News item/letter/article/editorial published on May. 20.05.2015 in the

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La Niña and global warming

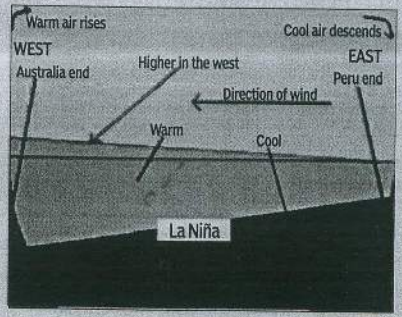
THE HEAT IS GETTING STOWED IN THE INDIAN OCEAN, WRITES S ANANTHANARAYANAN

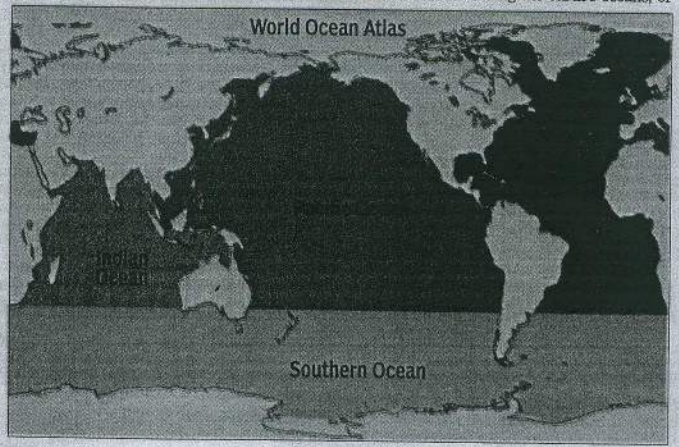
Despite global inaction to contain the emission of greenhouse gases and even the sizeable rise in the level of emissions during the last decade, it is seen that there has been nearly no increase in the earth's surface temperature. But scientists have warned that this is no reason to think matters are under control. The reason the ambient temperature has not been rising is that in the last decade the deep sea, which is cool and has great heat capacity, has been absorbing global heat.

Sang-Ki Lee, Wonsun Park, Molly O Baringer, Arnold L Gordon, Bruce Huber and Yanyun Liu of Miami, the University of Columbia and Kiel, Germany, in their letter in the journal *Nature Geoscience*, describe how a persistent *reverse El Niño* effect results in the surface of the Pacific Ocean cooling down and absorbing heat from the atmosphere. As there is no evidence of the surface of the ocean getting warmer, the team has searched and found that the heat is being passed on to the Indian Ocean, which keeps the heat in its upper 700 metres.

The El Niño effect is the phenomenon of the eastern side, that is the South America side, of the Pacific Ocean, which is normally cool and dry, getting warm and humid with rain, while the western side, which is the warm Australia side, gets cooler than it usually is. In normal years, the Peruvian coast of South America is cool and the sea near Australia is warm. The air over Australia gets warmed and rises, while trade winds blow westward from the Peruvian end. The westward winds over the ocean cause the water to shore up at the western end. The weight of higher water (it is higher by about one metre) near Australia causes cooler, nutrition-rich, deeper water to "well up" at the Peru end, where the weather stays dry and there is great fishing.

But every once in a few years ocean currents bring warm water to the eastern coast. This blocks the trade wind and the "up welling", and ruins the fishing, but there is warmth and moisture and luxurious vegetation in parts that are normally arid and bare. As this usually happens around Christmas time, the phenomenon is likened to the arrival of baby Jesus and has been named *El Niño*, or the (Holy) Little One.





And conversely, every once in a few, usually alternating with El Niño, is the opposite, when the weather around Peru is really cool and dry and this other extreme is called *La Niña*, which also means the little one, but with the gender changed.

La Niña & the atmosphere

The mean temperature of the atmosphere is a result of warming by the sun from above and by radiation from the earth or the sea from below. Now when the surface of the sea becomes unusually cool, as during La Niña, the sea does not radiate towards the atmosphere and this loses heat and cools down. The warm and cool spells in the Pacific alternate every few years, but since the beginning of this century there has been an unusually long spell of La Niña conditions. The surface of the Pacific Ocean has thus been cool for all these years and this is the reason that the lower atmosphere has been losing heat and the rise in global warming has not been readily apparent.

San Ki Lee and colleagues worked out the arithmetic of how heat is distributed among the earth's oceans, or the Global Heat Budget, with the help of the World Ocean Atlas. This is a display of the major ocean basins — the Atlantic, Pacific and Indian Oceans — separated by land masses, and the Southern Ocean below. The record of the annual addition to Oceanic Heat Content, or the OHC_{700}, which is the heat content in the upper 700 metres, is shown (see table) in terms of a unit that indicates the relative value.

The figures show that while there has been an increase of the global heat content, there is net reduction in the Pacific and Atlantic Oceans, with increase in the Southern Ocean and sharp increase in the Indian Ocean. Independent studies have shown that the Atlantic and Southern Oceans had a major inflow of heat, the effect not being visible in OHC_{700} of the Atlantic because heat has been transferred to the deep ocean, below 700 metres. But the anomaly remains of the Pacific Ocean, despite the high intake in the eastern Pacific, and the rise in the Indian Oceans, and this formed the subject of the scientists' study.

Horizontal flow

The study used a global general circulation model and simulated heat transport processes to correspond to the observed changes. The simulations correctly reflect the increased heat uptake, globally, on account of increased man-made addition to greenhouse gas content of the atmosphere, speeding up, and also checked by greater radiation by the warmer sea in the last decade. The Indian Ocean also has low heat intake during the earlier period and a sharp increase after the turn of the century.

