NOAA Report

May 29, 1990

COMING UP

3rd Annual Conference on Federal Quality and Productivity Improvement in Washington, D.C., May 30.

Improved Weather Reconnaissance System Program Council meeting in Rockville, Md., May 31.

WMO/UNEP Bureaus meeting and 42nd Session of the World Meteorological Organization's Executive Council in Geneva, Switzerland, June 2-23.

Coastal Zone 91 Conference Planning meeting in Long Beach, Calif., June 6.

Joint Meeting of the National Research Council Committees for NWS Modernization and Meteorological Analysis/Prediction Research in Washington, D.C., June 12-13.

NOAA Readies For Hurricane Season:--Dr. Robert Sheets, Director of NOAA's National Hurricane Center, and Grant Peterson, Associate Director of the Federal Emergency Management Agency, are preparing to meet the press at NHC in Coral Gables, Fla., to open the 1990 hurricane season on May 31. The two then will fly to Houston, Tex., in a NOAA WP-3D research aircraft to meet the media and public officials again on June 1. Press will be invited to tour the hurricane-hunting NOAA aircraft in both cities.

Sheets and Peterson will urge coastal dwellers and visitors to be ready to protect themselves should a hurricane threaten. Most have never experienced a direct strike by such a storm, they say, and a lack of caution could be fatal.

A busy NOAA WP-D3 aircraft was involved in another safety campaign last week as it hopped from city to city along the Gulf Coast last week plugging hurricane preparedness. With barely time for its paint to dry after a refurbishing, one of NOAA's "Orion" aircraft, N42RF, from the Aircraft Operations Center in Miami departed May 20 for Brownsville, Tex., and the start of a whirlwind 10-city tour as part of the Gulf Coast Hurricane Awareness Week. The aircraft, which returned from the Naval Air Rework Facility in Jacksonville, Fla., fresh from a complete airframe overhaul only the week before, was reinstrumented by NOAA personnel in record

time for the trip. The WP-3D was on public display in two cities a day from May 21-25 as one of the highlights of the program to bring a better understanding of the destructive nature of hurricanes to Gulf Coast residents.

The NOAA aircraft stopped at Victoria, Brownsville, Beaumont, and Corpus Christi, Tex.; New Orleans, La.; Mobile, Ala.; Gulfport, Miss.; and Pensacola, St. Petersburg, and Fort Meyers, Fla.

NOAA Uses CFC's In Circulation Studies:--NOAA scientists are making use of existing dissolved chlorofluorocarbons (CFC's) in the oceans to gain knowledge about the interactions between the oceans and atmosphere which affect global warming.

"The release of CFC's into the environment during the past 40 years has, inadvertently, provided oceanographers with a tool to study the rates by which compounds can be transferred from surface water into the deep ocean," Dr. John Bullister of NOAA's Pacific Marine Environmental Laboratory in Seattle, Wash., explained. "We are using this signal to study ocean circulation processes on a global scale."

Though these studies of long-range deep ocean circulation, NOAA scientists gain insight into the oceans' ability to absorb and process elements such as carbon dioxide from the atmosphere, an important factor in global warming. This circulation takes place on a time scale of many centuries, exchanging the ocean warm surface layers with the cold deep regions a mile or more down.

The harmful effects of CFC's, such as CFC-11 and CFC-12, in the atmosphere are well known. These industrially-produced compounds attack the earth's protective ozone shield, which in the atmosphere contributes to the problem. But some of the very characteristics that make CFC's undesirable additions to the atmosphere also make them useful, if only accidentally, as tracers in the oceans.

NOAA pioneered the practical use of CFC's as tracers to study long-term deep ocean circulation. NOAA scientists use them to understand better water mass formation and thermocline ventilation, which are critical processes in determining the moderating roles of the oceans in delaying and damping the global warming predicted for coming decades.

CFC's have no natural sources, and their histories of release to the atmosphere are reasonably well known. Since CFC levels in the atmosphere have risen continuously since the 1930's, measurements of dissolved CFC concentrations can be used to help determine the date at which sea water at a particular depth was last in contact with the atmosphere at the sea surface. This, in turn, provides knowledge about the uptake of gases by the oceans, and of rates by which surface water is mixed into the deep ocean.

