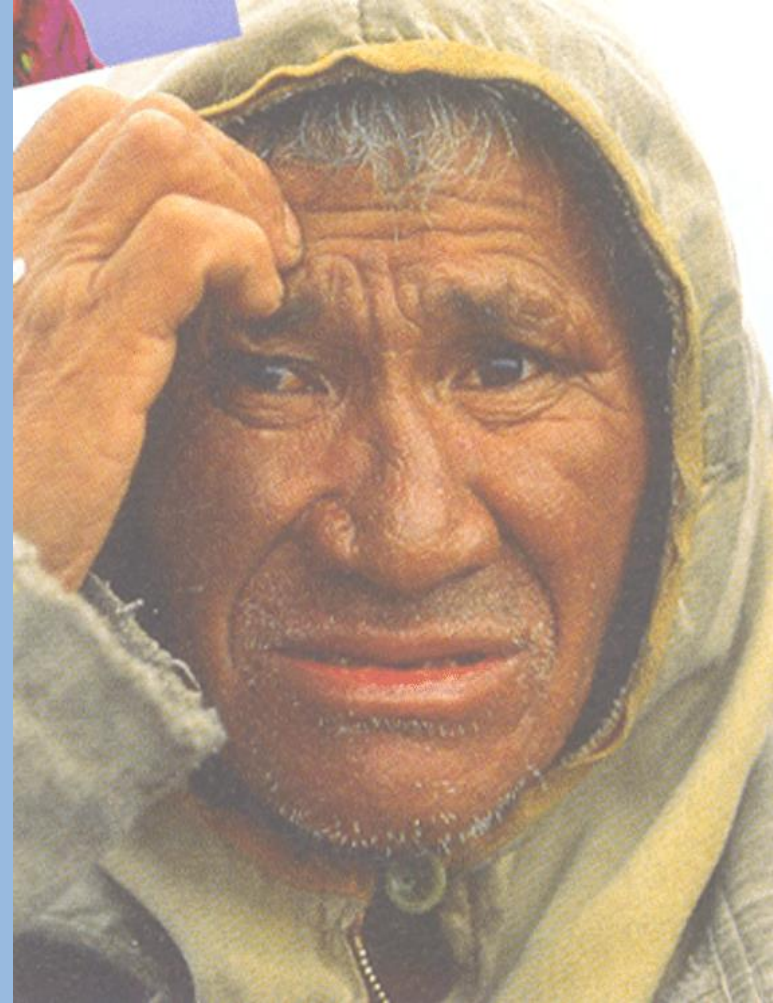


Climate change, environment and reproductive health in a global context

Jon Øyvind Odland
University of Tromsø
Arctic Monitoring and
Assessment Programme



ARCTIC WARMING - A NEW ISSUE?

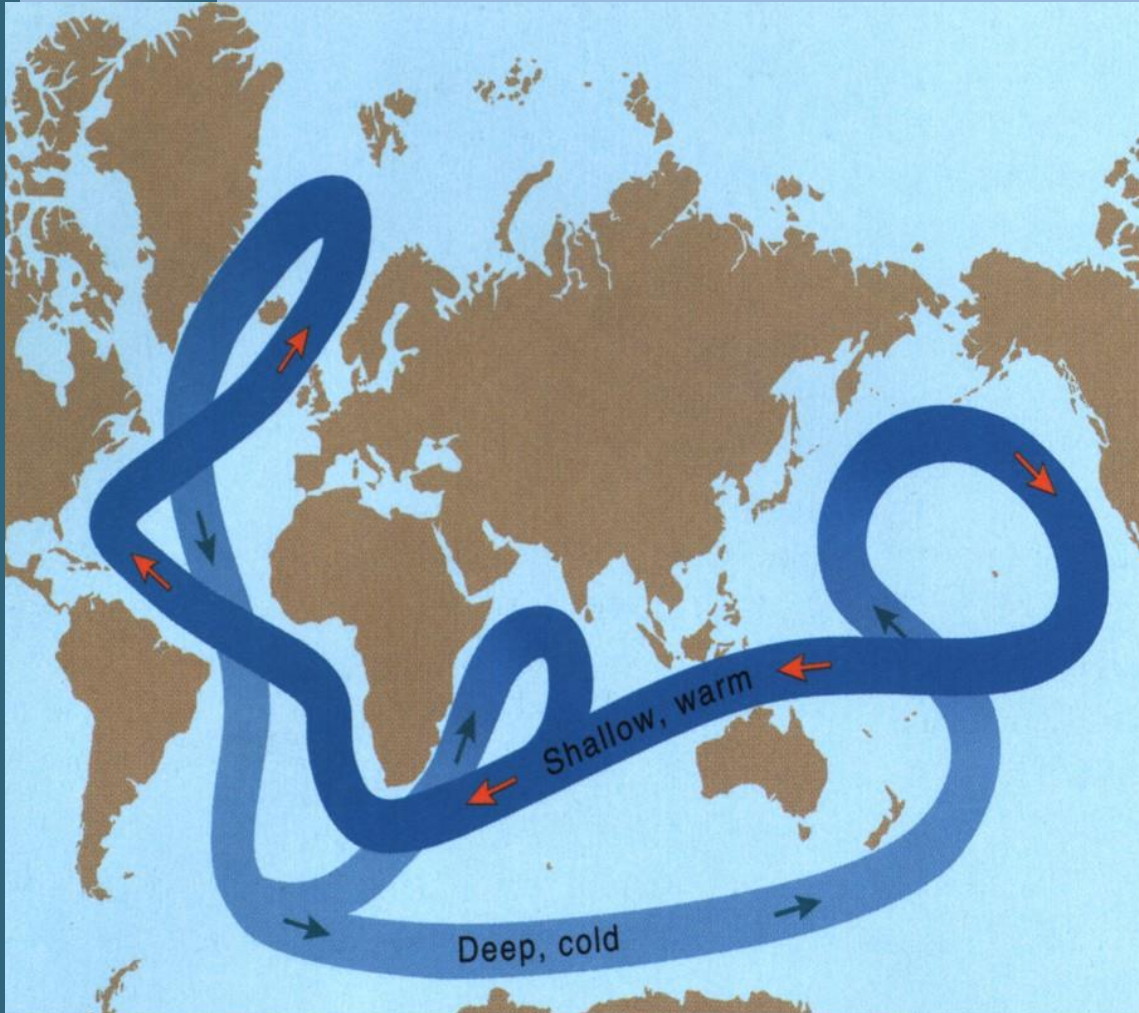
“temperature of the Arctic regions would rise about 8 degrees or 9 degrees Celsius, if the carbonic acid increased 2.5 to 3 times its present value”