These changes are reflected by the simulations, but the detailed heat budget analyses show that the warming of the Indian Ocean is not on account of surface heating but is a result of horizontal flows. Further analysis shows that the heat intake was from the Pacific Ocean via the passage to the Indian Ocean through the Indonesian archipelago. And this intake more than compensated the increased loss of heat during the period from the Indian Ocean to the Southern Ocean.

These changes are mirrored in the changes in the Pacific Ocean. There was great increase in the heat input on account of the sustained La Niña conditions, but this did not lead to a rise in surface temperature, rather the contrary, which would be a feature of La Niña because of the loss of heat to the Indian Ocean.

The study shows the Indian Ocean area as important in global ocean heat distribution and underlines the need to understand the mechanisms at work. An outcome of better understanding may be to know whether the heat stored in the Indian Ocean may be returned to the atmosphere once the La Niña conditions in the Pacific relax, or if it may get sequestered in the deep sea.

Period	Global Ocean	Indian Ocean	Pacific Ocean	Atlantic Ocean	Southern Ocean
1971-2000	2.8	- 0.2	0.9	1.3	0.6
2008-2012	2.9	2.1	- 0.4	- 0.3	1.5

What throws the switch?

CURRENT studies indicate that when warm water collects in the west (that is, eastern Australia), heat is transported north by ocean currents and also to the atmosphere by evaporation. Natural flows then deliver the excess heat to the eastern Pacific (that is near Peru), setting off El Niño. The effect is, hence, that the tropical Pacific Ocean loses heat during El Niño and gains it during La Niña.

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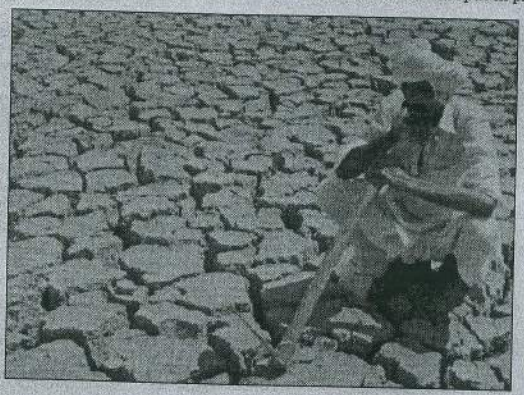
Climate and Food

WARMER TEMPERATURES WILL BE MILDLY POSITIVE FOR COLDER COUNTRIES OF EUROPE AND NORTH AMERICA AND HUGELY NEGATIVE FOR TROPICAL COUNTRIES LIKE INDIA. THIS WOULD MEAN THAT THE DEVELOPED COUNTRIES WILL BE ABLE TO PRODUCE LARGER QUANTITIES OF FOODGRAIN WHILE OUR PRODUCTION MAY DECLINE. WE HAD TO GO WITH A BEGGING BOWL TO WASHINGTON IN THE 1960S FOR SUPPLY OF FOODGRAINS UNDER THE PL 480 PROGRAMME. A SIMILAR SITUATION MAY BE CREATED YET AGAIN. THUS CLIMATE CHANGE WILL NOT ONLY AFFECT OUR FOOD SECURITY BUT ALSO OUR SOVEREIGNTY

BHARAT JHUNJHUNWALA

The suicides by farmers are direly portentious. The fear is that the worse is yet to come. The Intergovernmental Panel on Climate Change has forecast that global warming will result in more frequent floods, drought and cyclones. The rainfall pattern is likely to differ from place to place. Heavy rain for a few days may be followed by long periods of drought even though the average rainfall may remain the same. The average temperature in India has risen by 0.6 degrees Celsius in the last century. It is expected to increase by 2.4 degrees by the year 2100. A study conducted for the World Bank has predicted that extreme floods, that occurred once in 100 years till now, will take place once in ten years.

The impact of climate change will be more severe on rain-fed agriculture. Crops like bajra, corn and ragi are cultivated in large parts of the country. These crops are not irrigated. Lack of rainfall as and when required can delay the sowing. Should this happen, no crops can be grown in that year at all. Rainfall is often steady in Rajasthan followed by long dry spells. The farmer only harvests the straw at the end of the season. Often as much there is no rain at the time of sowing. In terms of output, the land remains barren.



Climate-change will affect rain-fed agriculture considerably. Farmers will demand irrigation facilities with canals as the source. Crop yields in irrigated areas will also be hit. It is predicted that there will be a decline in winter rains. Long spells of no rain during the monsoon will raise the demand for paddy irrigation as well. The availability of water will also decline. It has been predicted that there will be less snowfall in the hills, leading to less flow in the rivers during the summer when the demand for water is the highest. Greater variability in the rainfall pattern will lead to less recharge of groundwater aquifers. Water seeps into the earth if the drizzle is continuous for several days. A spell of heavy rainfall, on the other hand, provides less time for the water to seep into the earth. The bulk of the water flows into the rivers and thence into the sea. Our efforts to control floods have also led to less recharge of aquifers. Previously flood waters used to inundate large tracts of land, and water would seep into the aquifers. Now we have built embankments along many rivers. These prevent the spread of flood waters. This has lessened the recharge of aquifers. As a result, the groundwater level is fast declining across the country.

The availability of water for irrigation will be further reduced due to evaporation from large storage reservoirs like Bhakra and Tehri. A study of 12 large reservoirs in the United States predicted that the evaporation-loss will increase by nine per cent in the next century. The loss is likely to be more acute in our warmer climate. We are faced with a double whammy – the demand for irrigation will increase while availability of water for irrigation will come down.

