



# noaa week

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## Overgrazing, Decreased Rain in Sub-Sahara Linked

### Satellite Monitors Chlorophyll Concentrations in Great Lakes

Chlorophyll, the substance which makes plants green and is used in deodorants, has the potential for an even greater contribution to mankind.

Dr. Alan E. Strong, Research Oceanographer in the National Environmental Satellite Service's Environmental Sciences Group, reported that for the first time chlorophyll distributions in surface waters have been determined by satellite observation. This, he concluded, could lead to helping pinpoint productive fishing grounds with instruments aboard satellites.

He presented a paper on his observations at the fall meeting of the American Geophysical Union in San Francisco this week.

During the past summer and fall, he was able to identify chlorophyll concentrations in algae in the Great Lakes by using reflected infrared data from the National Aeronautics and Space Administration's LANDSAT satellite. Chlorophyll in the algae reflected solar radiation which was picked up by sensors aboard LANDSAT, Dr. Strong said.

Where living algae exists in water, he said, chlorophyll will be found. More importantly, many kinds of fish tend to congregate in algae-rich waters, feeding on the algae.

If areas of high algae concentration in fresh and salt water can be monitored, and that information made available to commercial fishermen, the benefits are obvious, according to Dr. Strong.

He stressed that at the present time satellite measurements of chlorophyll are only possible where high levels of algae exist in near surface waters.

His research substantiates that of other NOAA scientists who have observed that successful fishing will not generally be

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### Jack D. Bottoms Is Honored by CAP For Satellite Work

Jack D. Bottoms, Manager of the National Environmental Satellite Service's Satellite Field Services Station in San Francisco, Calif., has been honored by the Civil Air Patrol for helping perfect the use of satellites in locating missing aircraft.

The award, by the CAP's California Wing, was made last week in Denver, Colo., at the annual conference of the National Association of SAR (Search and Rescue) Coordinators.

Lt. Col James D. Bigelow, Director of Operations for the California Wing, CAP, said Mr. Bottoms was instrumental in developing a method of using satellite weather pictures to assist CAP search and rescue missions in determining productive areas in which to concentrate searches for missing light planes.

The CAP uses satellite photographs of an area to determine local weather conditions both at the time a plane was reported missing and during the search itself.

Livestock grazing in areas of marginal rainfall, like the land south of the Sahara Desert, may be eating the region's rainfall along with its vegetation, according to a researcher with the Environmental Research Laboratories.

This new hypothesis holds that vegetation, not soil, is a vital source of ice nuclei, the microscopic solids on which ice freezes to make rain in cumulus clouds—in effect, nature's cloud-seeding agents.

According to Dr. Russell C. Schnell, a National Research Council Research Associate in ERL's Atmospheric Physics and Chemistry Laboratory, this could mean that overgrazing, rather than delicate adjustments in the global weather machine, produce catastrophes like the recent drought in Africa's Sahelian nations.

His drought scenario begins with massive overgrazing that devours the sources of organic ice nuclei, so that fewer and fewer nuclei are released into the atmosphere, and the area's clouds—without this natural seeding—become less efficient producers of rain.

As rainfall diminishes, so does plant life, Dr. Schnell theorizes, and the overgrazing animals and the humans they support enter a

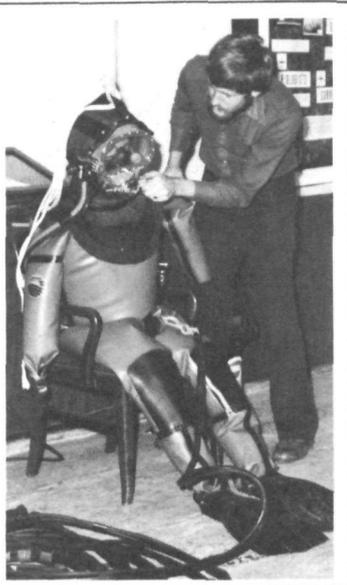
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### Save the Date

Jules Bergman, science editor of the American Broadcasting Company, will be guest speaker at the Thursday, Dec. 18 meeting of the American Oceanic Organization.

