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IMD tracks changes in Indian Ocean for monsoon impact

Predicts Normal Rainfall But To Release Updated Forecast In June

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New Delhi: The India Meteorological Department (IMD) on Tuesday predicted a normal monsoon for 2017 but the accuracy of its forecast will depend on the variability of a less discussed climatic phenomenon called the Indian Ocean Dipole (IOD), apart from the keenly observed El Nino. The country's national weather forecaster will hopefully have better picture of both these factors in June when it releases its updated forecast.

Unlike El Nino, which is an abnormal warming of equatorial Pacific Ocean, the IOD is defined by the difference in the sea surface temperatures between the two equatorial regions of the Indian Ocean — the western end near the Arabian Sea and the eastern one off Indonesia. Positive IOD conditions are likely to be favourable for a normal/above normal monsoon.

The IMD in its pre-forecast presentation on Wednesday noted that neutral IOD conditions are, at present, prevail-

DOES IOD CANCEL EL NINO EFFECT?

Unlike El Nino, which is an abnormal warming of equatorial Pacific Ocean, the IOD is defined by the difference in the sea surface temperature between two equatorial areas of the Indian Ocean — western near the Arabian Sea and eastern near Indonesia and Bay of Bengal

El Nino year	El Nino strength	Phase of IOD	Rainfall (% of LPA)
1951	Weak	Neutral	81
1953	Weak	Neutral	110
1957	Strong	Positive	98
1963	Moderate	Positive	98
1965	Strong	Neutral	82
1969	Weak	Neutral	100
1972	Strong	Neutral	76
1982	Strong	Neutral	85
1987	Strong	Neutral	81
1991	Moderate	Positive	91
1997	Strong	Positive	102
2002	Moderate	Neutral	81
2004	Weak	Neutral	86
2009	Moderate	Neutral	78
2015	Strong	Neutral	86
2017	Weak*	Positive*	??

El Nino - Abnormal warming of waters in east and central equatorial Pacific Ocean

IOD - Indian Ocean Dipole, a measure of the difference in temperatures in east and west Indian Ocean

LPA - Long period average

➤ In four of the 15 El Nino years, IOD was positive

➤ In 3 of these 4 years, rainfall was normal (96-104% of LPA and in one year (1991), it was below normal (90-96% of LPA)

Source: India Meteorological Dept

ling over the Indian Ocean and more clarity on it is expected next month. "The latest forecast from the Monsoon Mission Climate Forecasting System (MMCFS) indicates that the weak positive IOD conditions are likely to develop du-

ring the middle of the monsoon season and persist for some more months. Positive IOD conditions are likely to be favourable for a normal/above normal monsoon," said D S Pai, director of long-range forecast at IMD, while making

his presentation on Tuesday.

Pai noted that extreme sea surface temperature conditions over the Pacific, particularly El Nino conditions, and a positive IOD development over equatorial Indian Ocean are known to have strong influence on the Indian summer monsoon. IMD is, therefore, "carefully monitoring the sea surface conditions over the Pacific and Indian oceans".

Although there is no fully established correlation between summer monsoon rainfall in India and the IOD, IMD's records show that IOD was positive in four of the 15 El Nino years (during 1951-2016) and the rainfall was normal (96-104% of the Long Period Average) in three of these four years.

If one looks at only the El Nino phenomena, records show that the country had deficient monsoon rainfall (less than 90% of the LPA) in nine out of 15 El Nino years. In two of these years, the country received normal rainfall of above 100% of the LPA. One of these two years was 1997, which saw one of the strongest El Nino years of the last century.

Incidentally, 1997 was the year of positive IOD when the country had normal rainfall of 102% of the LPA — indicating a peculiar interplay of both these climatic phenomena which impact the Indian summer monsoon.

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Clouds of prosperity

The monsoon forecast should galvanise the country to make the most of a good season

The 'normal' monsoon forecast of the India Meteorological Department brings the promise of a year of growth and good health for India's economy and ecology. If correct, India will have a second consecutive year of normal rainfall, after two years of drought. The prospect that 2017 will be a good year boosts the prospects of enhanced agricultural output, healthy reservoir levels, more hydropower and reduced conflicts over water. It will also test the efficacy of the expensive water management initiatives launched during 2014 and 2015 by the Centre and the State governments to harness rainfall and build resilience for future drought cycles. As the IMD's experience shows, forecasting the all-India summer monsoon rainfall is fraught with uncertainties and has often gone off the mark. The dynamic model that it is using this year to make a forecast that includes an assessment of two phenomena – a possible late onset El Niño in the Pacific Ocean and variations in sea surface temperatures that create the 'Indian Ocean Dipole' – will be keenly watched. Given that El Niño is expected only in the later part of the year when the monsoon is in its final stages, the expectation of normal rainfall is reasonable. A confirmation could come in June.

