

## Nuclear Winter

I am embarrassed to not know about a subject, one that I have not even heard mentioned. Otherwise I should have understood much earlier that the risks of a nuclear war were much more serious than I imagined. I was assuming that the planet was able to withstand the explosion of hundreds of nuclear bombs upon realizing that both in the United States as well as in the USSR countless tests had been done over the years. I had not taken into account one quite simple reality: it is not the same to explode 500 nuclear bombs in 1,000 days as it is to have them explode in one single day.

I was able to know that when I requested information from several experts in the subject. One can imagine my surprise when I learned that a nuclear world war was not needed for our species to disappear.

It would be enough to have a nuclear conflict between two of the weaker nuclear powers, such as India and Pakistan –who nevertheless have between the two of them much more than 100 weapons of this kind – and the human race would disappear.

I reasoned a bit with the elements of judgement given me by our experts in the subject, taken from what has been laid out by the most prestigious scientists in the world.

There are things that Obama knows about perfectly well:

“...a nuclear war between the US and the Soviet Union would produce a ‘nuclear winter.’”

“The international debate about that prediction, fuelled by the astronomer Carl Sagan, forced the leaders of both the super-powers to face up to the possibility that their arms race had not only placed themselves at risk, but also all of humanity.”

“...‘the models drawn up by Russian and American scientists were showing that a nuclear war would bring about a nuclear winter tremendously destructive for all of life on this earth; for us, for persons having morals and honour, this knowledge signified a great incentive ...’.”

“...regional nuclear wars could unleash a similar global catastrophe. New analyses reveal that a conflict between India and Pakistan during which 100 bombs would be dropped on cities and industrial areas –only 0.4 % of the more than 25,000 warheads in the world – would generate enough fallout to destroy the world’s agriculture. A regional war could cause losses of lives even in countries far removed from the conflict.”

“With modern computers and brand-new climatic models, our team has shown that not only were the ideas of the 1980s correct, but that the effects would last for at least 10 years, much longer than what had been earlier believed [...] the fallout from a regional war would even be heated by the sun and would rise and remain suspended for years in the upper atmosphere, casting a veil over solar light and cooling off the earth.”

“India and Pakistan, who between the two of them have more than 100 nuclear warheads ...”

“Some believe that the theory of nuclear winter developed in the 1980s has fallen into disrepute. That is why they may perhaps be surprised by our contention that a regional nuclear war between India and Pakistan, for example, could wreak havoc on the agriculture of the entire planet.

"The original theory was strictly validated. Its scientific basis was backed by research done by the National Academy of Sciences, by studies sponsored by the United States Armed Forces and by the International Council of Scientific Unions that included representatives of 24 national science academies and other scientific bodies."

"Perhaps the cooling off does not appear to be anything to be particularly concerned about. But one should be aware that a slight drop in temperature could bring serious consequences in its wake."

"The total amount of grains being stored on the planet today could feed the world population for a couple of months (see 'Food crises: a threat for civilization?' by Lester R. Brown; RESEARCH AND SCIENCE, July 2009)."

"Sometimes the smoke from the huge forest fires penetrates into the troposphere and the lower stratosphere and it is dragged for great distances, generating the cooling off. Our models also agree with those effects."

"65 million years ago, an asteroid crashed into the Yucatan Peninsula. The resulting dust cloud, mixed in with the smoke from the fires, hid the sun, killing the dinosaurs. Massive volcanic activity which took place at the same time in India could have aggravated the effects."

"...the growing number of states with nuclear capacity increases the possibilities of a war breaking out, deliberately or accidentally."

"North Korea has threatened war unless its vessels stop being held up and inspected for nuclear materials."

"Some extremist leaders in India proposed attacking Pakistan with nuclear weapons as a result of the latest terrorist attacks on India."

"Iran has threatened to destroy Israel, now a nuclear power, which in turn has sworn never to allow Iran to become a nuclear power."

"The first two nuclear bombs so shook up the world that in spite of the massive increase in those weapons from then on, they have never again been used."

A nuclear war is inevitable from the moment that the UN Security Council term is fulfilled; anything might happen when the first Iranian vessel would be inspected.

"Within the framework of the Strategic Treaty on Offensive Reduction, the US and Russia committed to leave their arsenal at 1,700 and 2,200 deployed strategic nuclear warheads for the end of 2012."

"If those weapons were to be used against urban targets they would kill hundreds of millions of people and an enormous 189 Tg cloud of smoke would flood the planet's atmosphere."

"The only way to eliminate the possibilities of a climatic catastrophe is to eliminate nuclear weapons."

At noon today I met with four Cuban experts: Tomás Gutiérrez Pérez, José Vidal Santana Núñez, Col. José Luis Navarro Herrero, Head of the Secretariat for Science and Technology of the MINFAR and Fidel Castro Díaz-Balart. Together we analyzed the subject I am dealing with in this Reflection.

I requested the meeting yesterday on August 22nd. I didn't want to lose any time, not one second. Without a doubt, the meeting was productive.

## **Nuclear Winter**

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**Fidel Castro Ruz**

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