

**INTERNATIONAL SYMPOSIUM
ON
'STRATEGIC INTERVENTIONS TO MITIGATE THE HAZARD OF LIGHTNING'
LUSAKA, ZAMBIA
11-13 AUGUST 2015
BRIEF REPORT**

Lightning is a natural phenomenon with global presence. It can cause injuries and deaths for people and animals plus costly infrastructural damage and downtime of crucial equipment. However, it remains a highly underrated weather hazard. The impact of lightning in most African regions is far worse than the rest of the world for many reasons. Parts of Central Africa have the highest lightning density (lightning strikes/km²/year) in the world. Most of the population is at high risk because safe shelters are not available; they are often employed in outdoors work; rapid high-quality medical care may not be available; and there is a general lack of knowledge about lightning and how to avoid injury. In a country like Zambia, isolated efforts have been made to protect electronic/ electrical equipment, but little is being done to protect human beings and livestock.

Keeping the above in view, the NAM S&T Centre and the National Center for Lightning and Electromagnetics in Zambia (ACLE-Zambia) organised an International Workshop titled 'Strategic Interventions to mitigate the Hazard of Lightning' at Lusaka, Zambia during 11-13 August 2015 for brainstorming by international policy makers, scientists, engineers and medical practitioners, lightning industry executives, lightning industry and technology producers, investors, exploration people, planners and decision-makers. ACLE Zambia is currently hosted by the Zambia Air Services Training Institute, ZASTI. The Symposium was sponsored by the Disaster Management and Mitigation Unit (DMMU) and the Ministry of Education, Science, Vocational Training and Early Education of the Republic of Zambia.

The Inaugural Session started with the National Anthem and Address by Prof. Mary Ann Cooper, MD, Director, African Centres for Lightning and Electromagnetics (ACLE), followed by Mrs. Foster Lubasi, Coordinator, ACLE- Zambia making general remarks about the new ACLE Centre. Prof. Dr. Arun P. Kulshreshtha, Director General, NAM

S&T Centre presented the genesis of the event and also briefly described the activities of the inter-governmental organisation headed by him. Dr. Patrick Kona Nkanza, Permanent Secretary, Ministry of Education, Science, Vocational Training and Early Education (MESVTEE) and the Focal Point of the NAM S&T Centre in Zambia spoke about hosting the ACLE by Zambia and the excellent relationship of Zambia with the NAM S&T Centre benefitting a large number of scientists and specialists from Zambia. At the conclusion of the Session, the Chief Guest, Hon. Lazarous B Chungu, MP, Deputy Minister in the Office of the Vice President of Zambia addressed the Symposium and formally launched ACLE-Zambia. Dr. (Ms.) Ms Mwape sat in for Mr. Patrick Kwangwa, National Coordinator, Disaster Management and Mitigation Unit (DMMU) during the Inaugural Session.

The International Symposium at Lusaka was attended by 47 Participants (23 foreign and 24 Zambian) from 17 countries, including Benin, Cameroon, Egypt, India, Iraq, Malawi, Malaysia, Nepal, Nigeria, Pakistan, South Africa, Sri Lanka, Sudan, Uganda, the USA, Zimbabwe and the host country Zambia.

The foreign participants were from Benin [Dr. Boris Polynice Anato from the National Meteorological Directorate]; Cameroon [Mr. Ngamini Jean Blaise (Retired), Responsible for Meteorological Network in the Agency for the Safety of Air Navigation in Africa and Madagascar (ASECNA), Dakar, Senegal]; Egypt [Prof. Dr. Salah M. Mahmoud, Prof. of Geodynamics, National Research Institute of Astronomy and Geophysics (NRIAG), Helwan, Cairo]; India [Dr. Anirban Guha, Assistant Professor, Department of Physics, Tripura University]; Iraq [Engr. Faris Salih Mahdi Al Shaikhly, Technical Manager and Member, Iraqi Inventors and Inventors Society, Craima]; Malawi [Mr. Rodrick Walusa, Deputy Director, Department of Meteorological Services]; Malaysia [Prof. Mohd. Zainal Abidin Ab Kadir, Deputy Dean (Research & Innovation), Universiti Putra Malaysia (UPM), Serdang, Selangor]; Nepal [Dr. Shriram Sharma, Senior Lecturer, Amrit Science College, Tribuvan University, Lainchaur, Kathmandu]; Nigeria [Engr. M. M. Gaji, Senior Scientific Officer/Engineer, Energy Commission of Nigeria, Department of Renewable Energy, Abuja]; Pakistan [Dr. Muhammad Imran Shahzad, Assistant Professor, COMSATS Institute of Information Technology, Islamabad]; South Africa [Prof. Ian R. Jandrell, Dean, Faculty of Engineering and the Built Environment, University of the Witwatersrand, Johannesburg and Mr. Ian McKechnie, Director,

INNOPRO (Pty) Ltd and Global Africa (Pty) Ltd]; Sri Lanka [Mr. Nuwan Kumarasinghe, Senior Electronics Engineer, Bauddhaloka Mawatha, Colombo and Prof. Dr. Chandima Gomes, Professor of Electrical Engineering, Universiti Putra Malaysia (UPM), Serdang, Selangor, Malaysia]; Sudan [Prof. Arbab Ibrahim Mohamed, Assistant Director, Directorate for Science Research and Cultural Relations, Department of Physics, Faculty of Science, University of Khartoum, Khartoum]; Uganda [Eng. Barongo Ronny, Manager Communications, Navigation and Surveillance, Civil Aviation Agency, Kampala; Mr. Edmund Mugizi Ataremwa, Head ACLE; Mr. Yeleise Julius of Social Research, ACLE; and Mr. Richard Tushemereirwe, Senior Presidential Advisor for Science, State House, Entebbe]; USA [Dr. Mary Ann Cooper, MD, Professor Emerita, Department of Emergency Medicine, University of Illinois at Chicago and Prof. Ronald Holle, Holle Meteorology and Photography, Tucson, Arizona]; Zimbabwe [Mr. Innocent Masukwedza, Atmospheric Scientist, Zimbabwe Meteorological Services Department, Harare]. Two senior representatives, Mr. Jim Anderson, VP International and Dr. Charlie Liu, Chief Architect were deputed by Earth Networks, Inc. to attend the Symposium. The NAM S&T Centre was represented by its Director General, Prof. Arun P. Kulshreshtha.

