

Global Nuclear Arsenal 2007

Approximately 25,500 weapons with ≈ 7000 MT (megatons) yield

Total operational strategic nuclear weapons $\approx 9,140$

Total yield $\approx 2,815$ MT

U.S. and Russian strategic nuclear weapons on high-alert, launch-on-warning status $\approx 3,500$ warheads

Total operational non-strategic nuclear weapons $\approx 2,800$

Total U.S. and Russian inactive reserve (intact non-operational) nuclear weapons $\approx 13,500$ warheads Total yield ≈ 4000 MT

1 weapon = .

The total explosive power of every bomb detonated during World War II = 3 MT (3 megatons) = the total explosive power of 10 average size strategic nuclear weapons

WWII =

One Strategic Nuclear Weapon detonated above a city will within tens of minutes ignite a mass fire over an area of 20 to 100 square miles from which no living thing can escape

The Total Explosive Power of The Global Nuclear Arsenal is ≈ 7000 megatons = 7 billion tons of TNT = 14 trillion pounds of TNT

1 Weapon = .

U.S. Trident Sub = 144 Strategic Nuclear Weapons

97% of all Nuclear Weapons belong to the U.S. and Russia

Comparative Weapon Yields

- Largest bomb used in WWII = 6 tons TNT
- Largest 2007 non-nuclear bomb = 44 tons High Explosive
- Smallest Strategic Nuclear Weapon = 100,000 tons TNT
- Large Strategic Nuclear Weapon = 1.2 million tons of TNT
- Largest Nuclear Bomb ever tested = 50 million tons of TNT
- 1 ton = 2000 lbs 1 Megaton (1 MT) = 1,000,000 tons

Sources: The Natural Resources Defense Council, The Bulletin of the Atomic Scientists, The Federation of American Scientists

chart by Steven Starr

Catastrophic Climatic Consequences of Nuclear Conflict

U.S. researchers have demonstrated that *any* conflict which targets even a tiny fraction of the global nuclear arsenal against large urban centers will cause catastrophic disruptions of the global climate.

New studies show that a regional nuclear conflict, which targeted large population centers in the sub-tropics with 100 Hiroshima-size weapons – about 0.3% of the global nuclear arsenal – could produce as many fatalities as World War II¹ and would significantly disrupt the global climate for at least a decade.² After such an exchange, average surface temperatures around the Earth would quickly become colder than those experienced during the pre-industrial Little Ice Age.

Despite recent reductions in the world's nuclear arsenals, the new research confirms that the smoke produced by a war fought with the current global nuclear arsenal would still produce a nuclear winter.³ Under such conditions, daily minimum temperatures in the world's large agricultural areas would fall below freezing for more than a year and cause the collapse of modern agriculture and the starvation of billions of people.

A large nuclear war would produce enough smoke and soot to quickly block sunlight from reaching the surface of the entire Northern and Southern Hemispheres. In many areas sunlight would be reduced so much that at mid-day it would appear as dark as a moonlit night before the war.⁴ The smoke and darkness would persist for years.

The new studies used the latest NASA Goddard Institute for Space Studies climate model (1E) to predict that a war in which the global nuclear arsenal was detonated would result in rapid cooling of more than 20°C over large areas of North America and of more than 30°C over much of Eurasia, including all agricultural regions. The detonation of the U.S. and Russian weapons now on high-alert would produce global cooling equal to or greater than that experienced 18,000 years ago during the coldest period of the last Ice Age⁵ – and these temperature drops would occur abruptly in a matter of days or weeks, rather than over centuries or millennia.

Agriculture would be affected by not only the catastrophic drops in temperature, but also by a dramatic decrease in sunlight (insolation) and precipitation. The cooling of the Earth's surface would weaken the global hydrological cycle and the Northern Hemisphere summer monsoon circulations would collapse because the temperature differences that drive them would not develop. Consequently, a 45% reduction in average global precipitation is also predicted to occur. Catastrophic climatic effects lasting for many years would occur in regions far removed from the target areas or the countries involved in the conflict.⁶

¹ Toon, Owen B., Richard P. Turco, Alan Robock, Charles Bardeen, Luke Oman, and Georgiy L. Stenchikov (2007), *Atmospheric effects and societal consequences of regional scale nuclear conflicts and acts of individual nuclear terrorism*. *Atm. Chem. Phys.*, 7, p. 1973.

² Robock, Alan, Luke Oman, Georgiy L. Stenchikov, Owen B. Toon, Charles Bardeen, and Richard P. Turco (2007a), *Climatic consequences of regional nuclear conflicts*. *Atm. Chem. Phys.*, 7, pp. 2003-2012

³ Robock, A., L. Oman, and G. L. Stenchikov (2007b), *Nuclear winter revisited with a modern climate model and current nuclear arsenals: Still catastrophic consequences*, *J. Geophys. Res.*, **112**, D13107, doi:10.1029/2006JD008235.

⁴ Personal correspondence with Alan Robock, Sept. 9, 2007.

⁵ Robock et al., (2007b), p. 6 of 14.

⁶ *Ibid*, p. 6 of 14.