The event will be held at 11:45 a.m. in Room B339, Rayburn House Office Building.

AT THE OPEN HOUSE IN CELEBRATION OF NOAA'S FIFTH ANNIVERSARY held by the National Marine Fisheries Service Middle Atlantic Coastal Fisheries Center Sandy Hook Laboratory in Highlands, N.J., Andrew Draxler, Chemist and Assistant Dive Officer, displayed a Viking dry suit and Kirby-Morgan Helmet, surface-supplied diving gear, rig, and equipment used in contaminated waters. More than 1,000 people from the New York City and northern New Jersey area viewed displays and marine-oriented photography concerned with marine fisheries biology, resource assessment and environmental studies. Lectures conducted throughout the day explained the Lab's ongoing research activities as well as work being done by the NMFS Environmental Assessment Division and the National Ocean Survey.



## Kirschner, Petersen Appointed To NWS Headquarters Positions

Burton H. Kirschner has been named Chief of the Resources Management Staff in the Office of the Director of the National Weather Service in Silver Spring, Md. Since 1973 he has been Executive Assistant to the NWS Associate Director for Meteorology and Oceanography.

Mr. Kirschner served as weather officer in the Air Weather Service, USAF, from 1953-57, and began his NWS career in 1960 as a Forecaster in the Columbus, Ohio, Weather Service Office. In 1962, he transferred to the WSFO at Washington National Airport, as a Forecaster, and then served four years as Principal Analyst in the Forecast Division at the National Meteorological Center in Suitland. From

*(Continued on page 4)*



Mr. Kirschner Mr. Petersen

Gerald A. Petersen is the new Chief of the Meteorological Services Division in the National Weather Service Office of Meteorology and Oceanography in Silver Spring, Md. For the past two

*(Continued on page 3)*

# personnel perspective

## Current Vacancies in NOAA

To insure that NOAA employees are aware of job possibilities throughout the agency, a list of current NOAA-wide vacancies is published below. Employees interested in any of the listed vacancies

should contact their servicing personnel office for information where to apply.

Number	Position Title	Grade	MLC	Location	Issue Date	Closing Date
278-76	Supv. Research Chemist	GS-13	NMFS	Seattle, Wash.	12/5/75	12/19/75
279-76	Computer Specialist	GS-13	ERL	Boulder, Colo.	12/5/75	12/19/75
280-76	Meteorologist	GS-12	NWS	Silver Spring, Md.	12/5/75	12/19/75
276-76 (Amendment)	Technical Operations Asst.	GS-13	NOS	Rockville, Md.	11/28/75	12/20/75
281-76	Electronics Tech.	GS-11	NWS	Sterling, Va.	12/8/75	12/22/75
283-76	Meteorological Tech.	GS-8	NWS	Johnston Island, Hawaii	12/8/75	12/22/75
284-76	Supv. Meteorologist	GS-15	NWS	Memphis, Tenn.	12/8/75	12/22/75
277-76	Chief, Meteorological and Hydrological Services	GS-16	HDQS	Rockville, Md.	12/4/75	12/26/75
282-76	Supv. Fishery Biologist	GS-15	NMFS	Washington, D.C.	12/8/75	12/30/75
293-76	General Physical Scientist	GS-15	NOS	Rockville, Md.	12/11/75	1/3/76
272-76 (Amendment)	Research Meteorologist	GS-13	NWS	Kansas City, Mo.	11/24/75	1/9/76

## Summer Employment Examination

Announcement Number 414, "Summer Jobs," has been issued by the Civil Service Commission. The Commission is currently in the process of distributing the announcement and copies should be available soon at all Civil Service Commission Area Offices, Federal Personnel Offices, Federal Job Information Centers, and many college placement offices.

