

Ministry of Earth Sciences (MoES)
Summary of Important Developments –February,2020

1. **Important policy decisions taken and major achievements during the month:** Provided in Annex I.
2. **Important policy aspects / matters held up on account of prolonged Inter- Ministerial consultations/ delays, etc.:** Nil

3. Compliance of COS decisions:

S.No.	Number of COS decisions pending for compliance	Proposed action plan/ timelines	Remarks
1.	<p>Dt 14/08/2014 PROPOSAL FOR KRILL FISHING</p> <p>MoES, in collaboration with MEA, will study the experience of different countries showing varied interest in krill fishing so that India could learn from their experiences. MEA, in collaboration with MoES, will examine and identify the countries with which India can collaborate for krill fishing. MoES will ascertain the interest of Indian industry in krill fishing and also explore the feasibility of Indian companies collaborating directly with foreign companies MoES will study legislations enacted by other member countries before finalising the draft legislation as part of international convention obligations.</p> <p>MoES will bring out a paper on krill fishing giving a detailed account of demand analysis, financial viability, interest of industry, experiences of other countries, criteria for fishing license, existing knowledge gap, etc. Thereafter, the CoS will meet again to decide whether India should engage in commercial krill fishing.</p>	<p>The Ministry has examined the aspect of Krill fishing. Japan & Norway have developed expertise and these countries have been tentatively identified for collaboration on Krill fishing. Their experiences have been obtained. Indian Industries have been approached for Krill fishing to ascertain their interests. However, so far we have not received any response. The draft paper is prepared and suggestions of Cabinet Secretariat have been obtained.</p>	<p>A proposal has been mooted through NITI Aayog for collaboration with Norway for krill fishing.</p>

☐ **Cases of sanction for prosecution pending in the Ministry for more than three months:** Nil

☐ **Particulars of cases in which there has been a departure from the Transaction of Business rules of established policy of the Government:** Nil

☐ **Status of implementation of e-Governance :** Being implemented

☐ **Status of Public grievances:**

No. of Public Grievances redressed during the month	No. of Public Grievances pending at the end of the month
10	03

8. Information on the specific steps taken by the Ministry/Department for utilization of the Space Technology based tools and applications in Governance and Development:

Potential Fishing Zone advisories are generated using the satellite derived parameters viz. Sea Surface Temperature, and Chlorophyll. Further, data from Global satellite data are used on continuous basis for generating short range and medium range weather forecasts.

9. (i) **Confirmation that the incumbency details of all posts in the Ministry/Department and its organizations falling under the purview of the ACC have been updated on AVMS:** It is confirmed that the incumbency details of all the posts in the Ministry/Department and its organizations falling under the purview of the ACC have been updated on AVMS and are placed at Annex-II.

(ii)**Status regarding compliance of the directions of ACC:** It is also confirmed that the directions of ACC are complied with.

(iii)**Status of cases where recommendations from PESB have been received but the proposals are yet to be submitted to the ACC Secretariat:** NIL

Annex-I

Important policy decision taken and major achievements:

(1) The Small Vessel Advisory and Forecast Services System (SVAS) was developed and commissioned by Indian National Centre for Ocean Information Services(INCOIS), an autonomous institute under MoES. This is an innovative impact-based advisory and forecast service system for small vessels operating in the Indian coastal waters, which warns users against potential zones where vessel overturning can take place, ten days in advance.

(2) The Swell Surge Forecast System was also launched by INCOIS, which will provide forewarnings for the coastal population of India about the high period swell waves originating from the distant southern Indian Ocean.

(3) The Algal Bloom Information Service (ABIS) was also introduced by INCOIS which provides timely information on harmful algal blooms, which are detrimental to coastal fisheries and also tend to induce respiratory problems within the coastal population.

(4) A new Coastal Research Vessel Sagar Anveshika has been successfully delivered to National Institute of Ocean Technology(NIOT), an autonomous institute under Ministry of Earth Science. The vessel will enhance capacity in terms of coastal surveys, pollution monitoring, and coastal research.

There was no matter pending before the Cabinet requiring decision/approval.

Minimum Government, Maximum Governance:

- Dissemination of Agromet Advisories to user communities through SMS and IVR technology is continued in the country through Kisan Portal and under PPP mode. Presently, 40.1 million farmers in the country are getting advisories through SMS directly.
- Adverse-weather SMS warnings are being sent through mobile to the State Government officials / Disaster-related officials / Central Government organizations/common man.
- Daily forecast along with warning and city forecast for many cities are disseminated through email to all users including state authorities, electronic and print media.

