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Water Systems Engineering Directorate

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The News Clippings on Water Resources Development and allied subjects are enclosed for perusal of the Chairman, CWC, and Member (WP&P/D&R/RM), Central Water Commission; the soft copies of clippings have also been uploaded on the CWC website.

Encl: As above.

S. Mahendran
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News item/letter/article/editorial Published on 17.11.2018 in the

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Deccan Chronicle
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Cyclone Gaja: 7 districts in Tamil Nadu affected, 13 killed

EXPRESS NEWS SERVICE
CHENNAI, NOVEMBER 16

THIRTEEN PEOPLE were killed in Tamil Nadu after Cyclone Gaja made landfall between Nagapattinam and Vedaranyam early morning on Friday. The Nagapattinam district suffered maximum damage.

Speaking to the media, Chief Minister Edappadi K Palaniswami said that while Tiruvarur, Nagapattinam, Thanjavur, Cuddalore, Pudukkottai and Ramanathapuram districts received rainfall, extensive damage has been reported in Nagapattinam. He said he will be visiting the cyclone-affected areas soon.

The government has deputed a special team to assess damage to boats, crops and properties. Some 82,000 people were evacuated to 471 relief centres before the cyclone hit.

Palaniswami said there was no need to panic and promised

that the government machinery is taking up relief measures on a war footing. He also announced a financial aid of Rs 10 lakh to families of those who died in the cyclone. He said the state government, after completing assessment of damage to properties and crops, will approach the Centre for assistance.

The Centre has promised the state government all assistance to deal with the situation. Prime Minister Narendra Modi said all assistance would be provided to the affected people. He spoke to Chief Minister K Palaniswami and learnt about the situation, an official release said.

Home Minister Rajnath Singh issued directions to monitor the situation in Tamil Nadu and to provide all help to the state administration. Singh tweeted that he spoke to Chief Minister Palaniswami about the situation in the affected areas. "Assured all possible assistance from the Centre in mitigating the situation arising due to cyclone. Asked the HS to monitor the sit-

uation & provide all help to the state admin," he tweeted.

Gusty winds due to the cyclonic storm resulted in hundreds of trees and electricity poles being uprooted in Nagapattinam and Karaikal districts. As many as 405 mobile ambulances have been dispatched to treat those affected by the cyclone. For those with major injuries, Chief Minister's General Relief Fund will provide Rs 1 lakh as compensation while those with minor injuries will be given Rs 25,000, the government announced.

Among those killed are highways department official Muthu Murugan, 56, and sanitation worker Elizabeth Rani, 35, from Sivaganga district; and V Sathish, 22, V Ramesh, 21, V Dinesh, 19, and their cousin M Ayyadurai, 19 who died when a house collapsed near Pattukottai near Thanjavur.

According to Tamil Nadu Generation and Distribution Corporation, about 12,000 electric poles, 102 sub-power sta-

tions, 495 power conductors, 100 transformers and 500 km of power lines had been damaged across seven districts.

After hitting Tamil Nadu's delta region, the Indian Meteorological Department said, the cyclonic storm moved westwards and lay centred at 8.30 am on Friday over interior Tamil Nadu, leading to heavy rain in southern parts of the state and parts of central Kerala bordering Tamil Nadu.

State Fisheries Minister D Jayakumar said all fishermen from the state were safe as they were alerted in advance. The government was trying to bring back 22-odd fishermen whose boats drifted towards Sri Lankan waters in the heavy storm. A total of 173 boats reached the Lankan coast and at least 120 were damaged.

DMK leader and Leader of Opposition in Assembly M K Stalin has appreciated the efforts of the state disaster management team and relief measures taken by the state government.

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Climate change impact is now visible on farms

REVIEW 151 districts are vulnerable to changing weather patterns, says govt study

Zia Haq

■ zia.haq@htlative.com

NEW DELHI: Crops, plantations, even livestock in 151 districts, or slightly more than one-fifth of the total districts in India, are susceptible to the impact of climate change, according to an annual review by the Indian Council of Agricultural Research (ICAR), a wing of the agriculture ministry.

The effects of climate change on India's agriculture, which employs half the population and accounts for 17% of the country's economic output, are no longer about distant projections. The latest research, cited by the ICAR study, shows the impact of climate change will be increasingly felt, as demonstrated by extreme weather events -- and manifest itself in economic, political, even social consequences.

In Jharkhand's Sahibganj district, rice-growing Malto tribespeople are fending off new pests, attributed to changing temperature and rainfall patterns, according a 2016 study by researcher Hoinu Kipgen Lamtinhoi, who conducted the research for the Fellowship of

India Commission on Relief.

