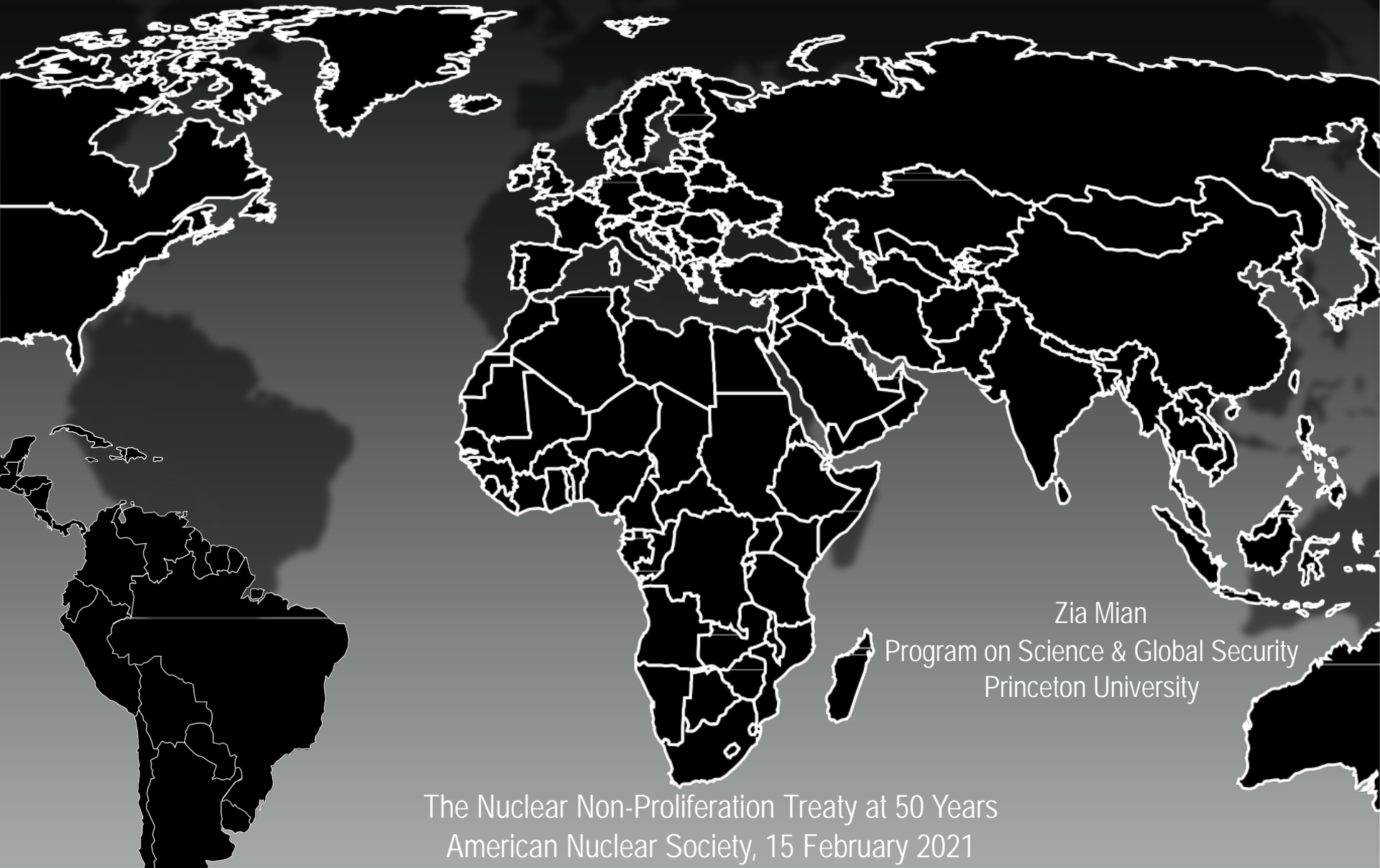


NUCLEAR WEAPONS AND ARMS CONTROL TODAY



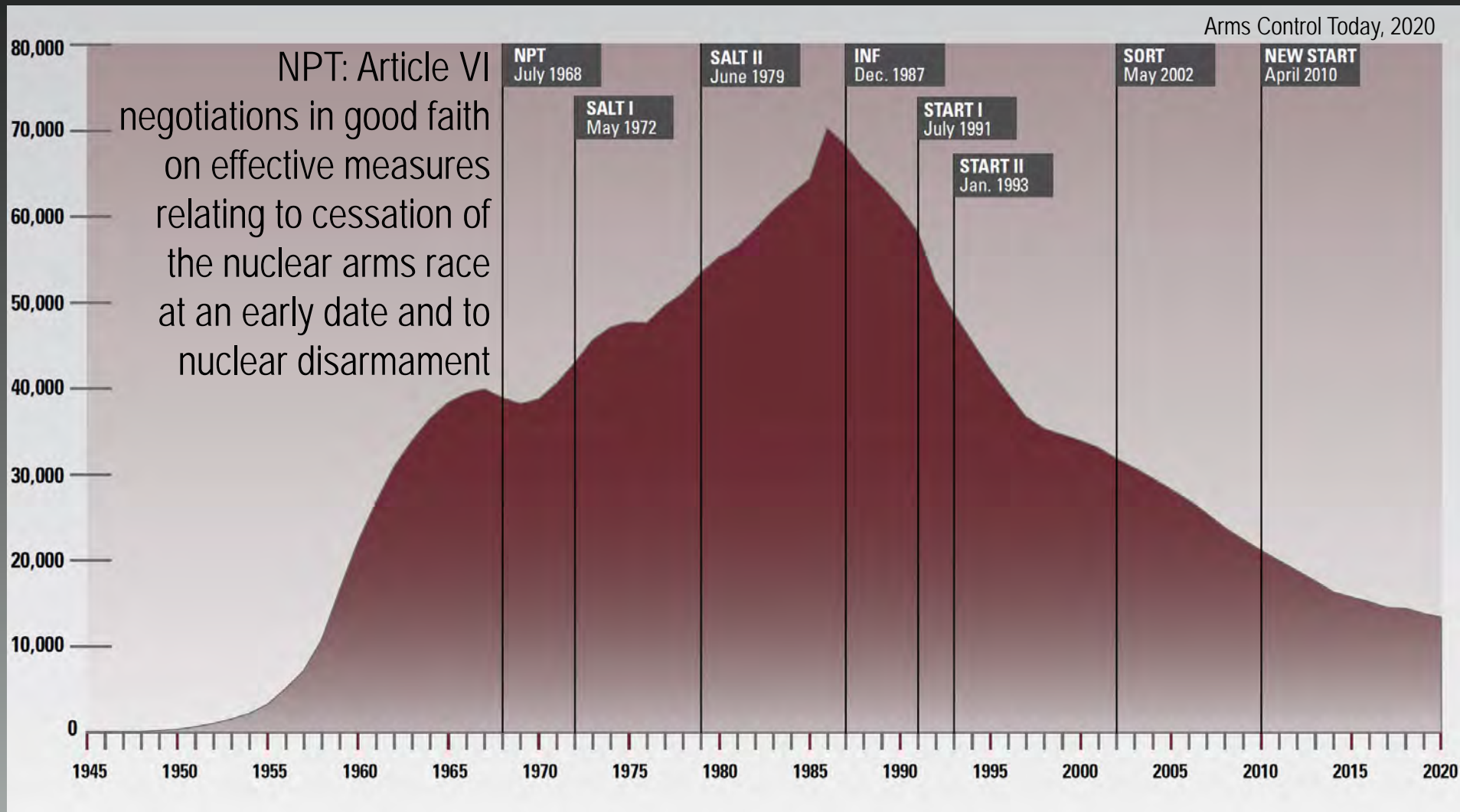
Zia Mian

Program on Science & Global Security
Princeton University

The Nuclear Non-Proliferation Treaty at 50 Years
American Nuclear Society, 15 February 2021

