

The planetary health imperative to prohibit and eradicate nuclear weapons

Tilman Ruff AM

International Campaign to Abolish Nuclear Weapons (Nobel Peace Prize 2017)
International Physicians for the Prevention of Nuclear War
(Nobel Peace Prize 1985)
Nossal Institute for Global Health, University of Melbourne

Consultant: WHO

RACP Congress Auckland 6 May 2019
Thanks: Alan Robock, Mike Mills, Ira Helfand



"Those who have the privilege to know have the duty to act."

"The unleashed power of the atom has changed everything save our modes of thinking, and thus we drift towards unparalleled catastrophe."

Albert Einstein
1946

The logo of the World Health Organization is a blue emblem. It features a central Rod of Asclepius, a staff with a single snake coiled around it. This staff is superimposed on a map of the world. The entire emblem is encircled by a laurel wreath.

**Nuclear Weapons constitute
THE GREATEST
IMMEDIATE THREAT
to the Health and Welfare of Mankind**

WORLD HEALTH ORGANIZATION

World health Assembly Resolution WHA 36.28 16 May 1983

Effects of nuclear war on health and health services, WHO 1984

Effects of Nuclear War on Health and Health Services



- “It is obvious that no health service in any area of the world would be capable of dealing adequately with the hundreds of thousands of people seriously injured by blast, heat or radiation from even a single 1-megaton bomb.”
- **“... the only approach to the treatment of the health effects of nuclear explosions is primary prevention of such explosions, that is, the primary prevention of atomic war.”**

A dark, apocalyptic landscape with a red sun and a person in a field. The scene is dominated by a dark, overcast sky with a single, bright red sun in the center. Below the sky, a dark, silhouetted horizon line shows a farm with a barn and a silo. In the foreground, a field of dead, brown crops stretches out. A person in a dark jacket and hat stands with their back to the camera, looking out over the field. The overall mood is bleak and desolate.

Nuclear Winter

Cold, dry, dark, and more UV
Crops dying and global famine

Nuclear weapon induced fires

“Even the smallest of nuclear weapons, such as the ~15 kt weapon used on Hiroshima, exploding in modern megacities would produce firestorms that would build for hours, consuming buildings, vegetation, roads, fuel depots, and other infrastructure, releasing energy many times that of the weapon’s yield.”

- Mills MJ, et al. Multidecadal global cooling and unprecedented ozone loss following a regional nuclear conflict. *Earth’s Future*, 2014.
doi:10/1002/2013EF000205

Hiroshima: fires released ~1000 times the energy of the explosion



Auckland



“Small” regional nuclear war

- 100 Hiroshima-size bombs
India – Pakistan
 - Contested Kashmir border with daily shooting, 3 wars since independence, mobilised up to 1 million troops twice more
 - India “Cold Start” invasion plans, Pakistan plans early use of nuclear weapons in a war with India
 - Nuclear weapons use considered in crisis Feb 2019
- Estimated 6 million tons of smoke
- 44 million casualties including > 21 million deaths in major cities in India and Pakistan
- Radioactive contamination across South Asia
- Global climate disruption from smoke and soot

0.4% of global nuclear weapons, 0.07% of total yield

“Small” regional nuclear war: update

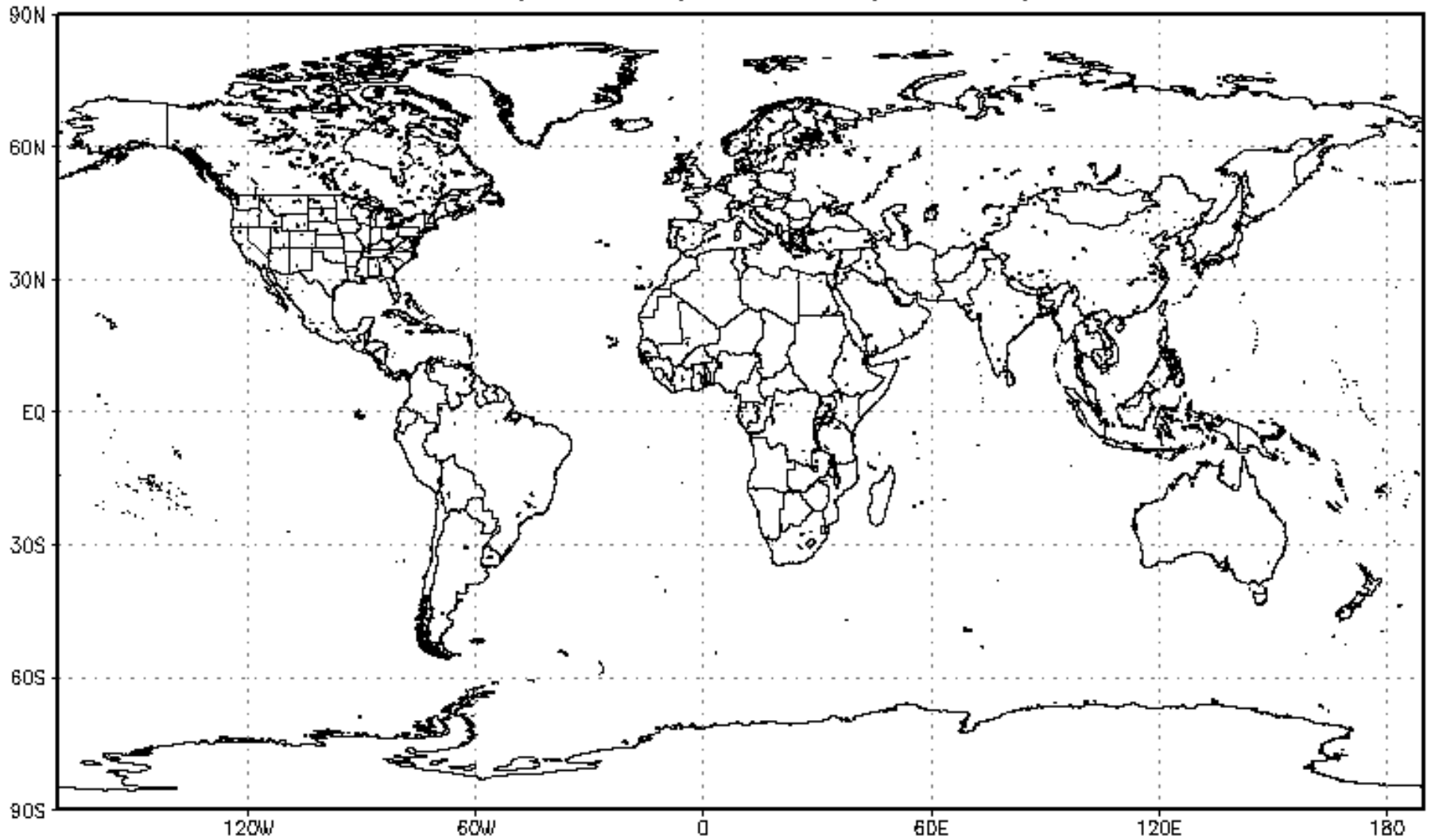
- India and Pakistan each now have ~130 nw and may have 250 by 2025
- Populations and urban fuel are growing
- 250 x 2, 50kt explosions would kill 130 million people acutely
- Current arsenals, Hiroshima size (125 x 2, 15 kt):
 - 15 million tons smoke
- 125 x 2, 50 kt:
 - 25 million tons smoke

Toon, Bardeen, Robock, Peterson, Xia. Rapid expansion of nuclear arsenals by Pakistan and India threatens regional and global catastrophes.

