

# DEPARTMENT OF METEOROLOGY

## ANNUAL REPORT: 2010

### 1. Name, brief introduction of the Unit and that of constituent departments

#### *Introduction*

*Weather and climate impact virtually all sectors of economy. Moreover, many of the natural disasters in the world are triggered by weather and climate. Knowledge of weather and climate is consequently necessary for sustainable national development. The department of Meteorology has continued to play a major role in training highly skilled meteorological personnel for English speaking Africa. In response to the evolving needs the department has developed several new 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. Courses offered

- Bachelor of Science in Meteorology
- B.Sc. in Atmospheric Science
- Postgraduate Diploma in Meteorology
- Postgraduate Diploma in Aviation Meteorology
- Postgraduate Diploma in Operational Hydrology
- Master of Science in Meteorology
- Master of Science in Agrometeorology
- Master of Science in Aviation Meteorology
- PhD in any of the following: Meteorology, Agrometeorology, Hydrometeorology

### 3. Enrolled students at both undergraduate and postgraduate:

	No. of Students
(a) Undergraduates	237
(b) Postgraduates	29

#### 4. International student component

No	Country	BSc	PGD	MSc	PhD
1	Botswana	5	0	0	0
2	Congo	2	0	0	0
3	Malawi	0	0	2	0
4	Namibia	3	0	0	0
5	Rwanda	4	0	0	0
6	Southern Sudan	0	0	1	0
7	Swaziland	1	0	0	0
8	Tanzania	11	1	0	0
9	Uganda	0	1	0	1
<b>TOTAL</b>		<b>26</b>	<b>2</b>	<b>3</b>	<b>1</b>

#### 5. Research activities undertaken

(i) *Emmah W. Mwangi, 2010. Assessment of the skills of ECHAM 4.5 in simulating of rainfall on seasonal time scales over the Greater Horn of Africa. M.Sc. Dissertation, Department of Meteorology, University of Nairobi*

(ii) *Simon M. Wambua, 2010. The use of remote sensing product to monitor the meteorological drought in East Africa. M.Sc. Dissertation, Department of Meteorology, University of Nairobi*

(iii) *James G. Gathura, 2010. Assessment of the predictability of rainfall over Kenya during the period July to December using the High Resolution Regional model. M.Sc. Dissertation, Department of Meteorology, University of Nairobi*

(iv) *Mbithi D. Muange, 2010. Transport and dispersion patterns of aerosols over the East African region. M.Sc. Dissertation, Department of Meteorology, University of Nairobi*

(v) *V. Ongoma, 2010. Effects of Urbanization on climate of Nairobi City. A paper presentation at the 3<sup>rd</sup> National Conference on Dissemination of Research Results and Exhibition of Innovations held at Kenyatta International Conference Centre, Nairobi, Kenya. 3<sup>rd</sup> – 7<sup>th</sup> May 2010.*

(vi) *Wilson Gitau et. al., 2010. State of East Africa Climate in 2009. Bulletin of American Meteorological Society. Vol. 91 N0.7*

(vii) *Walter E. A. Nganyi, 2010. Application of Phosphorus Fertilizer in Pigeonpea, Cajanus cajan (L.) Millsp. M.Sc. Thesis, Department of Meteorology, University of Nairobi*

(viii) *Ezekiel M. Njoroge, 2010. Validation of Satellite Derived Rainfall Estimates over Kenya. M.Sc. Dissertation, Department of Meteorology, University of Nairobi*

(ix) *Hellen E. Msemo, 2010. Association between Climatic Variability and Malaria Risk in Tanzania. M.Sc. Dissertation, Department of Meteorology, University of Nairobi*

(x) Philip O. Aming'o, 2010. *Decadal Climate Variability over East Africa and linkages to some global Sea Surface Temperature variability Modes. Ph.D. Thesis, Department of Meteorology, University of Nairobi*

6. International links and collaborations;

- Global Lightning Network (GLN): *Sensor Hosting Agreement*
- MOU between UON (Department of Geology and Department of Meteorology) and Kenya Meteorological Department (KMD) signed On 28-8-2010: *Establishment of Seismological and Meteorological network for Tsunami Early Warning*
- Centre de Recherches de Climatologie , FRE 2740 CNRS, University de Bourgogne, France: *Intraseasonal climate variability over Eastern Africa*

