

# Field Survey Report – Present Status of IMD RG network in Kerala and availability of space for the establishment of AWS

Investigated in April 2019



Kerala State Disaster Management Authority

Department of Disaster Management, Govt. of Kerala

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## **1. Introduction**

The recent flood in Kerala pointed out the deficiency of density of the weather observation network in the state. The Government of Kerala via letter no. DMA1/447/2018/DMD dated 06.10.2018 requested Ministry Home Affairs, Government of India to enhance the number of observatories in Kerala. Based on the above referred letter IMD decided to procure and deploy 100 numbers of Automated Weather Stations in Kerala state.

In order to strengthen the network of rain gauge stations under 'Daily rainfall monitoring scheme', IMD has to increase the number of rain gauge stations in certain districts of Kerala State. And for the same IMD via letter No D-001/168 dated 24.012019 send a list of existing and required stations.

A meeting was convened on 13.03.2019 in the chamber of Principal Secretary, Revenue and Disaster Management regarding installation of AWS in Kerala and enhancement of rainfall monitoring stations. The Principal Secretary, Revenue and Disaster Management, Director, IMD Thiruvananthapuram and Member secretary, SDMA were present in the meeting. In the meeting it was decided that 100 Automatic weather stations and 39 manual rain gauges will be established across the State by IMD. In consonance with this suitable land has to be identified and has to be reported to SDMA. The IMD Thiruvananthapuram will submit a status report along with the respective photographs and land dimensions of the already existing weather stations and rain gauges in the state to the Kerala State Disaster Management Authority. The procedures to allocate the required land will be initiated once the report is submitted by IMD in a stipulated time frame.

IMD has reported the details of existing manual rain gauge stations in the State with address with letter No.SIMC/GEN/0300/624 dated 01.04.2019. Following this letter KSDMA conducted a

reconnaissance of each of the RG's (except that which is located inside airport premises) on April 2019 so as to understand the site conditions and explore the site availability for establishing AWS. A database was prepared based on the reconnaissance reports of the District Disaster Management Authorities regarding each of the sites. The database of contacts of the custodians of the site was also gathered.

## **2. Terms of reference fixed for the survey**

The Hazard Analyst of each District were directed to visit the IMD RG's, and assigned to submit a report about the present status of the RG's, ownership of the site, how much space is available there, and is there 10 m x 10 m space available adjacent to it for setting up an AWS, along with photos and location information (Latitude & Longitude).

The consolidated report of status of RG's submitted by each Hazard Analyst is shown below:

SI No.	Site	District	Is the rain gauge functioning	Location		Who owns the Site	Is there 10 m x 10 m space available adjacent to it for setting up an AWS.	Remarks
				Latitude	Longitude			
1	Hosdurg	Kasaragode	Yes	12.3133	75.0919	Hosdurg Taluk compound	Yes	
2	Kasaragode	Kasaragode	No	12.4972	74.9897	Kasargod Taluk office	No	Completely in a deteriorated condition. The RG is located in a waste dumped and congested site
3	Kudulu	Kasaragode	Yes	12.5283	74.9694	Central Plantation Research Institute	AWS	Presently in working condition but seems to be the maintenance is poor
4	Irikkur	Kannur	Yes	11.9831	75.554	Sub Register Office (revenue owns this site)	Yes	
5	Kannur	Kannur	Yes	11.8765	75.3712	IMD Observatory	Yes	manual one and automatic one is there
6	Thalassery	Kannur	Yes	11.751	75.8023	Taluk Office Thalassery, (Revenue owns this site)	No	

7	Thaliparamba	Kannur	Yes	12.0505	75.3836	District Agricultural Farm	Yes	Already ISRO AWS is there
8	Kozhikode	Kozhikode	Yes	11.25	75.7833	Meteorological Observatory, Kozhikode	The Site is already equipped with AWS. but not fully installed. There is no other adjacent space available to it.	ARG
9	Permanent way, Southern Railway, Kollam, Quilandy	Kozhikode	Yes	11.4475	75.6914	Railway	Yes	
10	Ky.I.P Canal Sub Division, Puthuppanam, Vatakara	Kozhikode	Yes	11.5797	75.5994	Kuttiyadi irrigation project	Yes	Water Collecting Bottle & Measuring jar is damaged
11	RARS Ambalavayal	Wayanad	Yes	11.6161	76.2133	land owned by RARS	Already equipped with AWS	AWS
12	RRT (Near Wild Life Wardens Office, Kuppadi	Wayanad	Yes	11.6892	76.2544	land owned by forest dpt	Yes	opposite side
13	Taluk office, Mananthavady	Wayanad	Yes	11.8013	76.0041	land owned by revenue dpt	Yes	Available, and the space is currently using as kitchen garden
14	Vythiri Taluk office, Vythiri	Wayanad	Yes	11.5504	76.04	land owned by Revenue	Not available, though a strip of space is there approximately	CWC's AWS is function for last 4 months

