LIGHTNING LOCATION NETWORK

Indian Institute of Tropical Meteorology (IITM), Pune, India, is a premier institute with international repute devoted to research in various aspects of atmospheric sciences with emphasis on tropical meteorology. One of its thrust areas is the study of thunderstorm electrification and lightning by making measurements of atmospheric electricity parameters at the surface. IITM proposes to procure a local lightning mapping network. The main objective is to detect, locate and map the total lightning (Intra-Cloud (IC) and Cloud -to-Ground (CG) to understand the physics of lightning.

'Request for Information' (RFI) is sought from manufacturers of Lightning Location Network. It is expected that this information would be helpful in finalizing the specifications for the LLN. Participating in RFI or giving information about their product will carry no right in getting preference/privilege to particular firm/manufacturers.

The ***proposed network should detect and locate both CG and IC lightning discharges occurring in entire state of Maharashtra, India***. (map enclosed; proposed area of coverage is approximately 3,00,000 sq. km). The central processing and control unit should be located at IITM, Pune. Broad specifications of the proposed network are given below:

SPECIFICATIONS

I. FOR SENSOR

Lightning type	Capable of detecting both CG and IC lightning
Detection efficiency	Should **not be less than 90%** for CG discharges and **not less than 50% for IC**
Network location accuracy	Less than 500 m for CG (over land) Less than 1500 m for IC (over land)
Performance Monitoring	Automatic system for calibration and self- test.
Remote configuration	The parameters should be remotely configurable from CPU
Response time	Sufficient enough to capture all the lightning events in case of very high

	lightning frequency (better than 100 µsec).
Power requirement	230 Volt, 50Hz AC with power backup for up to 24 hours through rechargeable battery and solar panel
Communication interface	TCP/IP/GPRS
• **Sensors should withstand tough environmental conditions mentioned below:** **Environmental conditions**	
Operating temperature	- 40 to 50^{o}C
Relative humidity	0 – 100%
Wind speed	Up to 100 kmph
Hail	1 cm diameter

Number of Sensors required : Manufacturer should specify the number of sensors required to cover entire state of Maharashtra with above stated detection and location efficiency based upon their optimum base line distance between two sensors.

II. Field processor

Should be capable of communicating with the sensor (without any breakdown) to acquire the data and transfer the same to the Central Processor by internet broadband and/or by GPRS. The computer at the site should be of latest configuration with sufficient hard disk capacity of 1 TB to store/archive data.

II. Central Processor Unit

Compatibility	Should be compatible with the sensors provided
Software	All necessary software for the operation of network should be given
Remote operation	Should have command and control for remote operation and to monitor performance of sensors
Communication interface	TCP/IP/GPRS
Power requirement	230 Volts 50 Hz, AC with redundant power backup by UPS (min. 6 hrs).
Cloud discharges	Date and real time stamp accurate to

	100 µs; latitude and longitudinal positions; number of sensors used in locating lightning
CG discharges Polarity and Peak current	Date and real time stamp accurate to 100 µs; latitude and longitudinal positions; number of sensors used in locating lightning should give the polarity and peak of CG current lightning
Flash multiplicity	Should give number of return strokes

CPU should have

1. capability for addition of sensor(s) at a later date.
2. data base server
3. display unit with 51" Plasma Monitor.
4. GIS mapping
5. Facility and software for sector scanning to view activity over a particular region/station (by zooming).
6. Provision to give alarm/alert call whenever lightning frequency exceeds a user-specified critical frequency.

