc (Meteorology)	2011-2014
33	Gakomati Justin	I10/44407/2012	Male	Rwanda	BSc (Meteorology)	2011-2014
34	Musayidizi Jean De Dieu	I10/44409/2012	Male	Rwanda	BSc (Meteorology)	2011-2014
35	Niyonkuru Shadrack	I10/44408/2012	Male	Rwanda	BSc (Meteorology)	2011-2014
36	Kitero Beatrice Staford	I10/58731/2012	Female	Tanzania	BSc (Meteorology)	2012-2015
37	Maswe Oratile Kelebemang	I10/30949/2013	Female	Botswana	BSc (Meteorology)	2012-2015
38	Moreri Linky	I10/30950/2013	Female	Botswana	BSc (Meteorology)	2012-2015
39	Setoto Joyce Mmapotong	I10/30951/2013	Female	Botswana	BSc (Meteorology)	2012-2015
40	Masigani Godbless John	I10/58733/2012	Male	Tanzania	BSc (Meteorology)	2012-2015
41	Nasilele Collins		Male	Zambia	BSc (Meteorology)	2012-2015

Research Activities Undertaken

The research activities in the Department include;

- Climate variability and predictability using statistical, General Circulation Models (GCMs) and Regional Climate Models (RCMs)
- Development of indices for monitoring and prediction of climate variability in Eastern Africa region
- Link between atmospheric aerosols, stratospheric dynamic, ozone and climate variability
- Effect of urbanization on micro-environment; air pollution transport and dispersion, air quality modelling
- Climate change
- Drought and low flows in the Nile/Flow Regime for International Experimental Network Data (FRIEND) research program
- Mixed tree/crop interfaces in semi-arid environments
- Applications of renewable energy in Kenya.
- Applications of remote sensing in meteorology with particular emphasis on disaster management, hydrology, agriculture and environmental monitoring in support of sustainable food security

Researchers Name(s)	Title of Research	Departments involved	Sponsor
Prof. NJ Muthama Dr. J.M. Ininda Mr. W.B. Masieyi Mr. D.N. Kariithi	Atmospheric Resources Modeling Centre	<ul style="list-style-type: none"> •Department of Meteorology, UON •Kenya Meteorological Department 	KMD & UON
Dr. AO Opere	Nile basin Project- Adapting to climate change induced water stress in the Nile River Basin; WP1: Comprehensive Assessments	<ul style="list-style-type: none"> •Department of Meteorology, UON 	UNEP (Small Scale Funding)
Prof. NJ Muthama Dr. JN Mutemi Mr. BK Mutai Ms Stella Aura	Sensitization of the communities in Kibwezi on the use of weather and climate information for the enhancement of food security	<ul style="list-style-type: none"> •Department of Meteorology, UON •Kenya Meteorological Department 	African Institute for Capacity Development (AICAD)
Dr. GO Ouma Mr. CB Lukorito	Enhancing the Kenyan capacity on climate risk reduction and climate change adaptation for sustainable agricultural productivity and food security	<ul style="list-style-type: none"> •Department of Meteorology, UON 	Regional Universities Forum for Capacity Building in Agriculture (RUFORUM)
Prof. NJ Muthama Prof. MM Manene Ms Stella Aura Dr. RE Okoola Dr. AO Opere Mr. BA Chanzu Mr. PK Runanu Mr. WB Masieyi	National Survey on utilization of weather products in Kenya	<ul style="list-style-type: none"> •Department of Meteorology, UON •Kenya Meteorological Department •Kenya Agricultural Institute (KARI) •Kenya Police •IGAD Climate Prediction and Application Centre (ICPAC) •School of Mathematics, UON 	Kenya Government through Kenya Meteorological Department

5. International Links and Collaborations

S/N	Area of Collaborations	Partners
1	Climate variability and predictability using statistical and General Circulation Model (GCM) models	IGAD Climate Prediction and Application Centre (ICPAC) KMD
2	Education and Training	World Meteorological Organization (WMO)
3	Education, Research and Training	European Meteorological Satellite (EUMETSAT)
4	Education, Research and Training	CRC- University of Bourgogne, France
5	Education, Research and Training	WMO Regional Institute for Meteorological Training and Research (IMTR)
6	Sensor Hosting Agreement	Global Lightning Network (GLN)
7	Establishment of Seismological and Meteorological network for Tsunami Early Warning	Kenya Meteorological Department (KMD)
8	Intraseasonal climate variability over Eastern Africa	Centre de Recherches de Climatologie , FRE 2740 CNRS, University de Bourgogne, France:

