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NOAA news

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Volcanic Eruption Causes Minimal Pollution

Despite the ash it spat into the atmosphere, Mt. St. Helens was in some ways less a polluter than a coal-fired plant and had less effect on the weather than might have been anticipated.

Scientists with NOAA said ash from the eruption had no effect upon precipitation and had a lower nitrate content than particulates in air samples unaffected by the fallout.

Some types of airborne particles—such as those in pollutants from coal-fired burning

power plants—have been found to increase the number and size of water droplets in clouds. The particles act as seeds around which water vapor condenses or freezes to form precipitation.

A team led by Dr. Rudolf Pueschel of the Air Resources Laboratories measured airborne particles and cloud droplets upwind and downwind of the volcano in April 1980. Downwind, the mass of particles in the air was thousands of times greater, but the ash appeared to

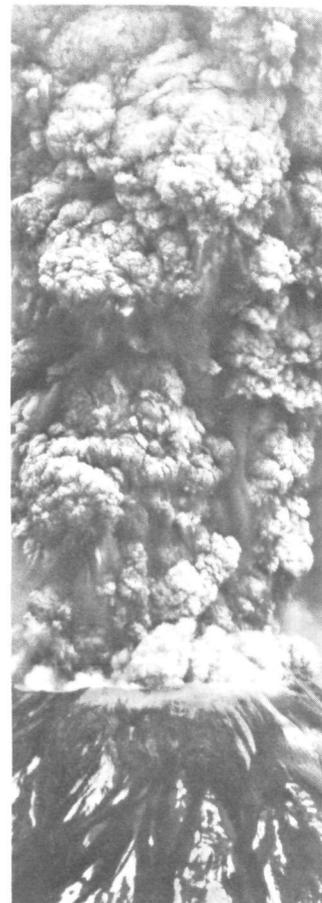
have no effect on the amount of water in clouds or the size of water droplets.

Laboratory tests of ash collected from the ground near Yakima, Wash., after the May 18 eruption produced similar results.

Dr. Russell Schnell simulated conditions in the volcano plume by squirting ash into an airtight plastic tent and allowing it to settle. At intervals, air samples were collected from the tent and particles were tested for their ability to serve as freezing, or ice, nuclei. The ash turned out to be a very poor source of ice nuclei.

The effectiveness of an ice nucleus depends on the temperature at which it induces freezing in water cooled below the freezing point. The warmer the temperature, the more active the nucleus.

In the ash samples, very few nuclei were active at temperatures above 10 degrees Fahrenheit. Even when the ash in the tent was three times thicker than a strong dust storm, more ice nuclei were present than if there had been no ash at all.



Electrical Snag Delays Launch

The scheduled March 19 launch of GOES-E was postponed until at least March 31, and probably beyond that date, as the NOAA NEWS was going to press.

A problem in the electrical circuitry of the VAS instrument was discovered in routine pre-flight testing at Kennedy Space Center, requiring removal of the instrument from the satellite

and its return to Santa Barbara, Calif., for study.

The National Aeronautics and Space Administration will launch the GOES-E satellite for NOAA from the Kennedy Space Center, Fla. Once in orbit at 85 degrees west longitude and an altitude of 22,240 miles, the satellite will be designated GOES-5. Ultimately, it will replace an older GOES-type satellite at 75 degrees west.

NOAA Invention Expected To Trim Sea Turtle Mortalities 90 Percent

A device invented by NOAA will allow sea turtles to escape unharmed from shrimp nets without any appreciable loss of shrimp.

NOAA estimates that more

than 2,000 sea turtles washed up along the East Coast last year. All were on the endangered or threatened species list.

Some turtles are acciden-

tally caught by shrimp vessels during certain times of the year. NMFS, the industry, and the conservation community have been working for several years towards reducing turtle mortalities.

"The device is a major step in the conservation of sea turtles," said Terry L. Leitzell, assistant administrator for fisheries. "Tests conducted by NMFS show that almost 90 percent of the turtles caught in the shrimp net escape when the device is used."

