

There Are No Small Nuclear Weapons, Not Even in Europe!

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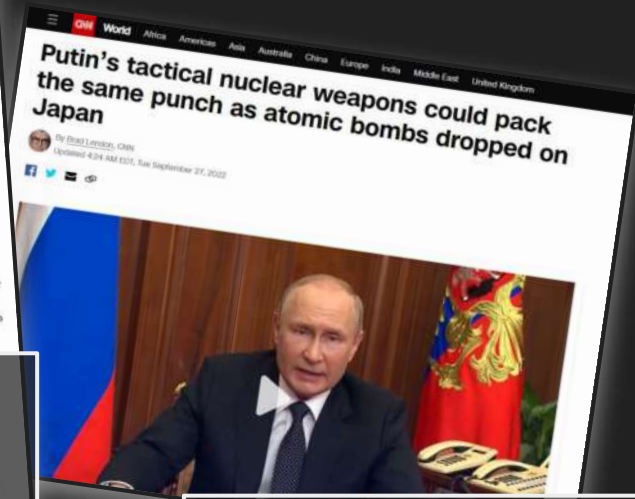
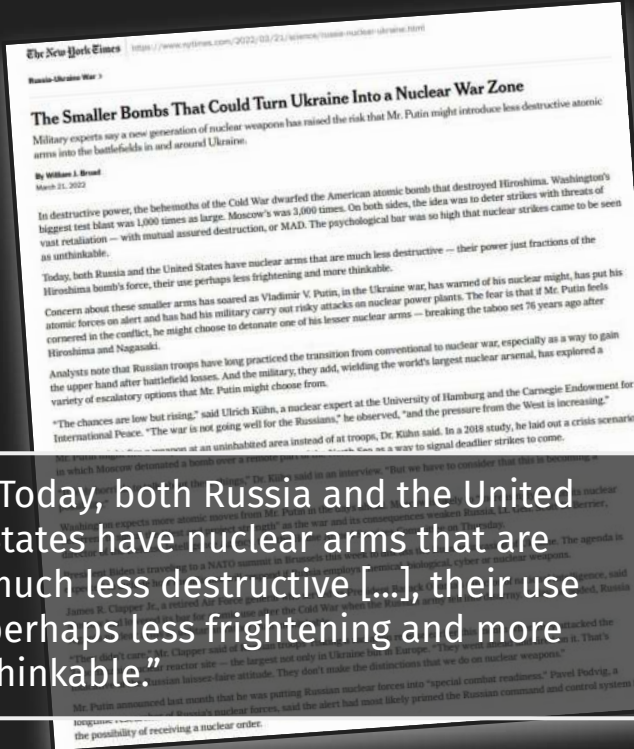
Institute for Peace Research and Security Policy at the University of Hamburg

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Motivation

Motivation

Normalization of nuclear weapons



“Today, both Russia and the United States have nuclear arms that are much less destructive [...], their use perhaps less frightening and more thinkable.”

“[...] the use of tactical nuclear weapons against command centers or air bases in Europe could limit civilian casualties in surrounding areas.”

Motivation II

**Tactical nuclear
weapons in many
locations**



There are
no
small nuclear weapons


www.1kt.at

The explosive power of nuclear weapons

“Yield”, measured in 1000 tons conventional explosive-equivalent (**kT**)