Svante Arrhenius, 1895



ARCTIC INFLUENCE ON OCEAN CIRCULATION

Arctic Monitoring and Assessment Programme

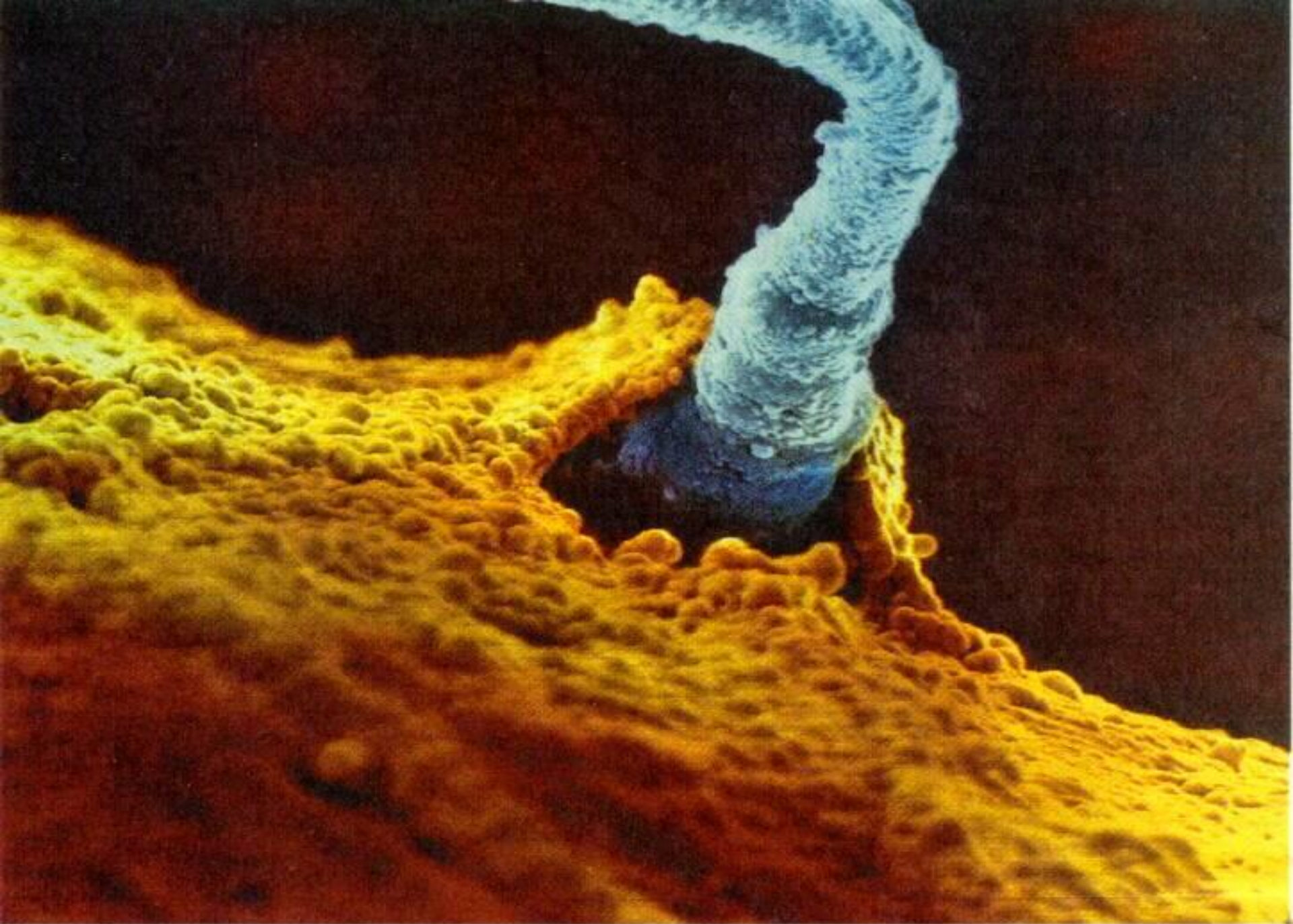


The Arctic plays a fundamental role in circulation of water in the oceans of the world. Every winter, several million cubic kilometers of water sink to deeper layers, which move water slowly south along the bottom of the Atlantic Ocean.