6. Publications for the year

Staff Name	Title of the Paper	Conference/Journal	Date
Prof. Ogallo	Linkages between global sea surface temperatures and decadal rainfall variability over Eastern Africa region	International Journal of Climatology (2012 Royal Meteorological Society)	July 14, 2012
Prof. Muthama	Linkages between global sea surface temperatures and decadal rainfall variability over Eastern Africa region	International Journal of Climatology (2012 Royal Meteorological Society)	July 14, 2012
Dr. Ininda	Linkages between global sea surface temperatures and decadal rainfall variability over Eastern Africa region	International Journal of Climatology (2012 Royal Meteorological Society)	July 14, 2012
Prof. Ogallo	Decadal rainfall variability modes in observed rainfall records over East Africa and their relations to historical temperature changes	Journal of Hydrology (2012 Elsevier B.V.)	July 3, 2012
Dr. Okoola	Decadal rainfall variability modes in observed rainfall records over East Africa and their relations to historical temperature changes	Journal of Hydrology (2012 Elsevier B.V.)	July 3, 2012
Prof. Muthama	Survey on the Utilization of Weather Information and Products for Selected Districts in Kenya	Journal of Meteorology and Related Sciences	August 15, 2012
Mr. Masieyi	Survey on the Utilization of Weather Information and Products for Selected Districts in Kenya	Journal of Meteorology and Related Sciences	August 15, 2012
Dr. Okoola	Survey on the Utilization of Weather Information and Products for Selected Districts in Kenya	Journal of Meteorology and Related Sciences	August 15, 2012
Dr. Opere	Survey on the Utilization of Weather Information and Products for Selected Districts in Kenya	Journal of Meteorology and Related Sciences	August 15, 2012
Prof. Ogallo	Spatial coherence and potential predictability assessment of intraseasonal statistics of wet and dry spells over Equatorial Eastern Africa	International Journal of Climatology (2012 Royal Meteorological Society)	October 6, 2012
Dr. Gitau	Spatial coherence and potential predictability assessment of intraseasonal statistics of wet and dry spells over Equatorial Eastern Africa	International Journal of Climatology (2012 Royal Meteorological Society)	October 6, 2012
Dr. Okoola	Spatial coherence and potential predictability assessment of intraseasonal statistics of wet and dry spells over Equatorial Eastern Africa	International Journal of Climatology (2012 Royal Meteorological Society)	October 6, 2012

7. Consultancies

Title	Client	Staff Involved
Provision of consultancy services on Verification of the Internally Displaced Persons due to 2007 elections	Ministry of State for Special Programmes	Prof. Muthama

8. Number of staff

Designation		No. of staff
Professor	-	2
Associate Professor	-	2
Senior Lecturer	-	9
Lecturer	-	3
Assistant Lecturer	-	0
Graduate Assistant	-	2
Administrator	-	0
Principal Technologist	-	1
Senior Technologist	-	2
Technologist	-	3
Trainee Technologist	-	0
Secretary	-	2
Clerk	-	0
Driver	-	0
Messenger	-	0
Total	-	26

9. Number of Graduands (2012)

s/n	Certificate	Number Graduands
1	Diplomas	N/A
2	Bachelor of Science in Meteorology	42
3	Postgraduate Diploma in Meteorology	1
4	MSc in Meteorology	5
5	MSc in Agrometeorology	1
6	PhD	0
Total		49

10. Papers Presented at Conferences

S/N	Staff Name	Title of the Paper	Date	Conference/Journal
1	Dr. Gitau	Spatial coherence and potential predictability assessment of intraseasonal statistics of wet and dry spells over Equatorial Eastern Africa	Feb. 20-22	PICREVAT Workshop, Izaak Walton Inn, Embu
2	Prof. Muthama	The Relationship between Atmospheric Aerosols and Rainfall over the Three Cities in Kenya	May 28-June 2	BALWOIS 2012 – Ohrid, Republic of Macedonia
3	Prof. Ng'ang'a	The Relationship between Atmospheric Aerosols and Rainfall over the Three Cities in Kenya	May 28-June 2	BALWOIS 2012 – Ohrid, Republic of Macedonia
4	Prof. Muthama	A review and assessment of applicability of the heat stress indices in the Kenyan Weather forecast	May 7-11	NSCT-The first national science, technology and innovation week
5	Ms. Bosire	Assessment of the predictability of rainfall on seasonal timescales over East Africa using climate forecast	May 9	Departmental Seminar