Opportunities for summer jobs are very limited. There are many more applicants than there are positions available. For example, last summer in the Washington, D.C. area, only one eligible in four obtained Federal employment and 70 percent of those who were employed were qualified typists. Considering current Government-wide budget and hiring restrictions, it appears probable employment opportunities will again be limited this coming summer. Therefore, when advising anyone to apply for summer work with the Federal government, they should be cautioned not to rely solely on this examination to find employment for the summer. The following eligibles should have a fair to good chance of receiving consideration for employment: (1) Typists (2) Stenographers (3) Statistics and Computer Science Majors (4) Accounting Majors (5) Engineering Majors.

Applicants who are not in one of these groups have a relatively poor chance of being considered for summer employment.

Written tests for summer employment have been scheduled as follows for the Washington, D.C. metropolitan area ONLY:

Applications Received by:

- December 12, 1975
- January 16, 1976

Test will be Scheduled for:

- January 10, 1976
- February 21, 1976

Applications postmarked after January 16, 1976, will not be accepted. For test information in other parts of the country, applicants should contact the Federal Job Information Center servicing the location where they wish to take the written test. A list of Area Offices and their test points is included in the Announcement No. 414.

Unless they wish to improve their score, persons who qualified for summer employment in 1975 based on the written test, or updated their previous year's written test eligibility are not required to retake the test to be considered for summer jobs in 1976. To qualify on previous written test eligibility, applications must be filed by February 27, 1976.

**SPECIAL NOTE:** Applicants may no longer be considered for summer employment on high grade point average. If they qualified for summer employment in 1975 based on grade average, they may NOT renew this eligibility. **APPLICANTS MUST PASS THE SUMMER EMPLOYMENT WRITTEN TEST TO QUALIFY FOR GROUP I JOBS IN 1976.**

## Graduation Ceremony Held

Friday, October 10, 1975, was graduation day for members of the Administrative Trainee and Administrative Fellowship Programs. Guest speaker at the ceremony was Ms. Evelyn Gray, Federal Women's Program Coordinator, Department of Commerce. Ms. Gray congratulated the graduates and commended NOAA for its dedication to Equal Employment Opportunity through continued support of the

NOAA Upward Mobility Training Programs.

Carol Ann Hall, Administrative Fellowship Program graduate, not pictured, will be assigned to the National Ocean Survey.

Norman Fitz has been assigned to the Office of Management and Computer Systems



T.P. Gleiter, Assistant Administrator for Administration; Alice Hinson, Personnel; Administrative Trainees Group X - Mildred Mattos, Ila Ruth Best, Paulette Quinn, Linda St. Peter, and Stephen Moore.



Norman Fitz, Administrative Fellow.



Evelyn Gray, Federal Women's Program Coordinator, DOC.

## Recent Congressional Activity Of Interest to NOAA Personnel

On October 31, a bill was introduced in the House to eliminate the President's authority to submit to Congress alternative comparability pay plans for Federal employees. A number of Congressmen have indicated the bill is likely to die in the House because of possible Administration opposition.

The House on November 17 enthusiastically approved a bill that would rewrite major provisions of a 1974 law designed to help consumers hold down the settlement charges connected with buying or selling a home. Real estate industry lenders and most consumer groups contended the 1974 law created unnecessary paperwork, added to costs of making a loan, and delayed moving dates. The new law strikes down a 12-day disclosure period, but makes it mandatory for lenders to give home buyers, when applying for a mortgage loan, a booklet that would include a range of likely settlement charges and describe common settlement services.

It is possible the President will decide to declare December 26 as a bonus vacation day, making possible a four-day Christmas weekend. An announcement on the subject is unlikely before mid-December. An extra day off for Christmas or New Years has been granted seven times since 1952. It appears unlikely the President would declare a bonus day of January 2, 1976, if he declares one for December 26, 1975.

Early in November the House passed a bill for the proposed consumer protection agency Congress has been debating for more than five years—the first time both chambers had approved it in one year. However, the bill passed 208-199, far short of the two-thirds needed to override a Presidential veto. Congressmen reported heavy constituent pressure against the bill, primarily by business groups. Consumer groups back the bill, but feel the

President will veto it if it comes out of conference and reaches his desk. The President has announced his opposition to the bill.