Climate change will also have international political implications. Warmer temperatures will be mildly positive for colder countries of Europe and North America and hugely negative for tropical countries like India. This would mean that the developed countries will be able to produce larger quantities of foodgrain while our production may decline. We had to go with a begging bowl to Washington in the 1960s for the supply of foodgrain under the PL 480 programme. A similar situation may be created yet again. Thus climate change will not only affect our food security but also our sovereignty.

We need to make changes in our agriculture and water policies to face these multiple challenges. The indigenous varieties of foodgrain like paddy and wheat are more resistant to climate variations. We had abandoned these types in favour of High Yielding Varieties to augment our food production in the wake of the food crisis of the Sixties. We will have to retrace our steps. We must encourage farmers to grow traditional varieties even though the production may be less. The farmer is willing to make this change. He wants to insulate himself from the vagaries of weather. His problem is that he cannot make ends meet if the production is less. Therefore, we must put in place a system of incentives for growing indigenous varieties. We must adopt water conservation measures such as drip irrigation so that we can grow the same amount of grains with less water. Once again the problem is that of price. The farmers do not have the income or the incentive to invest in drip irrigation systems. This requires an increase in price and provision of incentives.

We are consuming large amounts of water for growing water-intensive crops like grapes, sugarcane, and red chillies. Often these are produced for export. We pack our scarce water into these crops and export our water to foreign countries. It is imperative to assess the availability of water in each block and place restrictions on growing of crops that consume more water than is available. I have seen the richer farmers investing in the irrigation of the dry areas of Gulbarga and Jodhpur to grow grapes and red chillies. This must stop.

Our water policy also calls for reflection. At present we are constructing large reservoirs like Bhakra and Tehri to store monsoon water for use during summer. This is resulting in huge losses due to evaporation. Instead we must store water in groundwater aquifers. Indeed we will have to spend on electricity to pump out the water from the aquifers but that will be a small cost to pay for our food security. We must also remove the embankments along the rivers and let the flood waters spread over large areas. We must build villages on mounds and houses on stilts so that the loss of life is minimised during floods. We must "live with the floods." The flood waters will help recharge our aquifers and help establish our food security.

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Blunting impact of the vagaries of weat

Heavy rainfalls led to floods in Jammu and Kashmir last year. Are there ways to prevent and minimise the damage caused by unseasonal rains? A look at how to combat extreme weather conditions

JS SAMRA

OCCURENCES and intensity of extreme weather events, including unseasonality of rains, fast winds, hailstorms, cloudburst and floods, have increased the vulnerability of environment and society. In 2014, the monsoon arrived late, caused floods in the end in some places and was also in deficit overall. A few months later, unseasonal rainfall in March was in excess of normal by 355 per cent in Central India, 154 per cent in North West, 135 per cent in the Southern peninsula and -56 per cent deficit in East and North-East India.

The Jammu and Kashmir highway was blocked and closed to traffic due to landslides. Unique region-specific planning can help to prevent damage caused due to unseasonal rains

Damage to crops

In addition to frequent rainfall events, fast-blowing winds and hailstorms damaged the standing crops. The Mathura (Vrindavan) district of UP was worst afflicted by repeated bullets of hailstorms. There are unconfirmed reports of suicides by debt-ridden farmers from different states. Situation of crop losses, other damages and multiple distresses is still very fluid, memorandum from many states and their reconciliation by central teams are awaited and it is difficult to give final figures at this stage. However, damages are widespread over the premium crop of wheat, potatoes, vegetables, fruits and other perennials.

Eligibility norms relaxed

Meanwhile, the Government of India has relaxed compensation eligibility norms from more than 50 per cent to 33 per cent of crop losses and increased compensation rate by 50 per cent i.e. Rs 4,500 to Rs 6,750 per ha in rainfed area, from Rs 9,000 to Rs13,500/ha in irrigated lands and Rs 12,000 to Rs18,000 per ha for perennial crops like fruits etc. Some of the states have also announced additional compensation from their own resources. Earlier, mud flow after midnight cloud burst on August 6, 2010 in the otherwise cold desert of Leh killed 255 persons and damaged 71 towns/villages. In 2013, bursting of clouds and glacial lake in June caused extreme flooding, deluges, infrastructure damages, deaths etc. in Uttarakhand, Himachal Pradesh and South-West Punjab. Maximum number of glacial lakes vulnerable to climate change, bursting and flooding especially downstream are present in the Beas, Sutlej and Chenab basins. Towards the tag end of the otherwise weak 2014 monsoon, the North-west region, especially J&K, received 3,176 per cent and Punjab 534 per cent incessant, excessive rainfall from September 3 to 6, 2014. This caused unprecedented floods and deluge.

Geological conditions

J&K was the worst afflicted due to its peculiar geological and physiological conditions. Shopian district of J&K received 2,953 per cent, Kupwara 1,984 per cent, Kulgam 1,850 per cent, Anantnag 1,687 per cent and Baramulla 1,489 per cent excess rainfall over normal in the week ending September 9, 2014. Kashmir is an enclosed valley and Jhelum river is the only flood water outlet. Cloudbursts breached Jhelum river, damaged communication, other infrastructure and inflicted deaths. About 400 villages were inundated, damaged or destroyed and four lakh people stranded in Kashmir valley.

During the first two weeks of March and again on March 29 to 30, 2015, J&K received heavy rainfall, hails and snowfall due to western disturbances and damaged crops, fruits, vegetables etc. March 2015 became the wettest month of the past 100 years of meteorology. The rise in water level of Jhelum created flood situation and landslides during March 29 to 30, disrupted road communication. The Jammu and Kashmir highway was blocked and closed to traffic due to landslides. Vulnerability of the hilly region is relatively very high due to its fragility and landslides.

