

April 15, 1991

*New Report on High Pressure-Hot Water Says:*

## Alaskan Clean-Up Efforts May Have Backfired

The use of hot water under high pressure, among techniques employed to remove oil from Alaska's beaches after the 1989 Exxon Valdez oil spill, may have done more environmental harm than good and should be avoided in the future, according to a NOAA report.

The cleanup, involving thousands of man-hours and millions of dollars' worth of equipment, began shortly after the Exxon Valdez spilled 10.8 million gallons of crude oil into Alaska's Prince William Sound.

### Hot Sea Water Used

Sea water, as hot as 150 degrees F. and pumped from hoses at pressures up to 100 pounds per square inch, was used to wash sticky oil from an

estimated 400 miles of Alaska's shoreline. The oil that washed into water was then collected and pumped into onshore storage tanks.

According to the NOAA study, which compared species diversity and abundance among unoiled, oil-treated, and oil-untreated sites, the high-pressure hot water displaced oil from upper to lower parts of the beach and into tidal pools

where it damaged a wide variety of marine plants and animals.

The study says the hot water in effect sterilized many parts of the beaches, reducing both the number and diversity of marine life, including barnacles, mussels, clams, eelgrass and rockweed.

"Sometimes the best, and ironically the most difficult, thing to do in the face of an ecological disaster is to do nothing," said Dr. Sylvia Earle, NOAA's Chief Scientist.

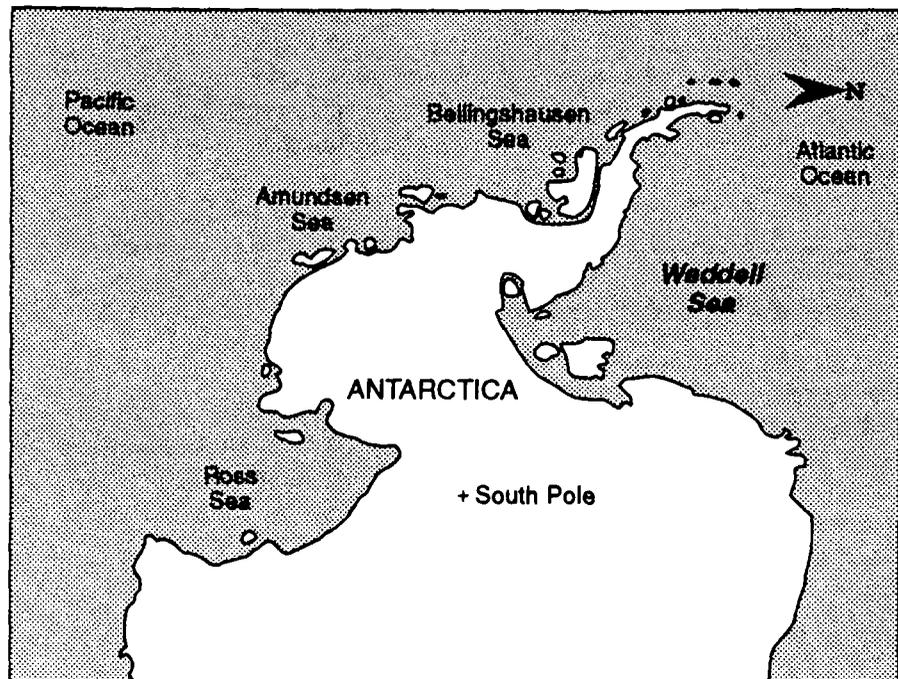
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## Two New Super Icebergs Adrift in Antarctic

Two new super icebergs have been spotted drifting in the Antarctic, the NOAA-Navy Joint Ice Center in Suitland, Md., reported last week.

Relatively speaking, however, they're midgets. Each contains only enough fresh water to run Hoover Dam for 150,000 years and produce more than 900 trillion kilowatts of power.

Named A-30 and A-31, they broke off—or calved—from ice shelves along the margins of the Weddell Sea, south of the Falkland Islands. They are among the smallest under observation: A-30 measures 17



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Two super icebergs in the Weddell Sea off Antarctica are being tracked by the NOAA-Navy Joint Ice Center.

# Methane Lifetime Found Longer Than Believed

Methane, a gas which has been linked to the greenhouse effect, stays in the atmosphere approximately 25 percent longer than originally believed—about 12.5 years instead of about 10 years, two NOAA scientists have reported.