The polar front influences global ocean currents



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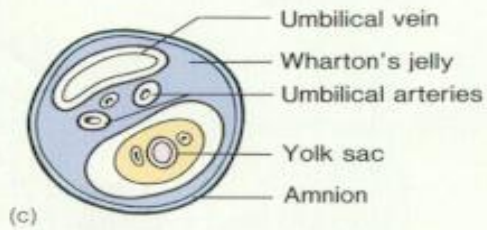
Vinnaren. Lennart Nilssons bild av spermien som befruktar ägget.

FOTO: LENNART NILSSON

Vulnerable placenta barrier

Arctic Monitor

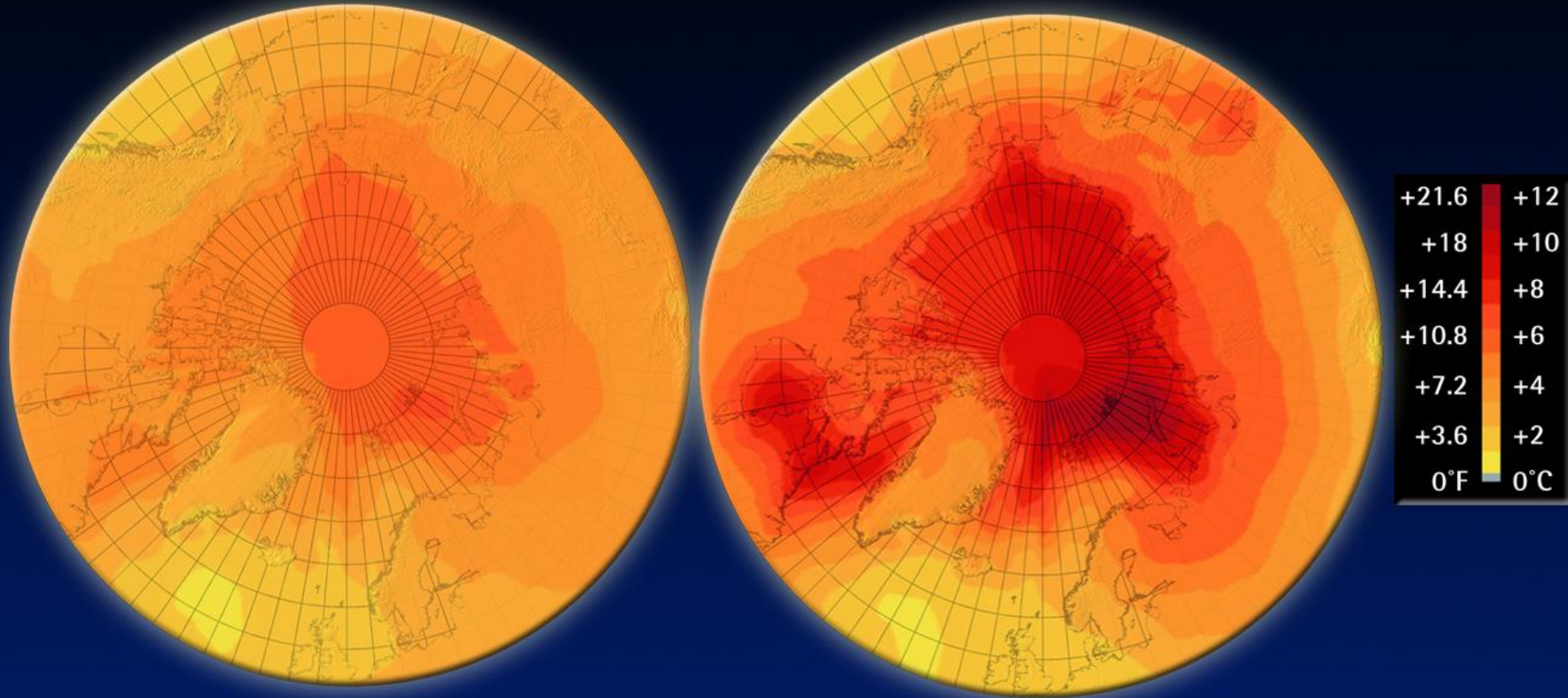
- Smoking
- Infections
- Pollutants





IMPACTS OF A WARMING ARCTIC

Projected Surface Air Temperature Change:
1990s–2090s (annual and Winter)