American Geophysical Union Fall Meeting, Washington DC

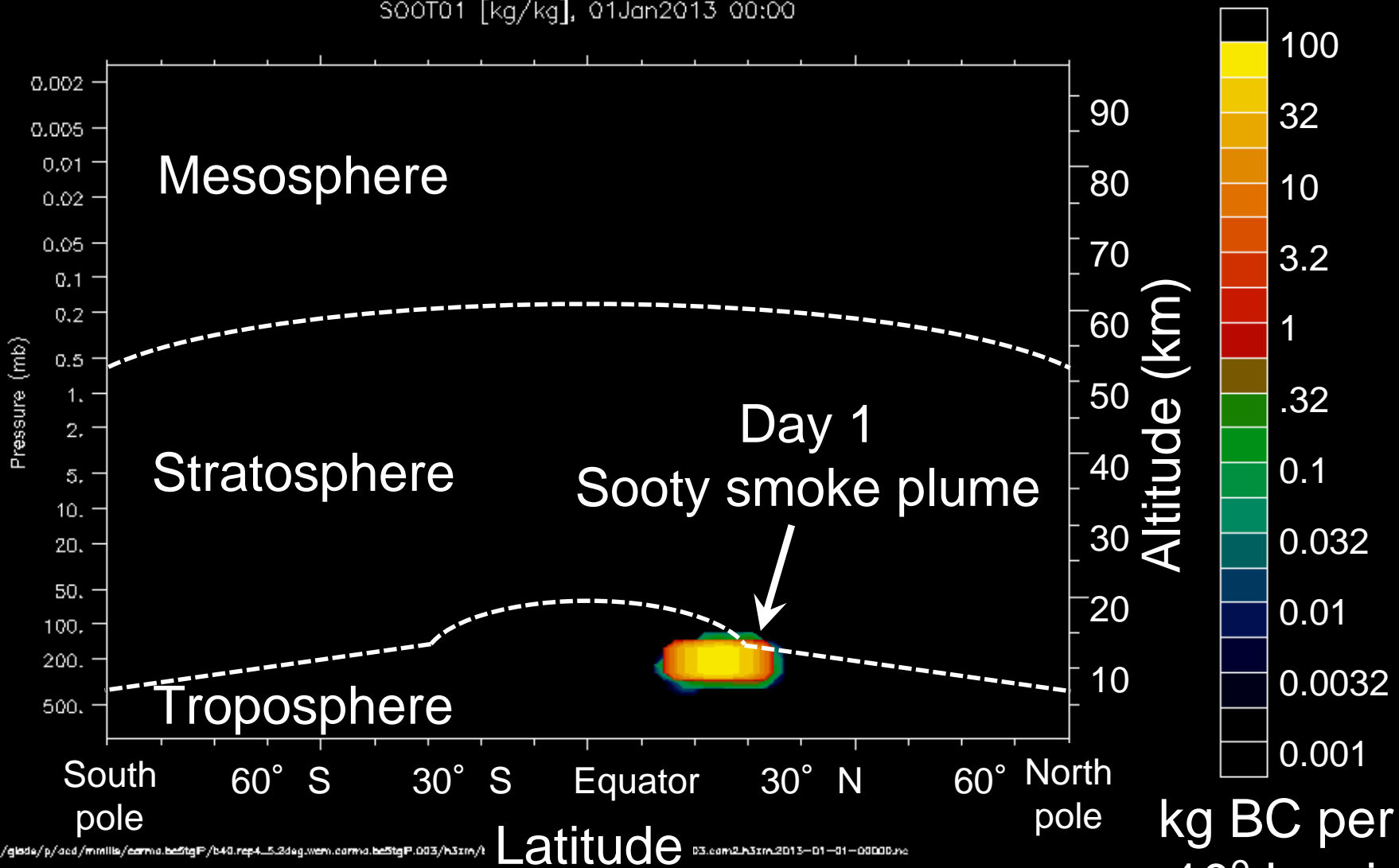
Dec 2018, GC33B-12.

BC Absorption Optical Depth May 14th



Black carbon mass mixing ratio

SOOT01 [kg/kg], 01Jan2013 00:00

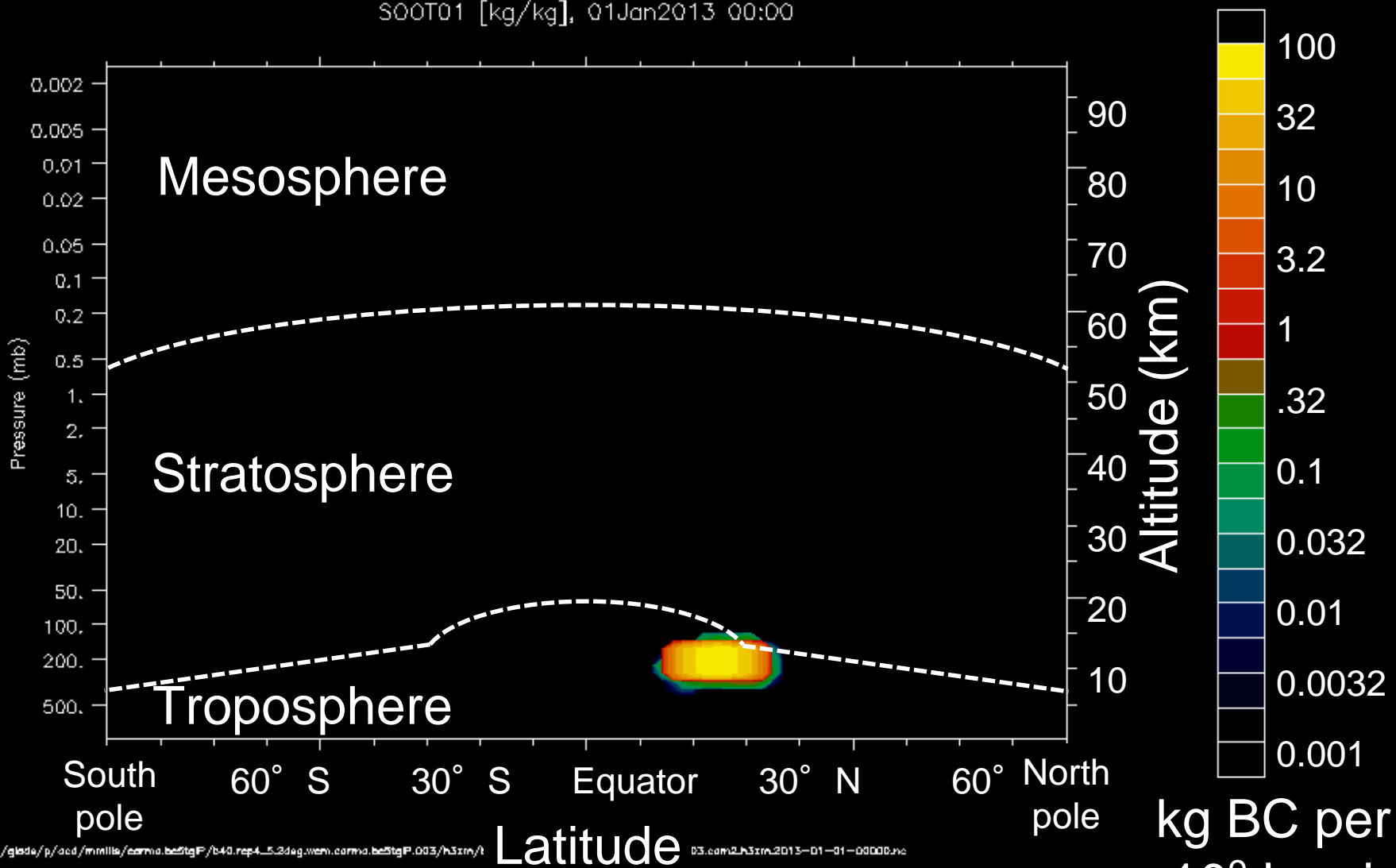


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Black carbon mass mixing ratio

