GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
RAJYA SABHA
UNSTARRED QUESTION No. - 183
ANSWERED ON 08/12/2022

WEATHER STATIONS AND RAIN GAUGES IN THE COUNTRY

183.   DR. DHARMASTHALA VEERENDRA HEGGADE:

Will the Minister of EARTH SCIENCES be pleased to state:

(a)   the details of Automatic Weather Stations (AWSs) and Automatic Rain Gauges (ARGs) in the country, State-wise;
(b)   whether it is a fact that in the State of Karnataka, the coastal area that extends up to 300 kms comprising of three districts is prone to natural disasters;
(c)   whether the Government will consider setting up more AWSs and ARGs in Karnataka;
(d)   whether the sensors used in AWS/ARG are as per guidelines of World Meteorological organisation; and
(e)   the manner in which Artificial Intelligence is being used in weather forecasting, climatological studies, satellite meteorology and radar meteorology?

ANSWER
THE MINISTER OF STATE (INDEPENDENT CHARGE) FOR
MINISTRY OF SCIENCE AND TECHNOLOGY
AND EARTH SCIENCES
(DR. JITENDRA SINGH)

(a)   The details of Automatic Weather Stations (AWSs) and Automatic Rain Gauges (ARGs) in the country, State-wise are given in **Annexure-I.**

(b)   Yes Sir. It is affected by cyclones, monsoonal heavy rain leading to flood and landslides in the coastal districts. The cyclone proneness of the coastal districts of India has been analysed by considering the frequency and intensity of land falling cyclones alongwith associated hazards like rainfall, wind and storm surge. It takes into consideration the frequency of total cyclones, frequency of total severe cyclones, wind strength, probable maximum storm surge (PMSS) and probable maximum precipitation (PMP) to cause damage due to cyclone.

Details of the districts and their ratings based on various cyclone parameters and their proneness in decreasing order are given in **Table 1**. As per Table 1, three districts namely Udupi, Uttar Kannada & Dakshin Kannada are moderately prone for cyclonic disturbances.

State	Districts	Ratings based on					Mean rating	Category of Proneness
		No. of severe cyclones	Total no. of cyclones	Strength of Wind speed	PMSS	PMP		
Karnataka	Udupi	0	3	2	7	10	4.4	**P3**
Karnataka	Uttar Kannada	0	3	2	7	10	4.4	**P3**
Karnataka	Dakshin Kannada	0	3	2	7	10	4.4	**P3**

Table 1.Cyclone prone districts of India touching the coast based on frequency of total cyclones & severe cyclones; strength of actual/estimated wind speed, PMSS and PMP for all districts

(c)   Yes, the details of setting up more AWSs and ARGs in Karnataka are given in **Annexure–II.**

(d)   Yes, all sensors used in AWS/ARG are as per the guidelines of World Meteorological Organisation (WMO).

(e)   Indian Institute of Tropical Meteorology (IITM) under the Ministry uses Artificial Intelligence /Machine Language (AI/ML) techniques for applications in weather forecasting.

List of AWSs, AGRO-AWSs and ARGs installed all over India

S NO.	STATE	AWS	AGRO AWS	ARG
1	ANDAMAN_AND_NICOBAR	1	NIL	NIL
2	ANDHRA_PRADESH	39	9	61
3	ARUNACHAL_PRADESH	16	3	25
4	ASSAM	36	8	58
5	BIHAR	43	14	29
6	CHANDIGARH	2	NIL	NIL
7	CHHATTISGARH	26	9	31
8	DAMAN_AND_DIU	2	NIL	1
9	DELHI	12	1	1
10	GOA	4	2	5
11	GUJARAT	45	9	65
12	HARYANA	32	6	33
13	HIMACHAL_PRADESH	28	4	66
14	JAMMU_AND_KASHMIR	30	4	14
15	JHARKHAND	32	17	28
16	**KARNATAKA**	**36**	**12**	**45**
17	KERALA	101	3	30
18	LADAKH	12	NIL	NIL
19	LAKSHADWEEP	2	1	NIL
20	MADHYA_PRADESH	66	14	101
21	MAHARASHTRA	64	10	122
22	MANIPUR	12	1	8
23	MEGHALAYA	11	2	15
24	MIZORAM	12	1	16
25	NAGALAND	12	2	13
26	ODISHA	40	10	177
27	PUDUCHERRY	3	1	1
28	PUNJAB	30	5	31
29	RAJASTHAN	50	9	64
30	SIKKIM	5	2	4
31	TAMIL_NADU	47	10	79
32	TELANGANA	14	4	54
33	TRIPURA	10	1	14
34	UTTARAKHAND	28	3	22
35	UTTAR_PRADESH	70	17	132
36	WEST_BENGAL	33	6	37
	TOTAL	**1006**	**200**	**1382**

New Proposal of AWS, AGRO AWS and ARG Installation in Karnataka State under PLAN projects

No	Under 400 AWS project	Under 330 Agro AWS project	Under 50 AWS in School Project	Under urban city project (Bangalore City)	
	AWS	**AGRO AWS**	**AWS with Computer and External Display**	**AWS**	**ARG**
	7	18	2	4	20
Total Proposal for new installation of AWS, Agro AWS and ARG in Karnataka state					
		AWS	13		
		AGRO AWS	18		
		ARG	20		
		Total	**51**		

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