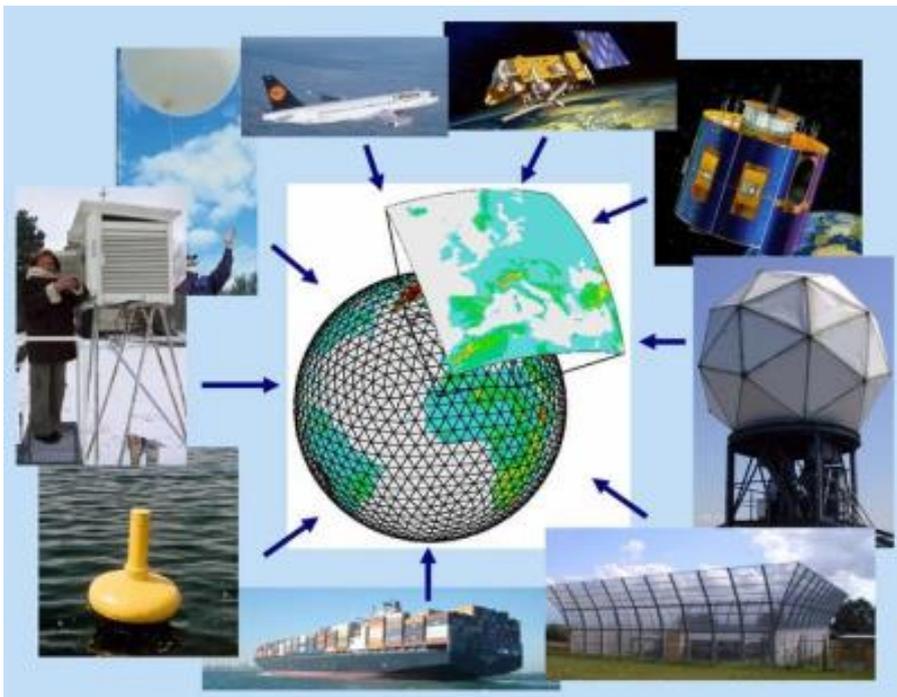


REPORT

Round Table Discussion



11
November
2014

Developing a National Climate Observatory System for Sri Lanka

Coordinating Secretariat for Science
Technology & Innovation



ORGANIZING TEAM

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Dr Noble Jayasuriya, Programme director, COSTI

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EXECUTIVE SUMMARY

The workshop was organized by the Coordinating Secretariat for Science, Technology & Innovation (COSTI) with the objectives of; (1) Recognizing the specific needs and priorities of having a Climate Observatory System (COS) for Sri Lanka, (2) Identifying the potential public private collaborators in establishing a COS for Sri Lanka, (3) Identifying the essential climate variables to be included into the system.

Representatives from both public and private sector participated at the discussion. Participants represented the Meteorological department and most of the stakeholder institutes such as Mahaweli Authority, Sri Lanka Air force, IWMI and Plantation Research Institutes which depend on weather data, and scientists and academics representing the public sector.

The report underlines the key suggestions extracted during the discussions. Working groups were also identified as instrumentation, ICT, modeling and user groups for the way forward of the system.

MEETING AGENDA

Roundtable Discussion on developing a national climate observatory system

11 November 2014

Sanvadani Hall, Sri Lanka Institute of Development Administration, Colombo 07

09.00 – 09.30	Registration
09.30 – 09.45	Welcome & Objectives of the Round table Dr. M.C.N. Jayasuriya - Programme Director, COSTI
9.45 – 10.30	A National Climate Observatory System for Sri Lanka – A Proposal Mr. Nirosan Sanjaya & Dr. Yann Chemin – International Water Management Institute (IWMI) Discussion 
10.30 – 11.00	
11.00 – 1.00	Panel Discussion Panelists - representatives from: Meteorological Department International Water Management Institute (IWMI) Irrigation Department/Mahaweli Authority University of Moratuwa Department of Agriculture Disaster Management Centre
1.00 – 1.10	Concluding remarks and vote of thanks Mrs. Vindya Jayawickrama – Deputy Project Manager COSTI
1.10	