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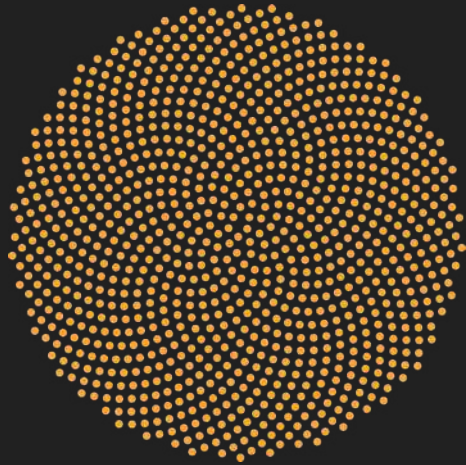
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10 tons
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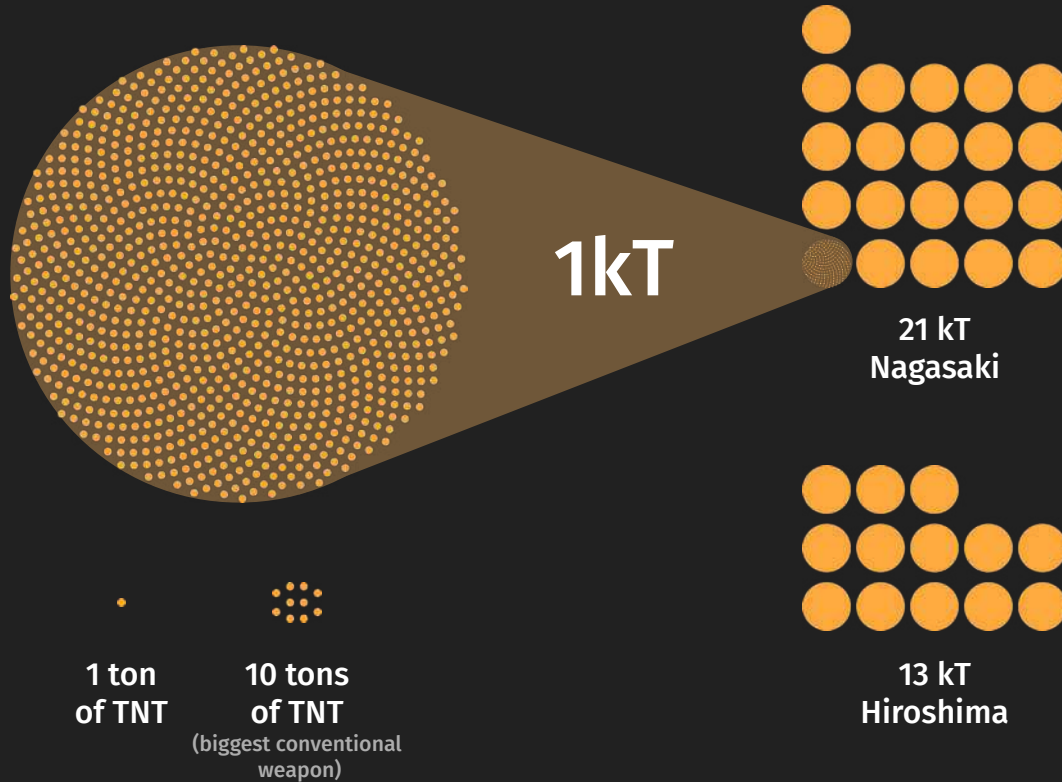
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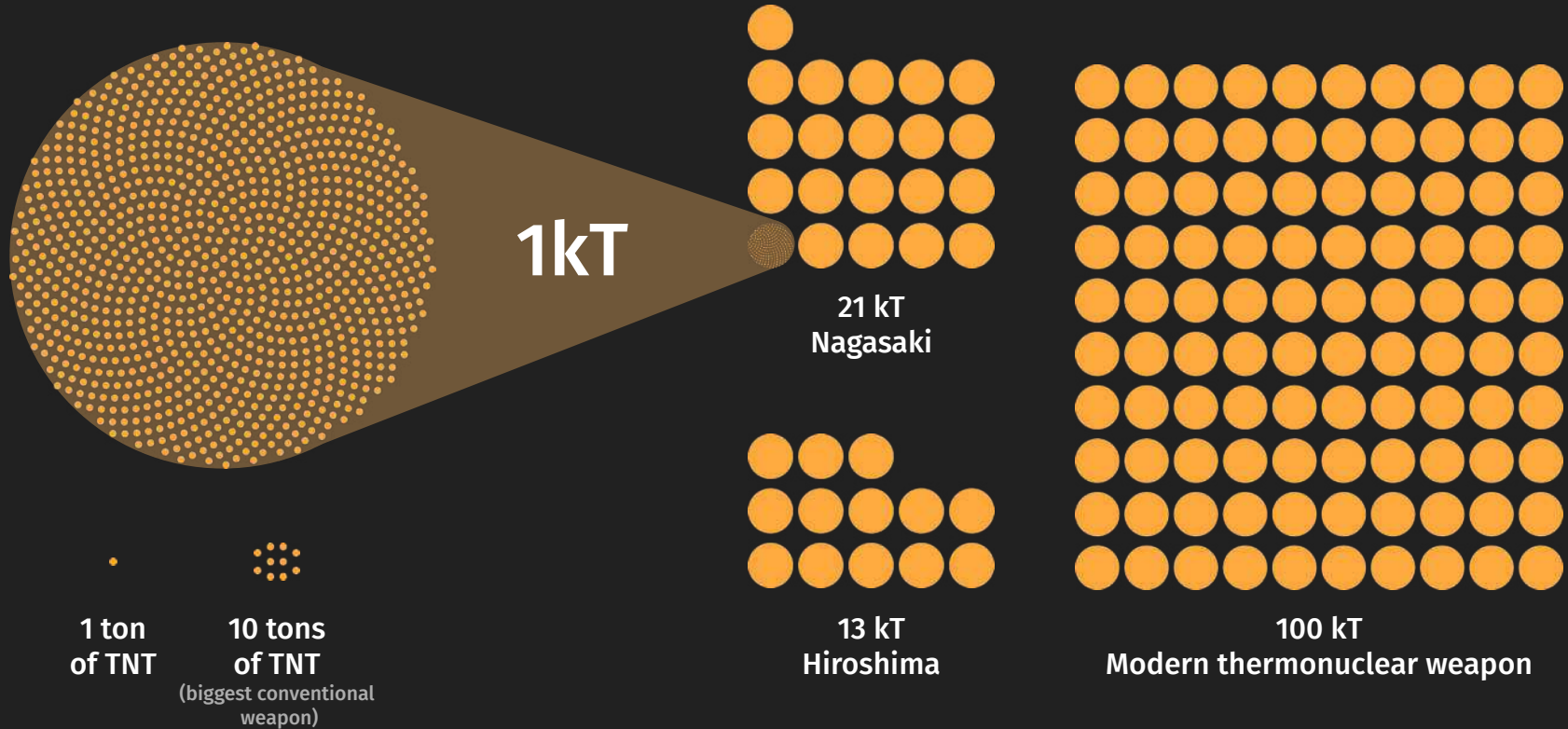
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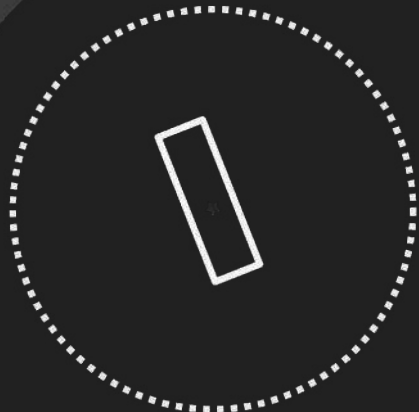
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Effects of a 1 kT nuclear weapon