Bullister, who recently joined NOAA at the Seattle laboratory, just returned from a 5,000 mile cruise of the remote Pacific for NOAA's Climate and Global Change Program. He hopes to make the CFC tracer program, already perhaps the most ambitious in the world, even more potent.

Current projects include participation in the World Ocean Circulation Experiment, the largest coordinated international oceanographic experiment ever attempted; development of CFC-113 as an additional tracer; and, a long-term storage technique that would greatly expand the scope of cost-effective CFC tracer studies through cooperative "ship-of-opportunity" capability.

Rural Ozone Study Planned:--NOAA and university scientists will begin a six-week study in Alabama in June to confirm how chemicals from natural sources combine with man-made chemicals to form damaging surface-level ozone in rural areas.

Ozone in the lower atmosphere is hazardous to human health, can damage crops and retard forest growth, and is a major component of smog, according to Dr. Fred Fehsenfeld of NOAA's Aeronomy Laboratory in Boulder, Colo., who heads the study.

Until recently, it was believed that high concentrations of ozone in rural areas had been transported there from cities, and that lowering urban levels would also reduce rural levels. However, studies by NOAA in rural Pennsylvania indicate that a substantial amount of observed ozone was created locally when hydrocarbons emitted from natural sources combined with certain man-made pollutants drifting into the area from nearby cities.

The rural Pennsylvania pollution was composed primarily of man-made nitrogen oxides, believed to be mainly from motor vehicle exhaust; the hydrocarbons were in the form of isoprene, emitted by deciduous trees.

If the same conditions exist for most rural areas, this has profound implications for control strategies, since it indicated that the present strategy for reducing urban ozone may not provide benefits in rural areas.

This year's follow-on study begins June 7. It will focus on the southeast where summertime conditions make the region highly susceptible to high ozone episodes, and where extensive farming and paper-pulp forestry make ozone damage an economic issue.

An array of instruments to collect surface-level chemical and meteorological measurements will be set up in a heavily forested area in west-central Alabama near Demopolis. Additional data will be gathered by instruments on tethered balloons, a research tower, and a research aircraft. A new type of Doppler radar providing

both vertical and horizontal air motion information will be used, as will simulation models.

Participating with scientists from NOAA's Aeronomy, Air Resources, and Wave Propagation Laboratories, will be researchers from the University of Colorado, The National Center for Atmospheric Research, Washington State University, and the Cooperative Institute for Research in Environmental Sciences, sponsored jointly by NOAA and the University of Colorado. Other agencies, including the Environmental Protection Agency, are carrying out companion studies.

The field work will conclude July 20, with findings to be published in the scientific literature in about a year, following data analysis.

NOAA Joins California Ocean Resource Group:--Under Secretary John A. Knauss, Dr. Charles Fullerton, NMFS Southwest Regional Director, and William G. Schramm, Acting Director of the NOAA Center for Ocean Analysis and Prediction, have been appointed members of the California Ocean Resources Management (CORM) Advisory Committee. The group provides expertise, information, and oversight review to the state program which examines current ocean management programs and uses, explores ways to improve them, and looks for opportunities for cooperative management between Federal and State agencies.

NOAA Has Role In Seabed Mining Information Exchanges:--At a recent meeting to foster international cooperation in deep seabed research, NOAA agreed to serve as an informal clearing house for exchange of information, including notifications of planned research voyages and proposed project and cruises which might involve multinational cooperation. Representatives from the National Ocean Service's Ocean Minerals and Energy Division, along with scientists, industry representatives and other government officials from 10 countries, met in Ottawa, Canada, May 8-9 to discuss increased cooperation and exchanges of scientific information related to the environmental impact of deep seabed mineral development.

NOAA Film Wins Prize:--"Trashing the Oceans," a NOAA film produced by Robert Amdur and directed by Nancy Munro, has been awarded a Diploma of Distinction in the 13th International Scientific Film Festival in Katowicz, Poland.

Save That Date:--Start planning now to attend the 1990 NOAA Awards Luncheon June 22. This year the event is slated for the Army Navy Country Club in Arlington, Va. Tickets are $14. The reservations deadline is June 15.

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National Oceanic and Atmospheric Administration

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