

Air board selection

[Tuesday, Aug. 17, Modesto Bee](#)

Gov. Schwarzenegger, a Republican, has reappointed Democrat Dorene D'Adamo of Turlock to the state Air Resources Board. D'Adamo, 44, a senior policy adviser to Rep. Dennis Cardoza, D-Merced, has served on the 11-member panel since 1999. She earns \$36,251 a year as an air board member.

Warning issued on warming

Snowpack could shrink by 30%, scientists say.

By Mark Grossi

The Fresno Bee, Tuesday, Aug. 17, 2004

The Sierra snowpack would shrink a startling 30%, heat-related deaths among Los Angeles residents would almost double and cows in California's \$4 billion dairy industry would produce 10% less milk.

That's supposed to be the good-news scenario for California in the next century as global warming takes hold, a group of scientists says in a new study.

The bad news in the study, made public Monday in a National Academy of Sciences publication, paints a vastly altered California. Almost 90% of the Sierra's snowpack -- which supplies two-thirds of the state's water -- could disappear in shortened winters dominated by rain, not snow.

The state's renowned wine grape industry would suffer from early crop maturity. The rest of agriculture would face expensive adjustments in crops and locations.

And the headaches would start sooner, not later. "It would be a mistake to think California will not experience significant adverse effects from global warming before the end of the century," said co-author Michael Hanemann, an economist from the University of California at Berkeley. "The adverse effects will begin within the next 30 years."

The 19 scientists involved in the study said the temperature would rise over the next century, no matter what changes society makes. But reducing pollution emissions would soften the blow considerably, they said.

The study aims at California, scientists said, because the state is known as a leading innovator in energy technology and pollution battles.

The authors, who hope the study is repeated in other regions of the country, come from public and private research settings, including such recognized centers as Stanford University, Scripps Institution of Oceanography and Lawrence Berkeley National Laboratory.

Global warming, a topic passionately debated for decades, refers to an increase in the world's average temperature since the Industrial Revolution.

Opponents say the evidence is flawed, circumstantial and insufficient.

Those who are convinced by current evidence say growing amounts of carbon dioxide, methane and similar "greenhouse" gases are contributing to the problem.

In the new study, scientists tweaked analysis models to fit California and projected two scenarios -- one portraying a path with reduced emissions and the other showing life with reliance on fossil fuels for energy production. A potentially devastating worst-case scenario may appear if the state continues "business as usual," they said.

In Los Angeles, for instance, heat kills 165 people annually. Under the worst-case scenario in the study, 1,182 would die at the turn of the century.

But the study shows mortality would be cut in half or more if society opts for more aggressively reducing emissions.

In a telephone interview Monday, scientists mentioned developments planned around public transportation, fuel-efficient cars and renewable energy, such as solar power.

"There is a substantial contrast in the scenarios depending on the choices we make," said climatologist Stephen Schneider of Stanford University.

The study considers the state's growth and economy as well as emissions. In the worst-case scenario, said the lead author, heat in the Central Valley during the next century would feel like Death Valley does today.

Katharine Hayhoe of ATMOS Research and Consulting in South Bend, Ind., said Yosemite National Park's summer would seem more like downtown Sacramento even under the scenario with fewer emissions.

"This study offers a new question," Hayhoe said. "How do you approach the two different scenarios?"

Study: Major changes from warming

By [Edie Lau and Stuart Leavenworth, Sacramento Bee](#)

Tuesday, August 17, 2004

By the end of the century, continued buildup of carbon dioxide in the atmosphere will sour wine grape production, distress dairy cows and bring summer temperatures to many inland cities that match Death Valley's today, according to scientists who have conducted the most detailed study yet of global climate change's effects in California.

The study, released Monday, lays out two main scenarios for the state. One is "business as usual," with carbon-dioxide emissions continuing to rise steeply through the rest of the century. The other presumes greater reliance in the near future on energy sources other than fossil fuels.

"We found substantial differences in the consequence of climate change ... (that) depend on future emissions," said Katharine Hayhoe of ATMOS Research and Consulting in Indiana, lead author of the study appearing this week in the journal *Proceedings of the National Academy of Sciences*.

Hayhoe said that finding sets apart this study from previous ones, which considered simply how the future might look under climate change. The latest study, conducted by a team of 19 scientists, "asks a striking new question," she said: "How do these impacts depend upon the choices that we make?"