The state's Action Plan for Climate Change too flags these changes, said Lamtinhoi. These changes are capable of stoking social conflicts. Lamtinhoi's research shows that crop-shriveling pests have led Malto to move into areas dominated by Santhal tribes downhill, leading to clashes.

Apple belts in Himachal Pradesh have been moving to higher altitudes for want of sufficient cold weather, according to the ICAR.

Crop-damaging spring hailstorms in central India and a

sudden temperature spike in Punjab in 2010, which cut wheat yields by 26% that year, according to the Ludhiana-based Borlaug Institute, are other instances.

The ICAR has identified that of the 28 million hectares under wheat, about 9 million hectares are categorised as being prone to sudden heat stress.

"These are the evidence of changing of weather patterns in India," said Pramod Aggarwal, one of India's top climate scientists and a former national professor at the Indian Agricultural Research Institute (IARI).



■ Farms are increasingly facing extreme weather.

HT FILE

KEY FINDINGS

- 1 Mustard in Gujarat's Anand facing higher pest incidence
- 2 Fruit fly pests to progressively increase in all mango-growing districts
- 3 Jharkhand's rice-growing Malto tribe battling new pests
- 4 Lack of cold weather shifting Himachal apple belts to higher altitudes
- 5 Indian Ocean has warmed 0.6 degree Celsius in 50 years

SOURCES: 1 & 2: ICAR; 3: Independent research; 4: NAEB and Dr YS Parmar, University of Horticulture & Forestry; 5: R Krishnan, IITM

Agriculture minister Radha Mohan Singh chaired a meeting on November 1 to review preparedness against extreme weather events. Although there are several ongoing mitigation programmes, including the flagship National Innovations on Climate Resilient Agriculture, these are scattered.

Singh has asked ICAR to prepare a new scheme that integrates all existing ones. At the meeting, he proposed tentatively calling it the "Integrated Climate Resilient Agriculture Programme".

CONTINUED ON P 9

from page one
Climate change

"A lot of people debate climate change. Even if we don't use these two words, there is sufficient evidence on the impact of changes in rainfall and temperature in India," Aggarwal said. Aggarwal was the coordinating lead author for the chapter on food in the fourth assessment report of the Intergovernmental Panel on Climate Change (IPCC). He was also the review editor of the IPCC's landmark fifth assessment report.

In each of the 151 climatically vulnerable districts, one representative village is now being chosen where "location-specific technologies" will be deployed. The technologies for demonstration have been selected based on the nature of vulnerability faced by the district and its main farming system. The ICAR's climate review offers many granular findings. It states that mustard farmers in Gujarat's Anand district should now be advised to shrink their sowing window to October 10-20 from October-November to avoid attacks by aphids, whose frequency has increased. The review blames changes in weather patterns for the attacks, including wind speeds of more than 2 km per hour and mean temperature of 19 to 25.5 degrees Celsius.

The review also states that in "10 mango-growing locations" of India, "incidence of fruit flies may increase due to projected increase in temperatures in future climate change periods".

The National Economic Survey 2018 analysed weather patterns over the past six decades, and found a long-term trend of "rising temperatures" and "declining average precipitation". Using data sets created by

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WHY

is Maharashtra reeling under drought?

H 18

What happened?

■ At the end of October, the Maharashtra government declared drought in 151 taluks in 26 of 36 districts, mostly in the Marathwada region and in the north. Experts said rainfall had been below par in large swathes of the State and faulty water conservation methods had added to the problem.

How serious is it?

■ The total number of villages affected by the drought — though the government has not shared figures — is likely to be more than 10,000. With water levels dipping in many areas, the government said this week that it is seeking ₹7,000 crore in Central assistance for drought mitigation, including crop loans for farmers, transport of water and arranging fodder for animals. The first quarter of 2019 will be spent tackling drought. Chief Minister Devendra Fadnavis told *The Hindu*. The Opposition has said the situation is worse than the 1972 drought, the worst in the history of the

State since Independence. It has accused the government of working only from Twitter and losing touch with reality.

Which area is worst hit?

■ As of November 16, water storage in all dams stood at 55.25% of the total capacity. On the same day last year, the storage was 73.91%. The Marathwada division is the worst affected region, with the total water storage down to 22.17%, as against 68.34% last year. The Nashik division (in north Maharashtra), too, has witnessed a drop in water levels to 58.56% from 83.23% last year. In the week starting November 12, Maharashtra had deployed 680 water tankers, supplying to 565 villages and 1,113 hamlets. Last year, the number of tankers used was 89, supplying to 114 villages. In its 2018-19 report, the Groundwater Surveys and Development Agency (GSDA) said a comparative study of water levels in October in the last five years had shown that there was a decrease, at



some places by more than a metre.