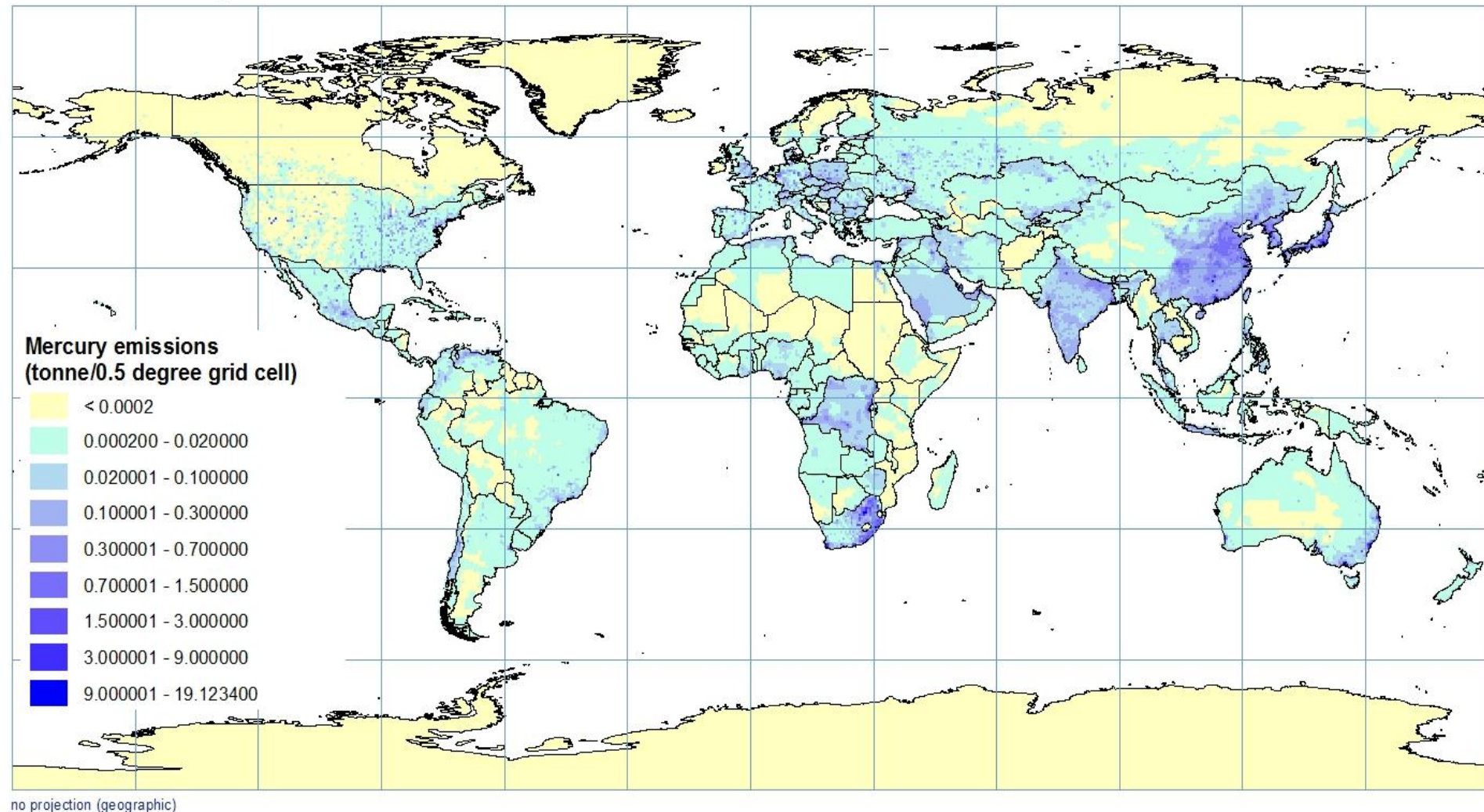
AMAP

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Mercury Emissions, 2000

diffuse + point sources



Building Cohorts

Establish cohorts based on delivery clinics

Cooperation with Indigenous Organizations and Research Programs

Effect studies – epidemiological and molecular effects

Objectives

Dietary exposure

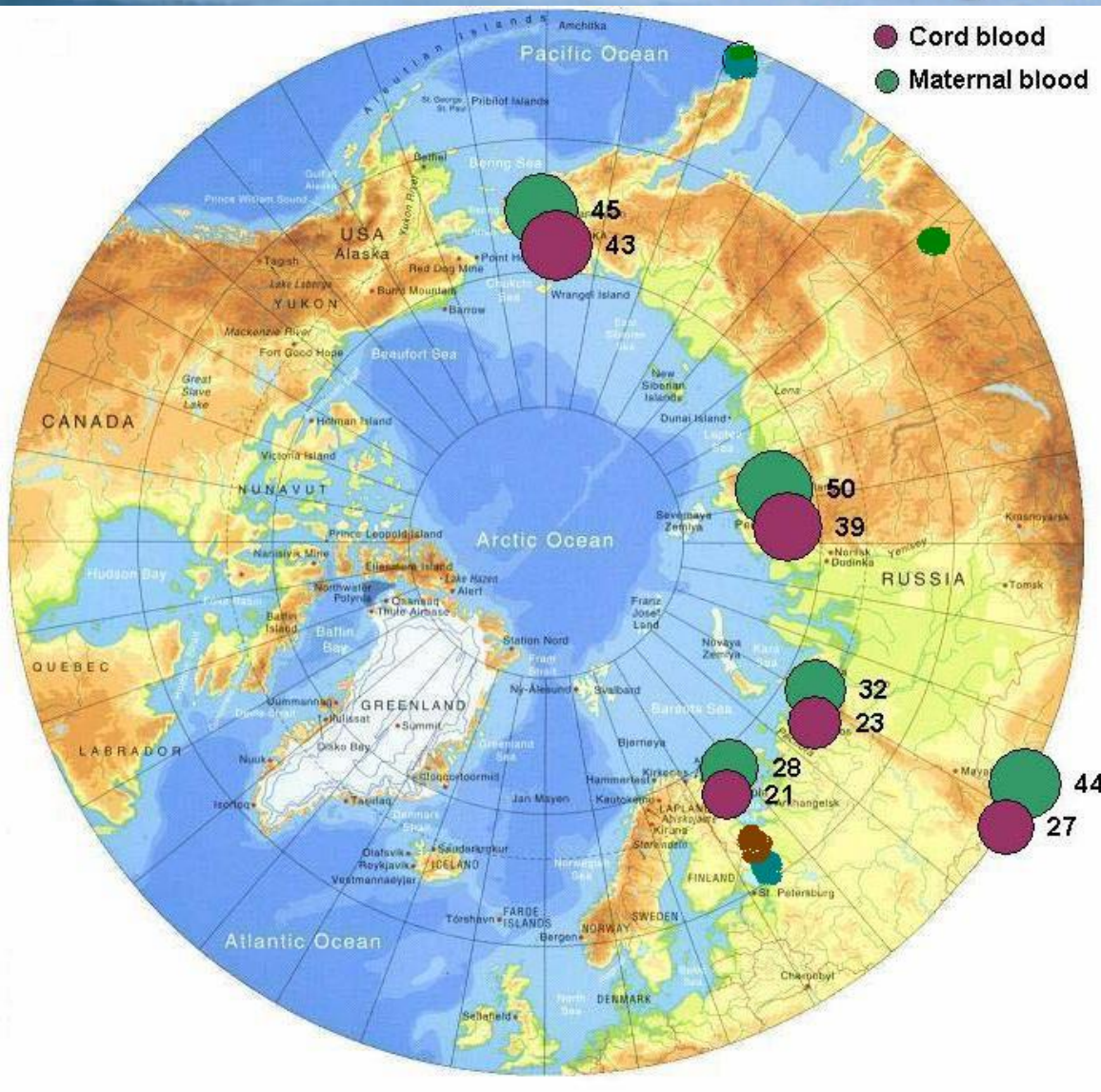
Public health and dietary implications