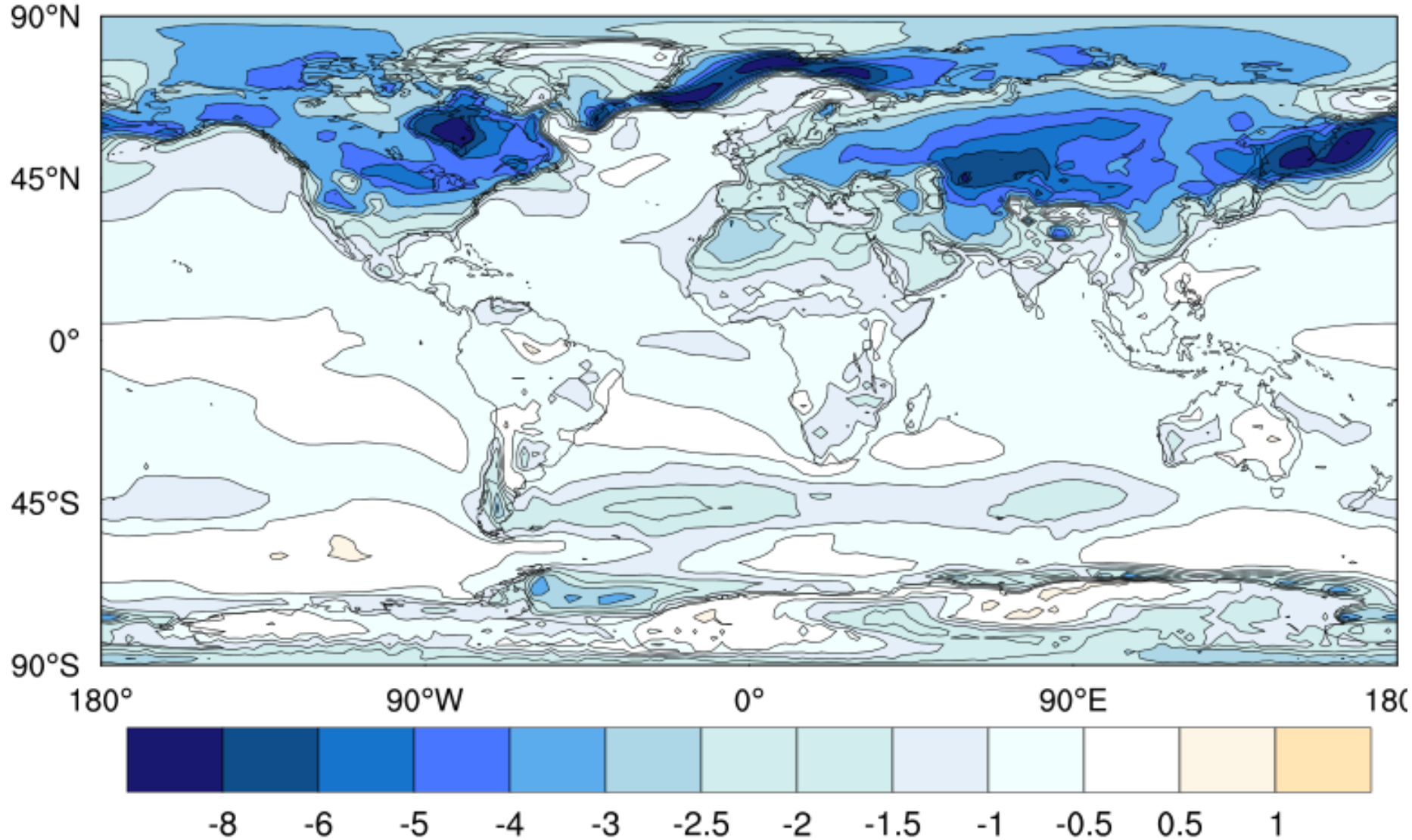
SOOT01 [kg/kg], 01Jan2013 00:00



/glade/p/acc/mills/carma.bestgP/b40.rep4_5.2deg.wem.carma.bestgP.003/h3zm/

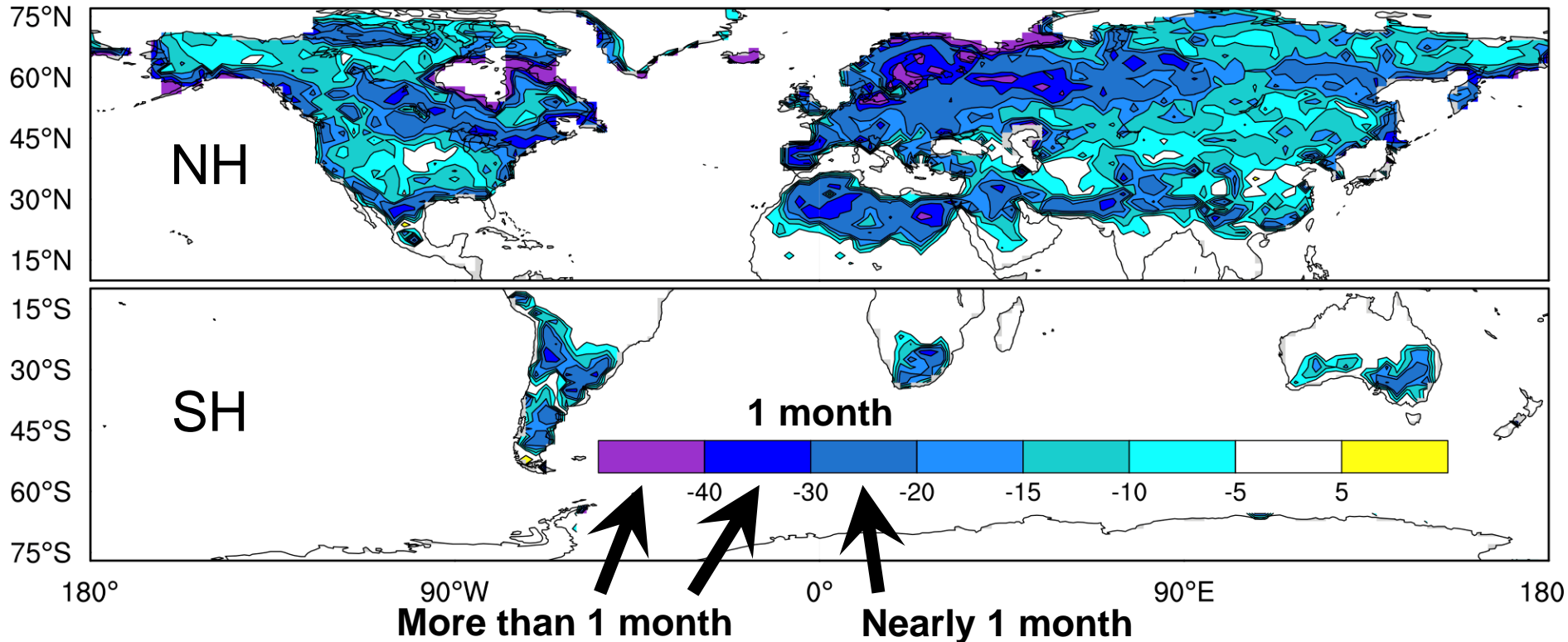
03.cam2.h3zm.2013-01-01-00000.nc

Surface temperature change (°C)



DJF average, years 1-5

Change in growing season (days), years 2-6 average



Ways agriculture can be affected by a nuclear war

- **Colder temperatures**
 - shortened frost-free growing season
 - cold spells during growing season
 - slower growth → lower yield
- **Darkness**
- **Less rainfall**
- **Enhanced ultraviolet radiation from ozone**
- **Radioactivity**
- **Toxic chemicals in atmosphere, soil, and water**
- **Lack of water supplies**
- **Lack of fertilizer**
- **Lack of fuel for machinery**
- **Lack of pesticides (but not of pests)**
- **Lack of seeds (and those that do exist are genetically engineered for the current climate)**
- **Lack of distribution system**

Currently
being
modeled

Following a nuclear war between India and Pakistan, reduced global temperatures, precipitation, and sunlight reduce food production globally

	<u>First 5 years</u>	<u>Second 5 years</u>
US maize	- 20%	- 10%
US soybeans	- 15%	- 10%
China maize*	- 15%	- 12%
China middle season rice*	- 26%	- 21%
China spring wheat*	- 26%	- 20%
China winter wheat*	- 38%	- 23%

Özdoğan et al., Impacts of a nuclear war in South Asia on soybean and maize production in the Midwest United States, *Climatic Change*, 2012, 116, 373.

*Xia et al., Decadal reduction of Chinese agriculture after a regional nuclear war, *Earth's Future*, 2015; 3, 27-48.



Chronic malnutrition today

821 million people 2017 (FAO 2018)



