

and nuclear explosions. These discrepancies are rather easily explained. Many studies have tried to compare the quantities of dust that might be generated by a large-scale nuclear war, involving perhaps 5000–10 000 Mt of ground-burst explosions, with those produced in the eruption of large volcanoes such as Krakatau. They have generally concluded that the quantities are roughly equivalent. The climatic impact of nuclear war, as predicted by the nuclear winter studies, is greatly different from that of Krakatau, however, because the nuclear war produces soot as well as dust. It is the soot that causes the sharp plummeting of temperatures. (That effect is apparent in the figure that accompanied my story. Compare the curve labeled "baseline, dust only" to that labeled "baseline, 5000 Mt.")

Dust is generated by nuclear weapons only when the warheads hit on or explode close to the ground. The two bombs dropped on Japan in World War II were airburst, so they did not generate any dust. Those explosions did ignite fires, and hence there was smoke, but not enough to obscure the sunlight over a wide area for many days.

The size of nuclear war that might bring about a nuclear winter would depend on the nature of the attack, but in any case is highly uncertain. The 100-Mt attack scenario described in the nuclear winter studies should not be used as an indication of the threshold. That scenario is specifically designed to maximize smoke production by targeting only those areas of cities with the highest density of combustible materials. It requires targeting the centers of nearly 1000 cities, or more than all the cities in the US, Soviet Union and Europe with populations greater than 100 000 (certainly not a "threshold" attack in terms of human casualties). Furthermore, the particular calculation in the original nuclear winter study used several parameters in that scenario that were doubled compared to the baseline. As a consequence, this 100-Mt scenario yields nearly 60% as much smoke as the baseline scenario.

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Correction

June, page 27—The last line of the middle column of text in Gerold Yonas's article on SDI was lost in the course of production. The sentence that concludes the paragraph should have read: Unless the world is made aware of Soviet actions in ballistic-missile defense, the panel states, "the US will probably be blamed for initiating 'another round in the arms race.'" □

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