Didn't it get enough rain?

■ Though Maharashtra received 74.3% average rainfall, its scattered nature and concentration in particular areas harmed crops and affected water storage. Solapur and Beed districts received less than 50% rainfall; Nashik, Dhule, Nandurbar, Jalgaon, Ahmadnagar, Kolhapur, Aurangabad, Jalna, Latur, Parbhani, Buldhana, Amaravati, Yavatmal, Bhandara and Chandrapur received 50-75%; and Thane, Raigad, Ratnagiri,

Sindhudurg, Palghar, Pune, Satara, Sangli, Nanded, Hingoli, Akola, Washim, Wardha, Nagpur, Gondiya and Gadchiroli received 75-100%.

Aren't schemes helping?

■ The government's Jalyukta Shiwari scheme has come under the scanner, with experts alleging that it destroyed watersheds and natural streams. According to H.M. Desarda, former member of the State Planning Commission, the scheme is unscientific; also, its excessive focus on widening and deepening of streams and 'nullahs' benefits contractors rather than creating water storage. Ever increasing area under sugarcane cultivation and excessive use of water for this crop is also being blamed for the depleting ground and dam water. As per data, the total area under sugarcane in 2017-18 was 9.02 lakh hectares. As per initial estimates, the area increased to 11.62 lakh hectares in 2018-19. The increase is recorded in the now-drought affected regions of Auranga-

bad, Nanded and Ahmadnagar. Mr. Fadnavis, despite having talked about making drip irrigation mandatory for sugarcane cultivation, hasn't moved ahead with any scheme. With over 1.5 lakh hectares kharif area affected by drought and only 13% of the total area under rabi sowing being tilled, the crisis is likely to intensify further.

What lies in store?

■ The announcement of drought will bring along some relief measures. For instance, land revenue won't be collected from farmers; they will get a 33% subsidy on the electricity bill for agriculture pumps, find work under the employment guarantee scheme, and get exemption from payment of school and college fees for children. They will get financial help, with the government likely to give ₹6,800 per hectare to those with non-irrigated farms and ₹13,000 per hectare to those with irrigated farms.

ALOK DESHPANDE

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Drought dries up rabi gram sowing

One of the biggest pulses grown in the season, it has been planted in 5.02 million hectares — 21.5% less than last year

SANJEEB MUKHERJEE
New Delhi, 17 November

According to the latest data from the Ministry of Agriculture, rabi crops have been sown in around 19.12 million hectares. This is 16 per cent less than the same period last year.

Of the 63.43 million hectares so far in which rabi crops are normally sown, planting is over in almost 30 per cent of the land. Gram, one of the biggest pulses grown during the rabi season, has been planted in around 5.02 million hectares, which is nearly 21.51 per cent less than the area covered during the same period last year.

Experts said a sharp fall in price of gram last year,

when the crop sold at a discount of around 20-30 per cent than the minimum support price (MSP), may also have prompted some farmers to go for alternative crop.

"From reports we are getting from the field, I think a big reason for a drop in gram acreage in Maharashtra and Karnataka is low soil moisture due to inadequate monsoon. But in the northern parts of the country, the picture is still not very clear as sowing there continued till middle of November," said NP Singh, director of Kanpur-based Indian Institute of Pulses Research (IIPR).

According to data, farmers in Karnataka have sown pulses in only 0.73 million hectares so far this season compared with 1.3 million



Experts say, a sharp fall in price of gram last year, when the crop sold at a discount of 20-30 per cent compared to the minimum support price (MSP), may also have prompted some farmers to go for an alternative crop

PHOTO: ISTOCK

hectares in the same period last year. In Maharashtra, farmers planted pulses in only 0.86 million hectares so far this season against 1.06 million hectares in the year-ago period.

The southwest monsoon

was almost 22 per cent below normal in Marathwada region of Maharashtra, while in north interior Karnataka the deficit was 29 per cent. It was 37 per cent below normal in Rayalseema. Thereafter, the winter rain

didn't do any good in these regions so far.

Singh said in case of lentil (masur), whose acreage has also dropped by almost 21 per cent as of November 16, much shouldn't be read as sowing is still on in Madhya Pradesh and Uttar Pradesh, where the crop is generally grown.

Gram acreage in Madhya Pradesh, one of the biggest producers of the crop till Friday, was around 2.33 million hectares, almost the same as last year. In total, the crop is cultivated in around 3.07 million hectares of land in the state. The drop in acreage, along with low stocks with traders, has led to a mild upward swing in gram prices for the last few weeks. The crop is now selling closer to the state-mandated MSP of ₹4,620 per quintal.