Global food supply

Global cereal ending stocks 2018/19 forecast:
115 days utilisation

Based on FAO Cereal Supply and Demand Brief 4 April 2019

People dependent on imported food for >50%
energy intake:
>300 million



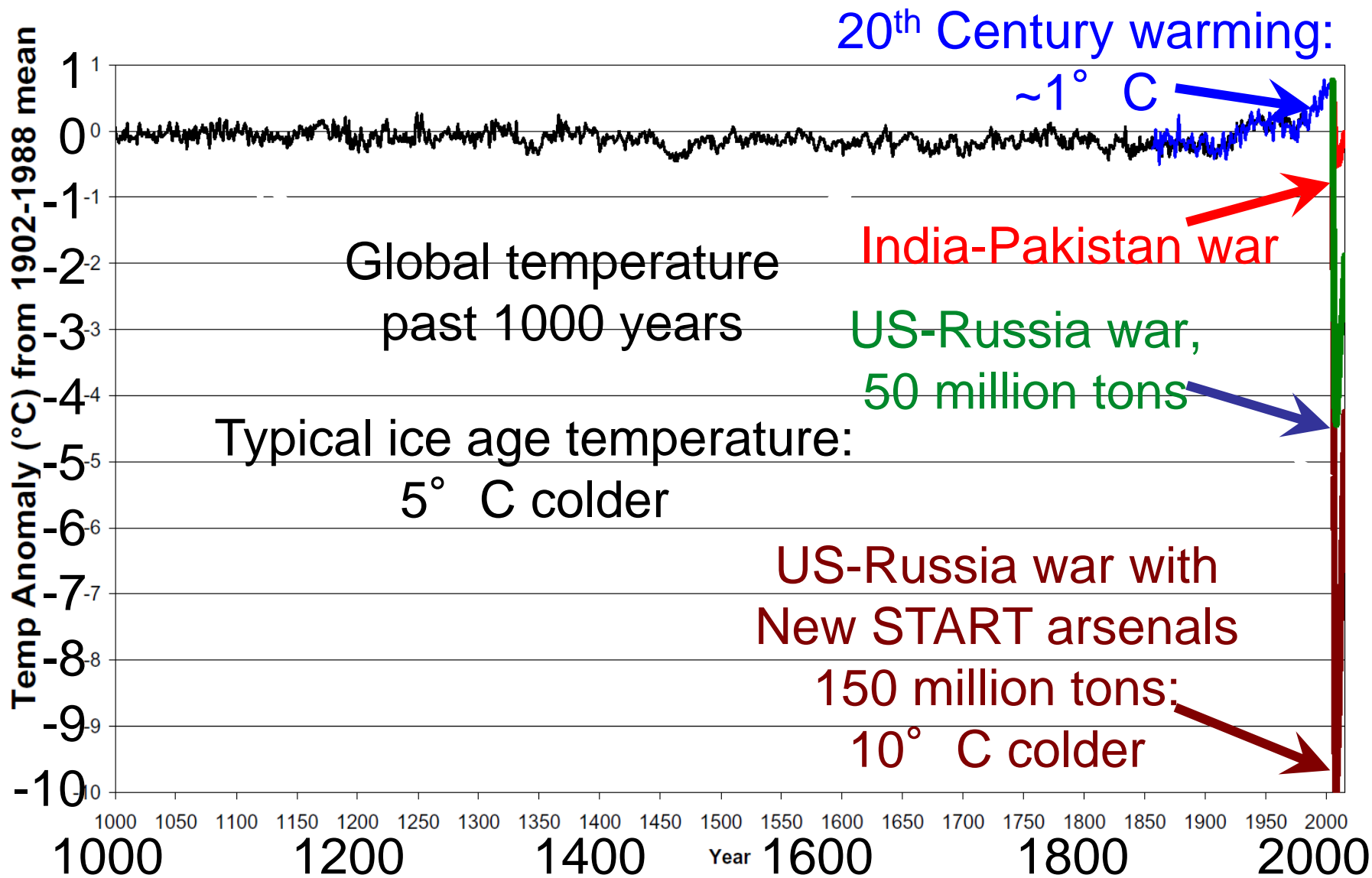
**Limited regional
nuclear war with low
yield weapons:**

**2 billion victims
of starvation
from nuclear
famine?**

+ epidemics, conflict



Surface temperature after global conflict drops to ice age conditions



Bulletin of the Atomic Scientists

IT IS 5 MINUTES TO MIDNIGHT



Feature

Self-assured destruction: The climate impacts of nuclear war

Alan Robock and Owen Brian Toon

Bulletin of the Atomic Scientists
68(5) 66–74

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Nuclear weapons are global suicide bombs

Disarmament is ... in reverse

Not disarming:

- No nuclear-armed state is disarming
 - No negotiations underway (except ?N Korea)
- Agreements abrogated/violated – ABM, JCPOA (Iran), INF Treaty ... ?CTBT, New START

But arming:

- All nuclear-armed states investing massively in indefinitely retaining and modernising their arsenals, adding new capacities
 - > US\$105 billion/y - increasing
 - USA: US\$1.2 trillion over next 30y



“Humanity now faces two simultaneous existential threats, ... nuclear weapons and climate change – were exacerbated this past year ...

It’s a state as worrisome as the most dangerous times of the Cold War, ...

The global nuclear order has been deteriorating for many years, ... The architecture of nuclear arms control built up over half a century continues to decay, while the process of negotiating reductions in nuclear weapons and fissile material stockpiles is moribund. The nuclear-armed states remain committed to their arsenals, are determined to modernize their capabilities, and have increasingly espoused doctrines that envision nuclear use.”

**2019: It is still
2 minutes to
midnight**

BAS Board of Sponsors
– 15 Nobel laureates



“The existential threat that nuclear weapons pose to humanity ... disarmament is the only guaranteed means to prevent nuclear war”

Antonio Guterres, UN Secretary General, 24 May 2018

“We are living in dangerous times.

We are on the brink of a new cold war.

... a resurgence of civil conflict, after more than two decades of decline.

Global military spending has more than doubled in inflation-adjusted dollars since the end of the cold war.

Morally repugnant weapons ... have been repeatedly used.

Arms control agreements have been abandoned or disrupted.”



**Rising nuclear risk,
disarmament and
the Nuclear Non-
Proliferation Treaty**

“We are now dangerously close to a world without arms control agreements, paving the way for a new arms race and for increased risk of nuclear weapons use.

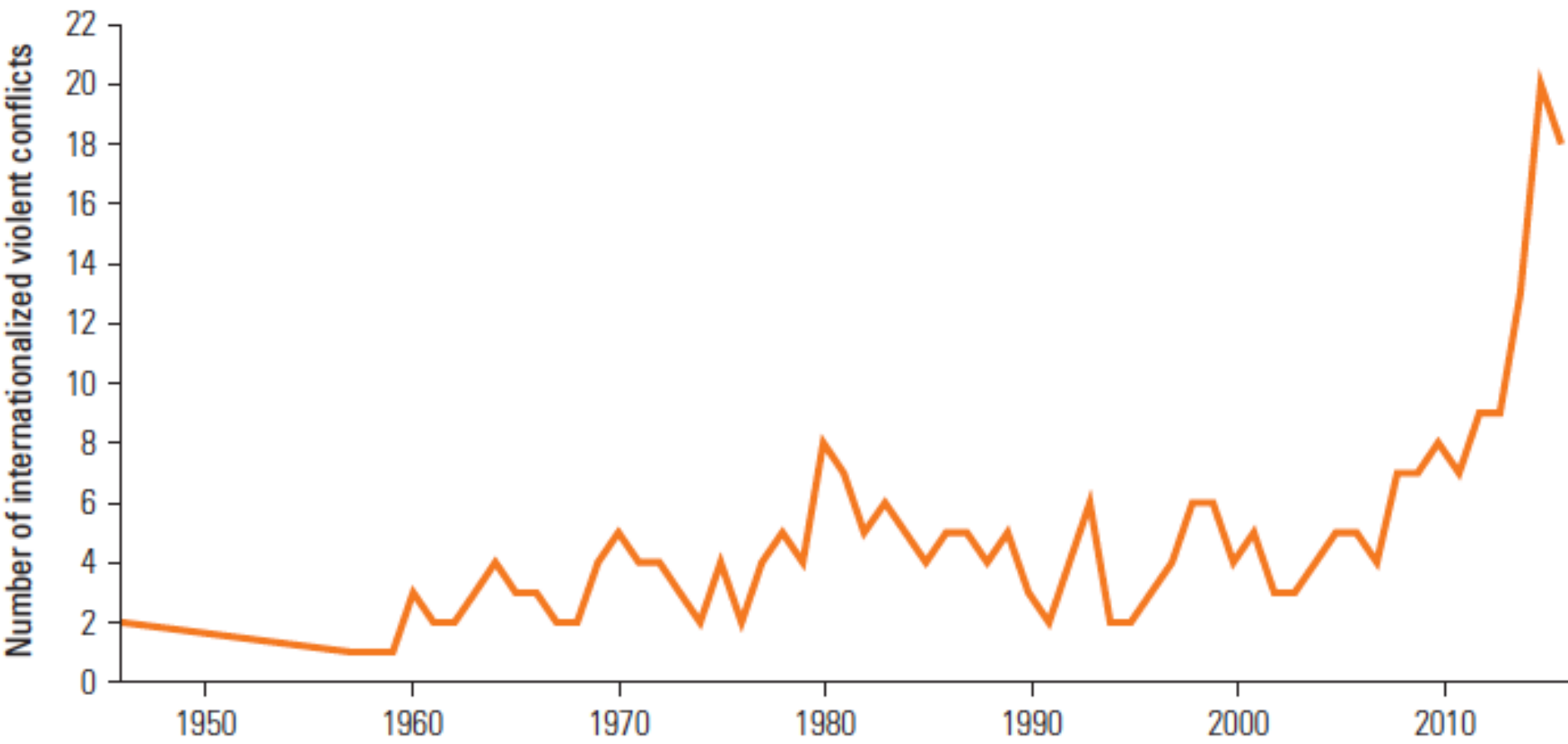
...the risk of nuclear weapons being used is now greater than it has been since the end of the Cold War.”

