

FEATURES

El Nino/La Nina

Wreaking Havoc Across the World

by Md. Asadullah Khan

The abrupt weather patterns, unusually dry spell for days, followed by torrential rains running to deluge and frequent hurricane formations in the coastal belts of Bangladesh are tell-tale signs that El Nino effects are already there. From Manila to Bangkok to Beijing, governments have taken preventive measures to minimise the damage caused by this sinister natural havoc. Bangladesh government's preparedness in this respect seems little known to people.

FOR months starting from the beginning of 1998 a vast swath of South-east Asia namely Papua New Guinea, the Philippines and Indonesia bore the brunt of the disastrous El Nino effects that would invite extreme weather conditions like drought and swings in temperatures, followed by torrential rain and cold spell. In Indonesia the drought has compounded the economic crisis unleashing forest fire and Indonesian government and people even with help from the neighbouring countries could hardly tame the raging blazes.

The El Nino related climatic event of the decade has wracked the Philippines so much so that thousands of families in Southern Mindanao face severe shortage of food and other economic hardship. On the other side, Palawan situated in the west of the Philippines has been ravaged by forest fires and most parts of the country are experiencing dry spell. The situation is equally grim in Vietnam. Ho Chi Minh city is going through its driest spell in a century and the hottest since 1912. As reports suggest, in the southern and central areas of the country, scorching temperatures and lack of rain have damaged coffee and cashew crops. Losses from the coffee alone are estimated to be around US\$100 million. The woes in Indonesia are much more grim. For months there was no rain in Teluk Pandan located in Indonesia's East Kalimantan province. Rice could not be planted there. Banana plantations were withering. Forest fires were all around. Meteorologists assert that El Nino's fury manifest in the drought and raging blazes of Borneo, and other islands of Indonesia would continue to wreak havoc even through the length and breadth of Asia.

El Nino was originally recognised by fishermen off the coast of South America as the appearance of unusually warm water in the Pacific ocean, occurring near the beginning of the year. El Nino means "the little boy" in Spanish. The name was used for the tendency of the phenomenon to arrive around Christmas.

El Nino results from interaction between the surface layers of the ocean and the overlying atmosphere in tropical Pacific. Stated in clear terminology, the phenomenon is caused by winds that blow across the Pacific Ocean. The winds shift periodically and alter water currents, causing a giant mass of warm water normally located off Australia to move toward Peru. The warm water displaces the cold Humboldt current (flowing north up the coast of Chile and Peru) altering weather patterns across a wide swath of the Earth. Climatologists assert that the phenomenon is the internal dynamics of the coupled ocean-atmosphere system that determines the onset and termination of El Nino events.

The physical processes are complicated, but they involve unstable air-sea interaction and planetary scale oceanic

waves. The system oscillates between warm (El Nino) to neutral (cold) conditions with a periodicity of roughly 3-4 years. The strongest El Ninos this century struck were in 1925-26 and 1982-83.

The great width of the Pacific Ocean is the main reason we see El Nino Southern Oscillation (ENSO) events occurring there as compared to the Atlantic and Indian Oceans. Most current theories of ENSO involve planetary scale equatorial waves. The time it takes these waves to cross the Pacific is one of the factors of ENSO climate anomalies. The narrower width of the Atlantic's or Indian ocean means the waves can cross those basins in less time, so that ocean adjusts more quickly to wind variations. Conversely, wind variations in the Pacific Ocean excites waves that take a long time to cross the basin, so the Pacific adjusts to wind variations more slowly. The slower adjustment time allows the ocean-atmosphere system to drift further from equilibrium with result that inter-annual climate anomalies (e.g. unusually warm or cold sea surface temperatures) are larger in the Pacific.