							5x25	
15	Karipur AP *	Malappuram	Yes	11.133	75.95	IMD		Departmental Obs
16	Angadipuram	Malappuram	Yes	10.9827	76.2069	Railway owned land	Yes	Space is available near to the RG.
17	Manjeri	Malappuram	Yes	11.1122	76.1208	Revenue dpt	No	The rain gauge was not maintained properly and no more space is available
18	Nilambur	Malappuram	Yes	11.2788	76.2286	Forest Range office	Yes	
19	Perinthalmanna	Malappuram	Yes	10.975	76.2266	Revenue Department	No	
20	Ponnani	Malappuram	Yes	10.78	75.9194	The land is owned by revenue department	Adjacent space is available near to the rain gauge for setting up an AWS.	
21	Malampuzha Dam Site, Palakkad	Palakkad	yes	10.83389	76.68322	Malampuzha Dam Authority	Yes	
22	Alathur	Palakkad	Yes	10.643449	76.557148	Alathur Block office	Not available	Tree branches need to be removed. Maintained by agriculture dpt
23	Taluk Office, Chittur	Palakkad	yes	10.69813	76.755844	GST Department	No	
24	Kollengode	Palakkad	Yes	10.625691	76.701601	Railway	Yes	

25	Mannarkkad	Palakkad	Yes	10.9952	76.4669	Forest range office	Yes	
26	Taluk Office, Ottappalam	Palakkad	yes	10.7717	76.3804	Hydrology division Trichur	No	
27	IDRB, Parambikulam Sub Division	Palakkad	yes	10.392282	76.776565	Parambikulam Irrigation Department	Yes	
28	Pattambi	Palakkad	Yes	10.8088	76.1894	Kerala Agricultural University	Yes	Automated Weather Station is completely down
29	Trithala	Palakkad	Yes	10.803	76.128	Water authority	No	The rain Gauge is under Assistant Director of Hydrology Division
30	Thrissur	Thrissur	No	10.525863	76.218211	Thrissur corporation	Available	RG-Damaged
31	Wadakkancherry	Thrissur	Yes	10.655578	76.24896	Irrigation dept.	Available	Open space available in the roof of newly built Taluk building; Tree branches and bushes need to be removed
32	Kunnamkulam	Thrissur	Yes	10.67858	76.128695	Hydrology	Available	Automatic RG (TBRG)
33	Enamackel	Thrissur	Yes	10.646955	76.07495	Irrigation	Not available	
34	Chalaky	Thrissur	Yes	10.409108	76.179062	Irrigation dept.	Available	Tree branches need to be removed

35	Kodungallur	Thrissur	Yes	10.22861	76.19916	Revenue	Not available	Presently installed in the south corner of Kunjikuttan Tamburan square. Tahsildar is requested to re-install RG to some other suitable location
36	Irinjalakkuda	Thrissur	Yes	10.356893	76.205154	Revenue	Yes	
37	Vellanikkara	Thrissur	Yes	10.547002	76.286363	KAU	Already Equipped with AWS	Installed in the KAU observatory which is 56m*36m
38	INS Garuda, Naval Base, Kochi	Ernakulam	Yes	9.946033	76.273906	Met. Department INS Garuda	Yes	Well maintained sites and have 10m X 10m space available adjacent to the rain gauge site for setting up an Automated Weather Station.
39	Permanent Way, Southern Railway, Aluva	Ernakulam	Yes	10.110029	76.357839	Railway	No	
40	Cochin International Airport.	Ernakulam	Yes	10.154912	76.401065	CIAL	Yes	Well maintained sites and have 10m X 10m space available adjacent to the rain gauge site for setting up an Automated Weather Station.