United States intelligence community annual assessment of worldwide threats 29 January 2019

warned that:

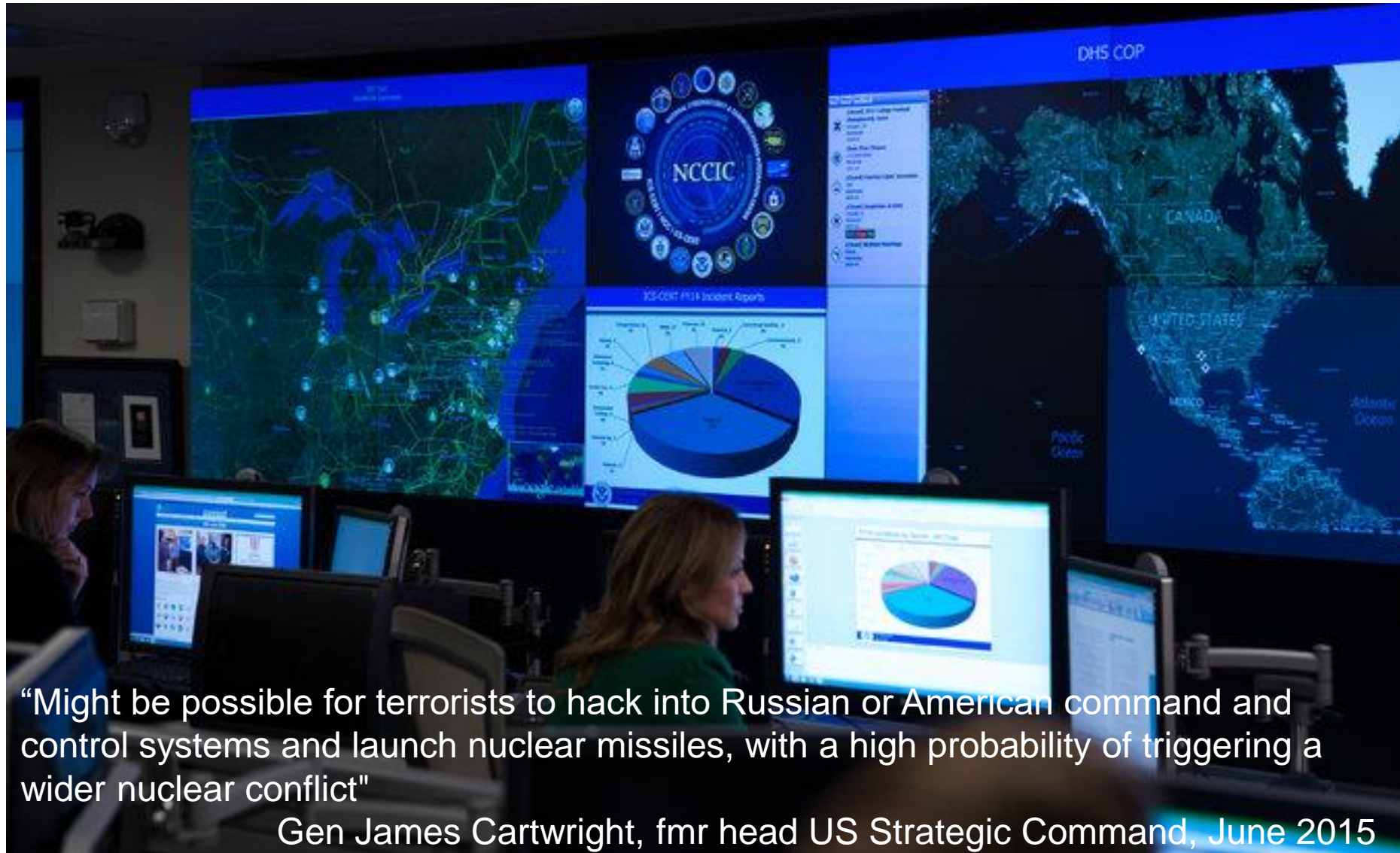
the effects of climate change and environmental degradation increase stress on communities around the world and intensify global instability and the likelihood of conflict, causing the danger of ... nuclear war to grow

FIGURE 1.5 Number of Internationalized Violent Conflicts, Global, 1946–2016



Source: Uppsala Conflict Data Program and Peace Research Institution Oslo (Allansson, Melander, and Themnér 2017; Gleditsch et al. 2002).

Cyberwarfare and nuclear weapons



“Might be possible for terrorists to hack into Russian or American command and control systems and launch nuclear missiles, with a high probability of triggering a wider nuclear conflict”

Gen James Cartwright, fmr head US Strategic Command, June 2015

US National Security Agency computers hacked 2017

US National Cybersecurity and Communications Integration Center, Arlington Va, NYT 29.4.15

Fissile materials global stockpiles – Jan 2017

Weapon yield	Plutonium	Highly enriched uranium
1 kiloton	1 - 3 kg	2.5 - 8 kg
20 kiloton	3 - 6 kg Nagasaki bomb 6 kg	5 - 16 kg
IAEA “significant quantities”	8 kg	25 kg
Modern nw	4 kg US declassified	12 kg

Highly enriched uranium (HEU)

- **1340 (± 125) tons HEU**
- 99% in n armed states
- India, Pak, Ru, DPRK producing
- >74,400 1st gen implosion nw @ 18 kg

Separated plutonium

- **520 (± 10) tons** – growing
- 230t military, 290t civilian
- All weapons usable
- India, Pak, Israel, DPRK prod for nw
- ~130,000 nw @ 4 kg

“We the peoples of the United Nations determined to save succeeding generations from the scourge of war ... ”

UN General Assembly Resolution 1.1, 1946



Figure 3.1. The first meeting of the United Nations General Assembly, London, January 1946. Passed on 24 January 1946, General Resolution 1.1 established a commission to draw up a plan “for the elimination from national armaments of atomic weapons.” *Source: United Nations Photo.*

The obligation to disarm

Nuclear non-proliferation Treaty(NPT)

- 191 states parties
- entered into force 1970

Article VI

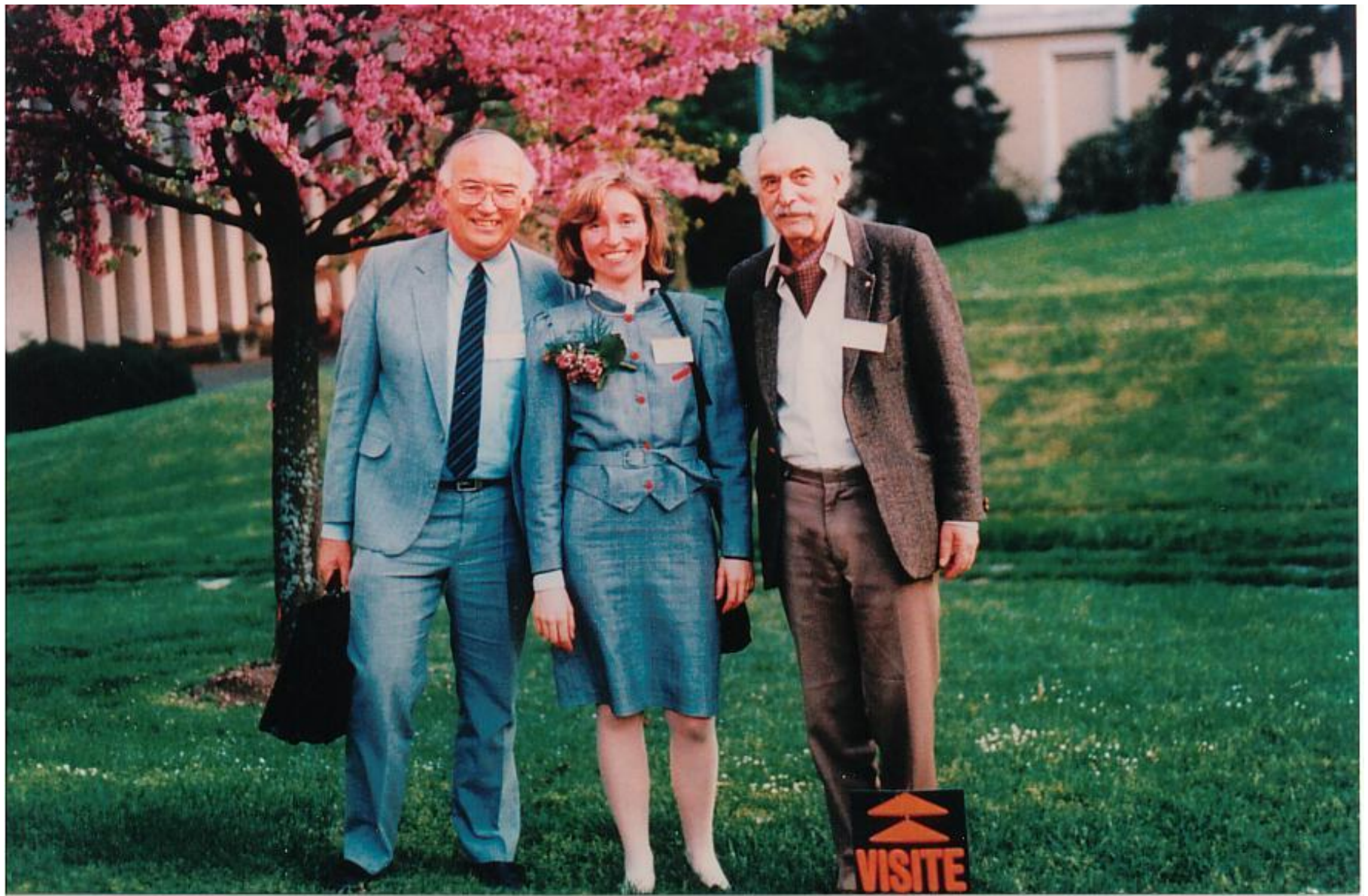
“Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament “

International Court of Justice

Advisory Opinion 8 July
1996, unanimously:

“...there exists an obligation
to pursue in good faith
and bring to conclusion
negotiations leading to
nuclear disarmament in
all its aspects under strict
and effective
international control.”