Atmospheric Observation Systems Network

Observation Type	Commissioned so far	Installations during the month	Data Reporting
Automatic Weather Station (AWS)	*302 (702-400)	--	247
Automatic Rain Gauge (ARG)	1356	--	358
GPS Sonde based RS/RW Stations	56	--	56
Doppler Weather Radar (DWR)	** 25	--	24
Ozone (Ozone Sonde + Total Ozone)	04	--	04

Surface Ozone (<u>Electrochemical Concentration Cell</u> method)	07	--	07
Nephelometer	12	--	12
Sky Radiometer	20	--	19
Black Carbon Monitoring Systems (Aethalometer)	25	--	23
Air Quality Monitoring System (SAFAR)	10(Delhi) 10(Mumbai) 10(Ahmedabad)	--	10(Delhi) 10(Mumbai) 10(Ahmedabad)
Hydromet. (IMD & Extra-departmental excluding AWS & ARG)	---	--	2895
Aviation	79	--	79
Radiation Stations	45	--	38

* Out of Total 702, 400 are outlived., ** Includes 2 Doppler Weather Radar of ISRO.

Seventy Eight (78) more stations/locations were added on IMD's new station-wise nowcast warning web page for issuing three hourly nowcast warnings thereby increasing the total number of nowcast stations to 854.

Monthly Weather Summary

i) Temperature Scenario:

- The Mean Temp for the month for the country as a whole was 21.93°C; this was slightly above normal (+0.28°C). The lowest minimum temperature of 2.0°C was recorded at Hissar (Haryana) on 8th February 2020 over the plains of the country during the week.
- Cold Wave conditions was observed at most places over Punjab on one day; at many places over Punjab on one day; at a few places over Haryana, Chandigarh & Delhi and Punjab on two days each and isolated places over Haryana, Chandigarh & Delhi on 5 days each, over Odisha on 3 days, over Punjab, East Madhya Pradesh and Chhattisgarh on 2 days each and over Bihar, Jharkhand and West Madhya Pradesh on 1 day each during the month.

ii) Western Disturbances along with associated weather: Ten (10) Western Disturbances (WDs) affected the NW India during the month. These WDs caused fairly widespread to widespread rainfall/snowfall with isolated intense rainfall activity over Western Himalayan Region. Two among these WDs caused scattered to fairly widespread rainfall/thunderstorm activity along with isolated hailstorm over the adjoining plains of NW India. Remnants of Western Disturbance as well as movement of trough in low level westerlies caused scattered to fairly widespread rainfall/thunderstorm activity over parts of East & Northeast India with intense activity at isolated places during the month.

Confluence between westerlies and moist easterlies caused scattered to fairly widespread rainfall/thunderstorm activity over east and adjoining parts of central India and over peninsular India along with isolated intense rainfall activity over these regions during the month.

Isolated hailstorm activity was reported over parts of northwest, central and east India during the month.

iii) Fog: Dense to very dense fog was observed at isolated places over Haryana, Chandigarh & Delhi for eleven days; over Punjab and Uttarakhand for six days; over Odisha, Madhya Pradesh and Chhattisgarh for four days; over Gangetic West Bengal for three days; over Sub-Himalayan West Bengal & Sikkim, East Rajasthan, Bihar, Nagaland, Manipur, Mizoram & Tripura, Assam & Meghalaya, Saurashtra & Kutch, North Interior Karnataka and Coastal Andhra Pradesh on one or two days of the month.

iv) Rainfall Scenario: The rainfall for the country as a whole for the month of February 2020 was recorded as 12.1 mm which is 52% to its Long Period Average (LPA) i.e., 23.5 mm. Sub-division-wise distribution is as under:

a) Heavy Rain: Heavy rain was reported at isolated places over Odisha and Chhattisgarh on two days; over Jharkhand, Bihar, West Madhya Pradesh, East Uttar Pradesh, Uttarakhand and Coastal Andhra Pradesh on one day each during the week.

b) Heavy Rainfall Activity: No. of Heavy/Very Heavy Rainfall Events (>64.4 mm) and Warning Skill (correctness in %) of spatial distribution in issued warnings during the month is given below:

warning issued for	No. of Heavy/Very Heavy Rainfall Events (>64.4 mm): 10
	Percentage correction (in %)
Day1 / 24 Hours	99%
Day2 / 48 Hours	98%
Day3 / 72 Hours	99%

v) Thundersquall & Hailstorm activity: Thundersquall & Hailstorm activity during the month is given below:

