

cannot support accurate long-range weather forecasts in atmosphere undisturbed by huge nuclear detonations could possibly be expected to predict global effects in the very special situations that have been predicated.

Nevertheless, they stress, there are serious strategic implications stemming from uncertainty. The policies and plans of governments are based on many factors, including judgements about the consequences of actions. In this area it is impossible to formulate specific policies based upon scientific hypotheses that cannot be tested except during a nuclear war. However, a government which has been persuaded that the nuclear winter hypothesis has some validity is not going to launch an all-out attack, even in the face of a presumed threat, if this will destroy the purpose of some temporary military gain. On the other hand, a country whose government has been persuaded that the hypothesis is not valid might see wisdom in striking a country whose morale and willingness to defend itself has been undermined.

A situation in which both superpowers believe in nuclear winter should, in the opinion of Hoerber and Squire promote stability, since resort to nuclear war would be a disaster for both.

The Canadian Department of National Defence, in a study paper contributed to the Royal Society of Canada report,¹⁵ stresses the importance of deterrence in Western defence policy.

“Because Canadian and other North Atlantic Treaty Organization governments have been able to find no surer practical method of prevention of war than nuclear deterrence, deterrence has become the centrepiece of Western security policy,” it states. “If one believes in the possibility of grave threat and yet aspires to continue in peace and freedom — neither red or dead — deterrence centred on nuclear weapons, however unlikeable, is the safest system within our reach.”

The study draws attention to an “inescapable paradox.” If weapons are not capable of realistic use, they cannot deter. The more likely it is that capabilities will be used, if required, the less likely it is that the need will arise.

The DND study examines what it sees as the implications for Western defence policy if the scientific findings of the nuclear winter hypothesis are accepted, and reaches the following conclusions:

- a) Strategic policy will not be affected in any profound manner. The concept of nuclear deterrence will not lose its validity or resiliency; nor are there likely to be any major implications for the strategy of flexible response.
- b) The disincentive to all-out use of huge nuclear arsenals will be strengthened; indeed, there

may be recalculations of the number and types of weapons needed to apply deterrence at levels lower than those at present. The study says, however, that the very large reductions that have been urged by some would weaken deterrence.

- c) If the intercontinental strategic (nuclear) deterrents now deployed by the superpowers are substantially reduced in strength, or if their use comes to be considered inconceivable, the importance of theatre-based weapons, including those of the United Kingdom and France (and China) becomes enhanced.
- d) Targeting policy may be altered, with even less priority attaching to the use of ground bursts, large yield weapons and the targeting of cities.
- e) The threshold for climatic effects of 200 to 2,000 warheads could become a target for nuclear arms reduction.

In considering the further strategic implications of the nuclear winter concept, it must be assumed that, in any world where there is some sanity left, an awareness of the consequences for *all*, both friend and foe, of any large scale strategic use of such weapons will be a substantial deterrent to their use.

Indeed, to many defence planners, the concept is anti-climactic since many of them have assumed that the prospects for survival would be minimal if deterrence failed and nuclear war ensued. On the other hand, the concept has caused some strategic thinkers to reassess the policy of massive retaliation with warheads of high megatonnage. There would be no sanctuary — a superpower could not isolate itself from the effects of its own weapons: the oft-used metaphor of nuclear war as mutual suicide would become literally applicable. The necessity for restraint by both adversaries becomes an even more crucial necessity.

A related implication concerns the possibility of the use of nuclear weapons in response to an enemy's conventional attack: the nuclear winter concept gives pause to those who contemplate the “first-use” of nuclear weapons. It also adds weight to the arguments of those who would strengthen the balance of conventional forces between the superpowers.

The production of high-yield nuclear bombs has been questioned, and a great deal of work done on the development of smaller, more accurate warheads. Because the US has opted for accurate, low-yield warheads, it has a theoretical advantage in the sense that more of its arsenal would be usable. The USSR by contrast has a greater proportion of its nuclear arsenal in high megaton weapons, the use of which would soon cross the nuclear winter threshold.