Advice to the vulnerable part of the population – fertile, pregnant, newborns

Evidence to decrease production and release of "old" and "new" substances

The 2001 Russian Arctic Health Survey

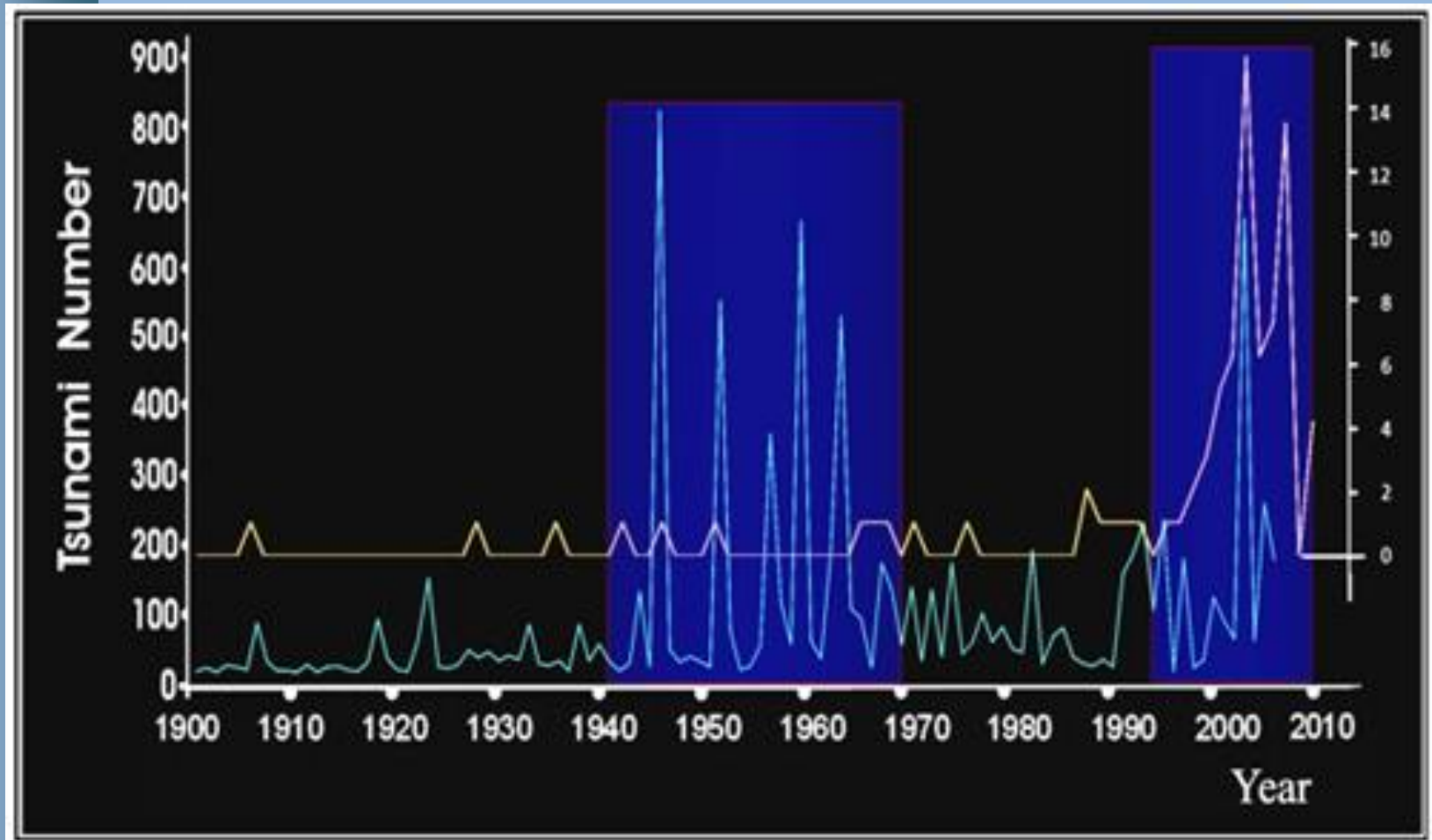
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- There were 18 native communities in the selected study areas.
- In total the surveyed cohorts of indigenous minorities of the North included :
 - - 407 mother-child pairs
 - - 1514 adults