Hamburg Central Station & Alster for Scale Comparison



5 minute walk from marker

Effects of a 1 kT nuclear weapon

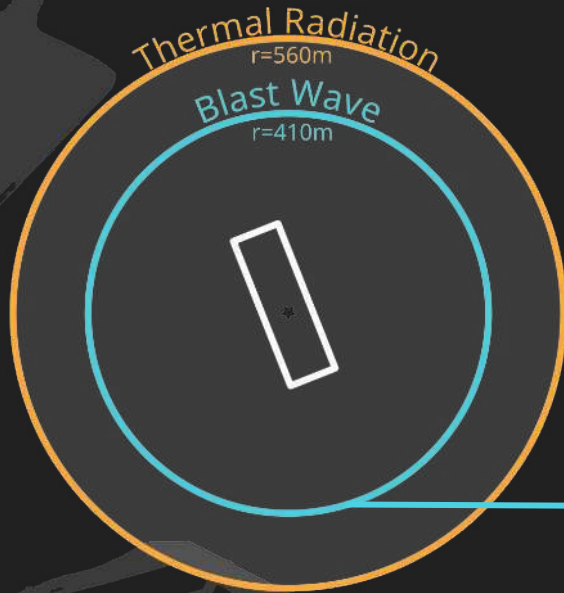
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Blast wave causes building
damage, 98% of people will
die immediately
(Radius for overpressure of 12psi/0.8 bar)

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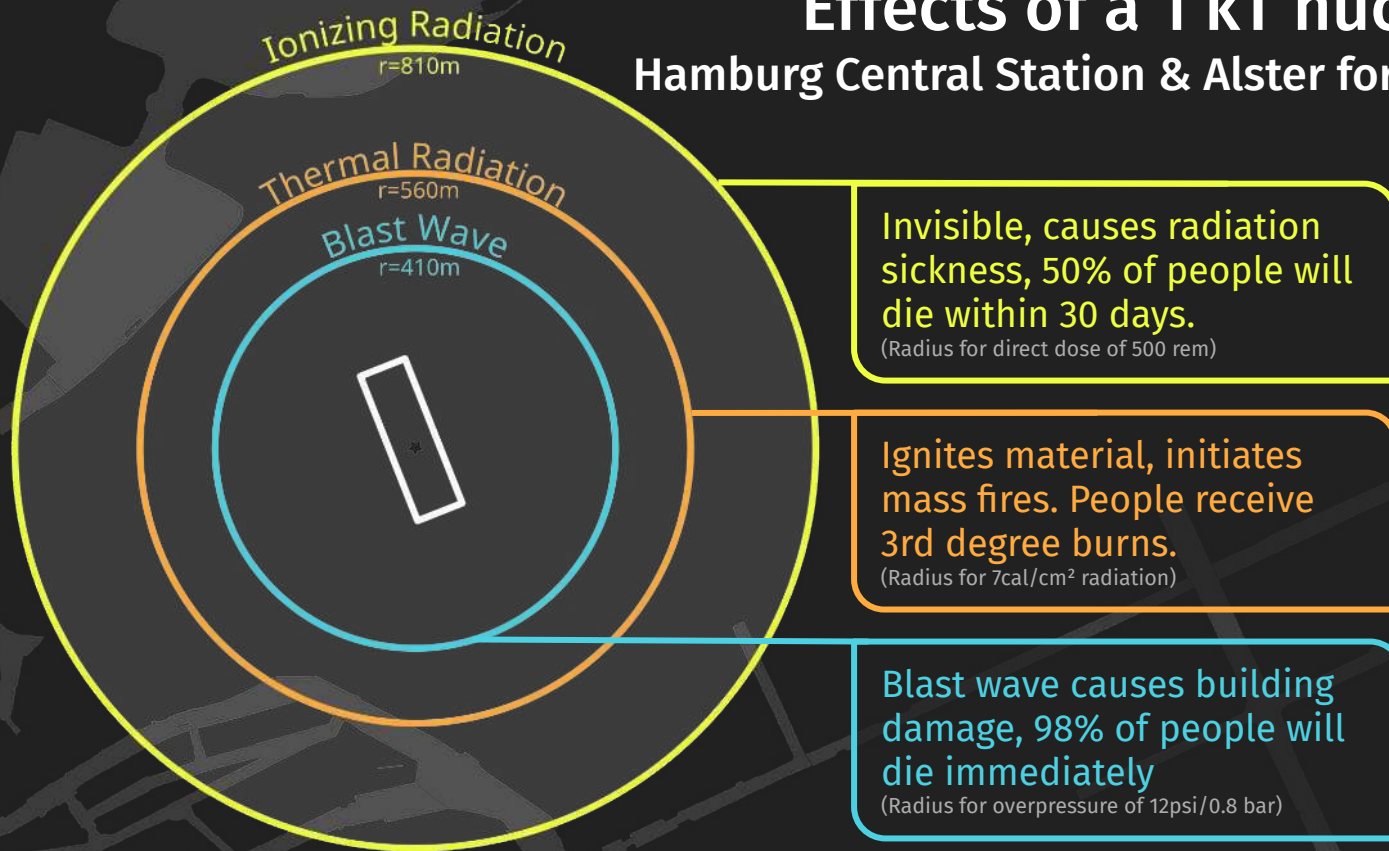
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Ignites material, initiates mass fires. People receive 3rd degree burns.
(Radius for 7cal/cm^2 radiation)