Among other major crops, wheat, the biggest food grain grown during rabi season, has been sown in around 5.16 million hectares, which is 4.9 per cent less than last year while oilseeds (mainly mustard) has been sown in around 4.68 million hectares, which is 5.34 per cent less than last year.

Meanwhile, water levels in 91-odd reservoirs across the country dipped by another 3 per cent during the week that ended Friday.

Data from the Central Water Commission showed that live storage available in these reservoirs is 103.735 billion cubic metres (BCM), which is 64 per cent of the total live storage capacity of these reservoirs.

More on business-standard.com

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Why we don't have hurricanes in India

What is the difference between hurricane, typhoon and cyclone?

■ They are all tropical cyclones, but different basins use different nomenclature. Tropical cyclones are formed in eight basins — Northern Atlantic, Northeastern Pacific, North Central Pacific, Northwestern Pacific, Northern Indian Ocean, Southwestern Indian Ocean, South and Southwestern Pacific and Southeastern Indian Ocean. In the North Atlantic Ocean, Northwest Pacific Ocean east of the International Date Line and South Pacific Ocean, they are called hurricanes. Typhoon is the name given to a tropical cyclone formed in the Northwest Pacific Ocean west of the dateline. In southwest Pacific Ocean and southeast Indian Ocean, it's called a severe tropical cyclone. Similarly, tropical cyclones in the north Indian Ocean and southwest Indian Ocean are called severe cyclonic storm and tropical cyclone, respectively.



LEARNING WITH THE TIMES

After Titli and Luban, now Gaja. And that's just in 2018. Cyclones of devastating impact often have the most disarming names. But who names cyclones and why is it hurricane Katrina but cyclone Nilofar?

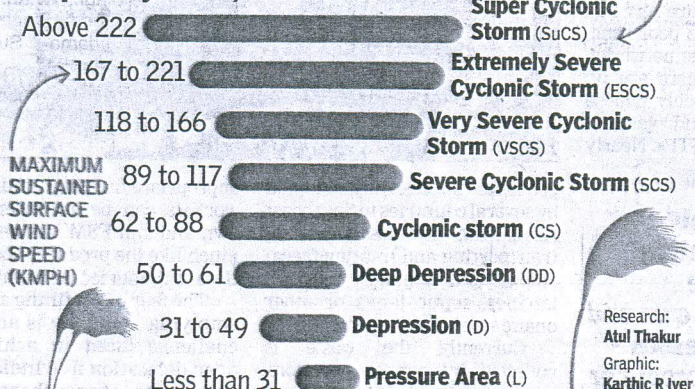
Why are cyclones named?

■ Tropical cyclones are named to provide ease of communication between forecasters and the general public. Apart from this, they can often last a week or longer and the same basin can have more than one cyclone. Hence, assigning names reduces confusion about what storm is being described. Naming of cyclones started in the early 20th century when an Australian forecaster started naming cyclones after politicians he disliked. During World War II, American meteorologists started naming cyclones after their wives and girlfriends and all cyclones were christened with female names. In the early 50s, they were identified by the phonetic alphabet — Able, Baker, Charlie and so on. In 1953, the US Weather Bureau again switched to women's names. Now, cyclones are given names that are contributed by member nations of the World Meteorological Organisation. The new names include those identified with men, women, flowers and so on. In the North Atlantic and Northeastern Pacific regions, feminine and masculine names are alternated in alphabetical order during a given season.

How is a cyclone formed?

■ A tropical cyclone is a storm system that is characterised by a low-pressure centre that produces strong winds and heavy rain. A tropical cyclone feeds on heat released by the condensation of moist air. The latent heat gets converted into kinetic energy and feeds the strong winds emerging out of it. Because of its warm centre, it's often called a warm core storm system. Cyclonic storms have counterclockwise rotation in the Northern Hemisphere and clockwise rotation in the Southern Hemisphere. Developed over warm water bodies, like oceans and seas, they lose their strength once they move over land. Apart from their devastating nature, they help in the global atmospheric circulation mechanism by carrying heat and energy away from the tropics towards temperate latitudes.

Classification of low-pressure systems at RSMC-Tropical Cyclones, New Delhi



What is the process of naming cyclones?

■ The regional body responsible for monitoring tropical cyclones in a particular basin makes a list of cyclone names for that particular basin. There are five such bodies that keep 10 pre-designated lists of cyclone names. The names are proposed by the member countries. For instance, the names of cyclones in northern Indian Ocean are contributed by Bangladesh, India, the Maldives, Myanmar, Oman, Pakistan, Sri Lanka and Thailand. Different basins use different methods for naming cyclones. In Caribbean Sea, Gulf of Mexico and the North Atlantic there are six lists, each having 21 names. These lists are annually rotated. The names of exceptionally destructive storms are retired from the list and hence Katrina can never reappear. In northern Indian Ocean there is no yearly list.

