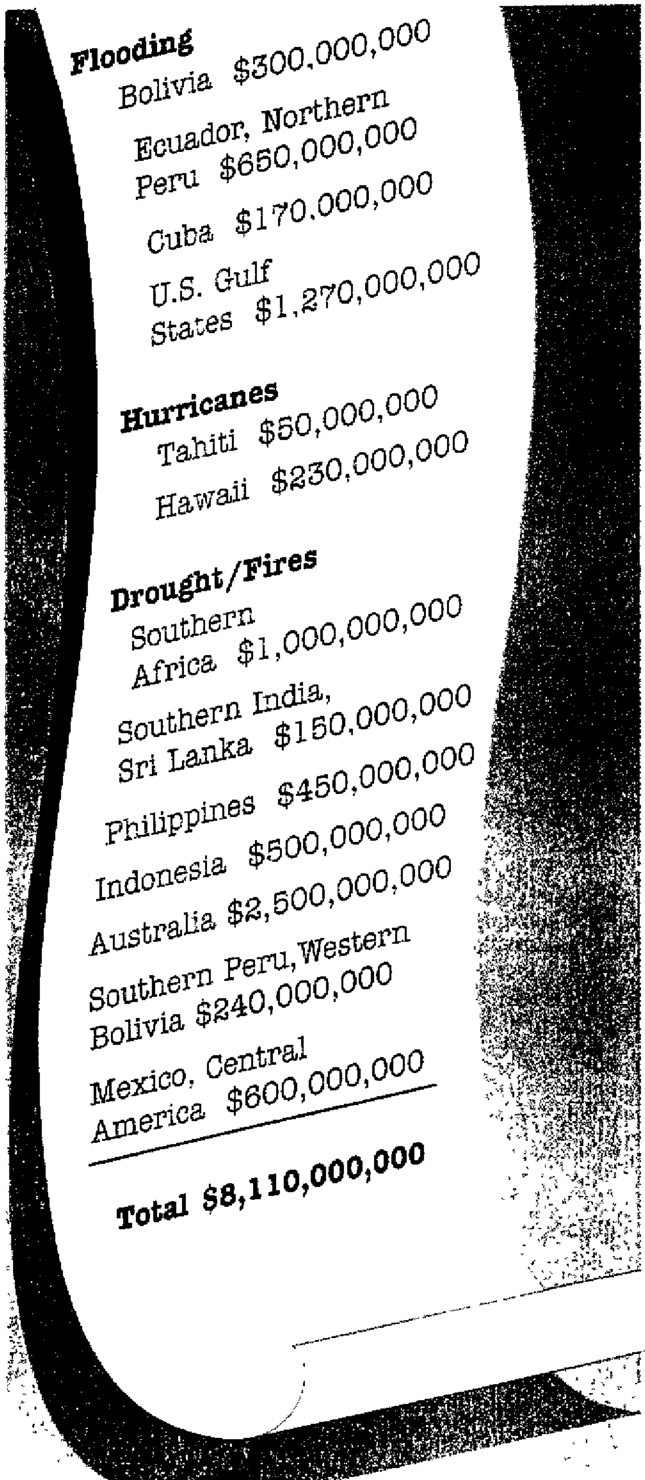

Economic impacts attributed to the 1982–83 El Niño.

by farmers because these years have frequently been marked by drought and crop failures. Such cold years often come on the heels of strong El Niño years. Hence, Peruvians have reason to be concerned, not only about El Niño events, but about both extremes of the El Niño cycle.

Before the flood waters from the record breaking 1982–83 El Niño event had fully receded, farmers in Peru were already beginning to worry that sea-surface temperatures might drop below normal the following year, bringing drought and crop failures. It was at this time that the Peruvian government decided to develop a program to forecast future climate swings.

The first task was to make a forecast for the next rainy season, which was expected to occur in early 1984. Information available in early November 1983 indicated that the climatic conditions in the equatorial Pacific were near normal and were likely to remain so through the rainy season, producing favorable conditions for agriculture. This information was conveyed to numerous organizations and to the Minister of Agriculture, who incorporated it into the planning for the 1983–84 growing season. The forecast proved to be correct, and the harvest was an abundant one.

Since that time, forecasts of the upcoming rainy season have been issued each November based on observations of winds and water temperatures in the tropical Pacific region and the output of numerical prediction models. The forecasts are presented in terms of four possibilities: (1) near normal conditions, (2) a weak El Niño with a slightly wetter than normal growing season, (3) a full blown El Niño with flooding, and (4) cooler than normal waters offshore, with higher than normal chance of drought.

Once the forecast is issued, farmers' representatives and government officials meet to decide on the appropriate combination of crops to sow in order to maximize the overall yield. Rice and cotton, two of the primary crops grown in northern Peru, are highly sensitive to the quantities and timing of rainfall. Rice thrives on wet conditions during the growing season followed by drier conditions during the ripening phase. Cotton, with its deeper root system, can tolerate drier weather. Hence, a forecast of El Niño weather might induce farmers to sow more rice and less cotton than in a year without El Niño.