Vale George Salmond

George, Ann Marie
Janson, Erich
Geiringer WHA 1992

Indiscriminate inhumane weapons banned by international treaty



- [Expanding bullets 1899]
- Biological weapons 1972
- Chemical weapons 1993
- Landmines 1997
- Cluster munitions 2008

- The main basis for bans on all these has been humanitarian – unacceptable harm with any use
- Proven process: stigmatise - prohibit - eliminate

Norms matter

“How many States today boast that they are “biological weapon states” or “chemical weapon States”?”

Who is arguing now that bubonic plague or polio are legitimate to use as weapons under any circumstance, whether in an attack or in retaliation? Who speaks of a bio-weapon umbrella?”



Angela Kane,
when UN High
Representative for
Disarmament Affairs, NZ,
2014



ican
international campaign
to abolish nuclear weapons

Founded by IPPNW and MAPW in Melbourne

Campaign coalition: 532 partner organisations in 103 countries

Goal: A treaty for prohibit and provide for the elimination of nuclear weapons

Based on the unacceptable, catastrophic consequences of any use of nuclear weapons

www.icanw.org

Bringing the era of nuclear weapons to an end

ICRC President Jakob Kellenberger 20 April 2010 to Geneva diplomatic corps



- “Nuclear weapons are unique in their destructive power, in the unspeakable human suffering they cause, in the impossibility of controlling their effects in space and time, in the risks of escalation they create, and in the threat they pose to the environment, to future generations, and indeed to the survival of humanity.
- “... preventing the use of nuclear weapons requires ... negotiations aimed at prohibiting and completely eliminating such weapons through a legally binding international treaty.”

May 2010 NPT Review Conference

- A commitment to “achieve the peace and security of a world without nuclear weapons.”
- “expresses ... deep concern about the catastrophic humanitarian consequences of any use of nuclear weapons, and reaffirms the need for all States at all times to comply with applicable international law, including international humanitarian law.”

Humanitarian Impact of Nuclear Weapons



SECOND CONFERENCE ON THE
HUMANITARIAN IMPACT OF
NUCLEAR WEAPONS
NAYARIT, MEXICO 13-14 FEBRUARY, 2014



VIENNA CONFERENCE ON
THE HUMANITARIAN IMPACT
OF NUCLEAR WEAPONS
8-9 DEC. 2014

- **Three intergovernmental conferences on HINW, attracting most of the world's governments, concluded with no significant challenge:**
 - any use of nuclear weapons would be a **catastrophe**
 - **no effective humanitarian response** is possible
 - risk of nuclear weapons use has been underestimated, is growing, and exists as long as the weapons do
 - there is a **legal gap**: the most destructive of all weapons are not explicitly prohibited

Austrian → Humanitarian Pledge to fill the legal gap

“Austria pledges to cooperate with all relevant stakeholders ... to stigmatize, prohibit and eliminate nuclear weapons.”

– AUSTRIAN PLEDGE

127 states joined



How can states without NW change the game?

- Nuclear-armed states currently arming and modernising, not serious about disarmament
- States can't eliminate weapons they don't own, but they can de-legitimise, stigmatise and ban nuclear weapons
 - if they use the right forum
 - Not NPT meetings
 - Not UN Conference on Disarmament

UN Working Group on nuclear disarmament 2016



International Physicians
for the Prevention of Nuclear War



The health and humanitarian case for banning and eliminating nuclear weapons

International Physicians for the Prevention of Nuclear War (IPPNW)[†]
World Medical Association^{††}
World Federation of Public Health Associations[‡]
International Council of Nurses^{‡‡}

“Banning and eliminating nuclear weapons is the only
way to ensure planetary health”

United Nations Conference to Negotiate a Legally Binding Instrument to Prohibit Nuclear Weapons, Leading Towards Their Total Elimination

16 Feb, 27-31 March, 15 June – 7 July 2017



Conference President Ambassador Elayne Whyte Gómez, Costa Rica



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Available languages: **English**

UN conference to negotiate a legally binding instrument to prohibit nuclear weapons, leading towards their total elimination

A legally binding instrument to prohibit nuclear weapons would establish general prohibitions and obligations as well as a political commitment to achieve and maintain a nuclear-weapon-free world.

Sue Coleman-Haseldine, Kokotha nuclear test survivor, South Australia





My father Yami Lester was blinded by the British nuclear test. Many of his family and people died and many are still suffering today. The emotional, mental and physical suffering is felt by generations.

- Karina Lester, second generation nuclear test survivor from Anangu Pitjantjatjara Yankunytjatjara Aboriginal land in South Australia

Karina Lester, Anangu
Pitjantjatjara Yankunytjatjara
2nd generation nuclear test
survivor
South Australia





VOTE 'YES' FOR HUMANITY

VANUATU

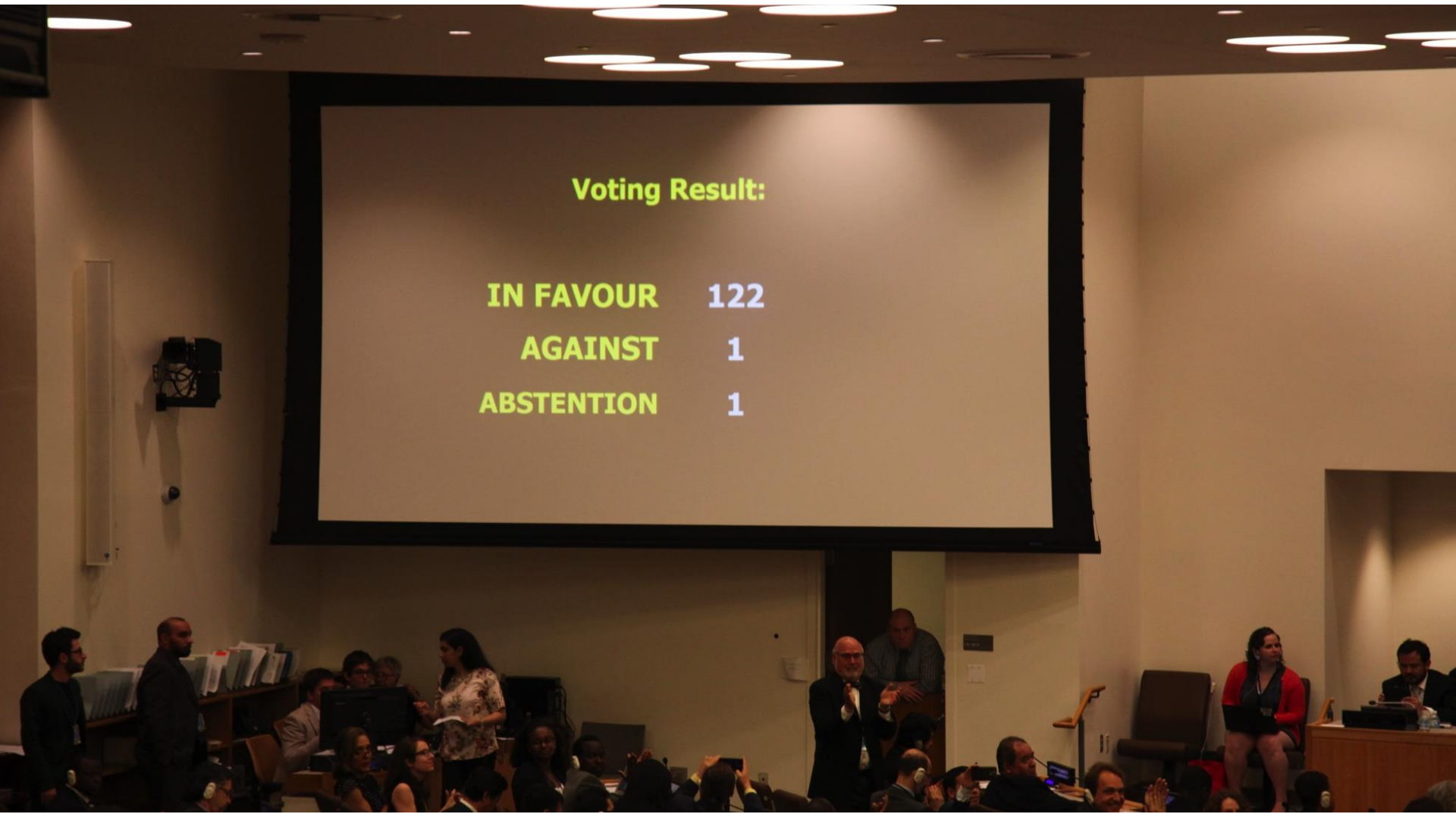
VOTE 'YES' FOR HUMANITY

VENEZUELA

VOTE 'YES' FOR HUMANITY

Voting Result:

IN FAVOUR	122
AGAINST	1
ABSTENTION	1





'FOR DECADES,
WE HAVE SPOKEN
OUT AGAINST THE BOMB.
NOW IT IS AS IF
THE WORLD HAS
FINALLY HEARD
OUR CRIES'



Former Senator Abacca Anjain-Maddison, Rongelap descendant, Marshall Islands



“Without the leadership so ably displayed by ICAN, we would not have achieved our objective today.”