THE EVOLUTION OF NUCLEAR ARSENALS

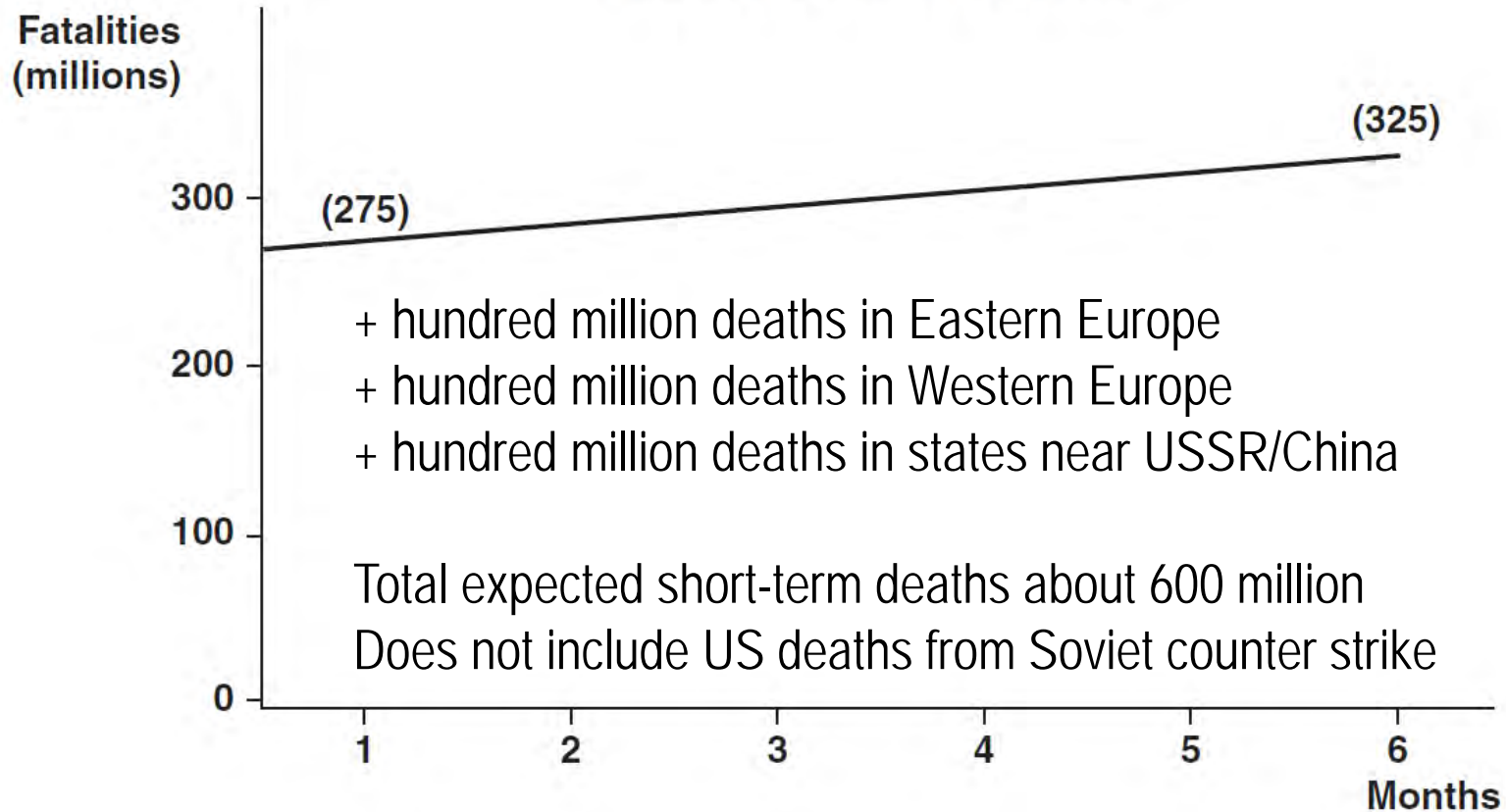
ARSENALS PEAKED AT OVER 70,000 WEAPONS IN 1986
THE PACE OF REDUCTION HAS SLOWED