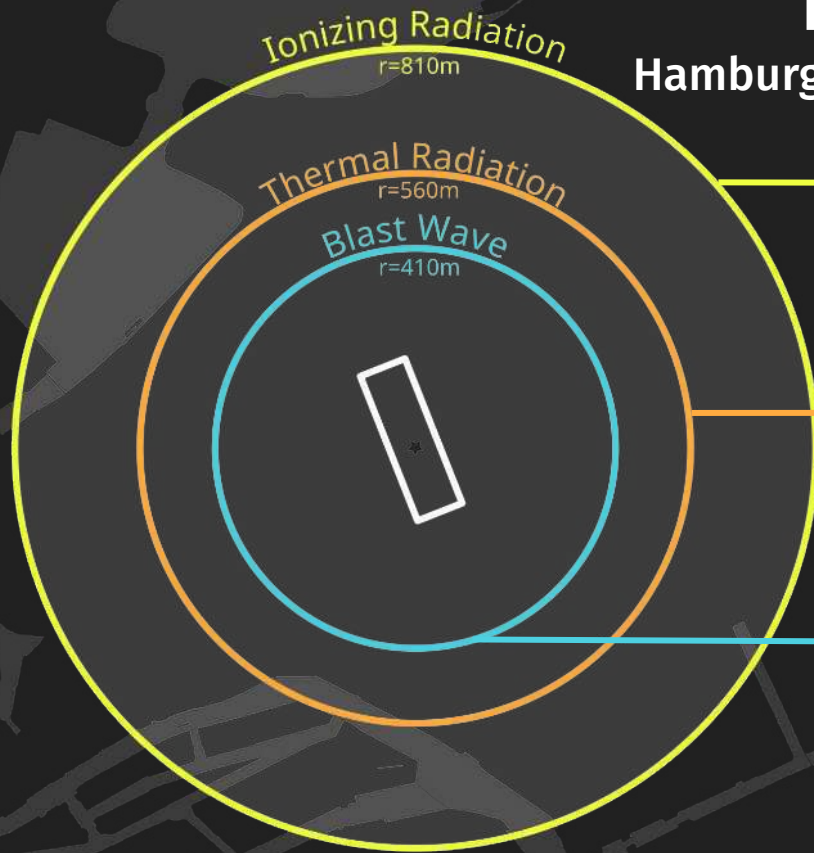
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Effects of a 1 kT nuclear weapon Hamburg Central Station & Alster for Scale Comparison



Effects of a 1 kT nuclear weapon

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Invisible, causes radiation sickness, 50% of people will die within 30 days.

(Radius for direct dose of 500 rem)

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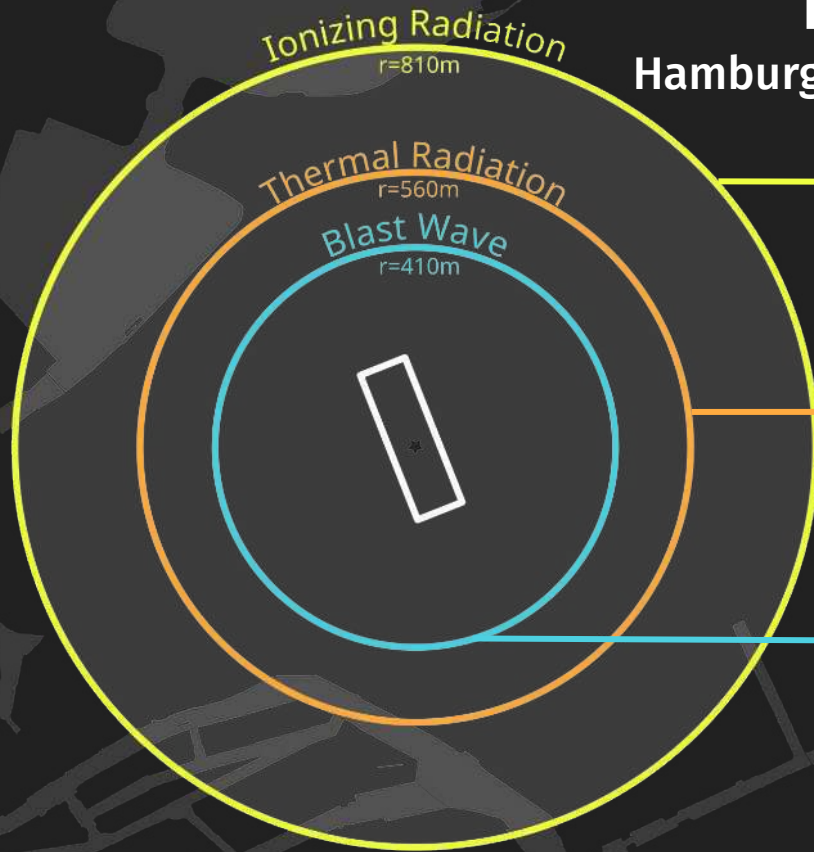
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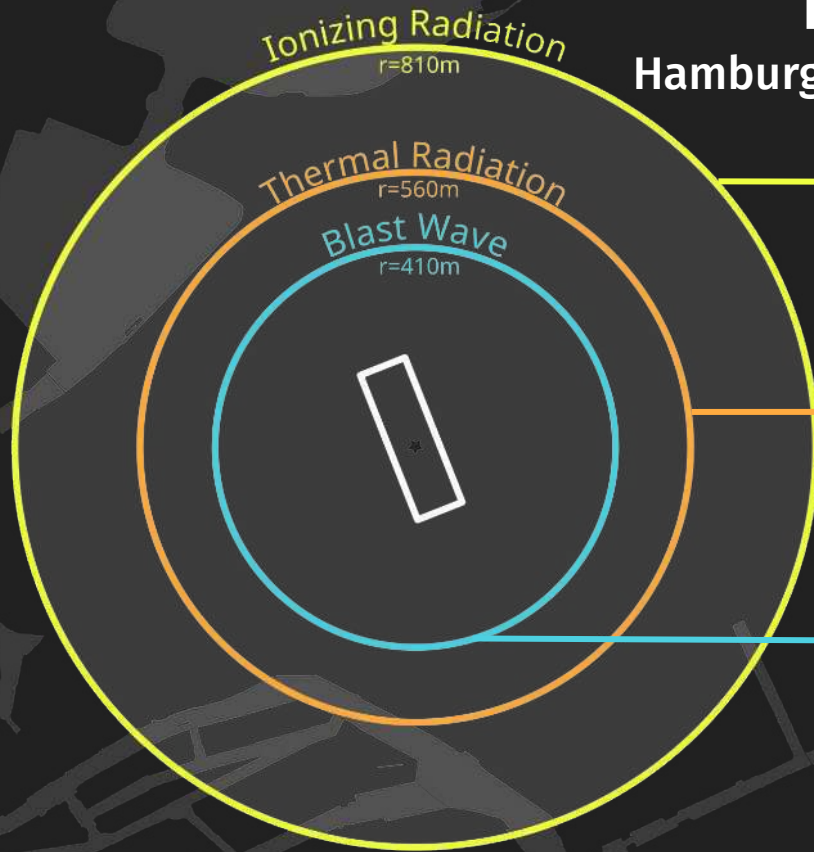
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Additional health effects after weeks, months & years.