The House early in November passed a bill that would revive the position of the Presidential science advisor that former President Nixon abolished in 1973. On November 12, President Ford announced the establishment of two new advisory groups concerned with science and technology. One, concerned with "Contributions of Technology to Economic Strength," will be chaired by Dr. Simon Ramo, of TRW, Inc., and the other, which will be primarily concerned with "Anticipated Advances in Science and Technology," will be chaired by Dr. William O. Baker, of Bell Laboratories.

Early in November the House voted 400-0 to liberalize provisions relating to payment of disability and death pension and dependency and indemnity compensation and to increase income limitations for veterans and their survivors. This bill mainly affects retired veterans who are drawing compensation from disabilities and drawing less than \$4,500 annually from all other sources.

## NWS Fruit Frost Services Expanded

Hazen H. Bedke, Director of the National Weather Service Western Region, recently announced expansion of Fruit Frost services in California.

The newly organized district serves agricultural interests in the area of Santa Maria, Calif., where annual production of frost sensitive crops approaches 1/4 billion dollars.

The Santa Maria Agricultural Services District will be operated by Wilbur Shigahara, Agricultural Forecaster WSO/Ag, Riverside, from early November through middle May. He conducts his operation from the facilities of WSO Santa Maria.

Dissemination of twice-daily forecasts, which began on November 10, is via three local radio stations, KFI Los Angeles, and a grower-sponsored recorded telephone system.

Mr. Bedke said Santa Maria represents the first frost district expansion in the Western Region since 1965.



Mr. Shigahara

## MIT To Review Oil Spill Analyses

A \$60,000 grant for the review of oil spill trajectory analysis techniques has been awarded to the Massachusetts Institute of Technology by the Environmental Data Service's Deepwater Ports Project Office through the Office of Sea Grant. The study, which will be undertaken by the Ralph Parsons Laboratory for Water Resources and Hydrodynamics at MIT, will involve an in-depth evaluation of the different analytic and numerical approaches used to model oil spill movement and behavior, as well as an assessment of state-of-the-art capabilities.

The study will provide NOAA with an improved basis to assess the risk of exposure of a given area of the marine coastal environment to oil spills and, ultimately, to evaluate the risk of damage.

A workshop of experts in the field is tentatively scheduled for April 1976 to provide an outside appraisal of the review.



A GROUP OF SOUTH AMERICAN DIPLOMATS AND SCIENTISTS who recently visited NOAA to discuss management of marine resources is shown with Dr. Robert M. White, NOAA Administrator. From left: Captain Pedro Raul Cabezas Gonzalez (Ecuador); Dr. Eduardo Ferrero Costa (Peru); Dr. Nestor Walter Lanfredi (Argentina); Dr. Vania Luiz Da Costa (Brazil); Dr. White; Ambassador Teodoro Bustamante (Ecuador); Ambassador Antonio Jose Uribe Portocarrero (Colombia); Ascencio Carlos Lara (Argentina); and Herman Massini Ezcurra (Argentina).

## Petersen Appointed (Continued from page 1)

years he has been Director of the Office of Meteorological and Hydrological Services in the Office of NOAA's Associate Administrator for Environmental Monitoring and Prediction.

Previously, he was Chief of the Public Weather Branch at NWS Headquarters.

Mr. Petersen's varied 26-year weather career has included service for the Navy and the Air Force, in addition to 15 years with the NWS. His operational and administrative assignments have involved public, aviation, marine, and hydrologic forecasting; development of field forecast procedures; data processing systems analysis, design, plan-

ning, and program management; and instructing courses in meteorology.

He holds a bachelor of science degree in meteorology from the University of Wisconsin; a Master of Engineering Administration from George Washington University (obtained on a Weather Service scholarship); and has completed all of the course work for a Doctor of Public Administration at George Washington University.