Research:
Atul Thakur
Graphic:
Karthic R Iyer

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Being prepared

Coastal districts must continue to strengthen resilience against extreme weather events

Tamil Nadu was more prepared than before to deal with Cyclone Gaja when it made landfall between Nagapattinam and Vedaranyam on November 16, but it still took a toll of at least 45 lives. The severe cyclonic storm damaged infrastructure, property and agriculture. Even so, the effort to professionalise disaster management through a dedicated national and State organisation initiated more than 15 years ago appears to be paying off, with bureaucracies acquiring higher efficiency in providing early warning and in mitigating the impact of cyclones. The National Cyclone Risk Mitigation Project started by the Ministry of Home Affairs has been working to reduce the impact of such catastrophic events on Andhra Pradesh, Odisha, West Bengal, Tamil Nadu and Gujarat, classified as States with higher vulnerability; most western coastal States are in the next category. However, there is a lot to be done to upgrade infrastructure and housing in coastal districts to meet higher standards of resilience in an era of extreme weather events. The lead taken by the State Disaster Management Authority in issuing a stream of alerts ahead of Gaja helped coastal residents move to camps and adopt safety measures. The active measures taken by the State after the cyclone, notably to clear roads, remove fallen trees and repair power infrastructure and communications, helped restore some stability. In its destructive exit path, the cyclone has affected some southern districts, felling tens of thousands of trees and also 30,000 electricity poles along the coast. It also hit residents in some central Kerala districts.

Tamil Nadu's political parties have acted in a mature manner and kept partisan criticism from getting in the way of relief and rehabilitation after Gaja. This is in contrast to some earlier instances, such as the Chennai flood of 2015, when the distribution of relief became politicised. Today, if any pressure on the government machinery is necessary, it is to secure without delay the financial relief of ₹10 lakh that has been promised for families of the dead, compensation for lost crops, trees and livestock, provision of emergency health intervention and rehabilitation assistance to rebuild lives. The larger question, of course, is whether the coastal States have equipped themselves for an even bigger event, such as the super cyclone that hit Odisha in 1999 that killed about 10,000 people. Even with far fewer casualties, Cyclone Phailin in 2013 required reconstruction estimated at \$1.5 billion. India's coastline experiences a lower frequency of tropical cyclones compared to many other regions, but the loss of life and destruction is much higher. Coastal States must, therefore, focus on reducing the hazard through policies that expand resilient housing, build better storm shelters and create financial mechanisms for insurance and compensation.

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The sacred Indian games

As rivers have become sites where the sacred and the polluted coexist, our beliefs about the sacred no longer correspond with our intuitions about sanctity



SERENDIPITIES

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One evening, many years ago, my father asked if I would accompany him to a town in northern Kerala called Thirunavaya. The place was known, particularly among the Hindus of Malabar and Kodagu, for a small Vishnu temple. More importantly, it was famous as the place where one went to make offerings on behalf of one's ancestors, to ask of the cosmological order that release (*moksha*) be granted to them. In parts, this sanctity to Thirunavaya in the Hindu, and particularly the Vaishnavite, cosmos is bestowed by the river Bharrathapuzha which flows by the temple, between the Vishnu temple on one bank and the Mahadeva and Brahma temples on the other. Alongside that slender but potentially perilous watery channel, like generations before, I sat on the gravelly steps leading down into the river.

Like generations before me, wearing a ring made out of darbha grass and with balls of sesame and cooked rice laid in front, I too performed the *pitrutharpanam* rituals. These were rituals in the name of those who had ceased to be. I invoked their spectral presence, reminded about their life and histories, and asked the gods that their beings find release. Sitting there, as an observer and a participant, while the drone of the young priest's voice rose and fell, I watched the river flow. The waters carried along with it refuse, debris, and residue to be poured out into the Arabian Sea near Ponnani. The river had survived sand mining mafias, invasive foreign species, chemicals – small and surreptitious abuses that wreck its ecosystem. All the while amidst the profane, natural and secular, the river made its way, unaware of the cosmological significance thrust upon it by humans.

