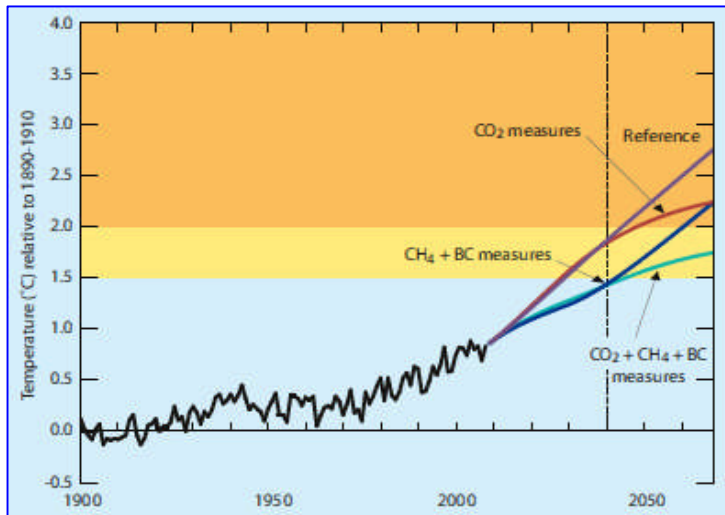




Figures from Howarth, Santoro, and Ingraffea *Climatic Change* paper, published Feb. 1, 2012:



Global mean temperatures and projected future temperature under 4 scenarios. Without controlling methane and soot (black carbon, or “bc”), the temperature of the Earth is predicted to rise to 1.5° above the long-term background within 18 years and to 2.0° C within 35 years, according to both a 2011 United Nations report and a 2012 paper in *Science* by scientists at the NASA Goddard Space Institute. These temperatures, shown by the yellow bar, pose a high risk of passing a tipping point and moving the Earth into an alternate state for the climate system, with likely catastrophic results. Methane control is more urgent than CO₂, although controlling both is essential.

Relative sources of methane pollution in the US, based on the most recent data from the US EPA. The natural gas industry is the dominant source. These EPA estimates are probably low, in light of research published early in 2012. Converting from conventional natural gas to shale gas is predicted to increase methane emissions from the natural gas industry by 40% to 60%. Even with these low estimates, methane from the natural gas industry contributes 17% of the entire greenhouse gas inventory of the US, including CO₂ and all other gases from all activities.