S. No.	Region	TS Days	Date of Maximum TS Activity	Hail Events	Squall Events
1.	South Peninsular India	Nil	Nil	Nil	Nil
2.	Northwest India	12	29-02-2020	01(Mukteshwar on 01-02-20) 02(Aligarh, Mukteshwar on 21-02-20) 02(Varanasi BHU, Churk on 22-02-20) 03(Ghazipur, Dehradun, Mukteshwar on 25-02-20) 01(Qazigund on 28-02-20) 01(Ludhiana 29-02-20)	Nil
3.	Northeast India	08	26-02-2020	Nil	Nil
4.	East India	05	25-02-2020	01(Gangtok 23-02-20) 01(Daltonganj on 25-02-20)	Nil
5.	Central India	05	24-02-2020	01(Pendra Road on 23-02-20) 01(Ambikapur 25-02-20)	Nil
6.	West India	Nil	Nil	Nil	Nil

Note: The convective activities mentioned above had been predicted and corresponding warnings were issued about 4-5 days in advance of the occurrence of the event. In addition to that, nowcasts were also given.

Bulletins / Operational Reports/ Services

Bulletins/Warnings/Press Releases Issued: All India Weather Bulletins(116), All India inference and severe weather warnings(116), Press Releases related to related to (a) intense rainfall activity(4),(b)current weather status and outlook for next two weeks (4),(c)Public Weather Bulletin(16), Nowcast Guidance Bulletins for severe weather (29), All India Weekly Weather Reports (4), Mountain weather bulletins including severe weather warnings for western and central Himalayan region(58),

Publications & Operational Reports issued: "Observed Rainfall Variability and Changes" Over 28 states and One Union Territory (29 Reports), Monsoon 2019 RMC Mumbai Report , Pre-monsoon Thunderstorms during 2019, Met Monograph: Monsoon Report 2019, Daily All India Weather Summary and Weekly Weather Reports, El Nino Southern Oscillation (ENSO) and Indian Ocean Dipole(IOD) bulletin for the month of February, 2020 ,Hot Weather Season outlook 2020, Gridded Standardized Precipitation Index (SPI) & Standardized Precipitation Evapotranspiration Index (SPEI) at 0.5*0.5 degree resolution at 4 weekly 1,2,3 & 4 monthly time scales computed and maps of same timescales are being uploaded at weekly basis on IMD Pune website, Report on Super cyclonic storm KYARR circulated to all stake holders and uploaded on RSMC website at the link :<http://www.rsmcnewdelhi.imd.gov.in/images/pdf/publications/preliminary-report/kyarr.pdf>., A Tropical Cyclone Operational Plan TCP-21 (Edition 2019) prepared and sent to WMO and available

on RSMC website at <http://www.rsmcnewdelhi.imd.gov.in/images/pdf/publications/tcp-21/tcp-21-2019.pdf>. A report on Regional aspects of Southwest Monsoon 2019 prepared and uploaded in the RMC Chennai website.

A “Location specific SMS based Nowcast and Dissemination System” for thunderstorm and lighting warning to the expected affected people over Jharkhand is formulated by joint collaboration of Meteorological Centre, Ranchi, Jharkhand Space Application Centre, (JSAC) and State Disaster Management Authority (SDMA) of Govt. of Jharkhand. The system has been made operational from February 2020.

NCMRWF Reanalysis Data Portal was launched by National Centre for Medium Range Weather Forecasting (NCMRWF) and Global and Regional Reanalysis data was released on the portal.

Geoscience Research

Seismological Observational Network

Observation Type	Target	Commissioned so far	Data reporting during the month
Seismic stations	115	115	109
GPS stations	40	20#	18

20 out of 40 are connected with VSAT, remaining 20 are operating in stand-alone mode.

Earthquake and Tsunami monitoring

Earthquake: 27 earthquakes were monitored in the Indian region out of which 3 events were greater than magnitude (M) of 5.0.

Tsunami: 1 seabed earthquakes (M> 6) with a potential to generate tsunami occurred. This information was provided between 12-15 minutes of occurrence the event.

