

Kids' KOrner

Airplanes help fight floods

WASHINGTON — Each spring the deadly cycle repeats itself somewhere. It begins with minute crystals of snow transformed into a single drop of water.

The process accelerates. Vast quantities of snow turn to mush. Tranquil streams swell into raging torrents. Rivers overflow their banks.

On the first line of defense are the National Weather Service's 13 River Forecast Centers scattered across the country. Responsible for issuing annual flood forecasts, they need the most accurate, timely information they can get on the volume of water expected from spring snow melt.

Until recently, the only reliable measurements were taken by ground-based workers who often had to slog through waist-high drifts and blinding blizzards to get accurate measurements. This is especially difficult in places such as the Great Plains, where snowfields stretch for hundreds of square miles and often contribute to disastrous spring runoffs.

Now, instruments on a low-flying airplane routinely estimate the water content of snow on the ground in most parts of North Dakota, South Dakota, and Minnesota.

The small aircraft, leased by the Weather Service, flies over designated areas well before the first snowflake appears so it can measure Earth's natural gamma radiation. The plane returns when snow cover is heaviest.

Snow cover decreases or weakens the gamma ray emissions, so, by calculating the difference in readings before and after snowfall, scientists can determine the amount on the ground and its water content.

The instruments on the plane can scan a 1000-foot-wide, 10-mile-long path in about five minutes. "It

would take all day for a ground-based crew of a dozen men to get meaningful data from a similar area," points out Thomas R. Carroll, manger of the Airborne Gamma Radiation Snow Survey Program in Minneapolis.

"Following carefully designated flight lines, we've been able to estimate the water content of a 30,000 square-mile area in just three days."

The system has been so successful that the plane will fly eastward this year to scan potential trouble spots in Indiana, Michigan, Ohio, New York, Vermont, and Maine. Parts of Canada will also be surveyed with special attention given to regions around Lake Superior, which sometimes help spawn spring floods.

But it's usually rain, not snow, that triggers the most deadly of all water disasters — the flash flood. "Large thunderstorms that stall and dump rain hour after hour over the same area are the most common culprits," says Robert A. Clark, director of the National Weather Service's Office of Hydrology.

Appalachia is particularly prone to flash flooding. "It's because so many communities there grew up between the mountains on flood plains," observes Clark.

Help has arrived. The Weather Service's first automatic flood warning system is functioning in two Pennsylvania counties and the region where Kentucky, West Virginia, and Virginia meet, an area of the Central Appalachians containing some of the most vulnerable valleys in the country.

The Integrated Flood Observing and Warnings System will be expanded this year to cover 80 counties. In a typical IFLOWS setup, rain gauges equipped with tiny radio transmitters are positioned on hillsides near a

community. Other automated gauges measure the depth and flow of streams and rivers that could be dangerous.

Signals from the gauges are beamed to a computer that immediately analyzes the data, enabling the Weather Service and local civil defense people to issue warnings and mobilize the community against any threats.

IFLOWS got one of its first serious tests last December when heavy rains threatened areas near Williamsport, Pa.

"We were able to get the word out three to six hours before the first flooding began, allowing civil defense workers and flash flood coordinators to take action and spread the word," recalls Albert S. Kachic, the Weather Service's hydrologist for the Eastern Region. "For a change everyone was evacuated before waters were seeping into living rooms."

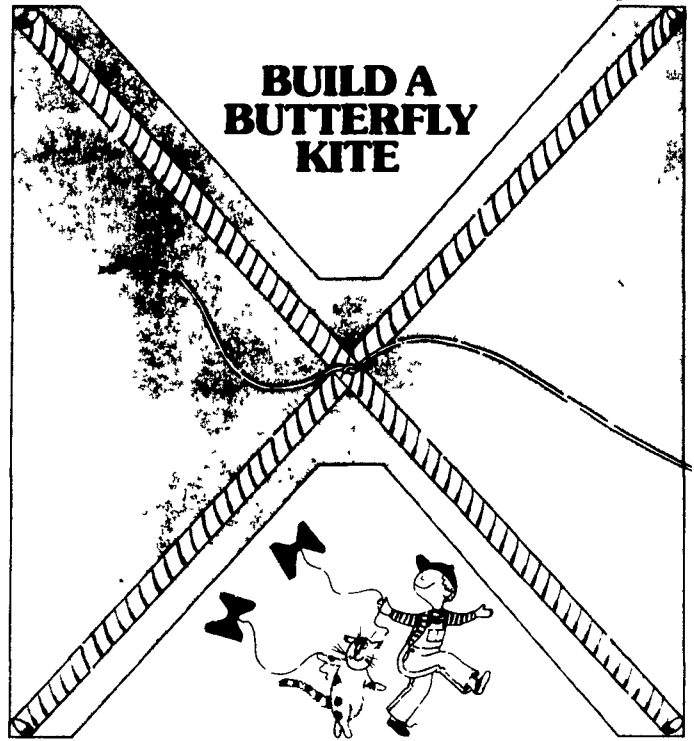
Budget constraints may hinder further expansion of IFLOWS, but other parts of the country could use it too. Last year floods of all kinds claimed more than 200 lives and caused about \$4.5 billion in property damage.

At least half the deaths occurred in automobiles. Explains hydrologist Clark, "Some people misjudge the depth and force of the water, the car suddenly starts to float, and then tips over with them inside."

His advice: "Don't value the car more than your life. When caught in threatening waters, abandon auto."

Johy V. Byrne, administrator of the National Oceanic and Atmospheric Administration, is convinced that flash flood programs such as IFLOWS will help forestall such tragedies.

"Our goal is to provide reliable advance warnings of flash floods from 30 minutes to three hours in



BUILD A BUTTERFLY KITE

On a windy day have fun with this butterfly finger kite

You'll need a sheet of paper the size of the pattern above scissors paints felt tip markers or crayons two feet (60 cm) of string two drinking straws some tape

Using the pattern above trace the butterfly kite onto the paper Then cut it out Color it to look like your favorite butterfly

Next lay the string across the middle of the kite as shown You should have

about four inches (10 cm) of string on one side and about 20 inches (50 cm) on the other Now lay two straws onto the kite to make an X Only the part of the string under the center of the X (where the two straws cross) should be touching the straws Tape the two straws in place Then knot the string around the center of the X

Hold onto the long end of the string and run with your kite It will look like a beautiful fluttering butterfly

advance," he says. "This, combined with effective local action,

could dramatically cut the loss of life and property."

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COLOR THIS!

- | | |
|-------------|---------------|
| 1. BLACK | 6. ORANGE |
| 2. LT. GREY | 7. GREEN |
| 3. YELLOW | 8. LT. BROWN |
| 4. BLUE | 9. LT. BLUE |
| 5. PEACH | 10. LT. GREEN |

THE HOODED SKUNK IS KNOWN FOR ITS WHITE HOOD ON TOP OF THE HEAD, ALSO FOR ITS UNPLEASANT ODOR WHICH IT USES TO PROTECT ITSELF WHEN ATTACKED OR FRIGHTENED. SKUNKS ARE VERY HELPFUL TO FARMERS, BE CAUSE THEY KILL OTHER ANIMALS THAT PREY ON FARM PRODUCTS.