In both scenarios, average temperatures rise, snowpack diminishes and agriculture and quality of life suffer noticeably. That's because the existing emissions - about 24.5 billion metric tons of heat-trapping carbon dioxide per year worldwide from burning fossil fuels - will continue to influence climate for years to come.

The number of days when the temperature reaches 90 degrees or higher in Sacramento more than doubles under the business-as-usual scenario, from 58 days on average historically to 138 days before the end of the century.

Under the lower-carbon-emissions scenario, the number of days of 90 degrees or hotter also nearly - but not quite - doubles, to 115.

Maurice Roos, the state hydrologist, said higher temperatures may not be that difficult to cope with, at least for most people. "There are many other big cities in the world that are hotter - not that it's pleasant," he said.

A one-time skeptic of global warming who is now concerned about its effects on water supply in California, Roos said he tends to believe its manifestation will not be as terrible as some models show.

By contrast, at a telephone news briefing Monday, four of the scientists who produced the study spoke passionately of the need for action.

"The way forward is clear," said Christopher Field, an ecologist and director of the Carnegie Institution's Department of Global Ecology based at Stanford University. "We (in California) need to take a leadership position on putting the world on course to lower emissions."

California has taken a maverick step in controlling "greenhouse gas" emissions from cars, becoming the first in the country to propose mandatory reductions in such pollutants from automobiles beginning with the 2009 model year.

The state also has joined seven other states and New York City in a lawsuit seeking big cuts in greenhouse gases from the nation's five largest power suppliers.

The scientists said they selected California to study in detail because of its diverse environment - mountains, deserts, coast and valleys - its diverse human cultures, its diversity of wildlife and plants and the fact that its economy consistently ranks among the world's largest.

The study was based upon two computer global climate models, one developed by a team in Britain, the other by the National Center for Atmospheric Research in Colorado. The team "downscaled" the global model to California size, using a statistical method that other researchers in the field said is scientifically sound.

Then they ran two scenarios under each model. The first assumed no changes in the carbon-dioxide emissions rate. The amount of carbon dioxide in the atmosphere has risen from 315 parts per million in 1958 to about 370 ppm today. If unabated, it will reach nearly 1,000 ppm by the end of the century.

The lower-emissions scenario assumed that the emissions rate would slow in coming decades, bringing the atmospheric concentration to 550 ppm by the 22nd century.

Among the projections:

- * The April 1 snowpack declines from between 26 percent to 89 percent across all elevations.
- * The heat-wave season - the period during which temperatures reach 90 degrees or higher for three or more consecutive days - lengthens to between 132 days a year and 204 days a year. Historically, the heat-wave season has lasted 115 days.
- * Heat-related deaths in Los Angeles jump from 165 to 1,182 a year.
- * The average annual temperatures rises to 69 degrees from 59 degrees.

A change of even 4 to 6 degrees Fahrenheit on average is notable, Hayhoe said. "It's the difference between spending the summer in Yosemite (National) Park as opposed to spending it in downtown Sacramento," she said.

A change of 15 degrees on average would make coastal cities feel like many inland cities today, she added, "and make summers in many inland cities feel like Death Valley today."

The scientists said agriculture could be severely affected. For example, dairy cows' milk production drops off as the temperature rises.

In the state's top 10 dairy-producing counties - which account for most of California's dairy output - production could drop between 7 percent and 22 percent.

Similarly, wine grapes would ripen sooner, with a consequent drop in quality.

Michael Marsh, CEO of Western United Dairymen in Modesto, said his industry group is keenly interested in environmental issues, including climate change. One avenue the industry is pursuing is capturing methane, a greenhouse gas produced by cattle manure, and burning it for energy.

Karen Ross, president of the California Association of Winegrape Growers, said her group has not tackled global warming. She said making broad statements about how it could affect the state wine industry is difficult because California has such a variety of microclimates.

"It could potentially have an impact on some of our wine-growing regions," she said.

The ski industry, which stands to be devastated by the loss of snowpack, is very active on the issue.

The National Ski Areas Association, based in Colorado, advocates a national reduction of greenhouse-gas emissions. "We don't have our heads in the snowbank on this," association President Michael Berry said.