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## LSC Removes Gages

Charles McWee and Joseph Wolny, Lake Survey Center Water Level Branch Technicians, recently removed four seasonal water level gages installed last May for a U.S. Army's Corps of Engineers Coastal Engineering Research Center (CERC) study of water level fluctuations. The gages were located at Little Lake, Mich., on Lake Superior; Pentwater, Mich., on Lake Michigan; Erie, Pa. on Lake Erie; and North Pond, N.Y., on Lake Ontario. The Water Level Branch placed the data on punch cards and sent them, together with the gage rolls and worksheets, to CERC for use in their study.

## noaa week

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NOAA Week reserves the right to make corrections, changes or deletions in submitted copy in conformity with the policies of the paper or the Administration.

Catherine S. Cawley, Editor  
Warren W. Buck, Jr., Art Director

## Texas Awarded \$300,000 Grant

The onshore impacts of offshore oil and gas production will be studied by the State of Texas under a \$300,000 grant from the Office of Coastal Zone Management. The grant is a supplement to the \$620,000 grant made earlier this year to assist the state in continuing its development of a coastal zone management program.

The Texas General Land Office will administer the grant and integrate into the state's coastal management program the planning related to the Outer Continental Shelf. Texas is in the second year of developing a CZM program to preserve coastal ecosystems, and achieve wise coastal land and water use for housing, recreation, industry, transportation, mineral mining, agriculture, and energy production.

The state received an initial grant of \$360,000 in June 1974, and is eligible for a third development grant under terms of the Coastal Zone Management Act of 1972.

Texas has conducted preliminary studies which suggest that continued oil and gas development on the Outer Continental Shelf may have a definite impact upon its coastline, especially the relatively undeveloped southern portions of the coast.

In its grant application, the state indicated it will use the OCS funds to determine the probable effects of offshore production, including the increased need for marine facilities and improved navigation; the location of pipeline corridors; the expansion of storage and refining facilities; the secondary impacts of additional jobs and people; the sudden demand for more social services; and the techniques for mitigating any adverse effects.

## Paul Hess Dies

Paul Hess, former Meteorologist in Charge at the National Weather Service Office in Wilmington, N.C., died on November 14 in Wilmington. He was 96 years old.

He entered the NWS in 1906 at Seattle, Wash., and served in several states before becoming MIC at Wilmington in 1921. He retired in 1949.

He is survived by his wife, Joyce Hobbs Hess, of 202 Brookwood Ave., Wilmington, N.C. 28401.

## Chlorophyll

(Continued from page 1)

found in areas where cold, subsurface waters rise to the surface, but in regions where this upwelling mixes with warmer, surface waters.

Chlorophyll concentrations, and hence algae, he identified were low in upwelling areas, but increased quickly as the colder water mixed with surface waters.

## NOS Holds Hydrographic Survey Processing Conference

The Third Annual National Ocean Survey Hydrographic Survey Processing Conference was held at NOS Headquarters in Rockville, Md., recently. More than 30 NOS personnel attended the Conference, which was sponsored, as in the past two years, by the Marine Data Systems Project (MDSP) of the NOS Director's Staff.

R. Adm. Allen L. Powell, NOS Director, was the keynote speaker. Agenda items included the implementation of new basic hydrographic survey processing procedures and recent developments in automated hydrographic

surveying and survey processing.

Participants included Cdr. Ray Moses, James Lisle, and Dale Westbrook (Conference Chairman) of MDSP; Capt. Robert Munson, Capt. Lavon Posey, Cdr. Melvin Umbach, Lt. Cdr. James Wintermyre, and Charles Ellis of the Office of Marine Surveys and Maps; Robert Delawder, Maxwell Rogers, Raymond Carstens, and Donald Engle of the Marine Chart Division; Carroll Thurlow and James Hubbard of the Oceanographic Division; Samuel Blankenbaker of the Coastal Mapping Division; Cdr. Wayne

Mobley of the Engineering Development Laboratory; Jack Wallace of the Marine Engineering Division; Theodore Kuchciak, Jerry Nahas, Casey Zaranek, John Schmidt, and Ronald Bagalay of the Lake Survey Center, Detroit, Mich.; Lt. Cdr. C. Dale North, Lt. Gregory R. Bass, Lt. (jg) C. Douglas Mason, and William Jonns, of the Atlantic Marine Center, Norfolk, Va.; and Lt. Cdr. Donald E. Nortrup, Lt. Michael E. Wagner, Lt. Cdr. Thomas W. Richards, Lt. Cdr. John Albright, Lt. Cdr. Lloyd K. Thomas, and James Green, of the Pacific Marine Center, Seattle, Wash.