In a paper published this week in *Nature* magazine, researchers A.R. Ravishankara and G. L. Vaghjiani of NOAA's Aeronomy Laboratory in Boulder, Colo., said measurements they have made show that methane's interaction with the hydroxyl radical—a naturally occurring, highly reactive

chemical in the atmosphere which dissipates methane and other compounds—is slower than previously accepted.

## Value to Scientists

The findings are of special value to scientists modeling the impact on the world's climate of greenhouse gases in the atmosphere because

methane, aside from water vapor and carbon dioxide, contributes most to the infrared heating of the atmosphere.

The NOAA results show, also, that methane's contribution to the greenhouse effect is larger than previously thought because of its longer lifetime in the atmosphere, according to the paper's authors.

Major sources of methane are believed to be natural wetlands, rice cultivation, emissions by domestic animals, biomass burning, termite emissions, landfills, coal mining, and industrial venting and leakage.

While atmospheric measurements show the abundance of methane in the lower atmosphere has been increasing yearly at a rate between 0.8 and 1 percent, the total amount, as well as the identities and strengths of the methane sources, are not clearly defined, the researchers noted.

## Slower Methane Reaction

In carefully controlled experiments, the two NOAA scientists determined that the speed of the methane reaction with hydroxyl radical was approximately 25 percent slower than earlier studies had shown.

The slower speed indicates, they reported, that the total methane emissions are about 100 teragrams (100 billion kilograms) per year smaller than previously calculated.

This finding is significant since the strength of every one of the individual sources of methane is thought to be comparable to, or less than, 100 teragrams. ☺

## Valdez Clean-Up May Have Harmed Beaches: Study

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"Certainly, as far as Alaska's shoreline is concerned, the

### Valdez Report: Close-Up

☐ Flora and fauna at beaches receiving little or no high pressure washing with hot water "strongly resembled those at unoled beaches."

☐ Full recovery to pre-spill conditions on rocky shorelines where high pressure-hot water washing reduced mussel and vegetation cover is expected to take several years.

☐ Long-lived, slow-reproducing organisms such as hard-shell clams may take many years to recover from the burial and death of young clams due to exposure to hot water.

☐ **Conclusion:** Plants and animals inhabiting Prince William Sound shorelines showed effects from both oiling and attempts to clean up the oil. The clean-up of oiled areas with high pressure-hot water washing was not as effective as clean-up in oiled areas which received little or no treatment. ☺

environment would have been better off if there had been less aggressive hot-water treatment and we had let nature take its course," Dr. Earle said.

## Beaches Altered

In addition according to the study, the high-pressure treatment, regardless of water temperature, greatly altered the physical aspect of the beaches, flushing finer sands and gravel from upper elevations down the beach slope, often burying the lower beach in several inches of oily sediment.

By contrast, oiled but untreated sand and gravel beaches had richer and more varied marine life, similar in most instances to sites where no oil had come ashore.

## Problems Reduced?

Charles N. Ehler, head of NOAA's Office of Oceanography and Marine Assessment, which tracks oil spills, said that with proper planning and prepositioning of technical equipment, the amount of oil that comes ashore—and therefore problems of cleanup—can be substantially reduced. ☺

## 19th Century Tidal Records Lead to New Data

In 1844, John Tyler was President, the flag had 27 stars, and the predecessor of NOAA's National Ocean Service (NOS) was measuring tides on the Chesapeake Bay.

Those records, found in an archive by NOAA's Physical Oceanography Division in Old Point Comfort, Va., combined with Hampton Roads Tide Basin data, will provide a rare series of tidal measurements which span 147 years.

Throughout the years, the methods of obtaining tidal measurements have not changed that drastically until recently. All data was obtained manually until about 20 years ago. In 1844, a tide observer recorded the times and heights of high and low tides by reading a measuring stick attached to a pier piling.

### First Gauge Installed

In 1883, the self registering tide gauge was perfected. This gauge, the first of its kind, was installed at Old Point Comfort. A float which rose and fell inside a stilling well recorded tide data with a pencil on a continuous scroll of paper. The float, connected by a cable to a drum, moved depending on the changing water level inside the well, and caused the pencil to move across the paper. This information was then manually scaled and processed to produce the finished tidal information.

In 1960, the analog-to-digital recorder was introduced, using the same float-stilling well action but replacing the pencil with a computer-compatible digital record.

Today, the NOS is implementing its Next Generation Water Level Measurement System which uses satellites to

decipher and transmit information to the NOS computers in Rockville, Md. The water levels are determined by an acoustic transducer which are stored on board a microprocessor and relayed by GOES satellite every three hours.