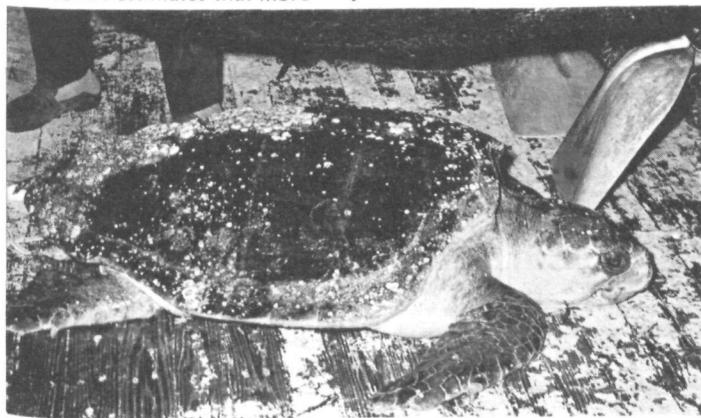
The device is installed in the throat of the shrimp net. As the sea turtle enters, it is deflected downward by bars which prevent it from entering the back end of the net. The vertical bars are angled to

the rear and downward, forcing the turtle to settle on a trap door that opens under its weight and releases it through the bottom of the net. The device is expected to cost about \$200 installed.

A fisheries service laboratory in Mississippi developed the device over a three-year period, testing it on shrimp vessels off South Carolina, Georgia, and Florida.

The device also can be modified to allow fishermen more selectivity in the size and species of the fish they catch.

The NMFS is collecting information on the construction, handling, and use of the device for distribution to the shrimp industry.



Trapped—A turtle caught in a shrimper's net off Fernandina Beach, Fla.

LETTER FROM THE LABS

By Richard Newell

As The World Turns—A NASA visiting-scientist recently discovered a cycle in the Earth's rotation rate that parallels the 11-year sunspot cycle, and he points to the work of NOAA visiting-scientist Gregory D. Nastrom for a possible explanation.

Nastrom, before coming to NOAA's Aeronomy Laboratory, helped to document a strong 11-year cycle in the jetstream winds of the northern hemisphere. This information, together with the knowledge that year-to-year changes in the Earth's rotation rate are caused by changes in atmospheric winds, led geophysicist Robert G. Currie to suggest that this 11-year fluctuation in our length of day (amounting to less than a thousandth of a second, but involving tremendous rotational forces) is wind-powered and sun-induced.

This is just one of many recent findings connecting solar variations with changes in atmospheric circulation. Such weather and climate changes appear to occur from the Earth's surface to

the top of the weather layer, on time scales ranging from hours to centuries. They involve solar wind streams and Little Ice Ages, solar flares and large-scale pressure changes, and much more.

Wired From Space—There is reason to believe that many important sun-weather relationships are electrically powered, by way of the global electrical circuit and its thunderstorms (see NOAA News, January 26). At the upper end of this suspected cause-effect chain are the high-energy solar and galactic particles and radiation that are known to electrify the global atmosphere. At the "business" end is the transfer of energy, now being documented by NOAA researchers, from thunderstorms to the large-scale circulation (NOAA News, March 2).

It appears that some thunderstorm systems can spring up and work dramatic changes in high-altitude wind patterns within just a few hours. This discovery may help to explain reports by other investigators that both thunder-

storms outbreaks and hemispheric circulation changes follow increased solar activity in a matter of hours. These findings strain the credulity of many scientists, but if they prove out, this would strengthen the argument for a fast-acting electrical connection between the sun and the weather.

Coming To Terms—How important would such an electrical connection be?—Probably important enough to account for a wide range of recently reported sun-linked weather and climate changes, involving thunderstorms, frontal storms, tropopause heights, upper-wind patterns, storm tracks, and regional drought and glaciation. This would mean that a new set of terms would have to be introduced into our weather and climate equations.

The possible need for terms describing the earth's magnetic field, which helps control the input of ionizing particles from the sun and outer space, will be explored in a later column.

Satellites Help Spot Tornadoes

Research into ways to integrate data from satellites and other sources is helping weather forecasters improve their ability to determine quickly where thunderstorm clouds, and perhaps tornadoes, may occur.

Field offices of NESS already are using the new technology to help NWS forecasters determine within hours when conditions are right for potentially dangerous storms.

Jim Purdom, a meteorologist with the satellite service's applications laboratory, is attempting to create methods to help forecasters use satellite imagery to understand why thunderstorms develop as they do. Although the evolution of a thunderstorm often appears random when viewed by radar, it frequently proves well organized when seen on satellite imagery, Purdom said, allowing forecasters to predict certain behavior quite accurately.

Under the right circumstances, he added, a thunderstorm in one location—even after it has dissipated—can affect conditions miles away. It even can be instrumental in creating new thunderstorms which often spawn severe weather.