The Zambian participants were Mr. Elliot Nketani Kabalo, Zambian Information and Communications Technology Authority (ZICTA); Mr. Patrick M. Simuchimba, Lusaka City Council, Lusaka; and Mr. Sebastian K. Namukolo, Lecturer, University of Zambia, Lusaka, who made technical presentation during the Symposium, and 18 others.

The overall programme of the Symposium was conducted in seven sessions, respectively chaired by Prof. Mary Ann Cooper, MD (USA); Mr. Edmund Mugizi Ataremwa (ACLE Uganda); Dr. Zainal Ab Kadir (Malaysia); Dr. Nuwan Kumarasinghe (Sri Lanka); Prof. Ronald Holle (USA); Dr. Shri Ram Sharma (Nepal); and Dr. Ian Jandrell (South Africa); a Banquet Session; three Interactive Sessions; and Concluding Session.

The scientific papers presented during the seven Technical Sessions were on ‘Weather Patterns across Africa’ by Mr. Ngamini Jean Blaise of Cameroon; ‘Lightning Physics’ by Prof. Ian Jandrell (South Africa); ‘Detection Systems’ by Dr. Charlie Liu of Earth Networks, Inc.; ‘Concept, Progress and Preliminary Results from Permanent Gns

Networks in Africa’ by Prof. Salah Mahmoud of Egypt; ‘Standard and Lightning Protection’ by Mr. Elliot Nketani Kabalo of ZICTA, Zambia; ‘Impact of Lightning in the Events of Severe Atmospheric Conditions’ by Prof. Mohd. Zainal Abidin Ab Kadir of Malaysia; ‘Extended Maxwell’s Equations’ by Prof. Arbab Ibrahim Mohamed of Sudan; ‘Populations at Risk from Lightning and Sources of Data’ by Ronald Holle of USA; ‘Mechanisms and Medical Effects of Lightning Injury’ by Prof. Mary Ann Cooper of USA; ‘Strategies for Understanding Lightning Myths and Beliefs’ by Mr. Innocent Masukwedza of Zimbabwe; ‘Lightning: Awareness and Protection Practices in Nepal’ by Dr. Shriram Sharma of Nepal; ‘Lightning and Dwelling Facilities’ by Mr. Patrick M. Simuchimba, Lusaka City Council of Zambia; ‘Lightning Evolution during Severe Tropical Cyclones’ by Dr. Anirban Guha of India; ‘Spatio-Temporal Analyses of Lightning Activities over Pakistan – Preliminary Results to Devise Strategic Interventions to Mitigate the Lightning Hazards’ by Dr. Muhammad Imran Shahzad of Pakistan; ‘Protection of Power Stations and Gas Heat from Solar Storms System {Geomagnetic}’ by Engr. Faris Salih Mehdi Al Shaikhly of Iraq; ‘Lightning Protection’ by Prof. Chandima Gomes of Sri Lanka/Malaysia; ‘A Strategic and Structured Approach to Effective Lightning Safety and Protection’ by Mr. Ian McKechnie of South Africa; ‘Mitigation of Lightning-Induced Overvoltages in Medium Voltage Distribution Lines by means of Periodical Grounding of Shielding Wires and of Surge Arresters: Modeling and Experimental Validation’ by Er. Muhammed Musa Gaji of Nigeria; ‘Structural Lightning Protection System for Large Exposed Area’ Mr. Nuwan Kumarasinghe of Sri Lanka; ‘Working with Government Organisations and Private Companies to decrease Deaths, Injuries and Property damage from Lightning’ by Mr. Richard Tushemereirwe of Uganda; ‘Strategic Intervention on Lightning Protection Improvement for Entebbe Control Tower’ by Er. Barongo Ronny of Uganda; ‘Lightning Effects and Solutions for Wireless Transmission Stations’ by Mr. Sebastian K. Namukolo of Zambia; and ‘Saving Lives in Lake Victoria’ by Mr. Yeleise Julius of Uganda.

Hon. Mr. George Nyendwa, Mayor of Lusaka City Council, was the Chief Guest at the Banquet Dinner on the second Day of the Symposium. The dinner was preceded by technical presentations by Mr. Jean Blaise Ngameni from Cameroon, Meteorologist associated with CIRDA Programme of UNDP, on ‘Early Warning and Technological

Innovations’, and by Mr. Jim Anderson, VP International, Earth Networks, Inc. on ‘Early Warning in Weather Forecast’.

In the Concluding Session Prof. Chandima Gomes proposed a draft for a Resolution for declaration of an International Lightning Safety Day. After extensive discussion the delegates unanimously adopted the Resolution for its submission to higher authorities in their countries as well directly to UNESCO.

The Certificates of Participation were handed over to the Symposium participants and concluding remarks were made by some of the participants, DG NAM S&T Centre. Finally, Mrs. Foster Chileshe Lubasi, Coordinator, ACLE- Zambia proposed the Vote of Thanks. The organisers were profusely thanked for the successful and fruitful organisation of the Symposium and for excellent hospitality and arrangements made for the delegates. It was unanimously hoped that more similar events will be held in future with a focus on South-South cooperation.