There is another way in which the width of the Pacific allows ENSO to develop there as compared to other basins. In the narrower Atlantic and Indian oceans, bordering land masses influence the seasonal climate more significantly than in the broader Pacific. The Indian ocean in particular is affected by monsoon variations under the strong influence of Asian land mass. Seasonally changing heat sources and sinks over the land are associated with the annual migration of sun. Heating of the land in the summer and cooling of the land in the winter sets up land sea temperature contrasts that affect the atmospheric circulation over the neighbouring ocean. The land influence competes with ocean and atmospheric interactions which are essential for generating ENSO (El Nino Southern Oscillations). La Nina, the temperamental sister of El Nino means "the little girl". La Nina is sometimes called El Viejo, anti-El Nino or simply a "cold event" or a "cold episode". La Nina is characterized by unusually cold ocean temperatures in the equatorial Pacific, as compared to El Nino, which is characterized by unusually warm ocean temperatures in the equatorial Pacific. Global climate anomalies associated with La Nina tend to be opposite those of El Nino.

At higher latitudes, El Nino is only one of a number of factors that influence climate. However, the impacts of El Nino and La Nina at these latitudes are most clearly seen in winter time. In the continental U.S., during El Nino year, temperatures in the winter are warmer than normal in the North Central States, and cooler than normal in the Southeast and the Southwest. During La Nina or El Viejo year, winter temperatures are warmer than normal in the Southeast and cooler

than normal in the Northwest.

El Ninos usually occur irregularly, approximately every two to seven years. The El Nino years 1976-77, 1982-83, 1986-87, 1991-94 are distinguished by large SST (Sea Surface Temperatures). The latest coming of El Nino in 1998 is among the worst on record and the impact has varied wildly from one region to another. While floods have engulfed the Americas and deadly storms have swept over China and Taiwan droughts have parched Australia and fuelled fires in Southeast Asia and

around the globe. Some scientists now say that 1998 could witness an unusually strong La Nina and Asia is bracing for its onslaught.

In general warm ENSO episodes are characterized by a number of tropical storms and hurricanes in the eastern Pacific and the Caribbean sea. As many as 14 storms have hit the regions of the Pacific Ocean in places where it never happened so before. Hurricanes seldom hit California, but this time it struck. It never rained in



Floods in China

Brazil. But as bad as the past year has been the future may hold no relief. As stated earlier, the period following an El Nino often brings a cooling of those same Pacific seas — a climatic pattern known as La Nina which generally produces sharp reversals of weather patterns

the desert area of northern Chile before. But in October 1997, it rained so heavily that there was flood in the desert.

During August to October, the season of storms in the Atlantic, at least six or more hurricanes or tropical storms swept over the Atlantic ocean

and the depletion of fish stocks as toxic ash seeps into rivers, lakes and coral reefs in the Philippines ex-president Fidel Ramos ordered officials to unclog and repair drainage and flood control systems nationwide to prepare for floods that could destroy rice fields causing huge crop losses. Says Natural Resources Secretary of the Philippines, "We are more worried about La Nina than El Nino". That's saying something considering the toll that La Nina's temperamental brother has taken so far.

Last fall a vast swath of Southeast Asia was immersed in smoke from Indonesian forest fires: hundreds died and tens of thousands were stricken with respiratory ailments. Damage caused by the haze alone exceeded \$1 billion. Meanwhile, famine has struck the region and hundreds have perished from hunger in Indonesia's Irian Jaya province as a result of crop failure. This year dry conditions and fire have brought 60,000 close to starvation in East Kalimantan, as report from an international



Fires in Brazil



Fires in Brazil

Photos — Courtesy: TIME

organisation suggests. In the Philippines agricultural losses and malnutrition are mounting as hordes of rats have surfaced from the scorched earth to infest farmlands. Heavy rains have hit coastal China and Taiwan, where the worst typhoon in a decade blew through last summer, killing more than 200 people. Damage caused by cyclones in parts of coastal areas of India in the recent past in terms of loss in human lives and property were extensive.

The eastward flow of the Pacific is central to the physics organisation suggests. In the Philippines agricultural losses and malnutrition are mounting as hordes of rats have surfaced from the scorched earth to infest farmlands. Heavy rains have hit coastal China and Taiwan, where the worst typhoon in a decade blew through last summer, killing more than 200 people. Damage caused by cyclones in parts of coastal areas of India in the recent past in terms of loss in human lives and property were extensive.