NUCLEAR ARSENALS AND NUCLEAR WAR

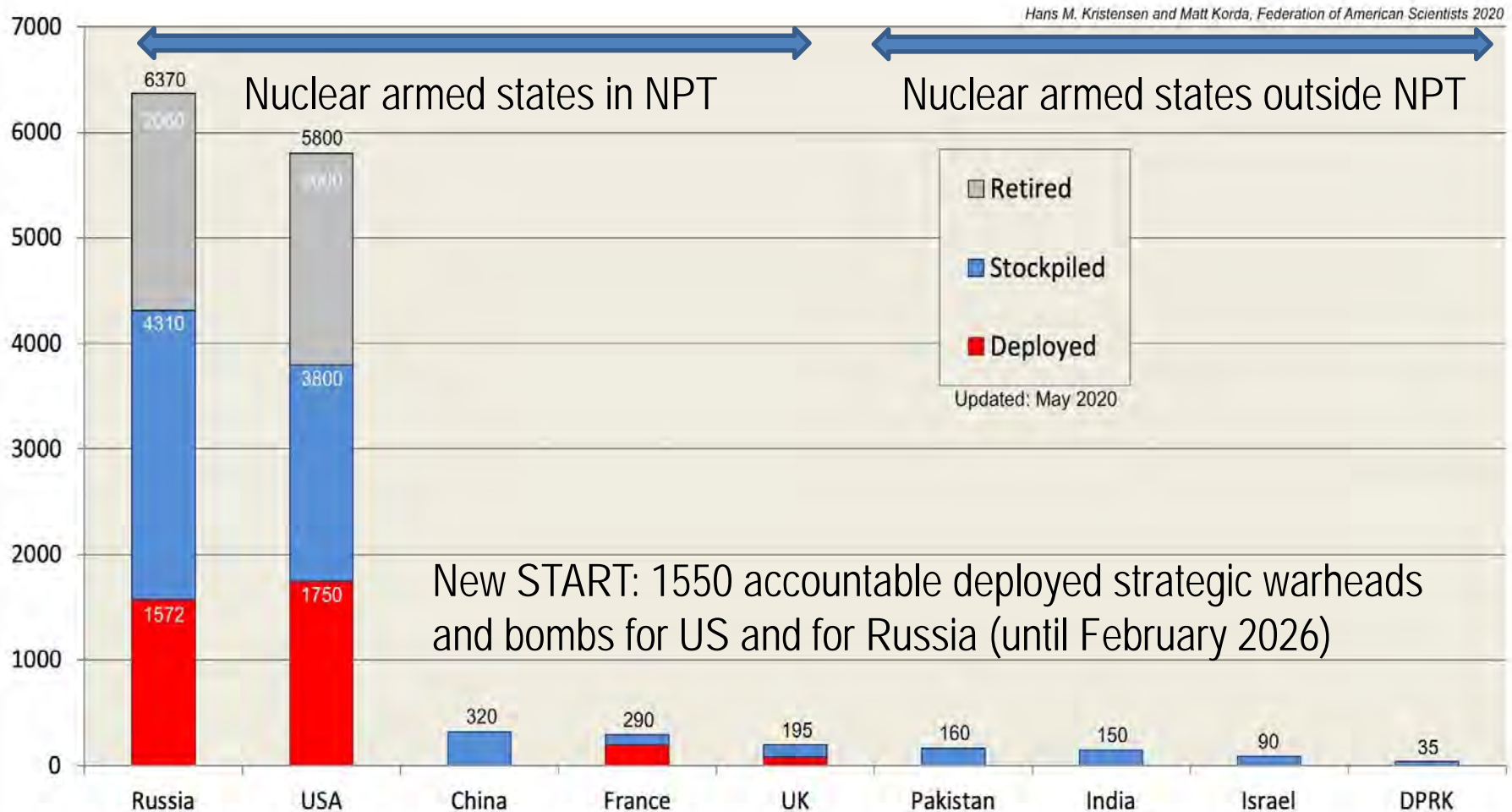
THE EXPECTED IMPACT OF THE US NUCLEAR WAR PLAN IN 1961