Sacred but polluted

That Indian rivers have become sites where the sacred and the polluted coexist is not new. The Ganga is perhaps the pre-eminent example of this. In the summer of 1993 and 1994, during the course of her field work, the American

anthropologist Kelly Alley, who now teaches at Auburn University in Alabama, asked the seemingly simple question of those who lived in Varanasi: "How is it that a sacred river can be polluted?" While she went about her investigation with compassion and rigour,

the scepticism in her question was twofold: How can devotees let the river become polluted, and does the pollution itself not render the river less sacred? Variations on this theme had preoccupied the British colonisers as well, although their focus was inordinately on the

macabre. ("The Hindoo casts the dead naked into the sacred stream," wrote the authors of *The Library of Entertaining Knowledge* in the 1830s).

When faced with the question of why a phenomenon or practice is held sacred, at the very end of that question often lie claims of civilisational epiphanies. This, in itself, is not unique to India. The scholar of myth and religions, Mircea Eliade (a student of Surendranath Dasgupta), wrote that sacrality bestowed on phenomena is, at its heart, an act of uncovering. Sacredness is the manifestation to all of what was a revelation to only a few. It is an act of what he calls 'hierophany' (hierō: sacred; phany: to make visible). The great Martin Heidegger called this unconcealment of Being as 'aletheia', as the truth of experience itself. Inevitably, like mushrooms after rains, stories follow that make the strangeness of hierophany palatable. In fact, according to the French sociologist Emile Durkheim, it is only by deeming some objects as sacred that societies can find reasons and means to cohere.

But our lived lives sidestep such the orisations. Our rivers continue to be receptacles of our detritus and yet they remain as objects of veneration. Earlier last week, we saw photos of women,

standing in the Yamuna and surrounded by chemical froth, performing the Chhath Puja. Unlike Islam or Christianity, which are abstemious in their relation to nature, the practice of Hinduism is intimately and extravagantly connected to the forests, plants, caves and rivers of India. These geographic features are not just instances of nature; rather, they become the locus of religion, the site where human consciousness acquires its Hindu identity via beliefs.

An element of the schizoid

What, then, happens to these beliefs, and inevitably identity, when these sources of sacrality are destroyed or polluted? We have found ways to make do, to coexist with ugliness, to ignore the discomfiting, and often to invent vocabularies that are elaborate and yet also expedient. The result is that there is an element of the schizoid, a sort of cognitive rupture: our beliefs about the sacred fail to correspond with our intuitions about sanctity. The more violent this rupture becomes, as India pollutes its way to middle-income status, the more strident will be efforts to insist on the sanctity of religious beliefs. At its extreme, our beliefs then become indistinguishable from mimicry.



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Half of world's annual rain now falls in 12 days

By 2100, Rain, Snow Distribution
To Shrink Further To Just 11 Days

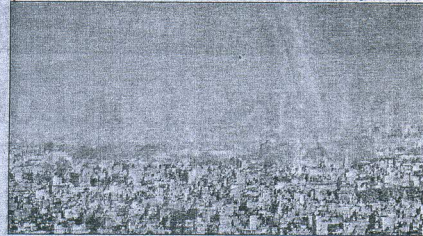
Washington: Half of the measured global precipitation in a year falls in just 12 days, an analysis of data collected at weather stations across the globe revealed. By century's end, climate models project that this lopsided distribution of rain and snow is likely to become even more skewed, with half of annual precipitation falling in 11 days.

Previous studies have shown that we can expect both an increase in extreme weather events and a smaller increase in average annual precipitation in the future as the climate warms, but research-

ers are still exploring the relationship between those two trends. "This study shows how those two pieces fit together. What we found is that the expected increases happen when it's already the wettest days get rainier," said Angeline Pendergrass, a scientist at the National Center for Atmospheric Research (NCAR) in the US.

The findings, published in 'Geophysical Research Letters', suggests that flooding and the damage associated with it could also increase.

The results are also a concern for agriculture, which is more productive when rain-



THE COLOURS THEY ARE A-FADIN

fall is spread more evenly over the growing season.

Scientists who study extreme precipitation — and how such events may change in the future — have used a variety of metrics to define what qualifies as "extreme".

Pendergrass noticed that in some cases the definitions were so broad that extreme precipitation actually included the bulk of all precipitation.

In those instances, "extreme precipitation" and "average precipitation" became

essentially the same thing, making it difficult for scientists to understand from existing studies how the two would change independently as the climate warms.

Pendergrass wanted to find something even simpler and more intuitive that could be easily understood by both the public and other scientists. In the end, she chose to quantify the number of days it would take for half of a year's precipitation to fall.

"I would have guessed the number would be larger — perhaps a month. But when we looked at the median, or midpoint, the number was just 12 days," said Pendergrass.

Researchers used data from 185 ground stations for the 16 years from 1999 through

2014. While the stations were dispersed globally, most were in North America, Eurasia, and Australia. To look forward, the scientists used simulations from 36 of the world's leading climate models.