Thomas Hajnoczi, Austrian Ambassador, 7.7.17



BIOLOGICAL WEAPONS BANNED 1972



CHEMICAL WEAPONS BANNED 1993



LAND MINES BANNED 1997



CLUSTER BOMBS BANNED 2008



NUCLEAR WEAPONS BANNED 2017!

6 May 2019: 70 signatures
23 ratifications





*We are saying to our children,
YES, it is possible to inherit a world
free from nuclear weapons.*

WHYTE GOMEZ
President, U.N. Nuclear Weapons Ban Conference

Treaty on the Prohibition of Nuclear Weapons

- Reflects health /humanitarian evidence
 - “Catastrophic consequences cannot be adequately addressed, pose grave implications for human survival, the environment, socioeconomic development, ... food security and the health of current and future generations”
 - First disarmament treaty to cite disproportionate impact on women and girls and Indigenous peoples
- **Categorical and comprehensive prohibition**
- **Provides pathways for all states to join:**
 - Possess NW
 - Prior possession NW
 - NW stationed
 - Assist in preparations to use NW
- Maintains/strengthens safeguards
- Obligations:
 - Victim assistance and environmental remediation
 - International cooperation
 - Promote universalisation
- Indefinite duration
- No reservations
- Entry into force: 50 ratifications

AMERICAS

A Treaty Is Reached to Ban Nuclear Arms. Now Comes the Hard Part.

By RICK GLADSTONE JULY 7, 2017

Leadership



#NuclearBan

WISH YOU WERE HERE.



Moral leadership

“ ... a crucial basis for their elimination.”

Peter Maurer
ICRC President

“the possession of nuclear weapons is immoral”

Pope Francis 12 Jan 2019



Red Cross/Red Crescent Council of Delegates Nov 2017



Power of humanity

Council of Delegates of the International
Red Cross and Red Crescent Movement

10-11 November 2017, Turkey



or

1. *calls on* all States to promptly sign, ratify or accede to, and faithfully implement the Treaty on the Prohibition of Nuclear Weapons;

**COUNCIL OF DELEGATES
OF THE INTERNATIONAL RED CROSS
AND RED CRESCENT MOVEMENT**

Antalya, Turkey
10–11 November 2017

**Working towards the elimination of nuclear weapons:
2018–2021 action plan**

RESOLUTION



WORLD
MEDICAL
ASSOCIATION

WMA STATEMENT ON NUCLEAR WEAPONS
Revised Reykjavik, Iceland Oct 2018

- “... joins with others ... , including the Red Cross and Red Crescent movement, International Physicians for the Prevention of Nuclear War, the International Campaign to Abolish Nuclear Weapons, and a large majority of UN member states, in calling, as a mission of physicians, on all states to promptly sign, ratify or accede to, and faithfully implement the Treaty on the Prohibition of Nuclear Weapons; and
- Requests that all National Medical Associations join the WMA in supporting this Declaration, ... educate the general public and to urge their respective governments to work urgently to prohibit and eliminate nuclear weapons, ...”

Government action at all levels

- Cities urging their federal government to join the TPNW: **ICAN Cities Appeal**
 - Melbourne, Sydney, Canberra, Bayside, Blue Mountains, Lismore, Wollongong, Darebin, Fremantle, Inner West NSW, Moreland, Randwick, Yarra, Yarra Ranges, Newcastle, Hobart ...
 - Madrid, Barcelona, Geneva, Mainz, Milan, Manchester, Trondheim, Toronto, Baltimore, Los Angeles, 1700+ Japanese cities including Hiroshima and Nagasaki, Washington DC, ...
- States
 - Assembly and Senate of California, 5 Sep 2018:

“The Legislature urges our federal leaders and our nation to embrace the Treaty on the Prohibition of Nuclear Weapons and make nuclear disarmament the centerpiece of our national security policy; ...”
- National parliaments
 - US House of Reps McGovern-Blumenauer resolution 302: Embracing the goals and provisions of the Treaty on the Prohibition of Nuclear Weapons, 8 April 2019

Money is moving

Divestment – banks, sovereign wealth funds, pension funds etc

- Cooperative Bank (UK), 2015;
Amalgamated Bank (US) Sep 2017
- Norwegian Pension Fund – largest wealth fund (US\$1.1 trillion) pulled out of BAE Systems because nw “violate fundamental humanitarian principles” Jan 2018
- Dutch ABP – largest pension fund in Europe will divest all holdings in nw companies, product by definition harmful to humans, Jan 2018
- Deutsche Bank, May 2018
- Largest Belgian KBC bank, June 2018
- AP4 Swedish pension fund, Jan 2019
- Resona Holdings Japan, finance Jan 2019
- Cities of Cambridge (MA), Takoma Park, Ojai, (Calif); Leuven (Belg)
- Ghent University



Money needs to move

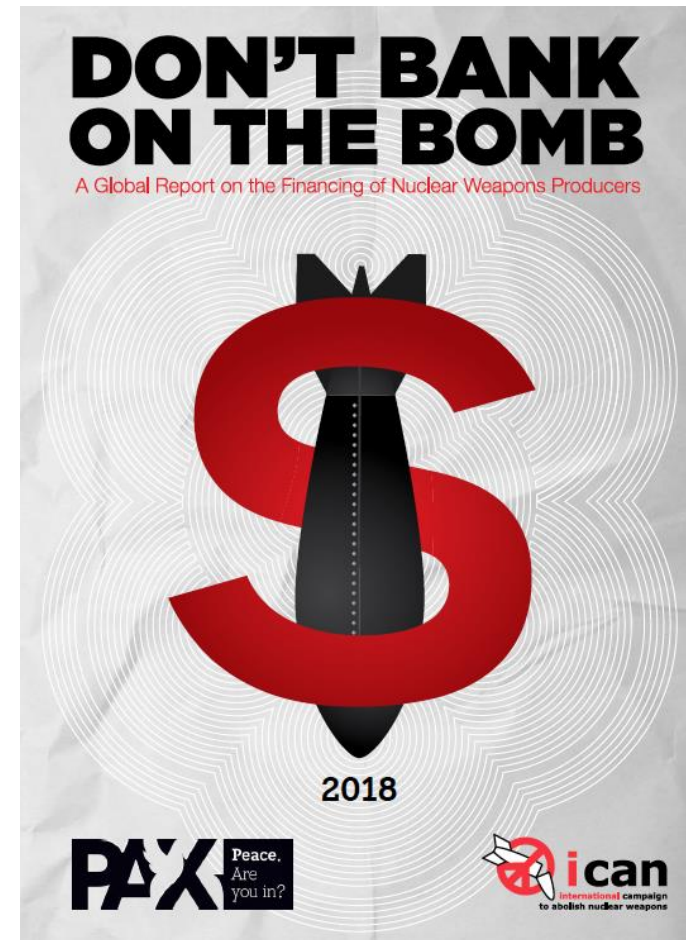
Australia

– Hall of Shame:

- A\$6484m to nw makers 2014 - Oct 17 by:
 - ANZ A\$2445m
 - Macquarie \$1938m
 - Westpac \$1584m
 - CBA \$517m

– Hall of Fame:

- Australian Ethical
- Future Super



Walking the talk – first do no harm

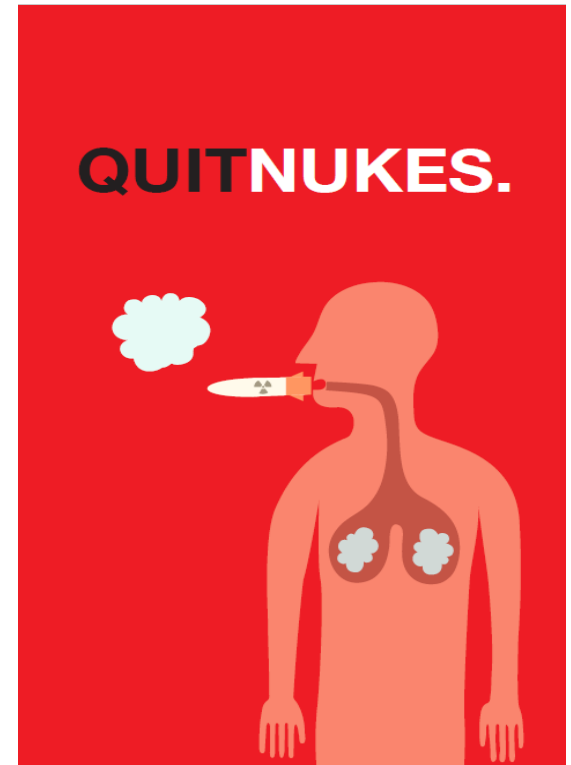


MAPW

health professionals promoting peace

University of Melbourne

“Partnering with nuclear weapons companies is unethical and unacceptable.”