Looking Ahead

Peru is one of several countries that are already successfully using predictions of El Niño in connection with agricultural planning. Other countries that have taken similar initiatives include Australia, Brazil, Ethiopia, and India. It is not a coincidence that all these countries lie at least partially within the tropics. Tropical countries have the most to gain from successful prediction of El Niño because they experience a disproportionate share of the impacts summarized on pp. 2–3 and, coincidentally, they occupy the part of the world in which the accuracy of climate prediction models is greatest. But for many countries outside the tropics, such as Japan and the United States, more accurate prediction of El Niño will also benefit strategic planning in areas such as agriculture, and the management of water resources and reserves of grain and fuel oil.

Encouraged by the progress of the past decade, scientists and governments in many countries are working together to design and build a global system for (1) observing the tropical oceans, (2) predicting El Niño and other irregular climate rhythms, and (3) making routine climate predictions readily available to those who have need of them for planning purposes, much as weather forecasts are made available to the public today. The ability to anticipate how climate will change from one year to the next will lead to better management of agriculture, water supplies, fisheries, and other resources. By incorporating climate predictions into management decisions, humankind is becoming better adapted to the irregular rhythms of climate.

Just as humankind has adapted to the march of the seasons,

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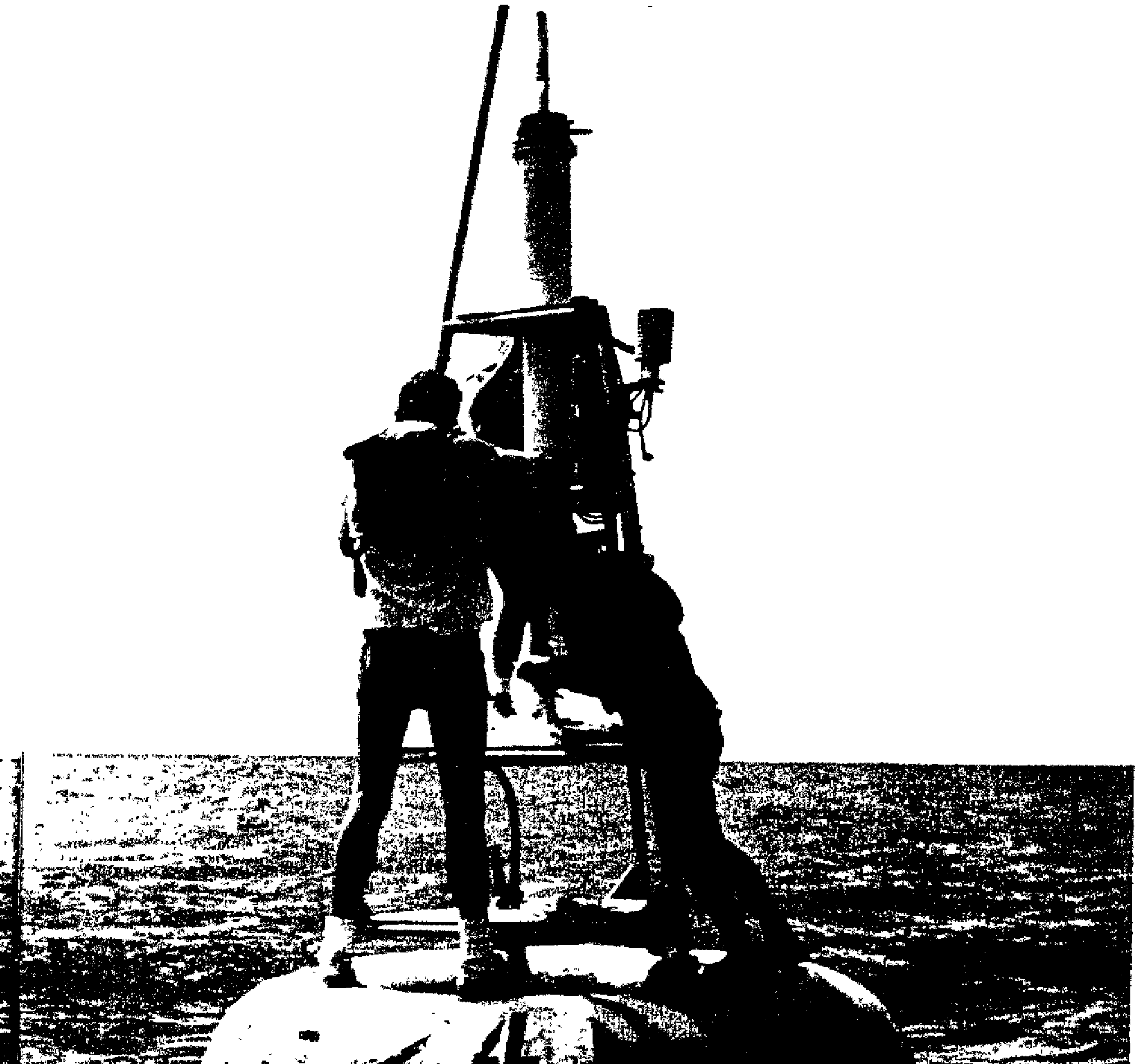
ns. it can learn how to recognize and act for the irregular rhythms of climate



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