Plan to share earth observation data seen providing billions in benefits

RANDOLPH E. SCHMID, Associated Press Writer, S.F. Chronicle

[Tuesday, August 17, 2004](#)

WASHINGTON (AP) -- Scientists are planning to take the pulse of the planet -- and more -- in an effort to improve weather forecasts, predict energy needs months in advance, anticipate disease outbreaks and even tell fishermen where the catch will be abundant.

Forty-nine countries have agreed to participate in a 10-year project to collect and share thousands of measurements of the Earth, ranging from weather to streamflow to ground tremors to air pollution, Conrad C. Lautenbacher, head of the National Oceanic and Atmospheric Administration, said Tuesday.

"The Earth needs a full-body scan, and that is what we're talking about," Lautenbacher said at a briefing on the project.

Michael Leavitt, head of the Environmental Protection Agency, said the "benefits of this are limited only by our own imaginations."

Being able to anticipate soil moisture conditions and rainfall in advance would help farmers to know what crops to plant and where, Lautenbacher said.

The new system could help managers pinpoint coastal areas affected by erosion, report changes in ocean currents that affect the movement of fish, provide real-time updates on the potential loss in earthquake zones, monitor pollution threats to local water resources and track the change from vegetation to developed land to study the impact of urban growth.

Much of the data to be shared is already collected and the new effort will be to combine the collection systems so that the information can be easily shared among the participants and used to both understand current conditions and forecast the future.

"We have been able to make computers work together. The challenge of the 21st century is to get people to work together," Leavitt said of the cooperative effort.

"It will not be the technology that limits it, it will be the sociology," Leavitt added, noting that the problem will be overcoming bureaucracy, politics, turf.

With that overcome, Lautenbacher and Leavitt said, major benefits can result from the shared data. And while Leavitt said the federal budget for next year contains an additional \$50 million for observing systems, much of the data is already being collected and just needs systems for more rapid distribution and sharing.

Some of the pollution in California arrives from Asia, Lautenbacher noted, and air pollution in the Northeast has been traced to forest fires in Washington state. Other scientists have traced dust and pollution in Florida and the Caribbean to the Sahara desert in Africa.

Among other benefits expected to result from the effort:

- * Forecasting winter weather months in advance to allow planning for energy supplies. A 1 degree improvement in the winter forecast could save \$1 billion in electricity costs.
- * Monitor forest fires and issue timely warnings of air quality effects.
- * Provide farmers with forecasts that help them know when and what to plant for the best crops.
- * Avoid as much as \$1.7 billion of the annual \$4 billion the cost of weather-related aviation delays.

* Monitor conditions around the world to determine where the next outbreak of malaria or West Nile virus is likely.

Risk to State Dire in Climate Study

Unless checked, global warming could reduce the Sierra snowpack up to 89% by century's end, new research says.

By Miguel Bustillo, Los Angeles Times
[August 17, 2004](#)

Global warming could raise average temperatures as much as 10 degrees in California by the end of this century - sharply curtailing water supplies, causing a rise in heat-related deaths and reducing crop yields - if the world does not dramatically cut its dependence on fossil fuels, according to a study by 19 scientists published Monday.

The study, in the Proceedings of the National Academy of Sciences, contemplated the consequences of two distinct paths the industrialized world could take in response to a changing climate: maintaining its current reliance on coal, oil and gas, or massively investing in new technologies and alternative energy sources. Burning fossil fuels adds carbon dioxide to the atmosphere, which increases global temperatures by trapping more of the sun's heat.

Using two new computer models on climate change, the study focused exclusively on impacts in California, citing the state's economic importance, diverse climate and longtime reputation as a leader in environmental protection.

The scientists' findings were stark. Human activities already have caused an increase in the amount of gases that contribute to global warming, and as population grows, some further increases are inevitable, the researchers said. Because of that, the state will have to endure not only higher temperatures but significantly longer summer heat waves no matter which path is taken, they warned.

Meanwhile, the Sierra Nevada will receive substantially less snowfall. Much of the state's water comes from mountain snow, and that snowpack could be reduced by 89% if greenhouse gases are not reduced, the study predicted. Rising temperatures could also produce more heavy precipitation in the spring, forcing managers of rapidly filling reservoirs to release water they would prefer to save for dry summer months.