Fallout

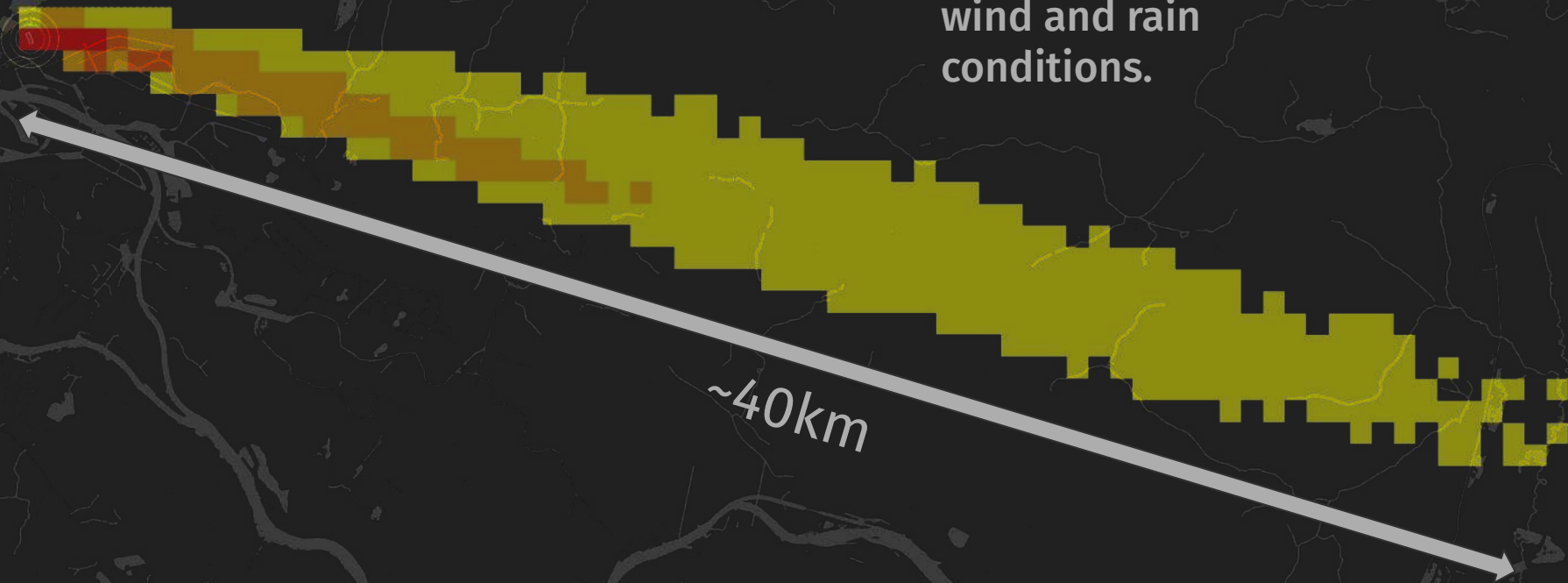
Regional contamination for “ground bursts”



Fallout

Regional contamination for “ground bursts”

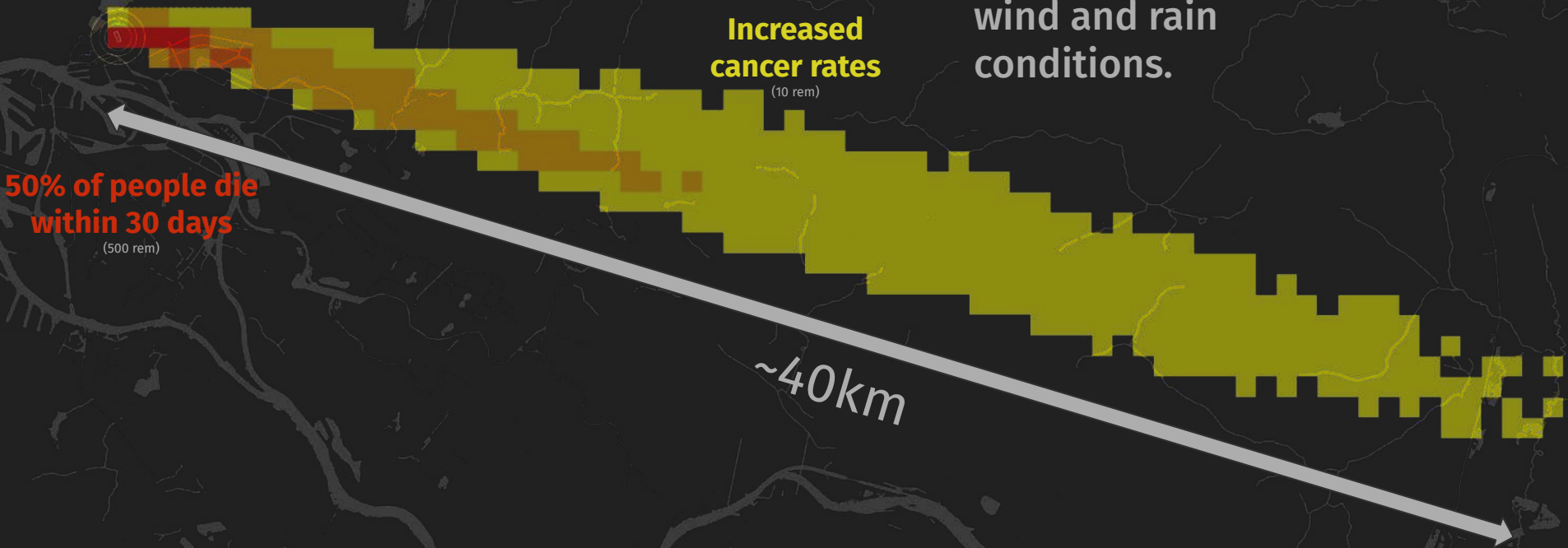
Radioactive particle dispersal depends on wind and rain conditions.