The Valley of Kashmir was inundated earlier in 1841 and 1803 also. After that, marshlands have been reduced by 52 per cent and water bodies by 23 per cent in 103 years i.e. during 1911 to 2004 and by cushioning of floods by Dal, Wullar and other lakes were lost. Excessive water saturation of soils caused landslides, led to collapse of all kinds of communications with attendant difficulties in rescue-and-relief operations. The Jammu region was also flooded but recovered soon during September, 2014. Keeping in view the diverse topographical, geological, socio-economic environment and down-stream effects, very innovative, out-of-box and region-specific solutions are called upon to reduce vulnerability.

Vulnerable to climate change

The Jammu and Kashmir Hills are young, seismically active, fragile, diverse, complex and highly vulnerable to climate change. J&K normally experiences about 20 earthquakes in the range of 3.3 to 5.4 on the Richter scale, which further increase fragility and vulnerability to landslides and damages. There are 5,253 glaciers in Jammu and Kashmir, as compared to 2,786 in Himachal Pradesh and their melting due to climate changes contributes to flooding and human distress locally as well as down-stream. In the ancient times, Srinagar city area itself was a lake or a part of wetland network. Wullar, Dal and other lakes used to hold excess storm water and regulate floods. After Wullar lake, Jhelum crosses Pir Panjal range through a deep very narrow gorge (about 2,100 meter deep) with almost vertical or even hanging rocks and is a bottleneck for quick evacuation of excessive flood water due to high intensity rains or cloud/glacier lake bursts and ice melting. This section of the gorge may be surveyed and all possibilities of increasing its discharge internalised.

Robust or resilient construction or reconstruction of roads, bridges, railway lines, other civil works and communication infra-structure is very vital for long-lasting inclusive development, providing relief and ensuring security of this border region. This requires coordination and convergence of the departments like Public Works, Border Roads Organisation, NHAI, Railways, geologists, hydrologists and engineers for designing and selecting of most appropriate technologies and construction material.

Stabilisation of slopes, landslides and road/rail side drainage and safe landings of run-off water should be made mandatory. In high-rainfall Mizoram hills, easing and stone pitching of slopes, construction of slope-stabilisation structures, meticulously designed drains towards the hillside and frequent safe landing of the run-off into the valleys have minimised landslides. Similar is true for a toll road from Chandigarh, bypassing Pinjore to Simla. There are many lessons to be learnt by all those who are engaged in road construction or re-construction works in the hills.

Survey of wetlands

Unfortunately, Jammu and Kashmir did not have a river-monitoring and flood fore-warning system specifically provided in the Indo-Pak treaty. The Central Water Commission (CWC), along with some IITs and wetland experts, should carry out detailed survey of wetlands, drainage network, identify bottlenecks and suggest remedial measures for the unique situation of Kashmir. The state should come out with a preparedness plan, required policy, institutions and capacity building.

In the South-West plains of Punjab, Haryana, Rajasthan etc. introduction of canal irrigation in this arid region having poor quality ground water led to massive levelling of sand dunes, diversification to cash crops of cotton and water-guzzling paddy, rise in water table almost up to surface (1-2 metre below ground) and excessive accumulation of salts in the upper soil layers with extensive land degradation. Seepage from the Indira Gandhi Canal, Sirhind feeder system and others, inefficient irrigation and obliteration of the natural drainage by land levelling, construction of canal network, roads, railways etc. also accel
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The writer is Chief Exe

Technology can come to the rescue

The Central Road Research Institute (CRRI), New Delhi, has alternative technologies of unique materials and processes for specifically addressing the high vulnerability of the fragile Himalayan landscape. Discussions with Border Road Organisation, IIT Roorkee technocrats and others revealed that there is a lot of scope of tunnelling technologies for re-aligning to ensure all-weather, safer roads, railways and other communication network. Retrofitting of dangerous buildings, flood zoning, relocation of buildings on river banks, maintaining the drainage system, restoration of wetlands and river training works will be durable solutions. A diverse, dedicated, robust and reliable telecommunications system based on satellite, power backup and submergence proofing would be required. Rigorous concurrent or on-line quality monitoring, evaluation and periodical course corrections during implementation should be a part of the bidding process. Testing of quality of construction material by an independent third agency like that being done in the Pradhan Mantri Sarak Yojana should be mandatory.

Havoc caused

- J&K was the worst afflicted due to its peculiar geological and physiological conditions. Shopian district of J&K received 2,953 per cent, Kupwara 1,984 per cent, Kulgam 1,850 per cent, Anantnag 1,687 per cent and Baramulla 1,489 per cent excess rainfall over normal in the week ending September 9, 2014
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बदला मौसम का मिजाज | जयपुर में एक घंटे में 14.5 डिग्री गिरा तापमान, प्रदेश भर में जनजीवन बाधित

