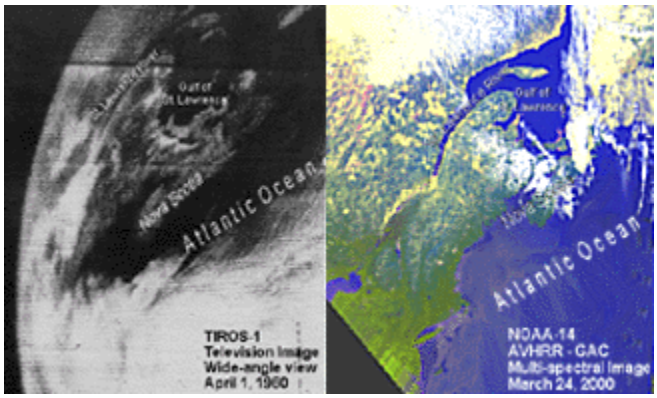
Climate-Watch, April 2000

National Climatic Data Center - April 04, 2000 (last update April 28, 2000)



Comparison image between first TIROS-1 image taken on April 1, 1960, and a NOAA-14 image taken almost 40 years later. (Click on image for larger view)

Review

Brief History of Weather Satellites

Following World War II, Viking and captured V-2 rockets were used for aerological research. Then in 1954, the U.S. Navy Aerobee rocket returned high altitude motion pictures of the earth and its cloud cover. The initial development of the TIROS (Television and Infrared Observation Satellite) program was carried out by the Radio Corporation of America (RCA) under an Army Ballistic Missle Agency contract at the Redstone Arsenal. The world's first meteorological satellite, TIROS-1, was launched on April 1, 1960, inaugurating the start of a brand new era of weather observations from space. TIROS-1 demonstrated the ability to acquire images of the Earth's cloud cover over much of the planet. TIROS-1 weighed 122kg and was 1.1 meter in diameter and 0.6 meter high not including antennas on the top and bottom of the spacecraft. The spacecraft consisted of two compact 1.3-cm vidicon television cameras (one wide angle and one narrow angle), two video recorders, a command and control electronics system, a communication system, solid rockets for spin control, power supply with rechargeable batteries, and a cylindrical solar array.

The earliest uses of satellite imagery focused on the identification of synoptic-scale cloud patterns, their general characteristics, and influences on weather patterns. It was soon realized that weather satellites would become a major player in observational and forecast meteorology. The impact of that momentous date in meteorology history is still being felt 40 years later with a greater urgency for more sophisticated remote environmental observing platforms. For a brief history of the NOAA polar-orbiting and geo-stationary satellites and their launch dates, please visit the Satellite Resources page.

Weather Log - April 1-5th, 2000

Around the globe this month, Cyclone Hudah was downgraded from a cyclone to a tropical storm but still is aiming at the coast of flood-ravaged Mozambique on Wednesday April 5th, 2000. Cyclone Hudah passed over northeastern Madagascar late April 2nd and severely affected the city of Antalaha. Damage to houses, schools, phone service, and other infrastructure was reportedly widespread across the northern section of the country, where it left 27 people dead and 100,000 homeless. The storm fed off ocean waters as it headed toward northern Mozambique, an area of the impoverished African nation that escaped the worst of this year's devastating flooding. Hudah is the third cyclone in a month to target Mozambique and Madagascar. It was expected to bring heavy rains and winds of up to 85 mph (130 kmh), the South African Weather Bureau in Pretoria said Tuesday (4th) evening.

Elsewhere, Cyclone Tessi affected parts of northern Queensland on April 1-2, 2000. In particular, Townsville experienced a landslide that caused damage to homes and other structures. 35,000 people in Queensland have been left without power as a result of the storm, and several roads around Townsville were also closed. Tropical cyclone Vaughan headed westward across the Coral Sea toward the northern tip of Australia's Cape York peninsula early in the month.

Moisture from the Gulf of Mexico combined with a slow moving storm system to bring heavy rains to parts of the southeastern U.S. Heavy rains fell from Louisiana and Arkansas eastward across Alabama, Mississippi, and Tennessee, into parts of Georgia and the Carolinas. This area has been suffering from below normal precipitation and the rainfall was quite beneficial. Rainfall totals of 3-8 inches were common in many places between April 1-6th, 2000. A table of rainfall amounts is available here.

Weather Log - April 6-10th, 2000

Flooding due to heavy rains over the late winter and early spring have hit Hungary for the second year in a row. The Hungarian government declared parts of eastern Hungary a disaster area on the 9th with flooding occurring along the Tisza river. Last year in March of 1999, the combination of heavy rains and melting snows resulted in a series of floods and landslides as well.

A winter-like storm hit parts of the eastern U.S. during April 9-10th, bringing damaging winds along with a dusting to several inches of snow from the Appalachians in North Carolina to over a foot of snow in Albany, New York. The highest total reported so far was over two feet of snow (25 inches) at Eden, Vermont.

The Great Lakes are at the lowest water levels since 1965 and may reach new records this year unless there is an extremely wet spring and summer. The complete report is available at the following NOAA site.

Weather Log - April 11-15th, 2000

Drought continues in Ethiopia this month. A monthly composite map for March 2000 looking at the wetness index across Africa is available here. The wetness index is a satellite derived product

that measures liquid water observed on the surface. These analyses are routinely produced at NCDC and available from Climate of 2000--Monthly Reports.

Heavy rains have hit the country of Ecuador during mid-April. Landslides caused by six days of nearly nonstop rain have killed 15 people, destroyed homes and forced the evacuation of dozens of residents in this Andean capital, authorities said Monday (17th).