"The satellite is the finest small-scale weather observing system we have," the NOAA scientist said. "Visible sensors on the satellites allow us to observe clouds as small as one-half mile in size during daytime, while infrared sensors provide observations both day and night with a resolution of four miles.

"Clouds and cloud patterns in a satellite image represent the integrated effect of ongoing dynamic and thermodynamic processes in the atmosphere," he explained. "When that information is combined with more conventional data such as radar, the interactions in the atmosphere that are so vital in the formation and continuance of thunderstorm activity can be better understood."

Purdom said repetitive situations occur frequently. Thunderstorm-induced phenomena later trigger thunderstorm systems miles away, giving rise to tornadoes and severe weather.

EDIS Recommends: Don't Overheat—Humidify

You can feel warmer and save energy and money by humidifying your home. NOAA is offering a guide to humidity with this advice.

It has prepared a table that shows the feeling of warmth obtainable at various combinations of temperatures and humidity.

The table was prepared by EDIS which notes that when cold, dry air puts a chill in the air, many people overheat to compensate.

EDIS, however, recommends that you increase humidity by using humidifiers, vaporizers, steam generators or by simply placing large pans of water around the room.

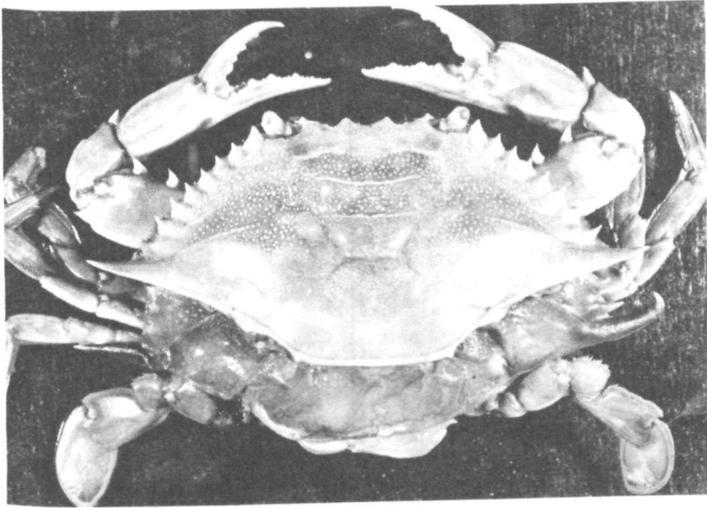
It also suggests purchasing a simple device called a hygrometer to measure the amount of moisture in the air.

The table shows that by setting your thermometer at 68 degrees Fahrenheit, you can make your home feel like 70 degrees by keeping humidity at 90 percent.

RELATIVE HUMIDITY (%)

	0	10	20	30	40	50	60	70	80	90	100
75	68	69	71	72	74	75	76	76	77	78	79
74	66	68	69	71	72	73	74	75	76	77	78
73	65	67	68	70	71	72	73	74	75	76	77
72	64	65	67	68	70	71	72	73	74	75	76
71	63	64	66	67	68	70	71	72	73	74	75
70	63	64	65	66	67	68	69	70	71	72	73
69	62	63	64	65	66	67	68	69	70	71	72
68	61	62	63	64	65	66	67	68	69	70	71
67	60	61	62	63	64	65	66	67	68	68	69
66	59	60	61	62	63	64	65	66	67	67	68
65	59	60	61	61	62	63	64	65	65	66	67
64	58	59	60	60	61	62	63	64	64	65	66
63	57	58	59	59	60	61	62	62	63	64	64
62	56	57	58	58	59	60	61	61	62	63	63
61	56	57	57	58	59	59	60	60	61	61	62
60	55	56	56	57	58	58	59	59	60	60	61

Apparent Temperature for Values of Room Temperature and Relative Humidity



Molting—A blue crab “backs out” of its shell.

Florida Crabbers Aided

Three marine specialists who spent \$4,750 in Sea Grant funds training Floridians to harvest softshell crabs last year may have launched a \$1 million a year industry.

The trainees' harvest uncovered a virtually untapped market for the delicacies that annually could yield that amount.

Softshell crabs are considered such a luxury they command three times the price of hardshell crabs.

However, the industry was practically non-existent in Florida when three researchers with the Florida State Sea Grant College program launched their training project last year.

Although the state produces 17 million pounds of blue hardshell crab annually, Dr. W.B. Otwell, a seafood technologist, Dr. James C. Cato, a marine economist, and Joseph G. Halusky, a marine advi-

sory agent, knew of only two commercial softshell crab operations.