AMAP

Intensity of Tsunami Occurred in the South-East Pacific Region



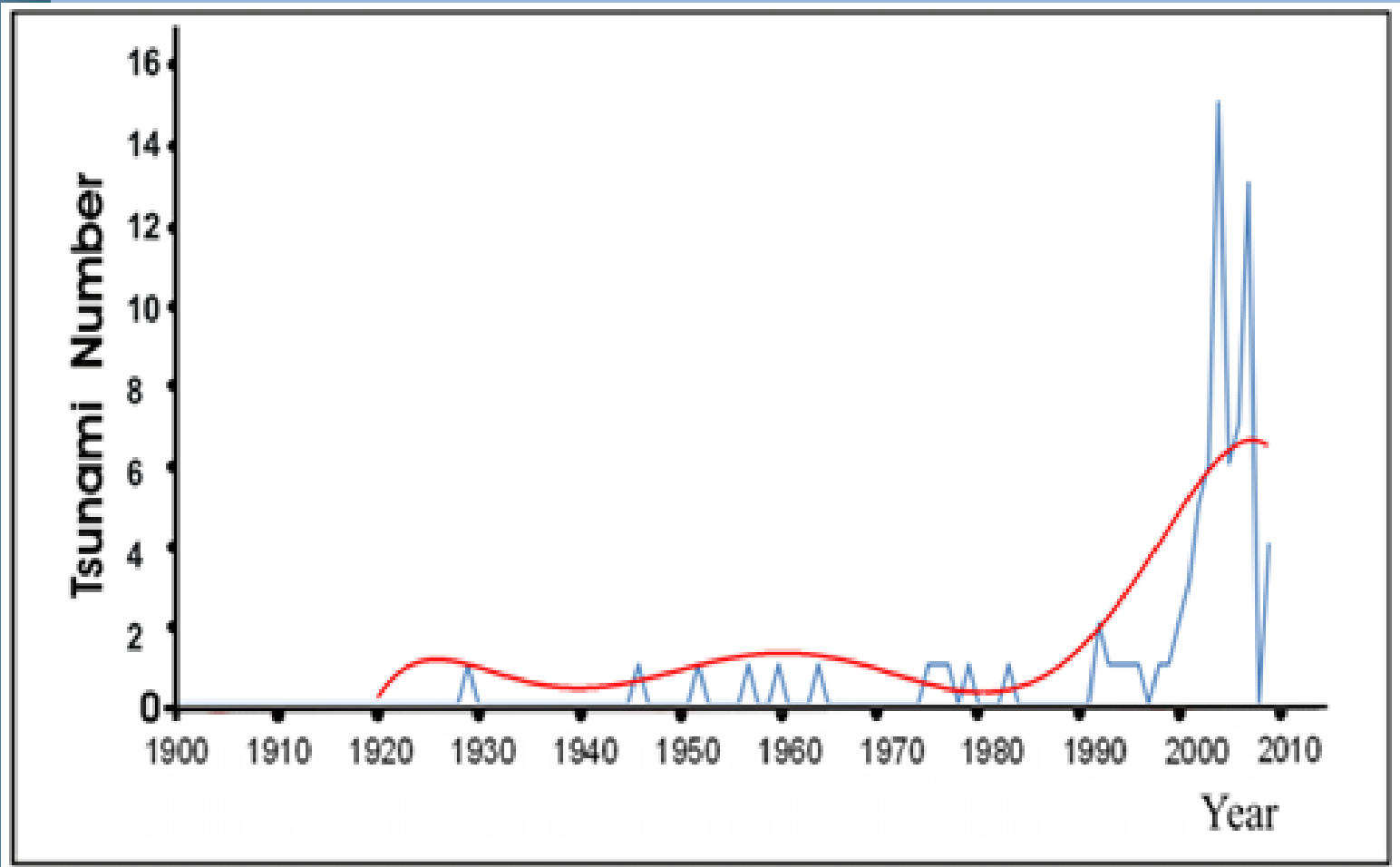
AMAP

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27 тыс. человек считаются погибшими, около 16 тыс. пропало без вести.

