



## Sound Climate Legislation Must Respond to Emerging Science

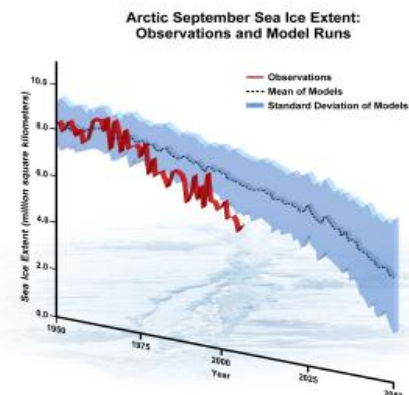
### Establishing Rapid Response Mechanisms

As Congress prepares to act on the urgent threat of global warming, it must ensure that any U.S. climate policy ensures a rapid response to the latest climate science. To that end, federal legislation must ensure that the Bush administration and Congress react rapidly if scientific reviews by the National Academy of Sciences (NAS) show the United States must do more to help avert the worst effects of climate change. The legislation should require the Environmental Protection Agency (EPA) and the president to quickly propose new legislation to adjust the emissions reduction framework—including targets and timelines—based on NAS findings. It should also call for expedited congressional action to speed passage of these proposed adjustments. Establishing this rapid response mechanism is critical to achieving science-based reductions that prevent dangerous global warming.

### Newest Science Establishes an Ever-Growing Urgency on Global Warming

In 2007, the Nobel Prize-winning Intergovernmental Panel on Climate Change (IPCC) found that global warming is primarily caused by human activities and, if left unchecked, will likely threaten communities with worsening heat waves, drought, sea-level rise, and extreme weather by the end of the century.<sup>1,2</sup> The observed and projected impacts in the IPCC's report are noticeably more severe than those described in its 2001 report, indicating that the urgency of the climate crisis is growing as the science becomes more advanced and comprehensive. For example, in 2001, the IPCC projected that ice in the Arctic Ocean would decline but did not explicitly quantify to what extent. In contrast, the 2007 report states that summer sea ice in the Arctic Ocean will disappear almost completely by the end of the 21st century.<sup>3,4</sup> Seasonally, this will affect Earth's natural cooling system in the North and eliminate critical habitat for many marine species.<sup>5</sup> Since the 2007 report, this trend of increasing urgency has continued, with the latest science projecting that:

- The Arctic Ocean might be ice-free in the summer as early as 2030.<sup>6</sup>
- The atmospheric carbon dioxide level today is the highest recorded in the last 800,000 years, exceeding carbon dioxide levels throughout the past 8 glacial cycles.<sup>7</sup>
- Oxygen levels in tropical oceans have dropped dramatically, which may have serious consequences for coastal ecosystems and economies.<sup>8</sup>
- Previous models underestimated the melt rate of the Greenland ice sheet, which means that future sea-level rise will be greater than previously projected.<sup>9</sup>



### Emissions Reduction Targets

In May 2008, more than 1,700 U.S. economists and scientists with climate change expertise urged U.S. policy makers to put our nation on a path today to reduce emissions 80 percent by 2050 and indicated the first step should be reductions on the order of 15-20 percent by 2020.



Because the science is emerging so quickly, the Union of Concerned Scientists believes it is both critical and achievable for the U.S. to reduce emissions on the order of 35% by 2020, taking into account reductions here at home and additional emissions cuts from investments in international forest protection.

## Risks of a Delayed Response to Emerging Science

Clearly, with the science changing so rapidly, the targets that experts recommend today may soon become outdated. That's why ensuring a speedy policy response to the latest science.

<sup>1</sup> Solomon, S., D. Qin, M. Manning, R.B. Alley, T. Berntsen, N.L. Bindoff, Z. Chen, A. Chidthaisong, J.M. Gregory, G.C. Hegerl, M. Heimann, B. Hewitson, B.J. Hoskins, F. Joos, J. Jouzel, V. Kattsov, U. Lohmann, T. Matsuno, M. Molina, N. Nicholls, J. Overpeck, G. Raga, V. Ramaswamy, J. Ren, M. Rusticucci, R. Somerville, T.F. Stocker, P. Whetton, R.A. Wood, and D. Wratt. 2007. Technical summary. In *Climate change 2007: The physical science basis—contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, edited by S. Solomon, D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor, and H.L. Miller. Cambridge, UK: Cambridge University Press.

<sup>2</sup> Parry, M.L., O.F. Canziani, J.P. Palutikof, and co-authors. 2007. Technical summary. In *Climate change 2007: Impacts, adaptation and vulnerability—contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, edited by M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden, and C.E. Hanson. Cambridge, UK: Cambridge University Press, 23–78. In *Climate change 2007: Impacts, adaptation and vulnerability—contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, edited by M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden, and C.E. Hanson. Cambridge, UK: Cambridge University Press, 617–652. For additional areas of concern see Intergovernmental Panel on Climate Change (IPCC). 2007. Synthesis report. In *Climate change 2007: Impacts, adaptation and vulnerability—contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, edited by M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden, and C.E. Hanson. Cambridge, UK: Cambridge University Press, section 5.2

<sup>3</sup> Intergovernmental Panel on Climate Change (IPCC). 2001. *Climate change 2001: The scientific basis—contribution of Working Group I to the Third Assessment Report of the Intergovernmental Panel on Climate Change*, edited by J.T. Houghton, Y. Ding, D.J. Griggs, M. Noguer, P.J. van der Linden, X. Dai, K. Maskell, and C.A. Johnson. Cambridge, UK: Cambridge University Press.

<sup>4</sup> Meehl, G.A., T.F. Stocker, W.D. Collins, P. Friedlingstein, A.T. Gaye, J.M. Gregory, A. Kitoh, R. Knutti, J.M. Murphy, A. Noda, S.C.B. Raper, I.G. Watterson, A.J. Weaver and Z.-C. Zhao, 2007: Global climate projections. In *Climate change 2007: The physical science basis—contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, edited by S. Solomon, D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor, and H.L. Miller. Cambridge, UK: Cambridge University Press.

<sup>5</sup> Arctic Climate Impacts Assessment (ACIA) 2004. *Impacts of a warming Arctic*. Cambridge, UK: Cambridge University Press. Online at <http://www.acia.uaf.edu>.

<sup>6</sup> Stroeve, J., M. Serreze, S. Drobot, S. Gearheard, M. Holland, J. Maslanik, W. Meier, and T. Scambos. 2008. Arctic Sea Ice Extent Plummets in 2007. *EOS, Transactions, American Geophysical Union* 89(2):13

<sup>7</sup> Lüthi, D., M. Le Floch, B. Bereiter, T. Blunier, J.-M. Barnola, U. Siegenthaler, D. Raynaud, J. Jouze, H. Fischer, K. Kawamura, and T.F. Stocker. 2008. High-resolution carbon dioxide concentration record 650,000–800,000 years before present. *Nature* 453:379–382. May 15.

<sup>8</sup> Stramma, L., G.C. Johnson, J. Sprintall, and V. Mohrholz. 2008. Expanding oxygen-minimum zones in the tropical oceans. *Science* 320(5876):655–658. May 2.

<sup>9</sup> Das, S.B., I. Joughin, M.D. Behn, I.M. Howat, M.A. King, D. Lizarralde, and M.P. Bhatia. 2008. Fracture propagation to the base of the Greenland ice sheet during supraglacial lake drainage. *Science* 320(5877):778–781. May 9.