7. Publications for the year (indicate author, date of publication, title of publisher, place of publication)

- Oludhe, Ogallo, Ambenje, Atheru and W. Gitau: Extreme Rainfall in November 2009 in Eastern Africa. Pp. 154-156; Bulletin of the American Meteorological Society Vol. 91, No. 7, July 2010
- Amelie, V.J., J.M. Ininda and R.E Okoola (2010): Spatial and Temporal Rainfall characteristics over Seychelles. Journal of Kenya Meteorological Society (accepted)
- Akinbobola A.and Bayo J. Omotosho (2010): Meteorological factors and measles occurrence in Akure, Ondo State, Nigeria. Journal of Kenya Meteorological Society (accepted)
- Francis M. Mutua, Abdel A.F. Zaki (2010): Analyses of Annual Droughts In Kenya Using An Objective Annual Rainfall Drought Index. Journal of Kenya Meteorological Society (accepted)
- O. Victor, N.J. Muthama, J.K. Ng'ang'a (2010): Effects of Urbanization on Climate of Nairobi City. Journal of Kenya Meteorological Society (accepted)

8. Consultancies either undertaken by staff members or in the unit as a whole

**Prof. N.J. Muthama** : Assisted in finalizing a project document on '*Evaluation of Socio-economic benefits of using weather information in the Marine and Port Services sector in Mozambique under FINNISH/WMO TRUST FUND*, Maputo 29<sup>th</sup> November to 4<sup>th</sup> December 2010.

9. Number of graduands (diploma, bachelors, postgraduate diploma, masters, and PhD)

No	Programme	No of Graduands
1	BSc	27
2	PGD	7
3	MSc	7
4	PhD	1
TOTAL		42

10. Papers presented at conferences. Please indicate title of paper, date of presentation and location where presentation was made

*Ongoma, V.*

Effects of urbanization on climate of Nairobi City. The 3rd National Conference on Dissemination of Research Results and Exhibition of Innovations held at Kenyatta International Conference Centre (KICC), Nairobi, Kenya. 3<sup>rd</sup> – 7<sup>th</sup> May 2010

*Dr. J.M. Ininda*

Making the best of Climate: *Adapting Agriculture to Climate Variability*. Agricultural Extension Officers' Training Workshop. 15-17 December 2010, T-TOT Hotel, Machakos.

*Dr. C. Oludhe*

- (i) "Risk Science Scholarship and Sustainable Development: Building Educator-Practitioner Networks in Africa." 11-15 January, 2010 in Bahir Dar, Ethiopia.
- (ii) NBDF – CCDARE Workshop for Training of Civil Society Organizations, Kigali, Rwanda, 9 -11 February 2010.
- (iii) CCI/CBS Intercommission Expert Meeting on Scoping Global Seasonal Climate Updates (*GENEVA, SWITZERLAND, 12–15 OCTOBER 2010*)
- (iv) Climate and Environmental Change: Challenges for Developing Countries, 17 – 20 November, 2010, Beijing, China
- (v) International Conference on Community Based Disaster Risk Reduction and Climate Change and Development of a three-year ICPAC Programme on DRR, 5 - 11 December 2010, Kisumu, Kenya

*Dr. Raphael. E. Okoola*

Seminar for the Aeronautical Meteorological Personnel (forecasters and observers) organized by UK MET OFFICE/WMO AVIATION and IMTR/WMO Regional Training Centre, Nairobi from September 27 to October 1, 2010. Participants were from Asia, Africa, Europe, Indian Ocean, the Middle East, Small Island Nations and the Caribbean.

*Prof. N.J. Muthama*

- The Eleventh WMO Symposium on Education and Training Citeko, Indonesia: 25-29 October 2010.
- The first Global Meeting of the International Forum of Meteorological Societies (IFMS GM-1) on 19 to 20 January 2010, in conjunction with the 90th Annual Meeting of the AMS, 17-22 January 2010.
- The first African Climate Change Communication conference, 30th May to 2nd Jun.2010
- Scientific Advisory Board meeting of the African Centre for Meteorology and Development (ACMAD) in Niamey, Niger on 20th July 2010
- Meeting on the evaluation of the socio-economic benefits of climate information: Nairobi Safari Club, 25-26 Feb 2010.
- Inception workshop: socio-economic benefits of using climate information in the Agriculture sector, Dar es Salaam, 17-20 October 2010.