बारिश, ओले और अंधड़ ने झकझोरा

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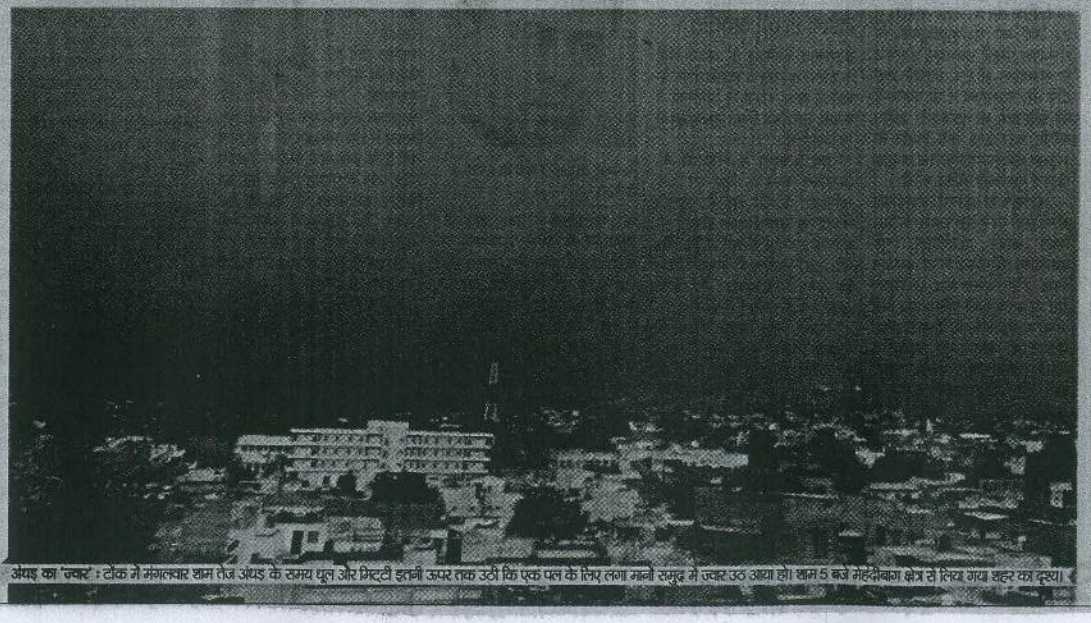
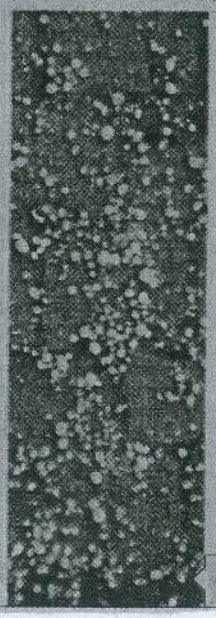
राज्यभर में मंगलवार को मौसम के कई रंग दिखे। पहले तपन, फिर अंधड़। साथ में कहीं बारिश तो कहीं-कहीं ओले भी गिरे। अंधड़ ने भले ही लोगों की राह रोकी लेकिन पारे को डुबकी लगाने पर मजबूर कर गया। जयपुर में शाम करीब चार बजे तापमान 43.2 डिग्री सेल्सियस पहुंच गया था लेकिन 76 घंटे प्रति किमी की रफ्तार से चली आंधी ने एक घंटे में पारा 14.5 डिग्री लुढ़का दिया। आंधी की शुरुआत प्रदेश के उत्तरी क्षेत्र से हुई, जिसने धीरे-धीरे समूचे राज्य को अपने आगोश में ले लिया। हालांकि मौसम के बदले मिजाज ने प्रदेश भर में एक दर्जन से अधिक लोगों की जान भी ले ली। जयपुर, सवाई माधोपुर, दौसा, टोंक, करौली, बीकानेर, श्रीगंगानगर, हनुमानगढ़, चूरू, सीकर, झुंझुनूं, भरतपुर, धौलपुर, अलवर, जोधपुर, जैसलमेर, पाली, अजमेर, नागौर जिलों में औसत 40-45 मिनट तक तेज आंधी चली। आगरा-झांसी मार्ग पर विद्युत लाइन टूटने से कई ट्रेनें धौलपुर में अटकी।



अंधड़ का 'ज्वार' : टोंक में मंगलवार शाम तेज अंधड़ के समय धूल और मिट्टी इतनी ऊपर तक उठी कि एक पल के लिए लगा मानो समुद्र में ज्वार उठ आया हो। शाम 5 बजे मेहदीबाग क्षेत्र से लिया गया शहर का दृश्य।



बारिश-ओले

बीकानेर में 14.4, पिलानी में 11.4, चूरू में 10.4, सीकर में 10 मिमी बारिश। श्रीगंगानगर व हनुमानगढ़ में बूंदाबांदी। सूरतगढ़, पदमपुर, केसरीसिंहपुर में हल्की बारिश। रावला और पदमपुर में ओले गिरे। नागौर के जायल में भी ओले गिरे।

जानमाल की क्षति

भरतपुर में 5, जयपुर में 3, धौलपुर, बीकानेर, सवाई माधोपुर में दो-दो, नागौर में एक जने की मौत। प्रदेश भर में 200 से ज्यादा लोग घायल भी हुए।

कारण यह

मौसम विभाग के मुताबिक, उत्तरी राजस्थान में बने उपरी परिसंचार तंत्र के कारण आंधी आई। इसकी मुख्य वजह पश्चिमी विक्षोभ माना जा रहा है।

100 किमी रफ्तार

आंधी की रफ्तार अलग-अलग थी। सीकर, चूरू, झुंझुनूं में करीब 100 किमी प्रति घंटे से हवा चली तो जयपुर में 76 व जोधपुर में गति 60 किमी प्रति घंटे रही।

श्रीगंगानगर जिले के रावला मंडी में मंगलवार को गिरे ओले।

News item/letter/article/editorial published on May - 20.05.2015 in the

Hindustan Times	Nav Bharat Times (Hindi)	M.P.Chronicle
Statesman	Punjab Keshari (Hindi)	A a j (Hindi)
The Times of India (N.D.) ✓	The Hindu	Indian Nation
Indian Express	Rajasthan Patrika (Hindi)	Nai Duniya (Hindi)
Tribune	Deccan Chronicle	The Times of India (A)
Hindustan (Hindi)	Deccan Herald	Blitz

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

Law to limit ground, river water use for drinking likely: Uma

New Delhi: Government may consider bringing in a legislation to restrict usage of river and ground water for drinking purpose while treated and rainwater could be used for other purposes, Union minister Uma Bharti said.

