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Office of Environmental Health Hazard Assessment

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OEHHA REPORT: INDICATORS OF CLIMATE CHANGE IN CALIFORNIA [04/17/09]

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The Office of Environmental Health Hazard Assessment (OEHHA), in its capacity as lead agency for the Environmental Protection Indicators for California (EPIC) Project, has prepared a report presenting indicators of climate change in California. A total of 27 climate change indicators are presented. The indicators draw upon data collection, monitoring and studies by state and federal agencies, universities and research institutions; many of the indicators are derived from research studies funded by the California Energy Commission's Public Interest Energy Research (PIER) Program. Taken collectively, the indicators can help the research community in examining the interrelationships between and among climate and other physical and biological elements of the environment, and in identifying gaps in information. Finally, the indicators – particularly those that reveal evidence of the already discernable impacts of climate change – can highlight priority areas for state mitigation and adaptation strategies. Generally, the indicators show that changes occurring in California are largely consistent with those observed globally.

PRESS RELEASE

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SACRAMENTO – Climate change is occurring in California's environment, with effects that include hotter temperatures, more carbon dioxide in the air and rising sea levels, according to a new report by the California Environmental Protection Agency's Office of Environmental Health Hazard Assessment (OEHHA).

The report identifies 27 indicators that measure the impact of climate change on the state's temperatures, precipitation, land, water, people, plants, and animals. It concludes that changes in California are consistent with those occurring globally. The report is a meta-analysis of existing research done by world-class scientists at the best academic institutions.

"This report documents that climate change is occurring in California with important consequences for the future," said OEHHA Director Dr. Joan Denton. "By monitoring these indicators, we can measure the impacts of climate change and provide information that helps regulators develop policies to respond to them."

Increased temperatures can have direct impacts on human health, including increased illnesses and deaths. Climate change indicators are measurements of the status of, and trends in, specific conditions that assess the state's climate.

Some of the report's key findings include:

- Emissions of greenhouse gases have increased since 1990. Carbon dioxide from vehicle emissions accounted for the largest portion of the increase.
- Atmospheric concentrations of carbon dioxide have increased.
- Air temperatures have increased over the past century. The increase is highest in urban counties.
- Spring snowmelt from the Sierra Nevada has declined over the last century. This means less water for the Central Valley.
- Glaciers in the Sierra Nevada have been reduced in area.
- Sea levels have been rising.
- Oxygen concentrations in coastal waters have declined.
- Nighttime heat wave activity has increased throughout the period since 1950, with sharp and unprecedented increases in 2003 and 2006. Daytime heat wave activity has increased less dramatically.
- Tree deaths in the Sierra Nevada have increased.
- The frequency and size of large wildfires have increased.

→ Spring and fall bird migration patterns are changing.

The report, titled "Indicators of Climate Change in California," was prepared to track observed changes in California's climate. It will provide information to the Legislature, the Air Resources Board, and the California Environmental Protection Agency. They will use the information to enact policies and regulations to adapt to climate changes and prevent additional changes.

The report was written with the assistance of the California Energy Commission's Public Interest Energy Research Program. Many indicators were developed in cooperation with scientists based on their research and ongoing programs.

The report includes data on population growth and increased energy consumption that provides a context for understanding the indicators. Indicators range from greenhouse gas emissions and carbon dioxide levels in the air to their impacts on plants, animals and people.

Heat-related mortality and morbidity is a developing indicator. One-time studies show cause for concern but there is no ongoing tracking of heat-related mortality trends. A recent study found the 2006 California heat wave led to at least 140 deaths from extreme heat and more than 16,000 additional visits to hospital emergency rooms due to heat-related illnesses.

Indicators of direct climate effects include regional annual air temperatures, extreme heat events, winter chill hours, and precipitation levels. The report also tracks water temperatures in Lake Tahoe, the Delta and the Pacific Ocean.

Impacts on plants include tree reproduction and mortality, wildfires, and forest upslope vegetation patterns. Impacts on animals include arrival times for migrating birds, relocations of small mammals, and timing of spring flights of Central Valley butterflies. The report also measured populations of copepods, which are small crustaceans found in both the sea and freshwater; and of small seabirds called Cassin's Auklets.

This report is part of the ongoing Environmental Protection Indicators for California Project (EPIC). OEHHA created the EPIC Project in 2000 and established a process for selecting indicators to track the health of the state's environment.

The first set of indicators was published in 2002 and updated in 2004 and 2005. The format established by the EPIC Program was used to develop the indicators in the new report.

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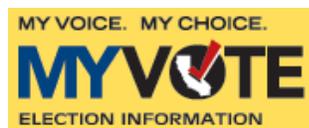
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