TOP SECRET—SENSITIVE
Joint Chiefs of Staff
For the President's Eyes Only



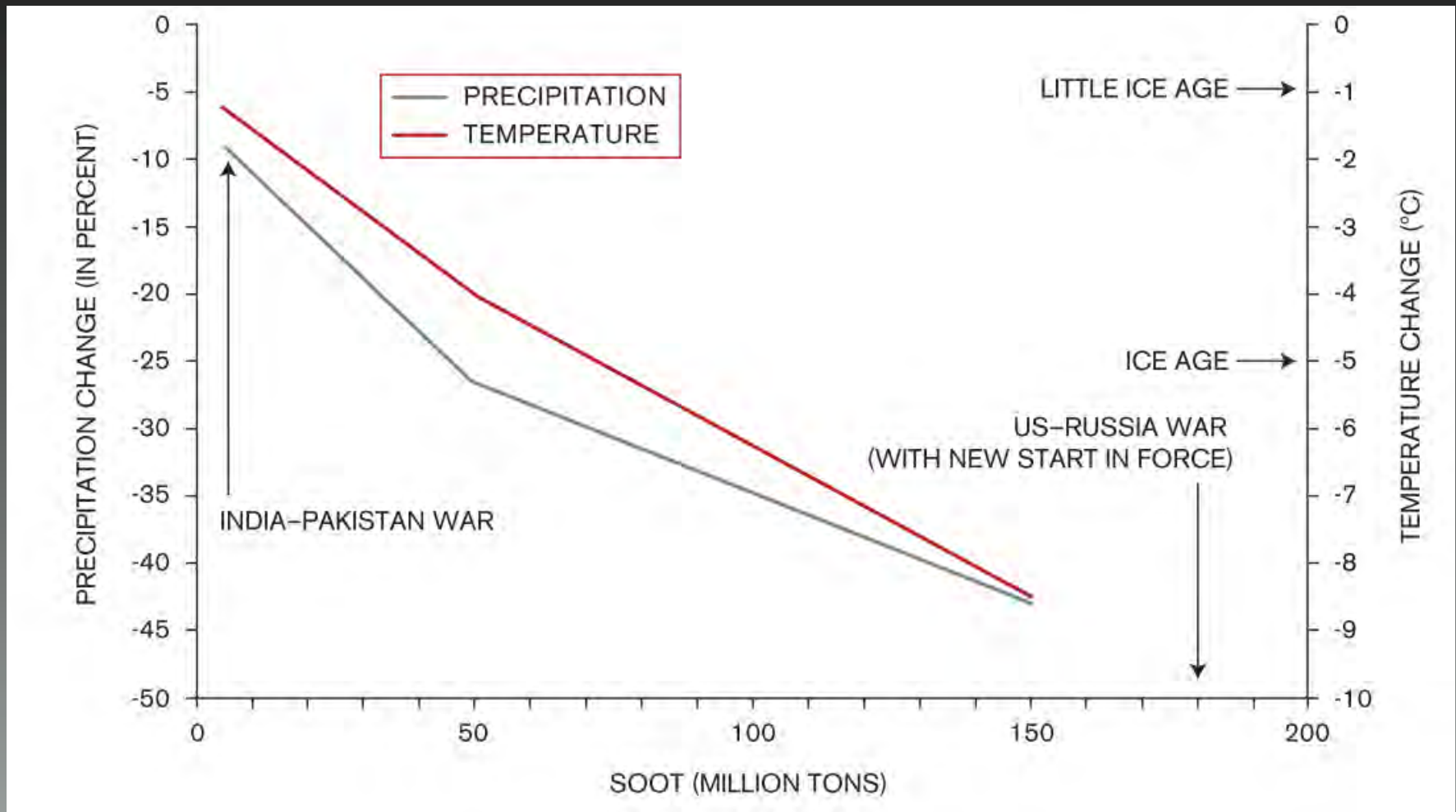
NUCLEAR ARSENALS TODAY

OVER 90% OF WARHEADS ARE HELD BY RUSSIA AND THE US
LESS THAN 25% OF WARHEADS ARE TREATY ACCOUNTABLE



GLOBAL CLIMATE IMPACTS OF NUCLEAR WAR

CONGRESS HAS ASKED NATIONAL ACADEMIES FOR
A NEW STUDY ON THE ENVIRONMENTAL EFFECTS OF NUCLEAR WAR

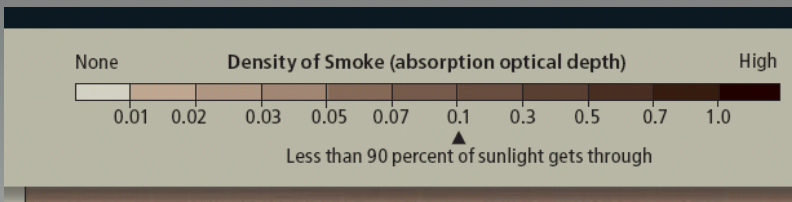


Robock, Oman, and Stenchikov, "Nuclear winter revisited with a modern climate model and current nuclear arsenals: Still catastrophic consequences," *Journal of Geophysical Research* (2007)

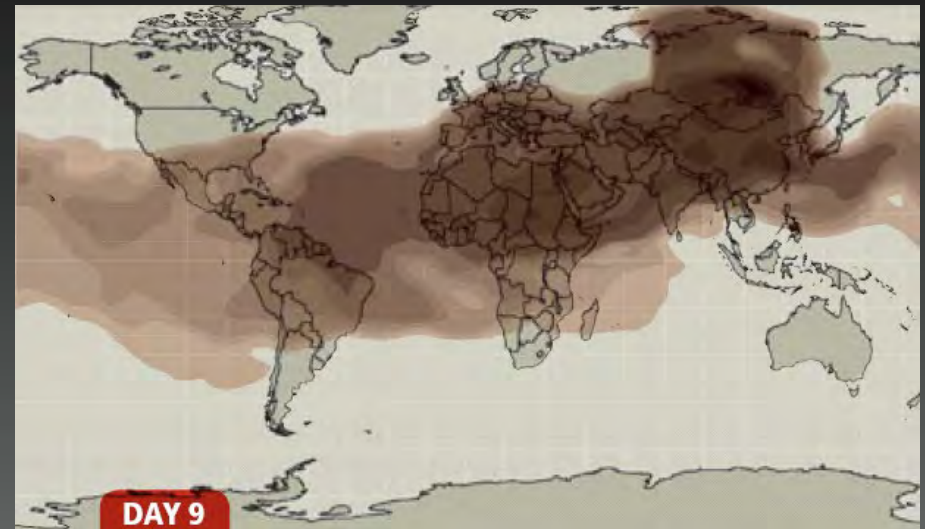
LIMITED NUCLEAR WAR HAS GLOBAL IMPACTS

NUCLEAR WINTER REVISITED WITH MODERN CLIMATE MODELS

Assuming Pakistan and India each use 50 weapons of 15 kt on cities
5 million tons of smoke and soot



Robock & Toon, *Scientific American*, January 2010



Global effects from darkness, cold, and ozone loss could last up to 25 years
2 billion people at risk from famine

ARMS CONTROL TREATIES

THE END OF THE FIRST ARMS CONTROL ERA?

US modernization plan for all delivery systems and warheads adopts New START levels to 2070-2080

US Nuclear Weapons Employment Guidance (2013) proposed
– “up to a one-third reduction in deployed nuclear weapons”
(to 1000-1100 warheads, smallest reduction so far)

ABM: signed 1972, US withdrawal in 2002

INF: signed 1987, US withdrawal in 2019

OPEN SKIES: signed 1992, US withdrawal 2020

CTBT: signed 1996, not ratified by US Senate

FMCT: no negotiations since 1993 UN mandate

UNITED NATIONS TREATY ON THE PROHIBITION OF NUCLEAR WEAPONS

ENTERED INTO FORCE ON 22 JANUARY 2021

Supported by 122 countries

Countries can not:

Develop, test, produce, manufacture,
acquire or possess nuclear weapons

Use or threaten to use nuclear weapons

Allow any stationing of nuclear weapons

Countries must:

remove nuclear weapons from operation
and destroy them as soon as possible

eliminate weapon programs and facilities
through a verifiable time-bound plan