41	Permanent Way, Southern Railway, Ernakulam jn.	Ernakulam	Yes	9.966643	76.292181	Railway	No	
42	Taluk Office, Paravur	Ernakulam	No	10.148088	76.232082	Revenue	No	
43	Taluk Office, Kunnathunad, Perumbavur	Ernakulam	Yes	10.1176	76.480149	Revenue	Yes	Space for Automated Weather Station is available just adjacent to the civil station in the same compound which is owned by the revenue department.
44	Irrigation Department, Hydrology Section, Muvattupuzha,P iravom	Ernakulam	Yes	9.876583	76.486159	irrigation	No	But the Space for Automated Weather Station is available adjacent to PWD office Piravom in the same compound, which is owned by the revenue department.
45	THODUPUZH A	Idukki	Yes	9.9001	76.7134	Revenue Department	Not available	
46	MYLADUMPA RA	Idukki	Yes	9.888	77.156	INDIAN CARDAMO M RESEARCH INSTITUTE (ICRI) – SPICES	11 m x 9 m space available	AWS

						BOARD (SB)		
47	MUNNAR	Idukki	Yes	10.0883	77.0658	KSEB	Not available	The AWS of IMD is not working and added that KSEB is sharing their rainfall data with IMD. KSEB have one rain gauge located in front of the IMD-AWS site, and they are planning to implement one AWS in that area (additional 20 m x 20 m space situated in front of IMD-AWS site) within 2 or 3 months.
48	DEVIKULAM	Idukki	No	10.066	77.1	Revenue Department	Yes	Spoke to the Devikulam Tahsildar regarding the rain gauge site and need for additional space. He is ready to arrange additional space (10 m x 10 m) either at the Taluk office/RDO office compound or at the site where the rain

								gauge was implemented by the IMD. The rain gauge was situated at the back side of the Devikulam jail compound. However, we were not able to note down the coordinates, as the location is inaccessible now. The area is fully covered by thorny plants and shrubs
49	PEERMADE	Idukki	Yes	9.5731	76.9908	Revenue Department	Yes	
50	KWA WATER TESTING LAB (NEAR CHERUTHONI DAM SITE)	Idukki	Yes	9.8477	76.9622	KSEB – Dam Safety Department	Already equipped with AWS	AWS
51	Vaikkom	Kottayam	Yes	9.74372	76.39574	PWD Roads subdivision, vaikom owns the site	No	
52	RARS, Kumarakom, Kerala Agrl. University, Kavanattinkara	Kottayam	Yes	9.63	76.43	Kerala Agricultural University	AWS	

53	Kanjirappally	Kottayam	No	9.55	76.7833	Hydrology Division, Mundakkayam, Kanjirappally	Yes	
54	Kottayam-Director of Research. Rubber Research Institute of India, Ruuber Board	Kottayam	Yes	9.6	76.6	Rubber Research Institute of India, Ruuber Board	Yes	
55	Kozha District Farming Center, Kottayam District	Kottayam	Yes	9.771812	76.569735	Kozha District Farming Center		AWS kozha not working
56	Taluk Office, Cherthala	Alappuzha	Yes	9.682964	76.340483	Revenue	No	
57	RARS, Onattukara	Alappuzha	Yes	9.176321	76.517247	RARS		There is a functioning AWS set up by IMD
58	CPCRI	Alappuzha	Yes	9.151918	76.513854	CPCRI	Yes	
59	O/o Senior Section Engineer, Southern Railway, Mavelikkara	Alappuzha	Yes	9.2411285	76.547657	Southern railway	No	
60	Govt. Girls HSS, Harippad (Karthikapally Taluk)	Alappuzha	Yes	9.283922	76.453183	Revenue	No	Rain gauge shifted to a temporary location

61	Taluk office, Chengannur	Alappuzha	Yes	9.318436	76.6168535	Revenue	No	
62	RRC Mankombu	Alappuzha	Yes	9.436924	76.427975	RRC		AWS already functioning
63	Port office, Alappuzha	Alappuzha	Yes	9.493293	76.319057	Dept of Port	Yes	Recording type rain gauges installed in the compound (1 functional)
64	Konni, Forest Department, Pathanamthitta	Pathanamthitta	Yes	9.230313	76.850732	Divisional forest office, Konni	Yes	
65	Kurudumanni, Pampa Irrigation Project, Pathanamthitta	Pathanamthitta	Yes	9.346726	76.739333	rain gauge station is maintained by Hydrology Department, Chengannur and the land is owned by Pampa Irrigation Project Pathanamthitta	Yes	The land available next to this station is very narrow; it will be difficult to find a square plot of 10m x 10m land. Another land 300m away from this site can be consider for new AWS and is owned by Cherukole village office
66	Thiruvalla, Thiruvalla Taluk office, Pathanamthitta	Pathanamthitta	No	9.380513	76.56919	revenue department	Yes	
67	KOLLAM	KOLLAM	Yes	8.8863	76.5913	Railway	No	Right now there is no vacant space available. Within 1 year they may built a new office,