"The state is not set up to deal with what could be a thorny problem over how to deal with shortages and diversion," said Michael Hanemann, director of the California Climate Change Center at UC Berkeley.

Nonetheless, the study concluded that aggressive measures to reduce greenhouse gas emissions could make a dent in the global warming problem.

"The question is, are you going to wait 25 years to solve this, or are you going to act on the vast preponderance of evidence that we are accumulating?" said one of the study's authors, Steve Schneider, co-director of Stanford University's Center for Environmental Science and Policy.

If the world continues to release high levels of heat-trapping gases, California's average statewide temperature is likely to rise 7 to 10 degrees Fahrenheit by the end of the century, the study concluded.

On the other hand, if nations undertake large-scale reductions - which the scientists conceded would require major economic and behavioral changes - temperatures are still likely to rise 4 to 6 degrees by 2100, the study found.

"The choices that we make today and in the near future will determine the outcome of this giant experiment we are undertaking with our planet," said Katharine Hayhoe, an Indiana-based climate consultant who was the lead author of the report. An increase of 7 to 10 degrees "is enough to make many coastal cities feel like inland cities do today, and enough to make inland cities feel like Death Valley," Hayhoe said.

If fossil fuel use is not reduced, the study warned, heat waves in Los Angeles would become six to eight times more frequent, and heat-related deaths would increase five to seven times.

The statewide average temperature, taking in day and night throughout the year, is about 60 degrees. It has slowly risen over the last two decades, climate records show. If it continues rising, scientists say it will exceed the range of historical variation within the next 10 years.

The report was produced by scientists who have specialized in the study of climate change. They include researchers from Stanford, UC Berkeley and the Scripps Institute of Oceanography in La Jolla, as well as government experts from the U.S. Department of Agriculture's Corvallis Forestry Sciences Laboratory in Oregon.

While the findings were largely in accord with previous predictions about global warming in California, some conclusions were more extreme, a fact that some participants attributed to new, more detailed climate modeling.

"They are very dramatic, but we have seen similar numbers before in other studies," said Peter H. Gleick, president of the Oakland-based Pacific Institute for Studies in Development, Environment and Security and a 2003 MacArthur fellow who has been studying climate change since the 1980s.

"I guess the surprise is that even the so-called good news doesn't look so good. Those scenarios look very ugly for California. Every scenario shows California's snowpack going away."

Rising temperatures could also affect the state's multibillion-dollar farming industry, the scientists noted. A particular concern is the Napa and Sonoma [wine](http://search.targetwords.com/u.search?x=5977|1||||wine|AA1VDw) grape harvest, which experts said could be hurt by even a slight uptick in temperature.

"Under higher temperatures, grapes fall off the vine more quickly," and the quality of the valuable fruit can be harmed, said Chris Field, director of the department of global ecology at the Carnegie Institution. Any sizable increase in temperatures "threatens California's status as the leading producer of wine grapes," he said.

State headed for warming, study says

By Mike Taugher

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California is destined to be hotter and drier a century from now, but the outlook will be far worse if emissions of greenhouse gases around the world are not curtailed, a new study says.

In Monday's Proceedings of the National Academy of Sciences, a team of scientists say that continued worldwide dependence on fossil fuel will dramatically alter life in the Golden State.

Coastal areas could feel like inland valleys do today, and inland valleys could feel like deserts in the summer, significantly impacting wine grape growers and dairy farmers, the report's lead

author said. High mountain ecosystems could wither away while the average Sierra Nevada snowpack could melt dramatically, reducing the state's water supply and damaging ecosystems.

"By the end of the century, the Sierra Nevada snowpack could decline by about 90 percent if emissions are not curtailed or 30 percent if emissions are curtailed," said Michael Hanemann, a UC Berkeley professor in the Department of Agriculture and Resource Economics who helped write the study.

Earlier this month, the state Air Resources Board issued proposed regulations that would force carmakers to reduce greenhouse gas emissions by one-third over the next 12 years.

The report's authors said such regulations, though limited to California, are an important step in addressing climate change because other states and nations might follow. They said their research focused on California because of the state's enormous economy, a range of wildlife habitat from desert to alpine mountains and a dependence on weather patterns for water.

"We are making decisions today that are setting in place what our kids and grandkids will perceive," said Peter Frumhoff, a senior scientist at the Union of Concerned Scientists.