11. Corporate Social Responsibility

Title	Partners	Staff Involved
Meeting of heads of meteorological services	<ul style="list-style-type: none"> • Kenya Meteorological Society (KMS) • East African Community (EAC) 	Prof. Muthama
Field Study in Western & Nyanza regions_ Verification of IDPs in Kenya	Ministry of Special Programmes	Prof. Muthama
RFA development retreat- Higher Education Solutions Network	<ul style="list-style-type: none"> • University of Washington • University of Nairobi 	Prof. Muthama
Pilgrimage to Jerusalem	<ul style="list-style-type: none"> • Emmaus Agencies • Embassy of the Arab Republic of Egypt 	Prof. Mutua
Technical Assistance to Kenya Water Institute (KEWI) to upgrade to University status	KEWI	Prof. Mutua
NUMA High School Outreach Programme	<ul style="list-style-type: none"> • KMS • Kenya Meteorological Department (KMD) 	<ul style="list-style-type: none"> • NUMA • Prof. Muthama
Co-Supervision of PhD student- E.M. Masinde	Department of Computer Science, University of Cape Town	Prof. Muthama
Drafting Retreat	<ul style="list-style-type: none"> • Arid lands Network • Ministry of Environment and Mineral Resources 	Prof. Muthama

12. Any other Activities

(a) Promotions:

- Dr. Wilson Gitau and Mr. Stephen K. Rwigy were promoted to the position of lecturer
- Ms. Dorcus K. Mule promoted to the position of Technologist Grade ABC

(b) Visitors to the Department:

DATE	NAME OF VISITOR	ADDRESS
29/2/2012	Dr. Richard Anyah	University of Connecticut, USA
1/3/2012	David N. Mburu	Kenya Meteorological Department (KMD)
1/3/2012	Edward M. Muriuki	KMD
1/3/2012	James Nguo	Alin. Net
1/3/2012	Anthony Mugo	Alin.Net
23/3/2012	Charles Ngunjiri	Ministry of EAC, P.O. Box 3795, Nairobi
23/3/2012	Peter Ambenje	KMD
23/3/2012	Hesbon Odongo	SBS – ISO Internal Quality Auditor
23/3/2012	P.W. Khaoya	CBPS ISO Internal Quality Auditor
15/5/2012	Elizabeth Page	UCAR/COMET
15/5/2012	Arlene Laing	UCAR/COMET (www.meted.ucar.edu)
22/5/2012	Mara Child	University of Washington, USA
24/5/2012	David Muchemi	KMD
10/7/2012	Mr. Mutuku U. Kioko	Makueni Boys High School, P.O. Box 20, Makueni
15/7/2012	Dr. Mark Higgins	EUMETSAT
10/10/2012	Nancy Mberia	Nuclear Electricity Project
10/10/2012	Harrison Ngugi	Nuclear Electricity Project
16/10/2012	T.N. Krishna Murti	FSU, Tallahassee, USA
16/10/2012	Vinay Kumar	FSU, Tallahassee Fl-32306, USA
1/11/2012	Dan Okaka	
1/11/2012	Charles Otieno	
1/11/2012	Stephen Juma	Hawinga Girls Secondary School, P.O. Box 25, Siaya
12/11/2012	Thomas Ekajja	Broadcast Solutions International
22/11/2012	Peris Gateri	UAP Insurance Ltd., P.O. Box 43013-00100, Nairobi
5/12/2012	Michael Mbaka	FSD Kenya, P.O. Box 11353-00100, Nairobi
5/12/2012	Diana Rono	UAP Insurance Ltd., P.O. Box 43013-00100, Nairobi
5/12/2012	Mary Mbataru	UAP Insurance Ltd., P.O. Box 43013-00100, Nairobi
5/12/2012	James Kiguru	UAP Insurance Ltd., P.O. Box 43013-00100, Nairobi

(c) Publications donated to the Department of Meteorology by Dr. A.O. Opere

The value of the publications is 30,000/=

	Title	Author	Publisher	ISBN	WMO-NO
1	Integrated flood management (concept paper)	M. Jarraud	APFM	978-92-63-11047-3	1047
2	Guidance on water and adaptation to climate change	J. Kubis		978-92-1-117010-8	
3	Comprehensive Risk assessment for natural hazards	Charles S. Melchin	WMO		955
4	Trans-boundary flood Risk management	M.V. der Valk	UN	978-92-1-117011-5	
5	Economic aspects of flood management	Prof. Kamta	APFM	92-63-11010-7	1010
6	Manual on estimation of probable maximum precipitation	Aaron F. Thomson, Paul Pilon	WMO	978-92-63-11045-9	1045
7	Guide to Hydrological practices Vol.1	Robert Halliday, Ann Cauden	WMO	978-92-63-10168-6	168
8	Guide to Hydrological practices Vol.1 6 th Edition	Robert Halliday, Ann Cauden etc	WMO	978-92-63-10168-6	168