OBJECTIVES OF THE DISCUSSION

The discussion was organized to:

- Recognize the specific needs and priorities of having a Climate Observatory System (COS) for Sri Lanka
- Identify the potential public private collaborators in establishing a COS for Sri Lanka
- Identify the essential climate variables to be included in to the system

PRESENTATIONS AT – A – GLANCE

Climate observation in Sri Lanka, as in many countries, is in a heterogeneous state. Quality, geography, temporality, sensors and reporting all have multiple systems and standards. At the same time climate data are not publicly accessible. This project aims to make climate observation more uniform and the data publicly available within the constraints of cost, by employing local technology. The data collected will be reported to an online public system where decision makers, practitioners, researchers, students and even farmers can interact with the data, either manually, or using software tools and decision-support systems (models).

The concept:

Contemporary open source hardware and open source software permit the self-production of advanced, standardized, open systems to address on-demand the most complex requirements. From this open ideology, both hardware and software will be built to monitor weather information through a network of Mobile Weather Stations (MWS) installed across the country. The MWS electronically records variations in climate variables continuously (every second) through its sensors and stores integrated data at specified intervals on a chip. By centralizing the reporting of these MWS into a National Climate Observatory Data Archive and Implementation (NCODAI) web site, standardized user and programmatic access can be openly defined, for integrating the data into other institutional systems. This data can then be used for decision-making in regular water resources management and other climate related applications including helping to avoid crisis situations, such as droughts and floods. The NCODAI can be productively used for early warning of flood and drought situations

- reservoir management for flood control
- field coordination of emergency flood management
- climate and related modelling including health

The Innovations:

1 - Low cost open source customizable hardware

2 - High temporal reporting (with a target of every 5 minutes, but can be slowed down to 30 minutes if required)

3 - Meteorological sensors which can be customized on demand

4 - Unified public online reporting system

5 - "Plug and Play" mobile weather stations which are "self-aware" and can automatically record date, time, latitude, longitude and altitude

DISCUSSION

This session was chaired by Dr. Noble Jayasuriya, Program Director of COSTI together with the panelists;

Mr. Nuwan Kumarasinghe - Electronic Engineer, Department of Meteorology

Prof. Dileeka Dias - University of Moratuwa

Ms. Nishadi Eriyagama - IWMI

Mr. H.M.K.R. Herath - Mahaweli authority

Currently Metrological department is having 38 automated weather stations received from Japan which are designed to address disaster situations. They are satellite based stations which send data every 10 minutes to Colombo Metrological Department. Currently only 29 stations are at operational level due to logistic and technical issues. In addition they are operating 22 manual weather stations (synoptic) from which data is recorded every 3 hours. Further, they are operating 20 automatic rain gauges purchased from Industrial Technology Institute (ITI) in separate locations. However, sustainability of ITI rain gauges has become a problem due to failure in appropriate maintenance.

The existing automated weather stations (donated by Japan) at Meteorological Department cannot be modified to integrate new vital parameters like air quality as the firmware and hardware are specially designed for the given parameters.

The existing automatic weather stations have the problem of not having a proper communication link. In some areas like Kudawa they don't have even mobile communication facilities and the ESAT communication links are not a feasible solution as the replacement cost of the defective instruments is very high even though the running cost is not much. As a solution to this communication issue Met department has planned to implement IPPM as the main communication means and GPRS also for redundancy situations by 2016 as another Japanese collaborative project.

Currently the metrological department weather stations are mainly concentrated in the south western part of the country. In northern area, only 3 stations are available. According to the met department there is a need of about 50 more fully pledged weather stations to cover the whole country.

Locally developed weather stations:

ITI has developed an automatic weather station with a radio based communication link at a cost of about Rs. 250,000/-. Sri Lanka Air Force has already installed one at Katukurunda and tested this system with another imported weather station and has identified variations only in pressure data, which needs high accuracy.

IWMI has recently developed an automated weather station which can provide data on Wind speed, Temperature, Rainfall, Pressure, Solar radiation and Humidity. It is a locally designed one costing about Rs.50,000. Two of their weather stations are being installed and tested in Nachchaduwa and

Mahaweli-H zone. They are planning to install 5 additional weather stations in Malwathuoya region to give real time weather data to avoid flooding by proper reservoir management.