The project underway today looks at all available tidal measurement information from 1844 to the present in order to determine long term global sea level changes. These sea level changes can effect many different aspects of oceanography:

- ports and harbors, which use updated nautical charts and predictions of tides and currents;

- Federal state and private coastal and marine boundaries;
- engineering and construction of piers, bridges, tunnels, water intakes and storm drains, etc.;
- waterway and channel maintenance;
- forecasting adverse weather conditions such as storm surges;
- the Greenhouse effect.

In order to accumulate statistically meaningful data, decades of information is needed to make comparisons and predictions. The 1844 tidal measurements are unique in that not much data was recorded or kept from that time and as a result opens the door to more accurate scientific information. ☺

## Fishing Violator Settles for \$460K

A Seattle-based company has made a nearly half-million dollar settlement with NOAA for taking sablefish prior to the opening of the season and 103 other reported violations.

It was the third time in the past 19 months that the vessels owned by Gulf Mist Inc., have been caught poaching sablefish in Alaskan waters.

The U.S. Coast Guard seized Gulf Mists vessel, the F/V Alaska Mist in June 1990 for the illegal sablefishing and other reporting violations including a previous incident of fishing in closed waters.

The \$460,000 settlement raises the total penalties imposed in fisheries cases in

Alaska to \$4.4 million during the past 12 months. ☺

### Super Icebergs Spotted

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by 10 miles and A-31 measuring 23 by 10 miles.

The largest iceberg being tracked by the NOAA-Navy installation is A-24, which is 52 by 46 miles, or twice the size of Rhode Island.

If they prove like many Antarctic icebergs, A-30 and A-31 will meander aimlessly for thousands of miles over a period of years. An iceberg of similar size of A-24, known as C-2, drifted in the Antarctic for more than 12 years and nearly circumnavigating the continent before it broke up late last year south of the Falkland Islands. ☺

**Commerce Quality Award:** In the next few weeks, the Department will issue a call for nominations for the Secretary's Quality Award. The nominations will be due in the Department on July 1, 1991. The Secretary's Quality Award, modeled after the Baldrige Award, honors organizations within Commerce that, through their commitment to excellence, serve as examples for other Commerce organizations.

NOAA has quality in abundance. Many of NOAA's offices, laboratories, and centers set the world's standards for their areas of expertise. Almost any of these NOAA organizations can win the Secretary's Quality Award if the effort is put forth to craft a good nomination package.

The preparation of a Quality Award nomination requires a good deal of thought and preparation. A tutorial session on preparing nominations for the Secretary's Quality Award will be scheduled soon for those organizations interested. Based on his experience as a Quality Award Examiner, Greg

Withee, Director of the National Oceanographic Data Center, will discuss with participants what the examiners look for, in terms of format and content, in a successful nomination. Managers, at the division level or higher, who are interested or are as yet undecided should attend this session. Those interested in attending should call John Abbott at FTS 377-8453.

## ~~NOAA NOTES~~

**TV, Radio Spots Warn of Weather Hazards:** Warmer weather brings the chance to enjoy the great outdoors but it can also bring two of nature's most violent storms, tornadoes and flash floods. The Office of Public Affairs has distributed four public service announcements and two short documentaries on these two weather hazards to 212 television stations in 37 states who requested them. These life-saving messages explain to viewers what to do and where

to go if a tornado or flash flood strike their areas.

Seventy four of these stations have also requested and will receive this week either one or both of NOAA's full-length documentaries, **Terrible Tuesday**, which describes the effects of one of history's worst twisters that struck Wichita Falls, Texas, and **Awesome Power**, a video which shows the powerful force of flash floods.

**Sanctuary Program Wins Award:** NOAA's National Marine Sanctuary Program has won the National Association of Underwater Instructors (NAUI) Outstanding Contribution to Diving Award. This is the first time in the 20-year history of the award that it has been presented to an agency rather than an individual. The award, which was accepted by NOAA Sanctuary Program Chief Joseph Uravitch in Miami, was given for the programs outstanding performance and service to NAUI and sport diving through support, protection and enrichment of the aquatic environment. ☺

## Coming Events

## April 1991

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
14	15 Coastal Ocean Program workshop, in Washington.	16	17 Satellite Modernization Task Force meeting	18	19	20
21	22	23 Ocean Dumping Ban Act meeting, Narraganset, R.I.	24	25	26	27

# **National Oceanic and Atmospheric Administration**

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