They pinpointed what the model projections for the last 16 years of this century would translate to for individual observation stations. They found that total annual precipitation at the observation stations increased slightly in the model runs, but the additional precipitation did not fall evenly. Instead, half of the extra rain and snow fell over just six days.

This contributed to total precipitation also falling more unevenly, with half of a year's total precipitation falling in just 11 days by 2100. en

News item/letter/article/editorial Published on 19.11.2018..... in the

Hindustan Times ✓
Statesman
The Time of India (New Delhi)
Indian Express
Tribune

Hindustan (Hindi)
Nav Bharat Times (Hindi)
Punjab Keshari (Hindi)
The Hindu (New Delhi)
Rajasthan Patrika (Hindi)

Deccan Chronicle
Deccan Herald
The Times of India (A)
Business standard
The Economic Times

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

Gaja toll 45, 'busy' CM will visit affected areas Tuesday

MC Rajan

■ mc.rajan@htlive.com

CHENNAI: Chief minister Edappadi K Palaniswami on Sunday cited prior commitments like the inauguration of a bridge while saying he would be unable to visit the state's cyclone Gaja-hit areas until Tuesday even as the toll from storm mounted to 45.

Many affected areas remained cut off from the outside world on Sunday two days after the cyclone uprooted trees, knocked down electricity poles, destroyed homes, and forced the evacuation of over 80,000 people when it made landfall before weakening as it moved inland.

"Prior engagements have kept me occupied. Till tomorrow, I have commitments like the inauguration of a bridge, opening up of new office buildings and so on in Salem and Namakkal districts. These programmes were fixed much earlier," said Palaniswami.

"Further, many affected places still remain cut off and work is on to clear the roads blocked all along by uprooted trees," he added, explaining the difficulties in touring the places by road. Residents were holding sporadic protests at many places to demand



■ The state government has deputed ministers and bureaucrats to the affected areas to speed up the restoration work. HT PHOTO

basic amenities and timely relief.

Officials said flooding, collapsing houses and electrocution have caused most deaths. A navy helicopter and two ships have had joined the relief efforts while workers were restoring roads and power cables.

Gaja is the second storm to hit the country's east coast since cyclone Titli killed at least 62 people in Odisha in October.

Palaniswami told journalists he has deputed 11 ministers and senior bureaucrats to the affected areas to speed up relief measures and carry out restoration works on a war footing. He had earlier

been scheduled to visit the area on Sunday. The CM said the state government has submitted a tentative report on the devastation to the Centre and sought an immediate release of funds to carry out relief measures. "The quantum of damage to every sector is being assessed and it is going up as only now the extent of destruction is coming to light."

He said the government has set up 378 medical camps and 1,014 mobile units. "More people are coming to the camps and the number of those accommodated in the 483 camps has gone up to 2.49 lakh," he said.

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गंगा की स्वच्छता विधेयक पेश कर सकती है सरकार

नई दिल्ली | एजेसी

गंगा नदी की स्वच्छता सुनिश्चित करने के लिए विधायी पहल के तहत सरकार संसद के शीतकालीन सत्र में राष्ट्रीय गंगा नदी पुनरुद्धार, संरक्षण एवं प्रबंधन विधेयक लाने की तैयारी कर रही है।

इस विधेयक में गंगा नदी की निर्मलता एवं अविरलता को नुकसान पहुंचाने वालों पर जुर्माने का प्रावधान है। सूत्रों ने बताया कि राष्ट्रीय स्वच्छ गंगा मिशन (एनएमसीजी) ने 'गंगा नदी संरक्षण के लिए कानून' बनाने के वास्ते एक विधेयक का मसौदा तैयार किया था।

Hindustan Times
Statesman
The Time of India (New Delhi)
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जलमार्ग से माल भेजना कंपनियों और कारोबारियों को भाया



वाराणसी | अरुण मिश्र

वाराणसी- हल्दिया राष्ट्रीय जलमार्ग के शुरू होने के महज चार दिन में कई नामी कंपनियों और उद्योगों ने माल भेजने के लिए अन्तर्देशीय जलमार्ग प्राधिकरण से संपर्क किया है। रामनगर बंदरगाह से माल लेकर पहला जहाज शनिवार को रवाना हो रहा है।

जलमार्ग से माल भेजने में कारोबारियों को करीब 25 फीसदी कम माल भाड़ा देना होगा। सड़कों पर वाहनों में कमी और प्रदूषण के घटने के अलावा माल सुरक्षित पहुंचाना भी इस जलमार्ग के बड़े फायदे होंगे।

