

Climate science chief sees 'huge gaps' in research

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India's Rajendra Pachauri, chairman of the Intergovernmental Panel on Climate Change, smiles during an interview with The Associated Press in Cancun, Mexico, Tuesday, Nov. 30, 2010. The U.N. sponsored network of climate scientists said world governments must invest more in cutting-edge research to 'get a handle' on how much and how quickly the world will warm in decades to come. (AP Photo/Charles J. Hanley)

(AP) -- From the methane-laden tundra of the far north to the depths of the oceans, world governments need to spend more on cutting-edge research to "get a handle" on how much and how quickly the world will warm in decades to come, says the head of the U.N. climate science

network.

"There are huge gaps in the effort as far as scientific research is concerned," Rajendra Pachauri told The Associated Press, pointing to concerns that the Arctic's thawing [permafrost](#) is releasing powerful global warming gases, and the oceans might eventually turn from absorbing [carbon dioxide](#) to spewing it into the atmosphere.

"What is being done today is certainly far from adequate," said the chairman of the Intergovernmental Panel on Climate Change (IPCC), the Nobel Peace Prize-winning organization whose twice-a-decade assessments of the latest climate research have been the authoritative guides to a warming world.

In its last detailed report, in 2007, the IPCC recommended that global emissions of carbon dioxide and other greenhouse gases, largely byproducts of fossil-fuel burning, be reduced by 25 percent to 40 percent of 1990 levels by 2020, to keep temperatures from rising more than 2 degrees Celsius (3.6 degrees Fahrenheit) above preindustrial levels.

Expert analysis of current pledges to rein in emissions finds they'll go only 60 percent of the way toward that goal. And those pledges are voluntary, with no guarantee even of that 60 percent.

Pachauri met with the AP here Tuesday early in the two-week annual negotiating conference of parties to the 193-nation U.N. [climate treaty](#).

Deep-seated disputes within the conference continue to block agreement on a new binding global accord requiring rich nations - and perhaps some emerging economies - to reduce emissions. At best, the delegates are expected to concur in a handful of decisions on secondary issues.

Underscoring the need for action, the World Meteorological Organization reported at the conference Tuesday that events of the past decade confirmed scientists' predictions of 20 years ago that temperatures would rise and storms would become fiercer.

The unprecedented heat waves that struck western Europe in 2003 and Russia this July will seem like average summers in the future, said Ghassam Asrar, head of the WMO's climate research center.

In a detailed announcement later this week, the WMO will report that 2010 is likely to end as the warmest year in the historical record, Asrar said.

In the AP interview, Pachauri was asked about the extreme events of 2010 - the Russian heat wave and wildfires, unprecedented nationwide flooding in Pakistan, China's worst floods and landslides in decades. He said the IPCC is working on a special report on the link between global warming and such extreme events.

"The trend is very clear," said the Indian engineer and researcher. "We have and will continue to have increasingly more floods, more droughts, more heat waves, more extreme precipitation events."

Describing areas where more intense research is needed, Pachauri spoke of the uncertain state of the Arctic tundra. Last year, he asked his scientific network to focus on possible "abrupt, irreversible climate change" from thawing permafrost, tundra soil frozen year-round, covering almost one-fifth of Earth's land surface and running up to 600 meters (2,000 feet) deep.

Plant and animal matter accumulated through millennia is frozen in that soil. As it thaws, these ancient deposits finally decompose and are attacked by microbes, producing carbon dioxide and - if in water -

[methane](#). Both are greenhouse gases, and scientists don't know how much is being released and how quickly.

"It's basically the fact that people have not carried out enough measurement so that we can get a handle on how this is going to change in the future, what sort of increase of temperature will occur with the melting of the permafrost," Pachauri said.

Similarly, he said, "the oceans require a lot more concentrated attention."

Researchers are growing deeply worried about the growing acidification of the oceans, from their absorption of excess atmospheric carbon dioxide. More acidic waters make it more difficult for coral, oysters and other undersea life to produce their calcium carbonate shells, threatening to blow holes in the oceanic food chain.

"We need to understand how this will affect marine life," Pachauri said.

And beyond that, he said, scientists must try to gauge the oceans' ultimate capacity to continue operating as a "sink," absorbing carbon dioxide. If that stops - and researchers believe they have detected a slowing of absorption in the seas north of Antarctica - the planet will be in even deeper trouble.

"We need to understand how the oceans, if at all, might get converted from net sinks to net emitters," the IPCC chief said. "We have to understand what will happen with the increase in temperatures in the oceans. Will that make them net emitters?"

All this requires more research money, he said. "As far as climate change is concerned, we need a lot more research."

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