Speaking to media while inspecting 12 major drains falling into river Ganga near Haridwar and Rishikesh in Uttarakhand, she said that it will be her endeavour to finish most of the major tasks related to Ganga conservation in next four years.

She said, if required, government may consider bringing a legislation to restrict usage of river water and groundwater for drinking purpose only, while treated and rain water may be used for other purposes. PTI

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Looking forward to rainy season

MONSOON MAGIC The June-September rains bring more than just respite from blazing summer. They are the lifeblood of India's economy. A primer on the crucial showers

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Illustration: ABHIMANYU SINHA

What brings on the monsoon?

The monsoon, which spans from June to September, is essentially a reversal of wind patterns: cool oceanic breeze blows over the hot Indian landmass, resulting in rainfall. It starts over Kerala in the first week of June and then cuts off into two branches – over the Bay of Bengal and over the Arabian Sea, before typically covering the whole of India within a month.

Until recently, monsoon was thought to be a distinctly Asian phenomenon. But, it occurs in other parts of the world too, such as Europe, Africa and Chile.

How are rains recorded and the monsoon's progress monitored?

Scientists can now fairly determine the monsoon's course and quality. Monsoon is said to be normal when rainfall is between 96%-104% of 80 centimetres, which is the 50-year average of rains during the season. Rainfall above 110% would mean surplus monsoon.

Why are the monsoons so important for India?

Two-thirds of Indians depend on farm income and over 40% of our cropped area does not have any form of irrigation other than the rains.

Millions of farmers wait for the rains to begin summer sowing of major staples, such as rice, sugar, cotton, coarse cereals. And half of India's farm output comes from summer crops dependent on the monsoon.

For good output, the rains have to be not just robust but also evenly spread across states. The monsoon also replenishes 81 nationally monitored water reservoirs vital for drinking, power and irrigation.

How does monsoon impact the economy?

When rain-dependent farm output is robust, rural income and therefore spending on almost everything – television sets to gold – goes up.

This creates demand for manufactured goods, which in turn helps the general economy. For example, 48% of all motorcycles and 44% of TV sets are sold in rural India.

Without this demand, industrial growth would slow down. Normal rains act as a strong check on inflation through plentiful food stocks.

How does deficient rainfall lead to higher prices?

Normal rains act as a strong check on food inflation by increasing food output and availability.

A drought instantly puts pressure on prices. Food inflation, if unchecked, can push up core inflation, such as prices of manufactured goods.

The 2009 drought resulted in one of the highest generalised inflation levels seen in almost a decade.

TWO-THIRDS OF INDIANS DEPEND ON FARM INCOME, RAINS ARE THE SOLE SOURCE OF IRRIGATION FOR OVER 40% OF CROPPED AREA

Lower food output, a possibility if rains don't pick up in July – the most crucial sowing month – could knock retail food prices, already high at above 10%.

How critical are this year's rains for the broader economy?

High inflation limits scope for the Reserve Bank of India (RBI) to cut high interest rates, which hamper business activity by making borrowing costlier.

The prediction of a below-normal monsoon for the second year, after a lingering bad winter of hailstorms and unseasonal rains, could bring back the spectre of high food prices.

A bad winter crop could aggravate shortages. Already, India looks set to contend with a reduced winter harvest, which could cut up to 20% of the country's wheat output, besides 30% of mango plantations and damages to slew of other food crops.

What is the significance of El Nino?

El Nino – or "the boy child" in Spanish – is a weather glitch marked by an abnormal warming of the eastern Pacific Ocean and is known to trigger weaker rains and droughts, such as the one in 2009.

An El Nino doesn't always result in a drought but nonetheless poses a risk. Chances of an El Nino weather pattern taking over, which could limit rainfall vital for the economy, have kept India's government on tenterhooks over the last few years.

DECODED: EL NINO

The higher-than-normal Pacific temperatures is one part of what's called the Southern Oscillation—the see-saw pattern of reversing surface air pressure between the eastern and western tropical Pacific.

South American fishermen have given this phenomenon the name El Nino because it comes about the time of the celebration of the birth of the Christ Child-Christmas.

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Blitz

and docu... Bhagirath(English)& Publicity Section, CWC.

Jal Board buying new tankers to stop misuse of ground water

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NEW DELHI: Water conservation is going to be the Delhi Jal Board's (DJB) top priority, according to vice-chairperson Kapil Mishra, but the focus is going to be on institutions and commercial establishments to kickstart the effort.

In the coming months, the water utility plans to regulate commercial bore wells and has already acquired private tankers. Its ambitious project to introduce GPS-enabled tankers is also expected to take off soon.

"Private tankers are something that we need to look at in a very serious manner. We have already taken over some of them and intend to do the same for others. Our plan to start GPS enabled tankers is top priority," said Mishra.

Private tankers, experts say, are a big reason for misuse of ground water in the city.

"There should be no private tankers at all. Ground water misuse has increased manifold because of these tankers. In fact, I am totally against privatisation of water in any form," said Manoj Misra, convener, Yamuna Jiye Abhiyan.

The Delhi government has already announced that it will make sure that the rule regarding rainwater harvesting in buildings bigger in area than 100 square metres is followed.

THE WATER UTILITY PLANS TO REGULATE COMMERCIAL BORE WELLS AND HAS ALREADY ACQUIRED PRIVATE TANKERS

"These rules exist on paper but have not been followed. We don't need new rules, only implementation. Our primary focus will be on commercial and government institutions. We will also reach households but at the outset, we need to make sure that big companies, housing societies and government offices are complying with the rules. They have the most capacity to save water," Mishra said.