11. Any other activities

- The Department received as donations the following instruments/ equipment

Date	Item Description	Value/Cost	Donor
4-3-2010	Office Furniture	US\$2,422.30	Nile Basin Initiative
4-3-2010	Office Equipment	US\$7,046.42	Nile Basin Initiative

24-6-2010	CO Scrubber	US\$600	World Meteorological Organization
1-11-2010	Meteorological instruments	KSh.483,000/=	Kenya Meteorological Department

- The Department hosted the President of Nanjing University of Information Science and Technology (NUIST), Prof. Li Lianshui and the Director of WMO Regional Training Centre, Nanjing China on Tuesday, 25-5-2010. They were accompanied by personnel from Kenya Meteorological Department
- Community outreach and Extension: Prof. F.M. Mutua gave a lecture on “The Art of Leadership” to the school heads (Principals) in Matunglu Division, Kangundo District at a seminar that was held at Blue Post Hotel in Thika on May 27<sup>th</sup> 2010. He had been invited by AEO Matungulu Division.
- Prof. N.J. Muthama selected as a Lead Author of Chapter 2 “Observations: Atmosphere and Surface” in the Working Group I of Intergovernmental Panel on Climate Change (IPCC)
- A stakeholders workshop on MSc programme on climate change held on 15-3-2010 at ICPAC
  - *Visitors to the Department*

Date	Name of Visitor	Address
8/1/2010	Joseph N. Kagenyi	Box 30759, Nairobi IMTR – Nairobi
27/1/2010	David M. Maina	Institute of Nuclear Science & Technology (UON)
27/1/2010	Reuben Mutai	Security, UON
8/3/2010	Andregs Jordaan	University of the Free State, RSA
9/3/2010	Lindsey Nicholson	University of Innsbruck
09/3/2010	Rainer Trinz	University of Innsbruck
09/3/2010	George Kaser	University of Innsbruck
16/3/2010	Robert M.	DFID, UK
16/3/2010	Joseph I.	UK Met Office
16/3/2010	Richard Graham	UK Met Office
23/4/2010	Chuji Yamamoto	JMBSC. Tokyo
25/5/2010	Li Lianshin	NUIST. China
25/5/2010	Wang Suchun	NUIST, Nanjing, China
25/5/2010	Caitang Wang	WMO RTC, China
25/5/2010	Zhang Jianwei	NUIST, China
25/5/2010	Wang Jun	NUIST, China
24/6/2010	Christoph Zellweger	Empa Diibendorf Switzerland
24/6/2010	Dr. Jorg Klausen	Empa Diibendorf Switzerland
24/06/2010	John Aseyo	Kenya Met Dept.
24/6/2010	Thiong'o Kennedy	Kenya Met Dept. Box 30259 Nairobi
24/6/2010	Samuel Kiama	Box 192- 10400 Nanyuki
14/07/2010	Keith Gloves	AFRL, Boston, MA, USA
14/07/2010	Ndeda Jared	Physics Dept. JKUAT
19/08/2010	Hitoshi Baba	JICA, Tokyo, Japan
19/08/2010	Taichi Minamitani	JICA, Tokyo, Japan
19/08/2010	Yoko Kitauchi	Nippon Koei Ltd, Tokyo, Japan
19/08/2010	Chuji Yamamoto	JMBSC, Tokyo, Japan
19/08/2010	John N. Nguji	JICA Kenya
25/08/2010	Henning Rodhe	Stockholm University S-069 Stockholm, Sweden
30/08/2010	Rey Parizat	World Bank, Washington
01/10/2010	Kiambuthwa Sec School Form 4 Students (11No.)	Box 376, Kiria-ini
08/12/2010	Dr. Pierre Camberlin	Centre de Recherchers de Climatology, Dijon, France

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