								and then free space might be available
68	PUNALUR	KOLLAM	Yes	9	76.9333	Punalur Municipality	Yes	
69	ARYANKAVU	KOLLAM	Yes	8.9756	77.1494	Forest Department	Yes	
70	Ayurvedic Hospital, Varkkala	Thiruvananthapuram	Yes	8.73307	76.73132		Yes	
71	Nedumangad Village Office	Thiruvananthapuram	Yes	8.60591	77.00214	Revenue	No	
72	Neyyatinkara	Thiruvananthapuram	Yes	8.40762	77.08244	PWD	Yes	
73	IMD Thiruvananthapuram	Thiruvananthapuram	Yes	8.50788	76.9576	IMD	Already Equipped with AWS	
74	Thiruvananthapuram AP	Thiruvananthapuram	Yes	8.4666	76.95	IMD		Departmental Obs

## **Inferences**

Examined the IMD Rain gauge sites and prepared a data base of the same. 68 RG's are in working condition. There are more than 40 sites available for establishing AWS near the rain gauge stations. But comparing with already established AWS network of IMD and ISRO (who are ready to collaborate with state government and share their data with the state) we suggest 35 sites for the establishment of new AWS's. Even though space is available at Taliparamba, Palakkad, Vellanikkara and Myladumpara we are not suggesting those locations since ISRO AWS are there.

The remaining locations for establishing 65 AWS systems and 39 manual rain gauges will be identified on the basis of hazard vulnerability profile of the state and it is under process. KSDMA has also asked the suggestions of KSEB, KWA irrigation departments for the suitable locations.

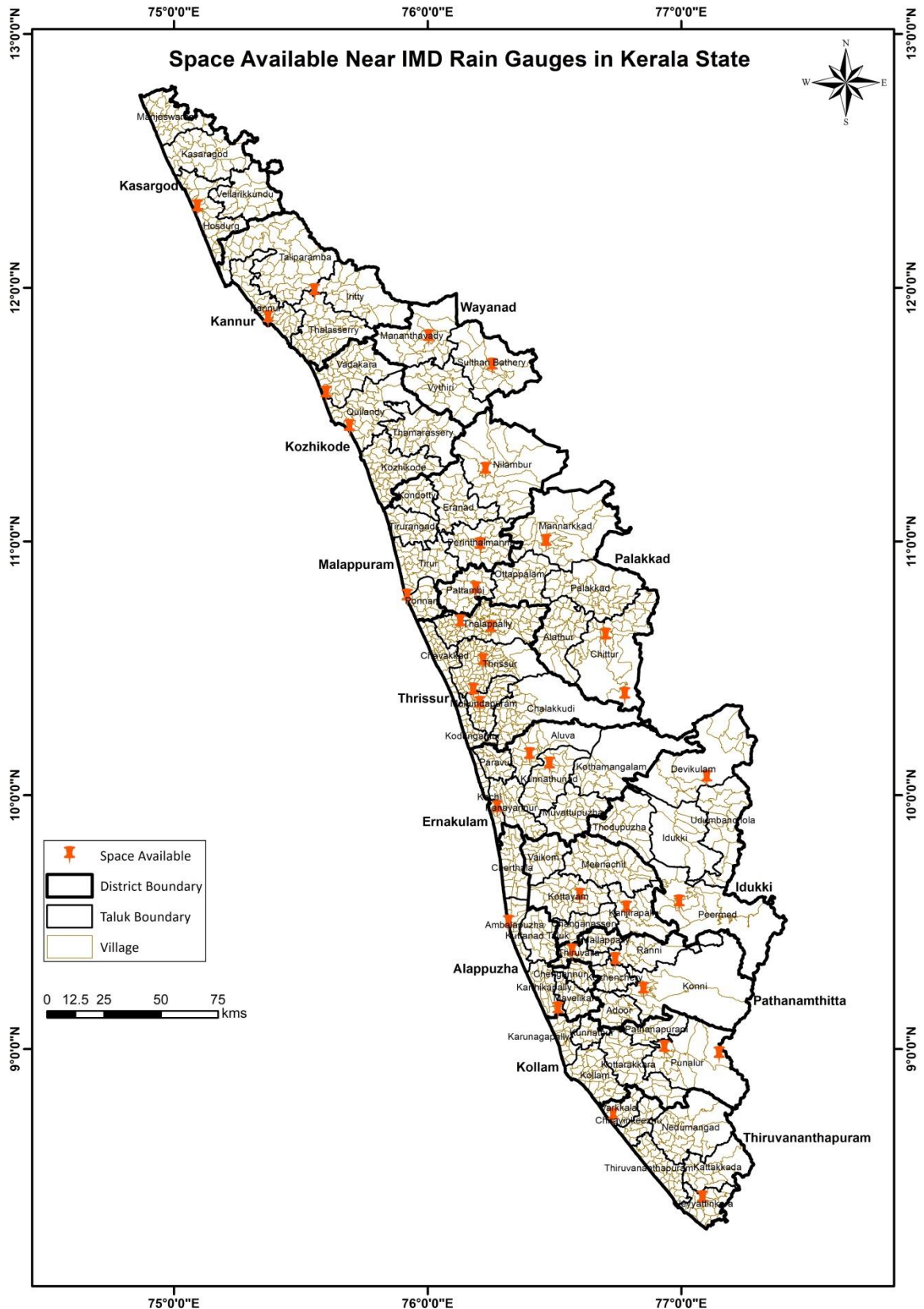
Suggested list of locations for the establishment of AWS's are