NOAA IR Satellite Image of Massive Iceberg calving off the Ross Ice Shelf in Antarctica. The infrared (IR) image was taken on April 15, 2000 at 1534Z when it was very clear. The IR is quite good with a resolution of 1.1 km at center of satellite pass. This pass occurred directly overhead. The "official" measurement is 37km x 295km (170 miles long by 25 miles wide), and has a total area slightly less than than 10,000 square kilometers (6200 square miles). NCDC made a rough estimation of the size to be 25km wide by 250km long by counting the pixels. For reference, the iceberg is about as wide as Long Island, NY and by comparison would extend from New York City eastward past Montauk Point to Martha's Vineyard. See the comparison image.

The iceberg has been given the designation 'B-15' by the National Ice Center. Note the small chunk of ice that had broken off earlier to the left (to the west). The image is oriented approximately south to north. In case anyone has been wondering, "How much fresh water is that? .... Assuming the berg is 6200 sq miles and also assuming that the berg is 1 mile thick (Ross Ice Shelf estimated as thick as 2.5 miles), NCDC researchers came up with a figure of 683 trillion gallons of fresh water! According to the EPA, we consume on average 38 billion gallons of water/day (1990 figure--this does not include agricultural uses, which accounts for 80% of water consumption in US). The water from the berg would supply the U.S. public consumption needs for 49.2 years!!!

Weather Log - April 16-20th, 2000

A powerful storm hit Southern California on the 18th. The storm was accompanied by damaging winds and three-quarter-inch hail. Over 3 inches of rain fell on parts of Southern California. At its peak, the storm flooded city streets and highways from Santa Barbara to Los Angeles and caused traffic collisions at the rate of 75 an hour, including one that involved 25 vehicles. In Santa Clarita, two people died and several others were injured in a five-vehicle pileup.

Cyclone Rosita crossed the sparsely populated northwest coast of Australia early Thursday (20th). Rosita was the strongest storm to approach Australia since Cyclone John, which hit last December. John was most powerful cyclone ever to hit Australia. Rosita weakened as she moved inland along the northwest coast of Western Australia, and did bring some heavy rains, coastal beach erosion, and high winds to the region.

Weather Log - April 21-25th, 2000

One location in Madagascar received over 55 inches of rainfall during February through March.

The NOAA colorized visible satellite image taken on April 24, 2000 shows a huge smoke plume accumulated in an inversion just NW of Yucatan peninsula. The plume probably obscured the

sun completely! A faint plume also appears to extend into Florida ahead of the cold front in the U.S.

Weather Log - April 26-30th, 2000

Hot and dry conditions have spread from parts of the Middle East across the Indian subcontinent with drought conditions across parts of Pakistan, Afghanistan, Iran and India. Media reports indicate that a heat wave is adversely affecting the many made homeless by last year's October cyclone in India. The lack of shelter and poor quality of temporary housing has reportedly made it difficult for people to escape the heat. Seven deaths have been reported in the region, and local media stated that farm labor had been particularly hard hit by the recent heat wave. Drought conditions, or prolonged periods of dryness leading to crop failure, exist in 11 of India's 25 states affecting 80 million people, mostly in the northern half of India, the national government said in a status report published Thursday. It warned that food grain production will drop by up to 30 percent, and oil seed crops will be cut in half in some of the worst hit areas.

The climate across parts of this region is driven by the great wind system known as the Asiatic monsoon. A monsoon is defined as a seasonal shift in wind direction, being derived from the Arabic word "mausim", meaning season. The word itself does not mean heavy rain, although the misnomer is not baseless. In a true monsoon climate, seasonal wind shifts typically cause a drastic change in the general precipitation and temperature patterns The monsoon typically reverses direction at certain times of the year. In India, the coolest driest time of the year is from December to February when light northerly winds bring clear skies and little rain. From March through May, the climate becomes hotter and hotter and the drought continues. Average daytime maximum temperatures in May across the northern plains (Delhi) average 105 F , across the Deccan Plateau (Hyderbad) 104 F and central coastal areas (Calcutta) 96F with little rainfall. The rains come only with the wind turns around to the southwest and mositure from the south arrives. On average, the arrivals of the rains - 'the burst of the monsoon' comes to the south of India during late May or early June. It will reach the north about six weeks later. Some years, the rains will be torrential; other years light or spotty; in this case, the monsoon will be said to have "failed". The failure or delay of the monsoon in terms of agriculture can be disasterous.

Australia is contending with a locust plague this month. The typically arid Outback was deluged with heavy rains during the last several months. See earlier Climate Watch - February 2000 . These wet conditions formed the perfect breeding ground for swarms of locusts. The ravenous insects are now threatening one of the country's richest farming lands.

Seasonal Atlantic Hurricane Forecast- 2000

Here is the latest update to the seasonal hurricane forecast issued by Dr. Gray, a professor of meteorology at Colorado State University in Fort Collins. In 1999, Dr. Gray and his team predicted 14 named tropical storms, nine of which would become hurricanes, and four of which would be classified as major storms. A major storm is classified as a category three on the Saffir/Simpson scale and have sustained winds greater than 110 miles per hour. In 1999 there were 12 named storms, eight of which became hurricanes, with five of them major. For 2000, Gray has predicted 11 named storms including seven hurricanes, three of them major.

Other global highlights for the month can be found at NOAA/OGP Special Global Summary for April 2000.

Note: Cyclone satellite images courtesy of NOAA OSEI Satellite Images.

Selected U.S. City and State Extremes

The Selected U.S. City and State Extremes provides a list of new records that were set across the U.S. during April 2000.

Additional Resources

NCDC Climatic Extremes and Weather Events
NNDC Climate Data Online
Additional NOAA OSEI Satellite Images
NCDC Storm Event Database

Citing the Article

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