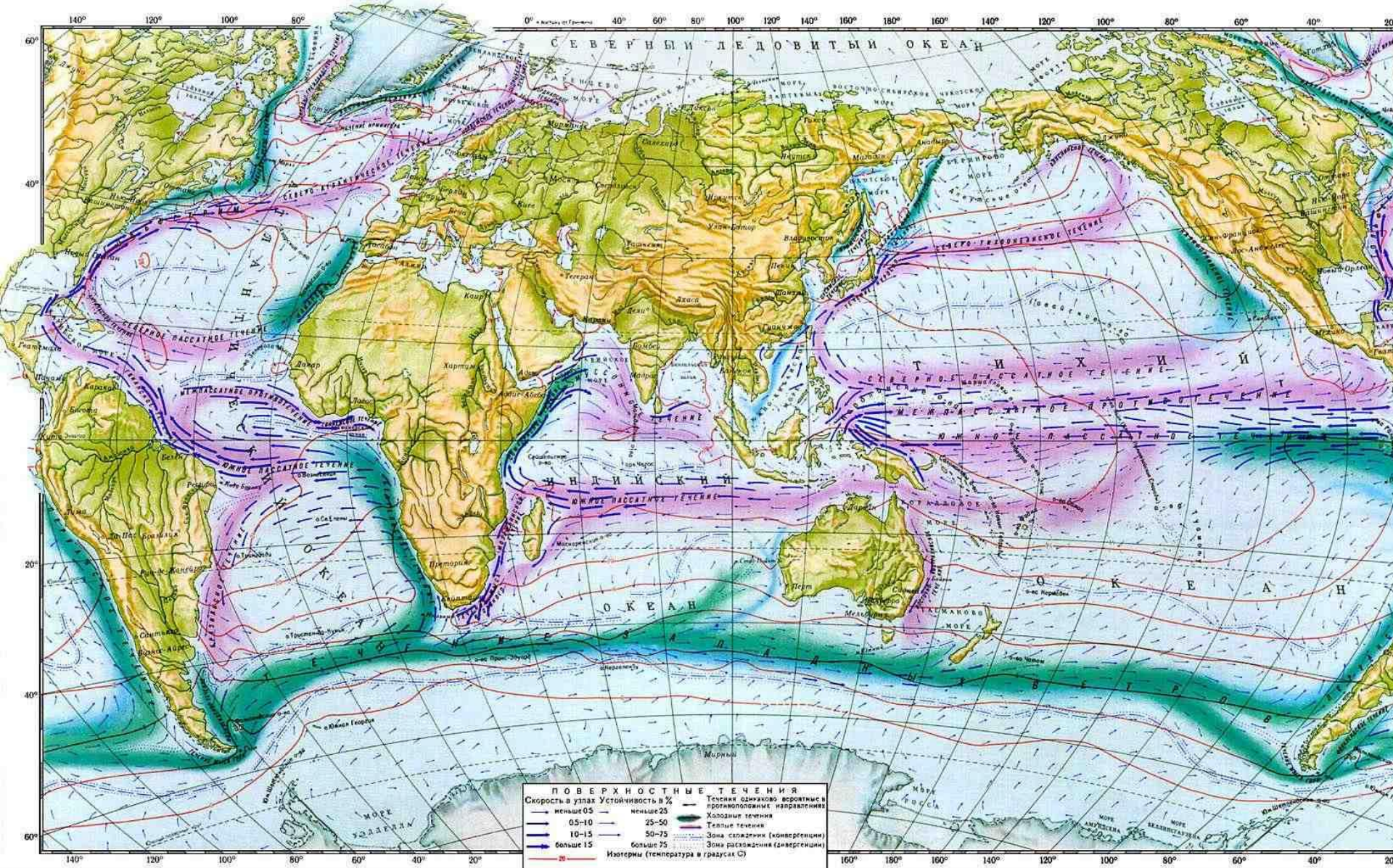
Estimated Cumulative Temporal Trend of Intensity of Washouts due to Natural Catastrophes



Ocean currents:

AMAP

A Pathway of POPs Transfer from Tropics to the Arctic



EMASAR: Effects of climate changes on health in a north – south perspective

- An expansion of the international health research program at the University of Tromsø
 - **Russia**, Canada, Greenland, Alaska
 - Australia, South-Afrika, Vietnam
- Mother/child cohorts (groups) observed over time
- 6 million NOK from the Barents 2020 program (UD)
- Argentina and Chile are vital in establishing a north/south-axis
 - Argentina: Salta and Ushuaia
 - Chile: Punta Arenas



MAP and Assessment Programme



<http://www.amap.no>

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Mirex

Chlorinated insecticide

Banned in US 1976. Still in use many places of the world.