वॉटरवेज अथॉरिटी के चीफ कंसल्टेंट (ट्रैफिक) इंद्रवीर सोलंकी का कहना है कि पहली जल परिवहन सेवा के सुरक्षित सफर के बाद हिमालया, डाबर, बर्गर पेंटेस, मारुति, होडा एवं खाद्य पदार्थों से जुड़ी बड़ी कंपनियों ने भी माल ढुलाई के लिए संपर्क किया है। अगला मालवाहक जहाज दिसम्बर के पहले हफ्ते कोलकाता से बनारस आएगा।

इंडियन इंडस्ट्रीज एसोसिएशन के वाराणसी मंडल के चेयरमैन आरके चौधरी एवं उद्यमी दीनानाथ झुनझुनवाला के मुताबिक बनारस में बंदरगाह बनने के बाद सामान मंगवाना बेहतर विकल्प होगा। जलमार्ग प्राधिकरण को खाद्य तेल आदि पदार्थों के परिवहन की भी व्यवस्था जल्द शुरू करनी चाहिए।

सस्ता: माल भाड़ा में 25% कमी आएगी

व्यापारियों का कहना है कि जलमार्ग परिवहन से माल भाड़ा में करीब 25 फीसदी की कमी आएगी। उदाहरण के तौर पर बनारस से कोलकाता तक सड़क परिवहन से कारोबारियों को दस चक्के के एक ट्रक से 18 टन सामान भेजने पर करीब 25 हजार रुपए खर्च करने पड़ते हैं।

सुरक्षा: हादसों में कमी

कोलकाता से मालवाहक जहाज के साथ आए चीफ कंसल्टेंट (ट्रैफिक) एके सोलंकी के मुताबिक जलमार्ग से माल भेजना सुरक्षित होगा। सड़क मार्ग से माल भेजने में दुर्घटना की आशंका रहती है। कई स्थानों पर जांच, ट्रैफिक, प्रदूषण आदि की दिक्कतें हैं।

2016 में हल्दिया-वाराणसी जल परिवहन सेवा का ट्रायल किया गया था।

उस दौरान मालवाहक जहाज कोलकाता से कार लादकर बनारस पहुंचा था। यहां से खाद्य सामान एवं बाइक की खेप लेकर जहाज कोलकाता लौटा था।

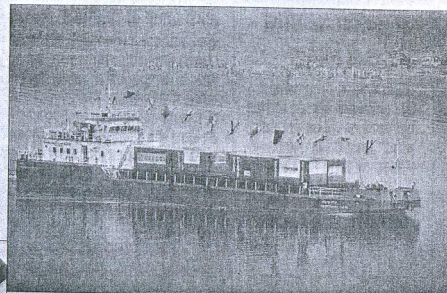
इन उद्योगों को लाभ

लघु उद्योग, पर्यटन, मशीनरी, तेल उद्योग, फूड्स, घेय पदार्थ आदि

वाराणसी के रामनगर क्षेत्र में बने बंदरगाह पर शुक्रवार को जलथान पर माल लोड कराने पहुंचे ट्रक।

कंपनियों ने संपर्क किया

इफको, पेप्सिको, होडा, इमामी, बर्जर पेंट्स, फूड्स



संभावना विदेश नी भेज सकेंगे

जलमार्ग शुरू होने से उत्तर भारत को पूर्वोत्तर भारत, बांग्लादेश, म्यांमार, और दक्षिण एशिया के देशों को जोड़ने में मदद मिलेगी जलमार्ग के सागरमाला प्रोजेक्ट का हिस्सा होने के कारण भारत कुछ वर्षों बाद दक्षिण एशिया के कारोबार में चीन के मुकाबले अपनी दमदार उपस्थिति दर्ज करा पाएगा।

कोलकाता रवाना

मालवाहक जहाज टैगोर शनिवार को रामनगर टर्मिनल से कोलकाता के लिए रवाना हो गया। इसमें 16 कंटेनर में सामान लदा है। कंटेनर में इफको की खाद्य, पेप्सिको व डाबर का सामान लदा है। जहाज टर्मिनल से रवाना होकर राजघाट के पास लंपार डालेगा। वहां से अगले दिन पटना के लिए रवाना होगा।

जहाज की खूबियां

- एमवी आरपन टैगोर की क्षमता साढ़े तीन सौ मीट्रिक टन
- अधिकतम रफ्तार विपरीत धारा में आठ किमी प्रति घंटे होती है।
- अधिकतम ढाई मीटर पानी की गहराई में चल सकता है

कितने जलमार्ग

- देश में 111 राष्ट्रीय जलमार्ग
- 2016 में 106 राष्ट्रीय जल मार्ग घोषित (चार अन्य पर काम चल रहा है जबकि बनारस-हल्दिया शुरू हुआ)