Keeping its focus on commercial establishments, the DJB had announced last week that potable water cannot be used for non-drinking purposes. A policy in this regard is expected to come out soon whereby commercial or government establishments will be required to buy non-drinking water for a number of purposes including cleaning, washing and construction works.

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कोलंबिया में भूस्खलन : 61 मरे

सालगर, (एएफपी): उत्तर पश्चिमी कोलंबिया में एक तंग घाटी में तड़के हुए जबर्दस्त भूस्खलन में कम से कम 61 लोगों की मौत हो गई और 37 अन्य घायल हो गए।

घटना सालगर निकाय क्षेत्र में तड़के करीब तीन बजे हुई। उस समय ज्यादातर लोग सोए हुए थे। सालगर की मेयर ओल्गा ओसोरियो ने आरसीएन रेडियो को बताया कि कीचड़ और पानी ने रास्ते में आई हर चीज को नष्ट कर दिया। उन्होंने कहा कि छोटा शहर सांता मार्गारिता 'नक्शे से मिट गया है।'

पंजाब - 20-5-15

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दै-20-5-15

जयपुर में तेज आंधी के दौरान धूल से बचने का प्रयास करते लोग। • हिन्दुस्तान

कई जगह तूफान के साथ बारिश, भिंड में पड़े ओले

नई दिल्ली। मध्यप्रदेश के भिंड जिले में शाम अचानक तेज आंधी चलने के बाद बारिश होने और बिजली गुल हो जाने से सामान्य जनजीवन अस्तव्यस्त हो गया। भिंड जिले के गोरमी में ओले भी गिरे। इस दौरान कई स्थानों पर पेड़ गिर गए और खंबे गिरने से बिजली गुल हो गई।

राजस्थान में सात की मौत, 11 घायल : राजस्थान के कई हिस्सों में धूल भरी तेज अंधड के कारण एक बच्ची और महिला समेत सात लोगों की मौत हो गई और 11 घायल हो गए। बीकानेर और भरतपुर जिलों के ग्रामीण हिस्सों में तूफान से कई मकानों को क्षति पहुंची है और कई पेड़ उखड़ गए जिससे यातायात और जनजीवन प्रभावित हुआ है। तूफान में भरतपुर में पांच लोगों की मौत हो गई और चार घायल हो गए। बीकानेर में दो लोगों की मौत हो गई और सात घायल हो गए। बीकानेर में बने तेज हवा के दबाव वाले तूफान ने जोधपुर, नागौर, राजधानी जयपुर, अलवर, भरतपुर और उसके आसपास के हिस्सों को चपेट में ले लिया।

हरियाणा में बारिश से तापमान गिरा : चंडीगढ़। हल्की बारिश से अधिकतम तापमान में दो से पांच डिग्री सेल्सियस की गिरावट दर्ज की गई जिससे भीषण गर्मी से राहत मिली।

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Nav Bharat Times (Hindi)
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Blitz

...icity Section, CWC.

तेज आंधी के कारण कई जगह ओवरहेड टूटे, रेलमार्गों पर गिरे पेड़, राजधानी, दूरंतो सहित 40 से अधिक ट्रेनें घंटों रुकी रहीं

बीकानेर से उठे तूफान ने उत्तर भारत की रफ्तार रोकी

कहर

नई दिल्ली | हिन्दुस्तान टीम

उत्तर भारत के कई राज्यों में मंगलवार की शाम को तेज आंधी ने कहर ढाया। बीकानेर में तेज हवा के बने दबाव ने राजस्थान, उत्तर प्रदेश और मध्य प्रदेश के कई जिलों में तांडव मचाया। आंधी में ओवरहेड केबल के टूट जाने से दर्जनों रेलगाड़ियों को जहां-तहां रोकना पड़ा।

यूपी में बरेली क्षेत्र में और आगरा-धौलपुर रेलमार्ग पर आंधी में पेड़ गिरने से केबल टूट गए और रेलगाड़ियों के पहिए थम गए। राजधानी, दूरंतो सहित 40 से अधिक ट्रेनें घंटों रुकी रहीं। वहीं तूफान में यूपी में 7 तो राजस्थान में 7 लोगों की मौत हो गई। कई इलाकों में बारिश से तापमान में गिरावट दर्ज की गई।

जयपुर में मंगलवार को तेज आंधी के बीच किसी तरह घर जाती महिलाएं। • हिमांशु

बरेली में रेल सेवा बाधित

बरेली के पास सीबीगंज में आंधी के दौरान रेलवे लाइन पर पेड़ गिर पड़ा जिससे ओएचई केबल टूट गया। केबल टूटने से कई रेलगाड़ियों को जहां-तहां रोकना पड़ा। इससे अप और डाउन दोनों लाइनों पर रेलगाड़ियों का संचालन बाधित हो गया। राज्य रानी और किसान एक्सप्रेस, पंजाब मेल जैसी ट्रेनों को रोकना पड़ा। हाइवे पर कई जगह पेड़ गिरने से सड़क यातायात भी हुआ प्रभावित हुआ। आंधी की वजह से बरेली शहर की बिजली गुल हो गई। शहर में कई से पेड़ और होर्डिंग गिरने की खबरें हैं। वहीं बदायूं में तेज आंधी एक किशोर की मौत छज्जा गिरने से हो गई।

पूर्वी यूपी में आज आंधी-पानी के आसार

आंचलिक मौसम विज्ञान केंद्र से मिली जानकारी के अनुसार 21 मई को प्रदेश के पूर्वी अंचलों में बारिश होने या फिर गरज-चमक के साथ बौछारें पड़ने के आसार हैं। तेज धूलभरी आंधी भी चल सकती है।