Fallout

Regional contamination for “ground bursts”

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Fallout

Regional contamination for “ground bursts”

Radioactive particle dispersal depends on wind and rain conditions.

Increased cancer rates

(10 rem)

50% of people die within 30 days

(500 rem)

~40km

Outside of population centers, fallout affects agricultural production and water supplies.

Social & Psychological Effects after the use of a single nuclear weapon

Mental health is considered biggest
problem of reactor accidents
Three Mile Island (1979) and Chernobyl (1986).



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Technological progress **increases the number** of people exposed to disasters.

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Technological progress **increases the number** of people exposed to disasters.

News and social media exposure will have overwhelming negative **mental health consequences** (cf. 9/11, Fukushima).

(First) Takeaways

There are **no small nuclear weapons** because

- 1) ... direct effects are catastrophic
- 2) ... of unknown global social and psychological effects

Not
even in Europe!

www.nuclearsharing.eu

How many?



The number of weapons
was recently reduced from
150 to 100

Status of NATO's Nuclear Weapons

- B61-12 - weapon modernization with increased usability
- Delivery of B61-12 to bases in Europe imminent
- Germany, Belgium, Netherlands, Italy: Upgrade dual-capable aircraft to F35
- Additional bases receive upgrades for storage vaults: Lakenheath (UK) and Ramstein (Germany)



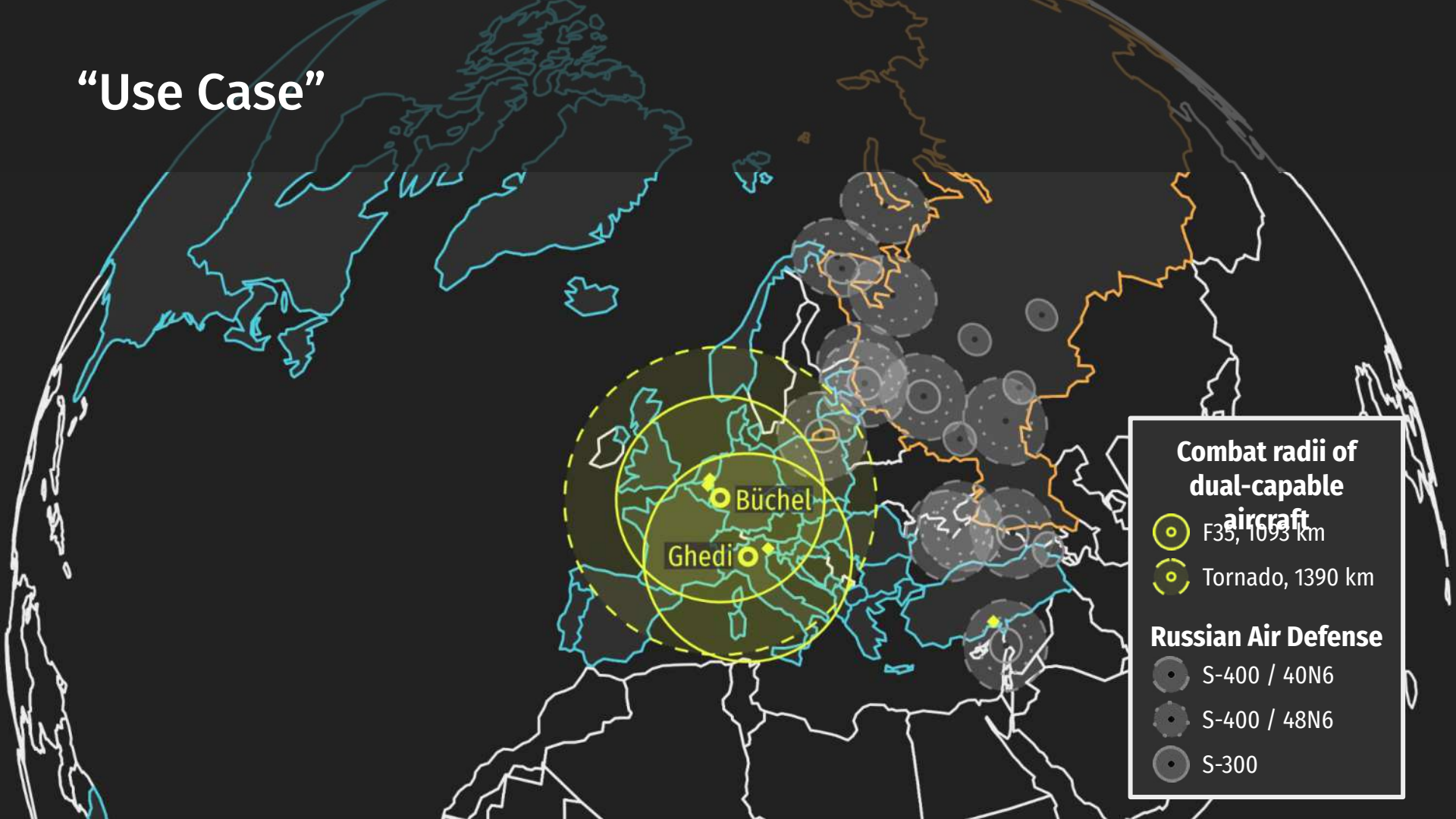
How small?