Global Bid to Trap Landmines in a High-tech Web

New communications technology is being harnessed to help the fight against landmines. Gemini News Service's Internet column examines the computer campaign against a world scourge that kills or injures 2,000 people a month.

Arlene Getz writes from Boston, US

WITH landmines still claiming the lives and limbs of dozens of victims every day, the United Nations is building a high-tech system to assist efforts to eradicate the weapons.

UN officials are working on a European-initiated project to create an information management system using a combination of satellites, sensors, data banks and the Internet to coordinate mine-removal operations.

The new system will also improve communications between UN agencies and other humanitarian and donor organisations.

"Our problem has been that there was almost no communication between field and UN headquarters," says Colonel Jacques Baud, the Swiss officer who is designing the system.

Baud has been seconded to the UN headquarters in New York to work on the project, an integral part of the International Humanitarian Mine Clearance Centre established by the Swiss government in Geneva last November.

As part of the new system, a computer software package should be ready by next year to help organisations needing preliminary data to start mine-removal projects.

Meanwhile, a computerised mapping facility, known as a Geographic Information System (GIS), is being developed by

the Joint Research Centre of the European Commission for use in Angola. This enables a computer to update, analyse and manipulate all forms of geographically referenced information.

"It is envisaged that a handheld GIS-based tool will be used at field level to record and report day-to-day progress of mine-clearance projects," research centre official Geoffrey van Orden wrote in a recent issue of the UN Department of Peacekeeping Operations publication Land Mines. "With the recent boom in satellite telecommunications technologies, it will be possible to send information from any location irrespective of the state of local communication facilities."

Some components of this system are already used in Bosnia and Croatia, where computer operators daily process large amounts of data about clearance, casualties and detailed maps.

In another advance, Baud says the establishment of data banks will enable clearance experts to share technical information about landmines, which kill or injure about 2,000 people — many of them children — every month.

The UN Mine Action Service estimates that 110 million anti-personnel mines have been planted around the world, in places such as Afghanistan, Angola, Cambodia, Ethiopia,

Iraq, Mozambique, Rwanda, Somalia, Thailand and Vietnam.

According to Baud, these mines come in about 600 different types and each can be planted in 10 or 15 different ways. In Afghanistan, for example, anti-tank mines, which are designed to be activated by the weight of a heavy vehicle, have been adapted so that they can be detonated by a child.

Clearance operations can be assisted by data banks. There are only a limited number of people — maybe a couple of hundred — with mine-clearing experience," says Baud. "As long as you have countries with new [de-mining] requirements, you need to know who is available."

Another advantage of the new information system is its ability to keep contributors informed about how their money is spent. The campaign against landmines gained global prominence with the high-profile involvement of personalities such as the late Diana, Princess of Wales, and last December's signing by 132 states of the Ottawa Treaty banning the use, manufacture, sale and stockpiling of anti-personnel mines.

One consequence of this has been that organisations such as the UN now find that donors are demanding more say about how their contributions are used. "With all the new needs, donors are getting fussier,"

points out Baud. Eventually, he hopes anti-mine personnel around the world will be able to communicate with each other and obtain relevant information over the Internet.

These high-tech plans, however, are still encountering a range of lower-tech problems. One is that some governments are unwilling to cooperate because they consider information about mines too sensitive to be released to outside agencies. While Baud is unwilling to name specific countries, he says their reluctance to share data stems from reasons such as wanting to keep information away from political opponents of because they are afraid of frightening off tourists.

Use of the Internet could also be hampered because some ruling parties restrict access to the worldwide computer network. Inadequate domestic infrastructures are another problem, with some developing countries still relying on maps compiled during colonial times. "It doesn't help to start with computers in those regions," says Baud. "We have not only to set up an information system, we have to set up the basic tools of mapping. That's a problem — especially in Africa."

The writer is a former South Africa correspondent for Newsweek magazine and the Sydney Morning Herald.

By Hanna-Barbera