Ocean Observation System

Type of Platform	Target	Commissioned till November, 2019	Data received during November, 2019
Argo Floats *	200	368	151
Moored Buoys	16	22	17
Tide Gauges	36	36	30
High Frequency(HF) Radars	10	12	9
Acoustic Doppler Current Profiler(ADCP)	20	20	17
Tsunami Buoys	7	9	3
Wave Rider Buoy	16	26	13

*The remaining floats/drifters have completed their life time and as such no data can be received from them.

Ocean Science Services

No	Types of forecasts	No. of advisories issued during the month
1	Integrated Potential Fishing Zone (PFZ) advisories (Sea Surface Temperature(SST), Chlorophyll., wind)	29
2	Tuna Fishing Advisories	29
2	Ocean State Forecast(OSF)-Wave, Wind, Currents, SST, MLD and D20 forecasts	29
4.	Real time global ocean analysis (daily)	29
5.	Coral Bleaching Alert System	9

Topographic Survey of Exclusive Economic Zone

Area covered during the month:= 8631 sq. km

Ocean Technology

European Patent awarded for “Process for the production of lutein”

Capacity Building and Outreach

During 24-26 Feb 2020 NCMRWF organized International Conference on 'Ensemble Methods in Modelling and data Assimilation' EMMDA 2020. The workshop featured 150 participants including international experts from USA, UK, Australia, South Korea, South Africa, Thailand and Saudi Arabia, as invited speakers.

The first Weather and Climate Science and Service Partnership (WCSSP) India Annual Science Meeting was held at Indian Institute of Tropical Meteorology (IITM), Pune during 5-7 February 2020. Around 75 participants from seven MoES Institutes and Met Office and Academic Institutes from UK attended the meeting. The meeting focused on the modelling of high impact weather and development of tools for impact based forecasting leading to disaster risk reduction.

The 6th International Conference on Climate Services (ICCS 6) at IITM, Pune during 11-13 February 2020. ICCS-6 is the world's premiere climate services event, organized jointly by the Global Framework for Climate Service, an international effort coordinated by the World Meteorological Organization (WMO), and the Climate Services Partnership. It aimed to convene the international community of practice for issues related to the production and use of climate services in a range of social and economic sectors. The South Asia Heat Health Summit (SAHHS) was also organised on 14 February 2020 by the Global Heat Health Information Network, the Indian Institute of Tropical Meteorology and others to build capacity, promote sharing, and encourage evidence-based policy and actions to improve the management of extreme heat risks. Total 225 national and International participants attended the Conference/WMO Workshop and SAHHS.

A seminar on Monsoons-2019 was held at RMC Chennai on 10th February 2020 under the joint auspices of Indian Meteorological Society, Chennai Chapter and Regional Meteorological Centre, Chennai.

A two days' Training-Cum-Familiarization workshop on Precipitation and Aerosol Chemistry was held on 25 & 26 February, 2020 at Pune.

NCMRWF organized 'one day Hindi scientific workshop on "अतिविषम मौसम और जलवायु" on 3rd Feb 2020.

Publications

Subject	Publications			Ph.Ds		
	April- 2019 - January 2020	February, 2020	Total	April- 2019 - January 2020	February, 2020	Total
Atmospheric Sciences	147	16	163	4	-	4
Ocean Science and Technology	92	12	104	1	-	1
Polar Sciences	30	-	30	-	-	-
Geosciences and resources	19	2	21	2	-	2
Total	298	30	328	7	-	7

Utilization of Ocean Research Vessels during the month

Vessel	Days at Sea / Utilization	Maintenance/ Inspection /Scientific Logistics / Cruise Preparation	No. of Cruise
Sagar Nidhi	25	4	2
Sagar Manjusha	16	13	1
Sagar Tara	14	15	2
Sagar Kanya	7	22	1
Sagar Sampada	22	7	3

No.MoES/20/01/2017-Estt.
Government of India
Ministry of Earth Sciences

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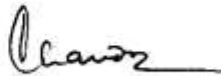
Dated, the ^{2nd} March, 2020

CERTIFICATE

(FOR THE MONTH OF FEBRUARY, 2020)

It is certified that the detailed status regarding all the posts pertaining to Ministry of Earth Sciences have been updated on AVMS as on last day of the month of February, 2020. A summary of the status is given below:-

- | | | |
|-----|---|------|
| (a) | The total number of posts required to be entered on AVMS | - 13 |
| (b) | Number of posts filled as on date | - 12 |
| (c) | Number of posts totally vacant as on date | - 01 |
| (d) | Number of posts under additional charge arrangement | - 00 |
| (e) | Number of posts that would fall vacant during the next 6 months | - 02 |


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