

# Nuclear Winter

## The Possible Result of Regional Nuclear War: A Major Disruption of the World's Food Resources, Climate and Life as We Know It

*Anyone who believes that a regional dispute using nuclear weapons can be kept strictly contained within a limited area is gravely mistaken, warns Dr. Yoav Yair of the Open University Department of Natural Sciences and Director of the Center for Technology in Distance Education (Shoham). Speaking at an Open University symposium on natural catastrophes, Atmospheric Scientist Dr. Yair warned that the possible effects of nuclear war – winter all year round, illnesses and hunger – would be felt all over the world.*

Local economies and communications are commonly spoken of as linked in what amounts to a global village. We still tend to think of regional warfare as a local affair that affects only those unfortunate people who happen to be in the immediate area. That is no longer the case when war turns nuclear.

Due to our complex global climate system, the various physical processes taking place in the atmosphere, and the interrelationship between them, such an event can turn into a global disaster that can affect the entire future of the planet. Dr. Yoav Yair, a specialist in atmospheric research, spoke on the ominous topic "Return of Nuclear Winter – Climatic Results of Regional Nuclear War" at an Open University

symposium on "Cruel Earth: Natural Disasters and Extinction."

Concern about the effects of nuclear war on the earth's climate is not new. Even in the 1950s and 60s, scientists worried about the possibility of disastrous effects, although they didn't yet have the appropriate tools to reach definite conclusions. A major concern then was the issue of banning nuclear tests on land, sea or air, particularly when it became clear that a nuclear test at a height of 10 km over Nevada had caused radioactive pollution not only over the desert, but as far away as Canada and Siberia.

Soviet scientist Andrei Sakharov, who then headed the Russian nuclear

program, promoted an international agreement banning nuclear testing in the atmosphere. The agreement was signed in 1963, and today, all nuclear tests take place underground.

During the Cold War between the US and the Soviet Union, strategic planners devised the "Mutual Assured Destruction" doctrine (MAD), which posited the decreased likelihood of nuclear war, since both sides would fear such an outbreak. Atmospheric scientists, trying to assess the outcome of a nuclear war between the US and USSR simulated the scenario by "deploying" 5,000 megatons of nuclear weapons. The result: about a sixth of the urban area of the northern hemisphere would be devastated.



A black carpet of dust and smoke, blocking solar radiation, would remain up to two years in the stratosphere, and the bleak outcome would be "nuclear winter," following a drastic drop in global temperatures. Water sources would be polluted and agriculture would suffer catastrophically.

### Affecting the Atmosphere

There are historical precedents for a similar, albeit smaller-scale, disaster. The climatic influence of major upheavals, whether natural or man-made, is no longer a matter of speculation. Many events have been seen to have had a dramatic affect on the earth, such as the 1816 Tambora volcano eruption in Indonesia. Ash particles stayed in the atmosphere for up to several years. They were spread by winds around the globe and blocked the sun. As a result, 1816 was dubbed the "year without a summer." Average global temperatures dropped, causing significant agricultural problems and famine in many parts of Europe.

The earlier model of prediction of the results of nuclear war was seen as too simplistic and extreme and more attention was given to topics like global warming. But by 2006, researchers had returned to studying what might happen if nuclear weapons were used.

*We still tend to think of regional warfare as a local affair that affects only those unfortunate people who happen to be in the immediate area. That is no longer the case. Such an event can turn into a global disaster that can affect the entire future of the planet.*

Not only had the world changed, but there were now new scientific climatic simulation models which promised more accurate predictions, based on accurate and detailed satellite photographs which show even buildings and trees in areas affected by the war.

The current study posits a hypothetical local war between India and Pakistan, using all the latest research models. What would happen if "only" 50 bombs on each side were used, of the size of the bombs used in Hiroshima?

The results were chilling – literally. In addition to the dust that the explosions

would send up into the atmosphere, there would be many fire storms, resulting in even more massive amounts of dust and smoke. Winds would blow the smoke around the globe, blocking the sun's rays and lowering the temperatures. Growing seasons would be shortened, and water sources would be polluted. All that, of course, would be in addition to the devastating effects of radioactive fallout.

Another fatal consequence would be destruction of much of the ozone level in the lower stratosphere, due to a chemical reaction with the radioactive smoke. It has been calculated that about 50-70% of the ozone at the north and south poles and 10% of the ozone at the equators would be destroyed, affecting human and animal life. The resulting nuclear holocaust would destroy the entire way of life in the northern hemisphere, and eventually all over the world.

And if "local" nuclear weapons were to be used in a conflict between Israel and Iran? Due to their geographic position, the results, say the scientists, would be very similar. The whole world would be the eventual loser and mankind and life as we know it would be severely impacted.