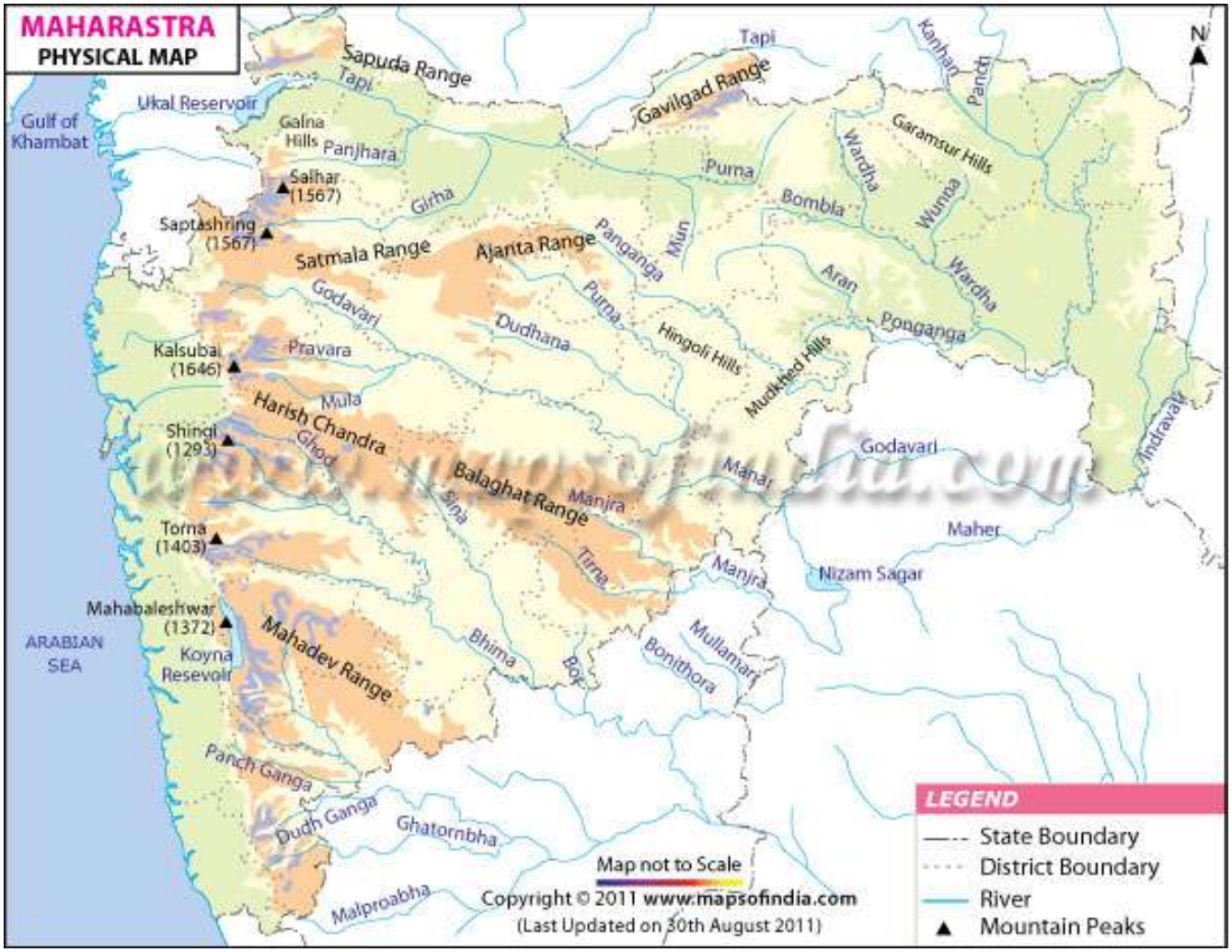
Data archive:

Suitable System to archive the information from the system for future analysis and a proper data base to retrieve the information for any particular region/day or time.

Manufacturers should specify the details of softwares they propose to supply with the system, for receiving the data from the sensor, their analysis and dissemination, archival etc. They are also encouraged to specify the options available to superimpose the lightning product with satellite/radar product.

For further details please contact Mr. V. Gopalkrishnan (gopal@tropmet.res.in).

Last date to submit the information is 5 July 2012.


MAHARASTRA
PHYSICAL MAP
N
Gulf of Khambat
Ukai Reservoir
Tapi
Sapuda Range
Gavilgad Range
Kanhan
Pench
Galna Hills
Panjhara
Garamsur Hills
Wardha
Purna
Bombla
Wunna
Girha
Salhar (1567)
Saptashring (1567)
Satmala Range
Ajanta Range
Panganga
Mun
Aran
Wardha
Godavari
Purna
Dudhana
Hingoli Hills
Mudkhed Hills
Penganga
Pravara
Kalsubai (1646)
Mula
Harish Chandra
Godavari
Shingi (1293)
Ghod
Manar
Indravati
Balaghat Range
Manjra
Sina
Maher
Torna (1403)
Tirna
Manjra
Nizam Sagar
Mahabaleshwar (1372)
Mahadev Range
ARABIAN SEA
Koyna Resevoir
Bhima
Bori
Bonithora
Mullamari
Panch Ganga
Dudh Ganga
Ghatornbha
Malproabha
Map not to Scale
Copyright © 2011 www.mapsofindia.com
(Last Updated on 30th August 2011)
LEGEND
State Boundary
District Boundary
River
Mountain Peaks