A map of Europe and the Mediterranean region with several nuclear bomber bases marked with yellow diamonds. The bases are labeled: Volkel, Kleine Brogel, Büchel, Ghedi, Aviano, and Incirlik. The map uses a dark background with white and yellow outlines for landmasses and borders.

Volkel
Kleine Brogel ♦ Büchel
Ghedi ♦ Aviano
♦ Incirlik

The new B61-12 has four possible yields
0.3 kT, 1.5 kT, 10 kT, 50 kT

“Use Case”



Not
even in Europe
(including Russia)

More in Russia

- ◆ NATO Base with Nuclear Sharing
- ✿ Russian Storage (National Level)
- ✕ Russian Storage (Base Level)

Kolosovka
Volkel
Kleine Brogel ◆ Büchel
Ghedi ◆ Aviano
Incirlik
Engels AFB/ Saratov-63



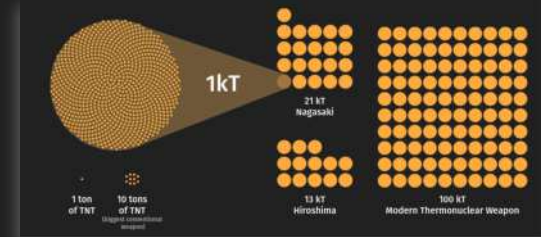
Arsenals for a Global Nuclear War

Ordered by explosive power

“Tactical”

Nagasaki yield or less
(≤ 21 kT)

560



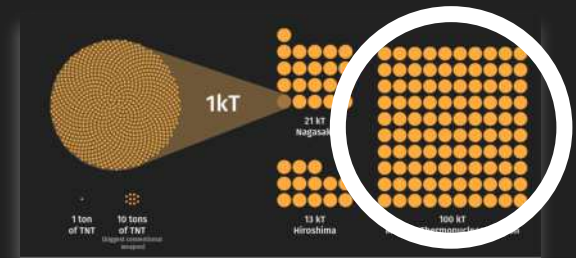
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(≤ 21 kT) **560**

Yield up to 5 times larger
(≤ 100 kT) **200**



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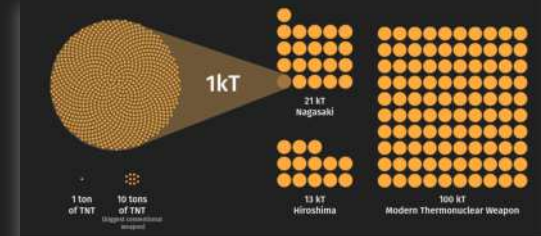
“Tactical”

Nagasaki yield or less
(≤ 21 kT) **560**

Yield up to 5 times larger
(≤ 100 kT) **200**

Even bigger
(150 kT - 5000 kT) **850**

Unknown **750**



Escalation

Single nuclear weapon use is likely not the last step

From U.S. wargames:

“So we played a big exercise [...] how do you think it ends?”

It ends the same way every time.

*It does. **It ends bad.** And the bad meaning it ends with **global nuclear war.**”*

Gen. Hyten,

Head of U.S. Strategic Command, 2018

<https://www.stratcom.mil/Media/Speeches/Article/1577239/the-mitchell-institute-triad-conference/>

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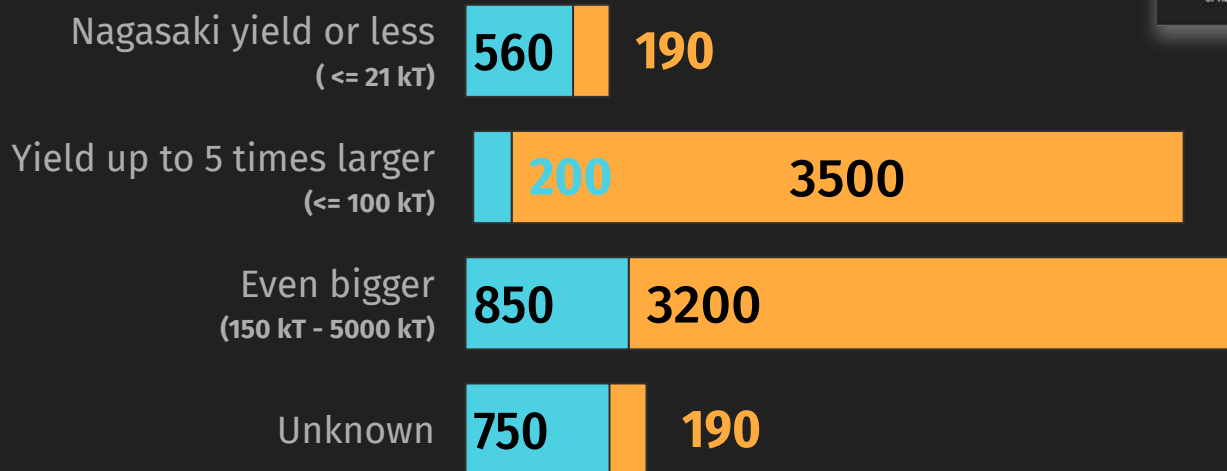
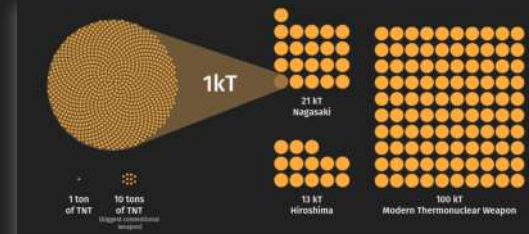
Princeton Simulation “Plan A”