As World Meteorological Organization (WMO) requires a high precision in recorded data it is important to use quality electronic instruments which have high accuracy. However, as different users of the forecasted weather data are interested on different weather parameters the weather stations can be custom made.

The importance of having a database for weather is increasing with the increasing needs and demands of such data. Having access to such data base for researchers will result in prediction and avoiding many disaster situations such as landslides and floods in future. However currently Meteorological department could not publicize such data as a policy. Therefore, it is important to take necessary actions to change such policies.

Weather forecasting is another important aspect in climate observation. However for predictions we need upper air observations. Currently the met department use Balloons, Satellite pictures and also numerical predictions from other countries such as India and Japan. However due to financial issues the metrological department is capable of sending only one balloon per day (at a cost of Rs. 30,000/-) which should in fact be two for purposes of accuracy. Possibility of using UAVs, to substitute the balloons needs to be looked in to by continuing further research.

All the participants identified this concept as a national requirement and agreed to give their fullest cooperation to develop a National Climate Observatory System for Sri Lanka (Name may require change).

The following groups were proposed and set with group leaders for way forward of the project:

Group	Group Members	Group leader
Instrumentation group	Met. Dept., IWMI, E Net Solutions, ITI, Air force, I & A	Mr. Nuwan Kumarasingha
Modeling group	IWMI, Air Force	Ms. Nishadi Eriyagama
Communication Group	Moratuwa University, ICTA	Prof. Dileeka Dias
Repairman, Maintenance & quality control group	Met. Dept and University of Moratuwa	Met. department
User group	Plantation, Agriculture, Insurance, Fisheries, NBRO, DMC, NARA, Mahaweli, Irrigation, Sustainable energy, Universities, Researchers	COSTI

Implementation of this project will be in two phases:

1. Upgrade and integrate the existing weather stations
2. Filling the gaps by introducing new weather stations

As the initial step, a data base of all the existing weather stations in Sri Lanka will be prepared by COSTI to consider the possibility to connect those stations. In the meantime, each group will identify their group participants and call up for separate group meetings. Finally a budget proposal will be prepared to develop a National Climate Observatory System for Sri Lanka.

Annex 1: LIST OF PARTICIPANTS

No	Name	Institute
1	Mr.Nuwan Kumarasingha	Department of Meteorology
2	W.P.Kalum Priyadharshana	Department of Meteorology
3	Dr. H. Mantharithilaka	Sri Lanka Development Initiative
4	James Clerk	IWMI
5	Dr. Yann Chemin	IWMI
6	Ms. Nishadi Eriyagama	IWMI
7	NiroshanSanjaya	IWMI
8	H.M.K.R.Herath	Mahaweli Authority
9	Prof. Dileeka Dias	University of Moratuwa
10	K.D.P.P. Jayasinghe	University of Moratuwa
11	Mr. Niranga Silva	SLIIT, Malabe
12	Thilina Ambagahawaththa	A&T Labs Lanka.
13	T.M.A Tennakoon	A&T Labs Lanka.
14	Dr.B.V.R. Punyawardhana	Department of Agriculture
15	Wasana Wijesinghe	Rubber Research Institute
16	Air Commodore TGJ Amarasena	Sri Lanka Air Force
17	Ravinda Herath(Senior Manager)	Sanasa Insurance Company
18	Harsha Wickramasinghe(Dpt.DG)	Sri Lanka Sustainable Energy Authority
19	Nalin D. Karunasinghe	e-Netsolutions
20	Ms. Anoja Senevirathne	Disaster Management Center
21	Prof.Sirimalee Fernando	COSTI
22	Prof.Ajith De Alwis	COSTI
23	Dr. Noble Jayasuriya	COSTI
24	Dr.Geetha Abesingha	COSTI
25	Vindya Jayawikrama	COSTI
26	Dr. Sachee Panawala	COSTI
27	Saumya Senavirathna	COSTI
28	Pathmakumara Jayasingha	COSTI
29	Wasantha Senadeera	COSTI



