

POLITICS & POLICY

U.S. Study on Global Warming May Overplay Dire Side

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—Long-Range U.S. Forecast: Heavy rains, severe droughts, improved growing conditions for some farmers and the end of winter as we know it.

WASHINGTON—A draft overview of a soon-to-be-released federal report on global warming paints something like that dire picture. Rising sea levels and heavy rains, for example, will force coastal cities to spend billions of dollars to redesign subways, tunnels, dams and sewage-treatment systems.

It is too gloomy, some federal experts complain. They want the overview revised to reflect more of its positive findings. The 118-page overview of the report, called "Climate Change and America," also predicts that farmers in the northern half of the nation may be able to capitalize on longer growing seasons by planting more than one crop.

More Drafts of Overview to Come

"I think some people get caught into a groove," says Peter Sousounis, a University of Michigan meteorologist in Ann Arbor who led the Great Lakes regional team that contributed to the report. He and others have argued that the final report should pay more attention to the economic "winners" of climate change. He says later drafts of the overview, scheduled to be released next month, should reflect some of these objections.

Until now, the debate on the impact of global warming has been focused on planet-wide changes. While a few scientists still argue that the warming will be slight but beneficial, most see an elaborate mix of changes, some good and some

bad. The coming rise in average temperatures, they predict, will break climate patterns that have held for centuries.

The report is the first attempt to predict the impact of global warming on various regions in the U.S. during the next hundred years. The four-year effort has involved 5,000 people and a total of nine government agencies.

A Hot Time in the U.S.

Initial computer projections of climate change in regions of the nation predict more heavy downpours and severe droughts. Some farmers benefit. Winter in the Midwest becomes gentler. Alaska melts.

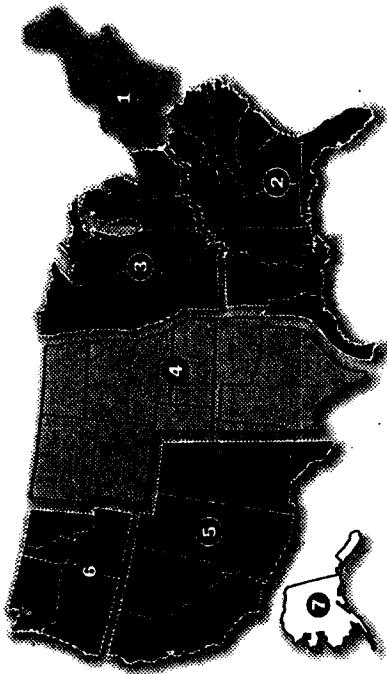
may have to be enlarged to capture the runoff. Deserts become more productive. Fruit and nut crops, requiring winter chilling, could decrease.

③ **Pacific Northwest:** Fast-growing Seattle faces summer water shortages as the mountain snowpack melts. Warmer streams and estuaries harm salmon populations. The danger of tree-damaging pests and forest fires increase with warmer, drier summers. More floods in the winter.

④ **Alaska:** Winters get up to 18 degrees warmer, melting permafrost and sea ice. Ocean shipping and offshore oil exploration become easier. Fish populations have sharp increases and decreases. Caribou and reindeer starve as the tundra melts.

polls show, has given little attention to the issue so far.

A copy of an initial draft dwells largely on the economic downside. Using two computer models, for instance, the draft predicts average temperatures could rise between five and 10 degrees Fahrenheit by the end of this century. It says increased evaporation could lower the already-fall-



Heat disrupts the nation's migratory bird population. Large corporate farms flourish as family farmers find it too expensive to adapt to changed conditions.

⑤ **West:** Heavy winter rains increase the danger of mudslides. Mountain snowpacks melt, creating water supply problems. Reservoirs

But it also dries out soils, creating a need for irrigation. An "urban heat effect" traps pollutants and makes summer nights more unhealthy in large cities. Lake levels drop, cutting the flows into the St. Lawrence Seaway by as much as 40%.

⑥ **Great Plains:** Droughts make water fights tougher.

The overview is an attempt by a White House "national assessment synthesis team" to summarize the findings of a much more complex, 700-page report prepared by the experts. Illustrated with multicolored graphs and written in relatively simple language, the overview is intended to bring home the impact of climate change to the average American, who,

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ing level of the Great Lakes by as much as 5 feet, requiring expensive reconstruction of ship docks and canal locks.

The health section of the overview predicts that a combination of higher temperatures and heavy rains will trigger the spread of waterborne diseases and red tides—an algae-like, poisonous microorganism that lives in salt water and kills fish. It also predicts a northward expansion of malaria, dengue fever and other diseases spread by mosquitoes and ticks.

Two EPA Scientists Object

The forecast provoked an objection from two Environmental Protection Agency scientists who wrote the underlying health report. Mike Slimak and Joel Scheraga argued that the descriptions "have a rather extremist/alarmist tone," which doesn't reflect the scientific papers that the overview supposedly summarized. A spokesman for the EPA says the two men, who could not be reached for comment, "are happy" with the wording of a later draft.

Mr. Sousounis objected that the economic gloom and doom in the overview overlooks huge positive effects, such as the easing of fierce winter conditions in the Midwest. He notes that the costs of energy, snow removal, accidents and the health impacts of cold weather should drop sharply.

Jae Edmonds, an economist who earlier developed a model of the economic impact of climate change for the White House, complains that the overview "chronicles a series of possible calamities that the various authors have happened upon," with an occasional aside that the "problem might not be so bad."

Dr. Edmonds, who works for the Department of Energy's Pacific Northwest National Laboratory, argues that the final report should contain a more balanced view of "winners and losers," and man's

ability to adapt to changing conditions over time.

Experts from industry were also asked to comment. Russell Jones, a senior economist for the American Petroleum Institute, complains of too much reliance on computer models. He says he and other volunteer reviewers could not get access to scientific reports reflected in the overview. "We were frustrated," he says.

Neal Lane, a physicist who is science adviser to President Clinton, is managing the compilation of the report and the delicate job of drafting an overview that captures the complex issue.

"This hasn't been done before. It's been an extremely challenging, exhaustive process," Dr. Lane says. He adds that more than 400 reviewers will have read at least parts of it before it is released.

Asked about the fight among the experts over the need to present a balanced view, Dr. Lane says the final draft will say more about the benefits of warmer winters and more robust crops in some regions.

"But if at the same time, parts of your coastal regions are going underwater and other parts of the world are becoming destabilized because of hunger and disease, how good a world would that be?" he asks.

University of Massachusetts climatologist Ray Bradley in Amherst recently developed a graph of average temperature variations going back thousands of years, using ice-core samples, tree rings and other data to estimate the temperature range before man measured it.

Climatologists call the graph "the Hockey Stick," because it shows a one-degree variation in average temperature until the end of the 20th century, when the graph line begins to curve straight up, like the blade on a hockey stick.

"All of our experience [with climate] from the Middle Ages on is trivial, compared with what's in store for us in this century," Mr. Bradley says.