<https://youtu.be/2jv3JU-ORpo>

Arsenals for a Global Nuclear War

Ordered by explosive power

“Tactical” “Strategic”



Takeaways

There are **no small nuclear weapons** because

- 1) ... direct effects are catastrophic
- 2) ... of unknown global social and psychological effects

Not even in Europe:

- 3) Tactical nuclear weapons are dangerous (and **not** small)
- 4) A nuclear war will likely also aim at targets in Europe

Questions: kuett@ifsh.de / simon@ifsh.de

Nuclear Winter: indirect effect

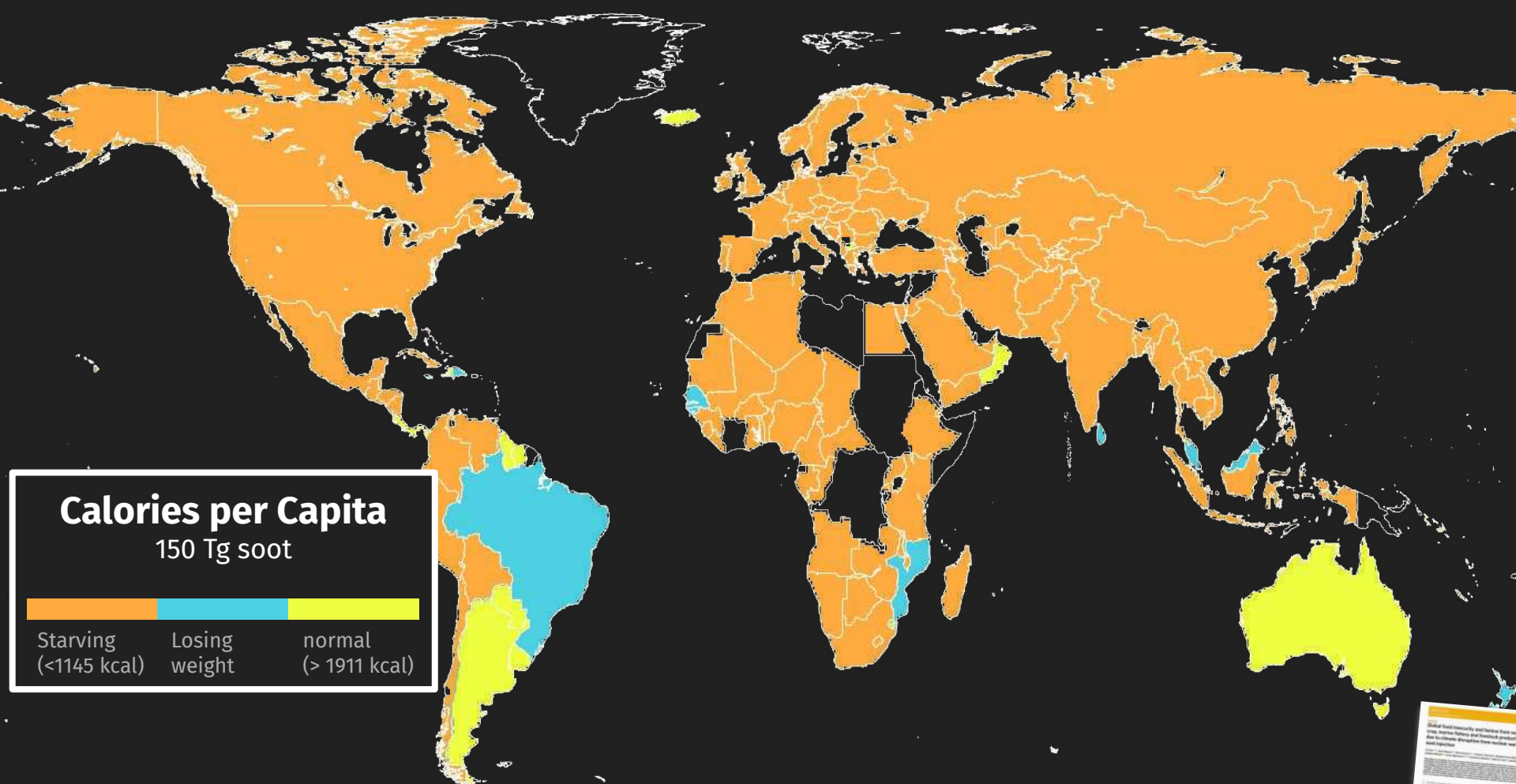
Global consequences after local nuclear war

Due to massive firestorms, big amounts of soot are injected into the stratosphere where the soot distributes

The sunlight is blocked, therefore surface air temperature, solar radiation and precipitation decrease significantly

Climatic changes last up to more than 10 years





Arsenals for a Global Nuclear War

Ordered by explosive power

“Tactical” “Strategic”