When more than half the population is sustained by agricultural livelihoods, highly efficient water utilisation holds the key to higher farm productivity. In fact, preparing for drought remains a top priority today, in spite of a big increase in outlays for irrigation made over successive five-year plans. Data on five decades of grain output from 1951 show that the negative impact of drought on productivity is disproportionately higher than the positive effects of a normal or surplus monsoon. This underscores the need to help farmers with small holdings to look ahead. As agriculture scientist M.S. Swaminathan pointed out during the drought a couple of years ago, the focus has to be on plant protection, water harvesting and access to post-harvest technologies. The NITI Aayog has also been calling for ways to cut water use, since India uses two to three times more water per tonne of grain produced compared to, for example, China, Brazil and the U.S. The way forward is to create ponds, provide solar power for more farms, mechanise operations and expand drip irrigation coverage. Aiding small farmers with the tools and providing them formal financing can relieve their cyclical distress. The area under drip irrigation, estimated to be less than 10% of net area sown, can then be expanded. A normal monsoon will also relieve water stress in the cities if they prepare catchments and reservoirs to make the most of the season and incentivise residents to install scientific rainwater harvesting systems.

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गंगा अधिनियम का खाका तैयार

प्रदूषण पर लगेगी रोक

राज्यों समेत विभिन्न पक्षों के साथ चर्चा के बाद विषय को कैबिनेट के समक्ष रखा जाएगा



नई दिल्ली, (भाषा): हरिद्वार से लेकर गंगा सागर तक गंगा नदी में प्रदूषण पर रोकथाम को प्रमुख प्रतिबद्धता बताते हुए केंद्रीय मंत्री उमा भारती ने कहा कि गंगा अधिनियम का खाका तैयार किया गया है और इस विषय पर संबंधित राज्यों, विभागों एवं अन्य पक्षों से चर्चा के बाद इसे कैबिनेट के समक्ष ले जाया जायेगा। जल संसाधन, नदी विकास एवं गंगा संरक्षण मंत्री उमा भारती ने कहा कि गंगा अधिनियम का खाका तैयार किया गया है। यह एक शानदार दस्तावेज है। बिहार समेत कुछ राज्यों ने प्रस्तावित कानून के खाका की प्रति साझा करने का आग्रह किया है। हम राज्यों को इसे साझा करेंगे और उनके साथ इस विषय पर चर्चा करेंगे। इसके बारे में वित्त समिति के साथ भी चर्चा की जायेगी। उन्होंने कहा कि राज्यों

नई दिल्ली में संवाददाता सम्मेलन को संबोधित करतीं केंद्रीय जल संसाधन मंत्री उमा भारती। (छाया मिहिर सिंह)

के विचार जानने के बाद हम शहरी विकास मंत्रालय, ग्रामीण विकास मंत्रालय एवं अन्य विभागों के साथ चर्चा करेंगे। तब यह कैबिनेट के समक्ष जायेगा। इसमें अभी कुछ समय लगेगा। गंगा को प्रदूषण मुक्त बनाने के लिए विधायी पहल के तहत समग्र गंगा अधिनियम बनाने की दिशा में कदम उठाया जा रहा है। इस विषय पर न्यायमूर्ति गिरधर मालवीय के नेतृत्व वाली समिति की रिपोर्ट के आधार पर प्रस्तावित कानून का खाका तैयार किया गया है।

उमा भारती ने कहा कि उन्होंने संसद में भी कहा था और अब भी उसे दोहरा रही हैं कि जब वह सांसद नहीं थी तब उन्होंने गंगा की अविरलता और निर्मलता

के लिए सांसदों व अन्य लोगों को गंगाजल भेजा था। उस समय सभी राजनीतिक दलों के नेताओं, सभी धर्मों व वर्गों के लोगों ने कहा था कि गंगा के विषय पर सभी एकमत हैं और इस पर कोई मतभेद नहीं है। उमा ने कहा कि इस विषय पर जब संसद में विधेयक पेश होगा तब वह इसे पारित करने में सभी वर्गों से वैसी ही एकजुटता प्रदर्शित करने का आग्रह कर रही हैं जैसा कि गंगाजल बांटते समय किया गया था। हरिद्वार से गंगा सागर तक की कहानी गंगा नदी में औद्योगिकी कचरे से जुड़ी है। 1600 ग्राम पंचायत और 6000 गांव से निकलने वाली गंदगी भी स्थिति को गंभीर बनाते हैं। इससे निपटने के लिए सरकार पंजाब के सींचेवाला माडल की तर्ज पर अलग व्यवस्था भी कर रही है।

उल्लेखनीय है कि पंजाब के कपूरथला जिले में जाने-माने पर्यावरणविद् बलवीर सिंह सींचेवाल ने काली बेन जलधारा को बहाल करने में महत्वपूर्ण भूमिका निभाई थी। गंगा नदी में 144 बड़े नाले गिरते हैं और पांच से 10 हजार छोटे नालों से गंदगी नदी में आती है। उत्तर प्रदेश, बिहार, हरियाणा समेत अन्य राज्यों से कहा गया है कि वे उन छोटे-छोटे तालाबों की सूची बना लें जिनकी मरम्मत करनी है।

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