(Seated, from left) Mr. Kuchciak, Mr. Nahas, Cdr. Mobley, Lt. Cdr. North, Mr. Zaranek, and Lt. Cdr. Nortrup; (standing, from left) Mr. Schmidt, Lt. Wagner, Lt. Bass, Lt. Cdr. Richards, Lt. (jg) Mason, Lt. Cdr. Albright, Lt. Cdr. Thomas, Mr. Bagalay, Mr. Green, and Mr. Jonns.

## Overgrazing, Rainfall Linked (Continued from page 1)

period of drought and famine. Then, the animals die or migrate, overgrazing stops, plant life begins slowly to regenerate itself, organic ice nuclei are once more released into the atmosphere, clouds regain their rainmaking efficiency, and the drought ends.

"That is what seems to have happened in Africa," Dr. Schnell says. "The Sahel area there was massively and increasingly overgrazed in the 15 years preceding the recent drought, causing almost total destruction of existing vegetation. When the numbers of grazing animals were reduced, as they were from 1969 to 1972, the vegetation began coming back once again to produce ice nuclei. Rainfall increased in 1974 and 1975, and the area is slowly returning to normal. But the cycle can repeat itself if overgrazing is resumed."

The theory rests on two comparatively recent discoveries by Dr. Schnell and his colleagues in other research organizations:

"First," he explains, "it was discovered that a large proportion of windborne dust is organic—that is, of biological origin—rather than inorganic particles. Even in the deep dust layer over the Sahara itself, one finds significant amounts of organic material." This means, he says, that vegetation plays a crucial role in supplying ice

nuclei to prospective rainclouds. Moreover, the nuclei supplied by vegetation are more efficient precipitation-forming agents than are inorganic materials. The reason for this is they "go active" at warmer temperatures than do inorganic nuclei, causing supercooled water in the atmosphere to freeze at warmer temperatures (or lower altitudes) and so improving the efficiency of the rainmaking process.

"The second pertinent discovery was the detection in satellite photographs of areas with near normal vegetation separated from barren, overgrazed land by nothing more than a fence.

"The best known instance of this," he says, "is the LANDSAT photography of the Ekrofane Ranch in Niger during the devastating drought there. One sees a parched area on one side of the fence where it has been overgrazed, and near normal vegetation on the other."

Dr. Schnell tested his hypothesis in field work in Niger funded by the National Science Foundation through the National Center for Atmospheric Research, which it supports, and by the Rockefeller Foundation.

During August and September of 1974, the latter half of the rainy season, he collected surface samples of leaves, grasses, dusts, and the like. A few weeks later

## Kirschner

(Continued from page 1)

1967-73, he was Program Leader of the Environmental Quality Weather Service Program at NWS Headquarters.

He received a B.S. in Chemistry from City College of New York in 1953, and has completed graduate work in meteorology at the University of New Mexico and the University of Maryland.

These samples were analyzed at the University of Wyoming for their ice nuclei content and the relative efficiency of these nuclei in "persuading" water cooled below freezing (or "supercooled") to turn to ice. Subsequent cloud chamber tests were also run at Colorado State University.

In both types of tests, the organic samples showed ice nucleating properties, confirming, Dr. Schnell believes, that they could be prime movers in the precipitation-forming process of clouds over the Sahel—and suggesting that grazing animals there could literally be eating themselves to death.

Dr. Schnell and Dr. Charles C. Brine of the University of Delaware's College of Marine Studies, reported the African ice nuclei results at this week's fall meeting of the American Geophysical Union in San Francisco.



# **National Oceanic and Atmospheric Administration**

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