Otwell said the main reason for the lack of activity was that most Florida crabbers did not know where or how to selectively harvest pre-molt blue crabs, or how to “read” the pre-molt identification signs.

The three researchers now have 20 producers harvesting softshell crabs. Otwell said half the producers had what could be described as financially successful seasons. He said restaurants and markets bought the entire yield and indicated an interest in purchasing as much as could be supplied.

The Florida State researchers are sharing their findings with researchers in Alabama, Georgia, South Carolina, and Mississippi. The major softshell crab producing states are Virginia, Maryland and Delaware.

NWS: ‘Don’t Lower Tornado Guard’

The public is advised against letting a three-year decline in tornado-related deaths cause it to lower its guard against such storms.

NOAA and the Federal Emergency Management Administration (FEMA) said potentially deadly tornadoes could occur at any time between now and May, their peak month.

Last year's 28 tornado-related deaths were the second lowest annual toll since records have been kept, and marked the third consecutive year such fatalities dropped below the 30-year average of 111. There were 53 and 84 fatalities in 1978 and 1979, respectively.

“It is vital that people not relax their vigilance against these destructive storms,” Richard E. Hallgren, director of NWS said. “If they do, we could witness an unwarranted number of casualties.”

Fred Ostby, director of the National Severe Storms Forecast Center said, “The low tornado death rate last year can be attributed, in part, to the occurrence of only five major killer tornadoes during 1980, compared to about 20 for an average year.”

Ostby noted that “Other contributing factors include the NOAA tornado watch and warning programs, local spotter groups, and the tornado preparedness activities of FEMA, various states, counties, local communities, and the media.”

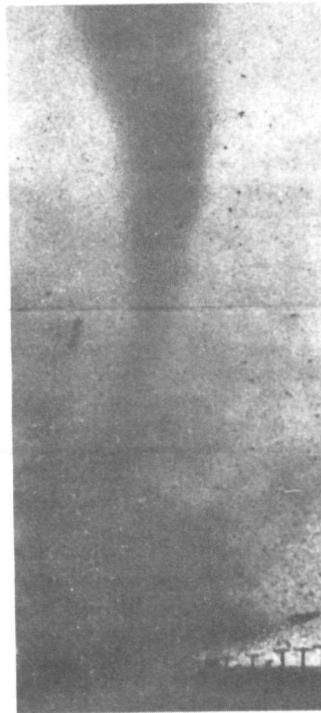
The most deadly outbreak of tornadoes during 1980 occurred at Grand Island, Nebr., on June 3. Seven—the largest number ever to hit one locality during a single storm—struck that city and its suburbs, killing five people and causing an estimated \$300 million in damage.

Major tornadoes also hit Kansas, Iowa, Indiana and Pennsylvania.

One unusual feature of 1980 was a “tornado alley” that ran from the Dakotas southward to Pennsylvania.

Normally, the area from northern Texas through central Oklahoma is called, “tornado alley” because of a high incidence of storms.

Kansas, Missouri and Oklahoma had fewer than normal tornadoes because of drought and excessive heat.



Functions of Three NOAA Office For Civil Rights Divisions Described

The Office for Civil Rights has completed its reorganization but will continue to expand upon existing programs until the end of the year. The office's functions are divided among three divisions: Policy and Planning, Operations, and Program Development and Review.

Policy and Planning and the Operations divisions are jointly producing an internal handbook on standard operating procedures for training EEO personnel and processing complaints. At present, only an informal manual

exists. Bill Wallace, assistant director for the Operations division, said the new handbook detailing “step one to step 99” will be completed within the next couple of months.

Ruby Gross is the assistant director of the Policy and Planning division, a new position. Its primary function is to plan, conduct and review major issues and regulations governing civil rights projects.

The Operations division is working to improve its education and training capabilities by

developing modules—blocks of instructional aids such as slide presentations and video tapes—to train NOAA employees. “It's cheaper and will reach more people” than a civil rights representative, Wallace said.

The Operations division has done the preliminary work on a computerized tracking system for processing discrimination complaints. In the past, Wallace said, “the complaints had to be followed manually.” Wayne Yoshino is NOAA's new EEO officer.

The Program Development and Review division, headed by assistant director Norvell Smith, is revamping its entire affirmative action approach. The division monitors, analyzes and reports on agency affirmative action programs. Wallace said the division hopes to develop personal contacts with the MLC's and MPE's instead of relying on memos over the next several months and improve the investigative and counseling phases of the program.