झांसी और बांदा में पारा 46 डिग्री पर

उत्तर प्रदेश में मंगलवार को प्रदेश में सबसे अधिक दिन का तापमान 46 डिग्री सेल्सियस झांसी और बांदा में रिकॉर्ड किया गया। आगरा में पारा 45 डिग्री पर दर्ज हुआ। राजधानी लखनऊ और आसपास भी मंगलवार को तपन और तेज धूप के साथ पारा 41 डिग्री सेल्सियस पर दर्ज किया गया।

साढ़े चार घंटे ठप रहा ग्वालियर-आगरा रेलमार्ग

धौलपुर और आगरा के बीच जाजऊ स्टेशन के पास दो पेड़ ओएचई केबल पर रेलगाड़ियों की आवाजाही ठप्प हो गई। लगभग 4.30 घंटे तक ग्वालियर और आगरा के बीच रेल मार्ग ठप रहा। राजधानी, ताज, झेलम सहित 40 से अधिक ट्रेनें खड़ी करनी पड़ गईं। ट्रैक खुलने के बाद भी देर रात तक आने जाने वाली ट्रेनें प्रभावित रहीं। ग्वालियर स्टेशन की तरफ से आ रही ट्रेनें धौलपुर स्टेशन से पहले जगह-जगह खड़ी रह गईं।

उत्तर प्रदेश के 16 शहरों की बिजली गुल, मांग में चार हजार मेगावाट की कमी

तूफान के कारण पश्चिम यूपी के 16 शहरों की बत्ती मंगलवार की शाम अचानक गुल हो गई। लगभग साढ़े चार बजे आए जोरदार तूफान से विद्युत वितरण की चार बड़ी लाइनों समेत कई छोटी लाइनें ट्रिप हो गई। लाइन ट्रिप होने से अचानक बिजली की मांग में जबरदस्त गिरावट आई। 12 हजार मेगावाट पर चल रही बिजली सप्लाई की मांग अचानक 8 हजार से नीचे पहुंच गई। पश्चिम में गिरी मांग का सीधा फायदा पूर्वी यूपी और मध्य यूपी को मिला। कॉरपोरेशन प्रबंधन ने शहर के साथ ग्रामीण इलाकों की बिजली सप्लाई को भी कटौती मुक्त कर दिया। लगातार घट रही बिजली की मांग के बीच ग्रिड सिस्टम संभालने के लिए पावर कॉरपोरेशन प्रबंधन ने शाम 5 बजे के आसपास बजाज समेत निजी कंपनियों के कई बिजली घरों से उत्पादन बंद करवा दिया।

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Statesman	Punjab Keshari (Hindi)	A a j (Hindi)
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Tribune	Deccan Chronicle	The Times of India (A)
Hindustan (Hindi)	Deccan Herald	Blitz

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

Dust storm, drizzle bring respite for a day

Anindya Chattopadhyay

IN THE EYE OF A STORM: Construction workers rushed for cover as the dust storm picked up around 5pm on Tuesday

Temperature Down To 28.8°C, But Heat To Return Today

TIMES NEWS NETWORK

New Delhi: The rising heat in Delhi was briefly halted by a thunderstorm on Tuesday evening. Dark clouds had been threatening to burst since early afternoon but it only drizzled in some parts of the city However, a massive dust storm picked up around 5pm which brought the temperature down from a maximum of 41.5 degrees Celsius to a pleasant 28.8 degrees Celsius.

The heat will return on Wednesday and temperature will rise by 2-3 degrees over the next few days. It is expected to come down again over the weekend with another spell of rain and thundershowers.

"On Wednesday, we will see a partly cloudy sky with a possibility of dust storm and thunderstorm in some areas. The maximum temperature will rise to 43 degrees Celsius and 28 degrees Celsius respectively Isolated rain and thundershowers may occur over the western Himalayan region but the weather will remain dry in other areas. We can expect a gradual rise in temperatures in Punjab, Haryana, Chandigarh, Delhi and west Uttar Pradesh, leading to heatwave conditions," said a Met official.

PTI

The sudden change in weather on Tuesday was a result of local heating. An official said that a circulation had built up over Rajasthan, Punjab and Delhi over the past two days that led to a convergence of moisture. "The moisture convergence at low levels and intense heating resulted in the dust storm over Haryana, Delhi, Punjab and Rajasthan on Tuesday. A western disturbance will be affecting the western Himalayan region from May 23. This will result in another spell of dust storms and thunderstorms over these states," he added. By May 25, the sky will clear significantly.

Tuesday's maximum temperature was 1.5 degrees Celsius lower than Monday's maximum of 43 degrees Celsius, but was still two degrees above normal. The minimum temperature was 28.5 degrees Celsius, three degrees above normal.

Services hit after pole collapses on Metro wire

Metro services between Dwarka and Noida/ Vaishali remained affected for nearly two hours on Tuesday evening after a streetlight pole from an adjacent flyover fell on its overhead electrical wire near west Delhi's Janakpuri after a storm.

Thousands of commuters were stranded on stations between 4.43pm and 6.45pm as authorities had to operate both the up and down Metro from a single line between Janakpuri East and West stations. "Normal services were restored at 6.45pm," said a Metro spokesperson. PTI

Central Water Commission
Technical Documentation Directorate
Bhagirath(English)& Publicity Section
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R.K. Puram, New Delhi – 66.

Dated 20.5.2015

Subject: Submission of News Clippings.

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.

P.M. Shukla 20/5/2015
Assistant Director (publicity)

Encl: As stated above.

Editor, Bhagirath (English) & Publicity

20.5.15

Director (T.D.)

For information of Chairman &Member (WP&P/D&R/R.M.), CWC and all concerned, uploaded at www.cwc.nic.in

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