Unacceptable weapons

Statement for students, staff and alumni of the University:

- I will not accept research or other funds from nor collaborate with such companies;
- I want my university to avoid or end funding from, including for research, and collaboration with such companies.

Ripple effects

UN Human Rights Commission, General Comment on ICCPR Article 6 on the right to life, 30 Oct 2018:

Stronger after a long wait:

“66. The threat or use of weapons of mass destruction, in particular nuclear weapons, which are indiscriminate in effect and are of a nature to cause destruction of human life on a catastrophic scale is **incompatible with respect for the right to life and may amount to a crime under international law. ...**

They must also respect their international obligations to **pursue in good faith negotiations in order to achieve the aim of nuclear disarmament** under strict and effective international control [274] and to **afford adequate reparation to victims** whose right to life has been or is being adversely affected by the testing or use of weapons of mass destruction, ...

Australia: the most active weasel

For undermining the NPT; obstructing efforts to ban nuclear weapons; general duplicity and insincere conduct; sundry offences against reason and logic.



The TPNW is compatible with a military alliance with a nuclear-armed state ...

- ... provided prohibited activities are excluded
- Nothing in ANZUS Treaty (nor NATO) stipulates extended nuclear deterrence
- NATO already has divergence in nuclear policies:
 - Denmark, Norway, Spain – do not allow deployment of nw in peacetime
 - Iceland, Lithuania – do not allow deployment of nw anytime
- 11 of 17 US “Major Non-NATO Allies” voted for treaty adoption:
 - Egypt, Jordan, New Zealand, Argentina, Bahrain, Philippines, Thailand, Kuwait, Morocco, Afghanistan, Tunisia
 - 3 of these have signed to date (Thailand, Philippines, NZ)
 - Thailand and NZ have ratified
 - No issues for non-nuclear military cooperation evident

DEN NORSKE NOBELKOMITÉ

HAR OVERENSSTEMMENDE MED
REGLENE I DET AV

ALFRED NOBEL

DEN 27. NOVEMBER 1895 OPPRETTEDE
TESTAMENTE TILDELT

International Physicians for the
Prevention of Nuclear War

NOBELS FREDSPRIS FOR 1985

OSLO, 10. DESEMBER 1985

Eivind Harnvåg *Gjerdhede Andreassen*
Olavdahl *Gunnar Stålslett* *Francis Røysund*



IPPNW Nobel Peace Prize 1985

“..IPPNW has performed a considerable service to mankind by spreading authoritative information and creating an awareness of the catastrophic consequences of atomic warfare.

... Such an awakening of public opinion, ... can give the present arms limitation negotiations new perspectives and a new seriousness.”

"For the greatest benefit to mankind"
Alfred Nobel

2017 NOBEL PEACE PRIZE

International Campaign to Abolish Nuclear Weapons (ICAN)



- “... for its work to draw attention to the catastrophic humanitarian consequences of any use of nuclear weapons and for its ground-breaking efforts to achieve a treaty-based prohibition of such weapons.”

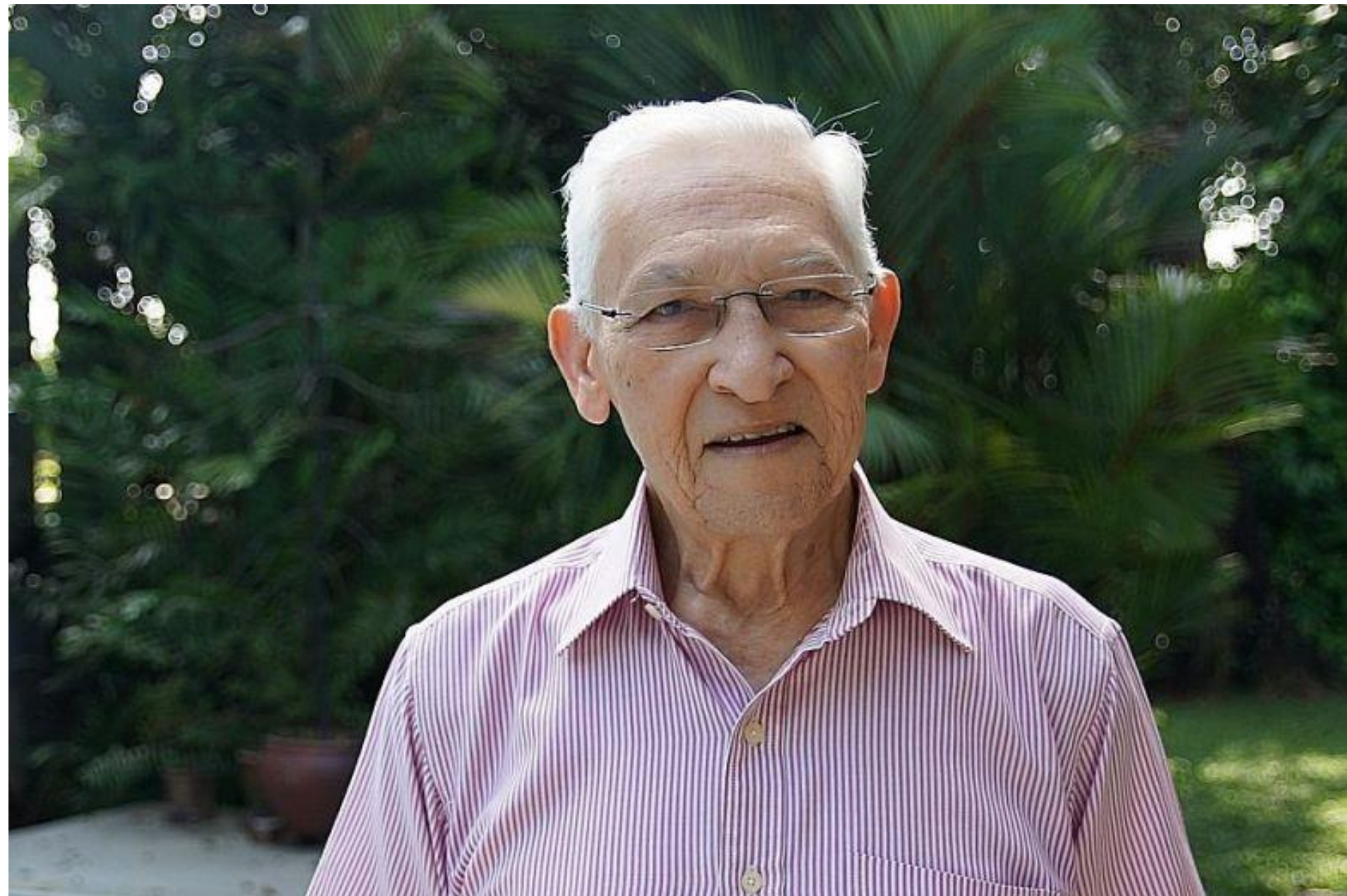


The first Nobel Peace Prize born in Australia





Datuk Dr Ron McCoy







The NEW ENGLAND JOURNAL *of* MEDICINE

Perspective

The 2017 Nobel Peace Prize and the Doomsday Clock — The End of Nuclear Weapons or the End of Us?

Lachlan Forrow, M.D., Tilman Ruff, M.B., B.S., and Setsuko Thurlow, C.M., M.S.W.

The awarding of the 2017 Nobel Peace Prize to the International Campaign to Abolish Nuclear Weapons (ICAN) may mark a turning point in efforts to ensure that humanity survives

stan, India, Israel, and North Korea — maintain nearly 15,000 nuclear weapons. Almost 20 years after warnings were published in the *Journal* and elsewhere about