NOTES ABOUT PEOPLE



The Atlantic Marine Center was awarded a 1980 Certificate of Appreciation for a significant contribution to the Norfolk Clean Community System. Attending a city-wide recognition luncheon, **Lt. Thomas Russel** accepted the award on behalf of the Marine Center, and in recognition of his participation. Lt. Russel and a group of students painted the colorful Clean Community logo on a wall of the Marine Center. Active participation in community affairs is encouraged by R. Adm. Richard H. Houlder, director of the Atlantic Marine Center, who personally thanked Lt. Russel for his involvement.

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OBITUARIES

Roland C. Hetherington, former chief electronics technician for the U.S. Coast and Geodetic Survey, now NOS, died Dec. 25 at his home in Honolulu.

Hetherington, 85, a native of Brampton, England, emigrated to the U.S. as a child. He returned to England and joined the British Royal Navy during WWI. He received the British service cross for gallantry while a telegraph operator aboard the *HMS Dutchess of Hamilton*.

He served aboard the NOAA ships, *Pioneer*, *Pathfinder*, and *Lydonia* in the Eastern, Mid-, and Southern Atlantic coastal waters, the Virgin Islands, the Arctic, Tatoosh Island, Wash., Vancouver Island, B.C. and Hawaii. He retired in 1959 after 33 years of in the USC & GS.

* * *

Barrett A. Erickson, 52, died recently in Seattle, Wash., after a long illness. He joined NOAA in 1966 and was the operational manager of the DOMES project examining the environmental effects of deep ocean mining. He devoted much of his career to the measuring and study of the earth's magnetic and gravitational field.

The publication provides information for employees of NOAA, an agency of the U.S. Department of Commerce.

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Students Lauded At Ceremony

NOAA honored twenty-eight outstanding high school students at the second annual Black Heritage Day ceremony sponsored by the Office of Civil Rights.

Edward Ridley, director of the National Oceanographic Data Center presented the students with letters of recognition from Acting Administrator James P. Walsh at the Department of Commerce ceremony.

Five recipients were "hi-skip students", pupils who by-passed their senior year and enrolled in college courses. Commended for their excellence in scientific and general studies were Donna Branch, Michelle Davis and Carol Blackmon of McKinley high school, and Tyra Mallory and Joyce Glover at Roosevelt high school.

Six other students who maintained 4.0 grade point averages also received recognition. They were: Emmanuel Tillman, Coolidge high school, Tonya Gray, Dunbar high school, Elizabeth Teare, Wilson high school, and Herman Robinson, Lisa Thompson and Valerie Adgebite, Woodson high school.

Eighteen students from Anacostia, Ballou, Cardoza, Coolidge, Dunbar, Eastern, McKinley, Wilson, and Woodson high schools received letters of recognition for grade averages ranging from 3.6 to 3.9.

Arthur Fletcher, executive director of Progress, Inc., was keynote speaker. Acting Administrator Walsh delivered the welcoming address. Special guests were Thaddeus Garrett Jr., assistant to the vice president of the United States for domestic policies, and ambassadors from Nigeria, Kenya, the Ivory Coast, Trinidad, Brazil and Zimbabwe.

PERSONNEL PERSPECTIVE

Annual leave for vacations should have been scheduled by March 1. All employees are entitled to annual leave but the time and the amount of leave are subject to the discretion of the supervisor. Supervisors should insure the excess annual leave is not forfeited unintentionally at the end of the leave year.

Scheduling should include any leave restored from previous years. Remember—there is a two-year limit to restored leave. Generally, any leave restored in 1979 must be used by the end of the 1981 leave year or be forfeited.

Although there is a 240-hour leave ceiling for carry-over into the next leave year, employees leaving the service can receive a lump sum payment for all leave accrued at the time of separation. Leave ceilings do not apply to members of the senior executive service.

More detailed information may be found in Chapter 12 of the NOAA Personnel Handbook.

Collette Appointed Society President

Dr. Bruce B. Collette, an ichthyologist with NMFS' National Systematics Laboratory, assumed the office of president of the American Society of Ichthyologists and Herpetologists after serving the previous year as president-elect. The Society, with more than 2500 members, is devoted to the scientific study of the biology of cold-blooded vertebrates—fishes, amphibians, and reptiles. In addition to publishing the internationally respected quarterly journal *Copeia*, the Society also holds an annual meeting for the presentation of scientific papers.

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