

## **Climate Change: What Do We Really Know?**

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Changes in atmospheric composition lead to changes in the radiative forcing of the Earth. We review the greenhouse effect and the effect of aerosols on climate, and present the evidence for contemporary changes in radiative forcing. Climatic response to the radiative forcing is, to the lowest order, tied to the hydrologic cycle and changes in the three-dimensional distributions of water vapor, cloud water, and ice. Increases in water vapor and decreases in ice cover act to amplify the radiative forcing, while the effects of clouds on climate depend on the horizontal and vertical distribution of the clouds. Aerosols alter not only the radiative forcing, but also the formation and lifetime of clouds. Uncertainties in projections of climate change will be presented.