...e letter/article/editorial published on 19/4/17 in the

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Indian Nation
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The Times of India (A)
Blitz

and documented at Bhagirath(English)& Publicity Section, CWC.

Positive signal for economy as IMD predicts normal monsoon

'Rains Likely To Be Well Distributed'

Vishwa Mohan & Amit Bhattacharya | TNN

New Delhi: The India Meteorological Department, the country's national weather forecaster, predicted normal monsoon rainfall for this ye-

FULL COVERAGE: P 19

ar on Tuesday, sending a positive signal to the farm sector and the overall economy.

The IMD said seasonal monsoon rainfall is likely to be 96% of the long period average (LPA), which is at the lower end of the normal range (96%-104%). The forecast has a model error of +/-5%.

"The distribution of rainfall is also expected to be good," said IMD chief K J Ramesh, sounding optimistic about the prospects for agriculture in the coming season. The department will release its forecast of regionwise and monthly-rain distribution in June.

Well-distributed monsoon rainfall is important for good farm output — particularly the kharif (summer) crop — which impacts the entire rural economy.

"There is a 38% probability of monsoon rainfall being at near-normal levels, that is, closer to 100% of the LPA," Ramesh said while announcing the IMD's first stage forecast for this year's southwest monsoon season (June-September). However, he did not release probabilities for other scenarios, including the odds for rains being below 96% of the LPA.

According to the department's latest assessment, the probability of El Nino developing around July-August this year has dropped to 40%. It was over 55% in the IMD's bulletin last month. The department will update its forecast in the first week of June.

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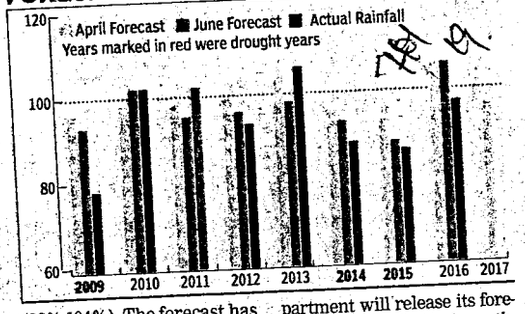
FORECASTS vs ACTUAL MONSOON



Agriculture growth rate estimated at 4.2% in 2016-17

▶Continued from P 1

Officials said the June update will fine-tune the forecast as more information will be available on the evolution of El Nino conditions in the Pacific, which is known to adversely impact monsoon rains in India.

The department will release its prediction of monsoon's onset in the third week of May. The normal date for the southwest monsoon to hit the Indian mainland at Kerala's coast is June 1.

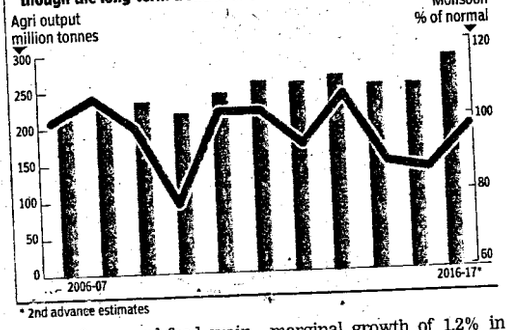
Although IMD had predicted an 'above normal' monsoon last year, the actual rainfall was in the normal range at 97% of LPA. Rains were below normal in around 100 districts of the country while parts of Tamil Nadu and Karnataka suffered a drought-like situation, also because of winter monsoon being below normal.

However, bountiful rains in many other parts of the country lifted agriculture production which has led to estimates of a record food grain output in 2016-17. Agriculture growth is estimated at 4.2% in 2016-17 and the country is expected a record food grain output of 272 million tonnes.

The turnaround followed two consecutive drought years of 2015 (14% deficit rainfall) and 2014 (12% deficit). The farm sector showed a contraction of 0.2% in 2014-15 and a marginal growth of 1.2% in 2015-16. The prediction of normal monsoon will, hopefully, drive growth further. The Centre has, of late, stepped up work to complete its minor irrigation projects in a time-bound manner to drought-proof the sector which contributes 15% to India's GDP and employs more than 50% of its workforce.

HOW MONSOON AFFECTS FARMING

Agriculture output still rises and falls with level of rainfall, even though the long-term trend is of consistent increase



* 2nd advance estimates

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CHEMISTRY

WATER HARVESTING

Published in *Science*, April 13, 2017

AUTHORS: Evelyn Wang, Sameer Rao, Hyunho Kim, Omar Yaghi and Others

Water, water everywhere, also from the driest air

AS ALREADY-severe water shortages look set to get worse with growing populations and heating climate, scientists at MIT and University of California at Berkeley have developed a technique that could help draw water directly from atmospheric moisture even in extremely dry locations.

Technologies such as "fog harvesting", which extract water from very moist air, have already been deployed in a number of coastal locations. There are also ways to take out moisture from drier air, such as "dew harvesting", but they are very expensive. The new method is the first with the potential for widespread use in virtually any location, regardless of humidity levels, the researchers say. It is completely passive, and is based on a foam-like material that draws moisture into its pores.

All that the new system needs is a source of heat — not even sunlight, specifically — which could be, say, biomass. The key to the new system lies in the porous material itself, which is part of a family of compounds known as metal-organic frameworks (MOFs). Invented by UC-Berkeley chemistry professor Omar Yaghi two decades ago, these compounds form a kind of sponge-like configuration with large internal surface areas.

By tuning the exact chemical composition of the MOF these surfaces can be made hydrophilic, or water-attracting. The team found that when this material is placed between a top surface that is painted black to absorb solar heat, and a lower surface that is kept at the same temperature as the outside air, water is released from the pores as vapour, and is naturally driven by the temperature and concentration difference to drip down as liquid and collect on the cooler lower surface.

Tests showed that 1 kg of the material could collect about 3 quarts (2.8 litres) of fresh water per day, about enough to supply drinking water for 1 person, from very dry air with a humidity of just 20%. Such systems would only require attention a few times a day to collect the water, open the device to let in fresh air, and begin the next cycle.

What's more, MOFs can be made by combining many different metals with any of hundreds of organic compounds, yielding a virtually limitless variety of different compositions, which can be "tuned" to meet a particular need. So far more than 20,000 varieties of MOFs have been made.

— MIT NEWS

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