

TABLE 6.1 (continued)

Sunlight Screening	
<i>Space Mirrors</i>	Place 50,000 100-km ² mirrors in the earth's orbit to reflect incoming sunlight.
<i>Stratospheric Dust^c</i>	Use guns or balloons to maintain a dust cloud in the stratosphere to increase the sunlight reflection.
<i>Stratospheric Bubbles</i>	Place billions of aluminized, hydrogen-filled balloons in the stratosphere to provide a reflective screen.
<i>Low Stratospheric Dust^c</i>	Use aircraft to maintain a cloud of dust in the low stratosphere to reflect sunlight.
<i>Low Stratospheric Soot^c</i>	Decrease efficiency of burning in engines of aircraft flying in the low stratosphere to maintain a thin cloud of soot to intercept sunlight.
<i>Cloud Stimulation^c</i>	Burn sulfur in ships or power plants to form sulfate aerosol in order to stimulate additional low marine clouds to reflect sunlight.
Ocean Biomass Stimulation	Place iron in the oceans to stimulate generation of CO ₂ -absorbing phytoplankton.
Atmospheric CFC Removal	Use lasers to break up CFCs in the atmosphere.

^a1 quad = 1 quadrillion Btu = 10¹⁵ Btu.

^bCorporate average fuel economy.

^cThese options cause or alter chemical reactions in the atmosphere and should not be implemented without careful assessment of their direct and indirect consequences.

options, including space mirrors and removal of CFCs from the atmosphere, are not included among those recommended for further investigation in Chapter 9.

Geoengineering options appear technically feasible in terms of cooling effects and costs on the basis of currently available preliminary information. But considerably more study and research will be necessary to evaluate their potential side effects, including the chemical reactions that particles introduced into the atmosphere might cause or alter. The data presented in Table 6.3 were developed during the course of the study and represent initial estimates. These or other options may, with additional investigation, research, and development, provide the ability to change atmospheric concentrations of greenhouse gases or the radiative forcing of the planet.

Geoengineering options have the potential to affect greenhouse warming on a substantial scale. However, precisely because they might do so, and because the climate system and its chemistry are poorly understood, these options must