The study examined two scenarios. One assumed robust economic growth and little change in how fossil fuel is used for energy, resulting in the tripling of emissions of greenhouse gases over the next 100 years.

The second scenario assumed that alternative energy sources are pursued aggressively around the world. In this scenario, greenhouse gas emissions would continue to increase for a while but then gradually fall off so that in 100 years, emissions are roughly what they are today.

Using sophisticated computer models, the team then attempted to predict how California would be affected in each scenario.

"This study asks the question, how do these impacts depend on the choices we make," said Katherine Hayhoe, the lead author of the study and atmospheric science consultant in Indiana.

The scientists found little difference in either scenario over the next 50 years. But after that, life in California becomes increasingly dependent on where energy comes from.

Predicting how changes in the climate will affect specific regions is an uncertain task, and similar studies in the past have been criticized for being too speculative.

"The modeling is just too crude to predict regional impacts," said Bill O'Keefe, president of the Marshall Institute, a Washington D.C.-area think tank skeptical of climate change theories. "The models tend to overpredict the amount of warming."

Stephen Schneider, a Stanford professor in the Department of Biological Sciences and the Institute for International Studies, said the authors could not discount the possibility that greenhouse gas emissions will have no bad effects in California.

But he said the odds that nothing detrimental will happen are low, and it was equally probable that climate change will have unforeseen catastrophic effects.

The report's authors predicted more frequent heat waves, major problems for Napa wine growers and California dairy farmers, loss of alpine ecosystems and significant water shortages.

Even if use of fossil fuel is decreased, California's alpine and subalpine forests are expected to decline by 50 percent to 75 percent.

Although the scientists said annual precipitation in California would probably be close to what it is now, far more of that would fall as rain instead of snow.

Warmer temperatures and more rain mean less snow in the mountains in winter and spring. That will lead to water shortages as managers try to capture as much runoff as they can in reservoirs while also trying to leave space in the reservoirs to capture floods that would otherwise inundate downstream areas.

Today, state water planners are nearing completion of a statewide water plan that is issued every five years. The document calls for more research on how climate changes will affect the state's water.

"This is probably the first time that climate change has gotten such a prominent mention (in the water plan)," said John Andrew, a water planner at the Department of Water Resources. "I expect that five years from now, this will be an even bigger issue."

Fight for clean air suffers legislative setback

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Special interests prevailed last week, and that means it's going to take a little longer to clean up the San Joaquin Valley's filthy air.

Senate Bill 999 by Sen. Mike Machado, D-Linden, would have remade the board that governs the San Joaquin Valley Air Pollution Control District. Machado's bill would have added four members to the district board and changed the way they are selected -- guaranteeing that Fresno, Modesto, Stockton and Bakersfield each would have a representative on the board. This would have made the board more regional in its perspective and given urban interests better representation.

Currently, there are no representatives of the valley's two largest cities -- Fresno and Stockton.

Unfortunately, those with a stake in the status quo were successful in stalling the bill in committee, depriving it of an opportunity to be voted on by the full senate. Those special interests include some sectors of the agriculture industry, the oil industry (concentrated in the southern portions of the valley) and even members of county governments who do not want to cede any power.

Machado ran out of time to address the concerns of the opposition, but he is not giving up. He plans to bring the measure back next year -- assuming he is re-elected. The farmer/senator is considered one of the Legislature's authorities on water and air issues, yet he is in a difficult race against Stockton Mayor Gary Podesto.

Machado is not standing alone on the air issue. John White of the Sierra Club in Sacramento says the effort to make the board more representative of the valley is not dead -- regardless of whether or not Machado is re-elected.

"The challenge of cleaning up the air in the valley is going to take longer than the term of any one member," he said. "The issue isn't going away."

Carolina Simunovic, a member of the Central Valley Air Quality Coalition, says this was a tough year to push this much-needed change, but adds, "we're optimistic that next year the conditions will be right."

Despite the setbacks, those who believe in cleaner air must persevere. The special interests have no problem putting their needs ahead of the valley's health -- even if they're breathing the same dirty air. That challenge can be overcome only if the rest of us are as relentless in pushing measures that will help us get cleaner air.

This is a small part of the larger struggle for the valley's future. The setback on Machado's bill is a reminder that not everyone will act in the valley's best interests.