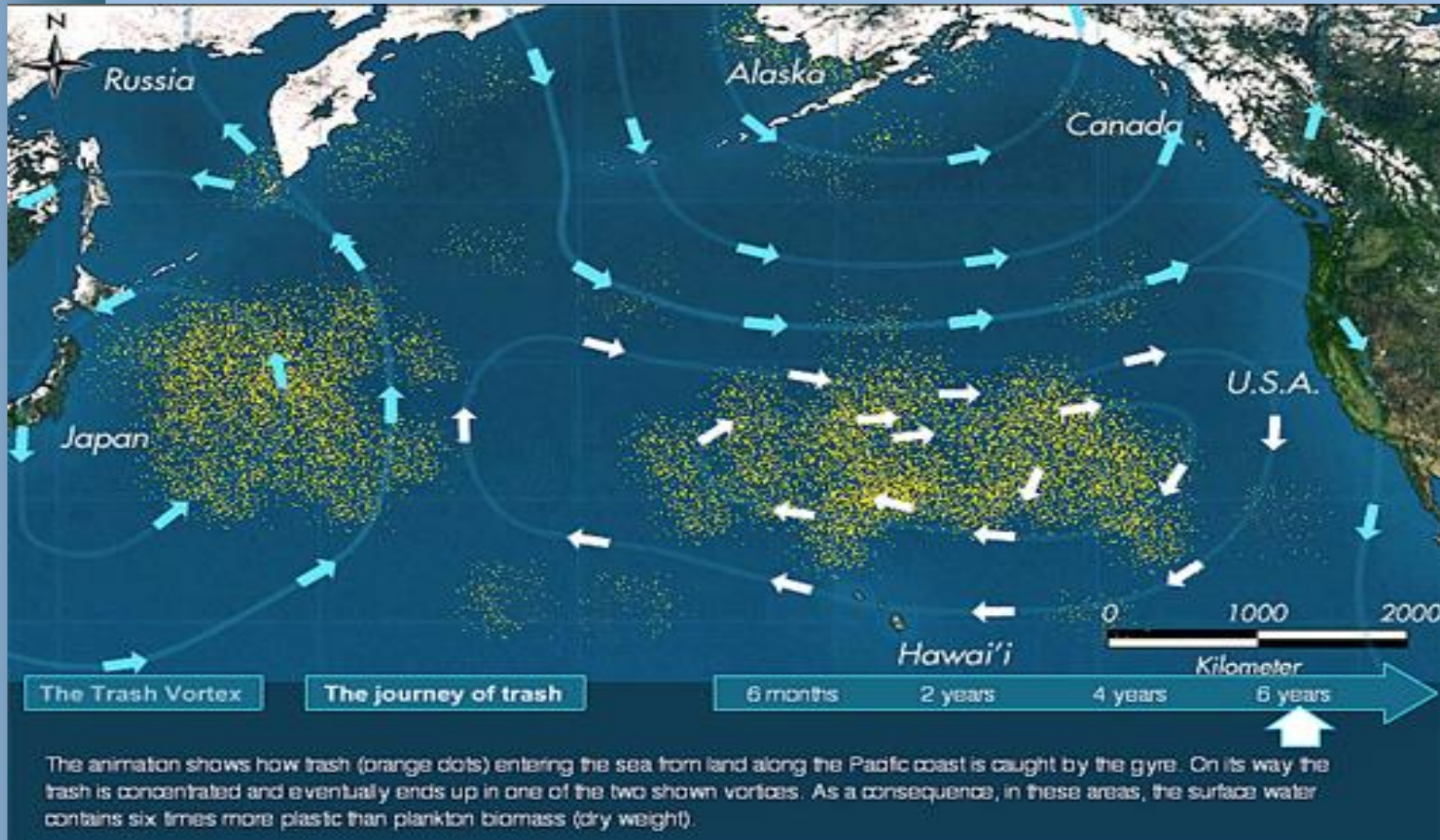
What about Argentina.

High concentrations in sea gulls in Antarctica, low in the Arctic

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Surface Contaminant Circulation in the North Pacific



Sex ratio (male/female) reported in Chukotka indigenous offspring in 2002-2011

City of Anadyr:- 2405 reported births . The sex ratio is of 0.960

Pacific coastal indigenous villages - 1513 reported births . The sex ratio is of 0.754 (p<0.01).

*** - National average – 1.06; World average- 1.07**

What now?

As levels of legacy contaminants decline, levels of emerging substances are increasing, raising new concerns.

There will be changes in human exposures, as well as changes in the physiological behaviour of contaminants.

What now II?

Human contaminant levels are too high, especially in the Arctic, and there is a need for strongly restricting the use and emissions of chemicals that are persistent, toxic and able to accumulate in food chains.

A forum for initiatives on this topic should be the Stockholm Convention.

In conclusion

Contaminants are moderate, but highly preventable contributors to global health problems

A cooperation and integration of all health activities is crucial

The precautionary principle is crucial

t Programme





Global actions are urgent for this child!

<http://www.amap.no>