SI No.	Site	District	Is the rain gauge functioning	Location		Is there 10 m x 10 m space available adjacent to it for setting up an AWS.
				Latitude	Longitude	
1	Hosdurg	Kasaragode	Yes	12.3133	75.0919	Yes
2	Irikkur	Kannur	Yes	11.9831	75.554	Yes
3	Kannur	Kannur	Yes	11.8765	75.3712	Yes
4	Quilandy	Kozhikode	Yes	11.4475	75.6914	Yes
5	Vatakara	Kozhikode	Yes	11.5797	75.5994	Yes
6	Kuppadi	Wayanad	Yes	11.6892	76.2544	Yes
7	Mananthavady	Wayanad	Yes	11.8013	76.0041	Yes
8	Angadipuram	Malappuram	Yes	10.9827	76.2069	Yes
9	Nilambur	Malappuram	Yes	11.2788	76.2286	Yes
10	Ponnani	Malappuram	Yes	10.78	75.9194	Yes
11	Kollengode	Palakkad	Yes	10.625691	76.701601	Yes
12	Mannarkkad	Palakkad	Yes	10.9952	76.4669	Yes
13	Parambikulam	Palakkad	Yes	10.392282	76.776565	Yes
14	Pattambi	Palakkad	Yes	10.8088	76.1894	Yes
15	Thrissur	Thrissur	No	10.525863	76.218211	Yes
16	Wadakkancherry	Thrissur	Yes	10.655578	76.24896	Yes
17	Kunnamkulam	Thrissur	Yes	10.67858	76.128695	Yes
18	Chalakydy	Thrissur	Yes	10.409108	76.179062	Yes
19	Iringalakkuda	Thrissur	Yes	10.356893	76.205154	Yes
20	Kochi	Ernakulam	Yes	9.946033	76.273906	Yes
21	CIAL	Ernakulam	Yes	10.154912	76.401065	Yes
22	Perumbavur	Ernakulam	Yes	10.1176	76.480149	Yes
23	Devikulam	Idukki	No	10.066	77.1	Yes



24	Peerumedu	Idukki	Yes	9.5731	76.9908	Yes
25	Kanjirappally	Kottayam	No	9.55	76.7833	Yes
26	Kottayam	Kottayam	Yes	9.6	76.39574	Yes
27	CPCRI	Alappuzha	Yes	9.151918	76.513854	Yes
28	Alappuzha	Alappuzha	Yes	9.493293	76.319057	Yes
29	Konni	Pathanamthitta	Yes	9.230313	76.850732	Yes
30	Kurudumannil	Pathanamthitta	Yes	9.346726	76.739333	Yes
31	Thiruvalla	Pathanamthitta	No	9.380513	76.56919	Yes
32	Punalur	Kollam	Yes	9	76.9333	Yes
33	Aryankavu	Kollam	Yes	8.9756	77.1494	Yes
34	Varkkala	Thiruvananthapuram	Yes	8.73307	76.73132	Yes
35	Neyyatinkara	Thiruvananthapuram	Yes	8.40762	77.08244	Yes

# Annexure 1: Space Available Near IMD Rain Gauges in Kerala State



## Annexure 2: Space Available Near IMD Rain Gauges in Kerala State

