The Gulf of Finland Science Days
“Facing our Common Future”

Helsinki, November 13-14, 2019

Photo

N.V. Aladin

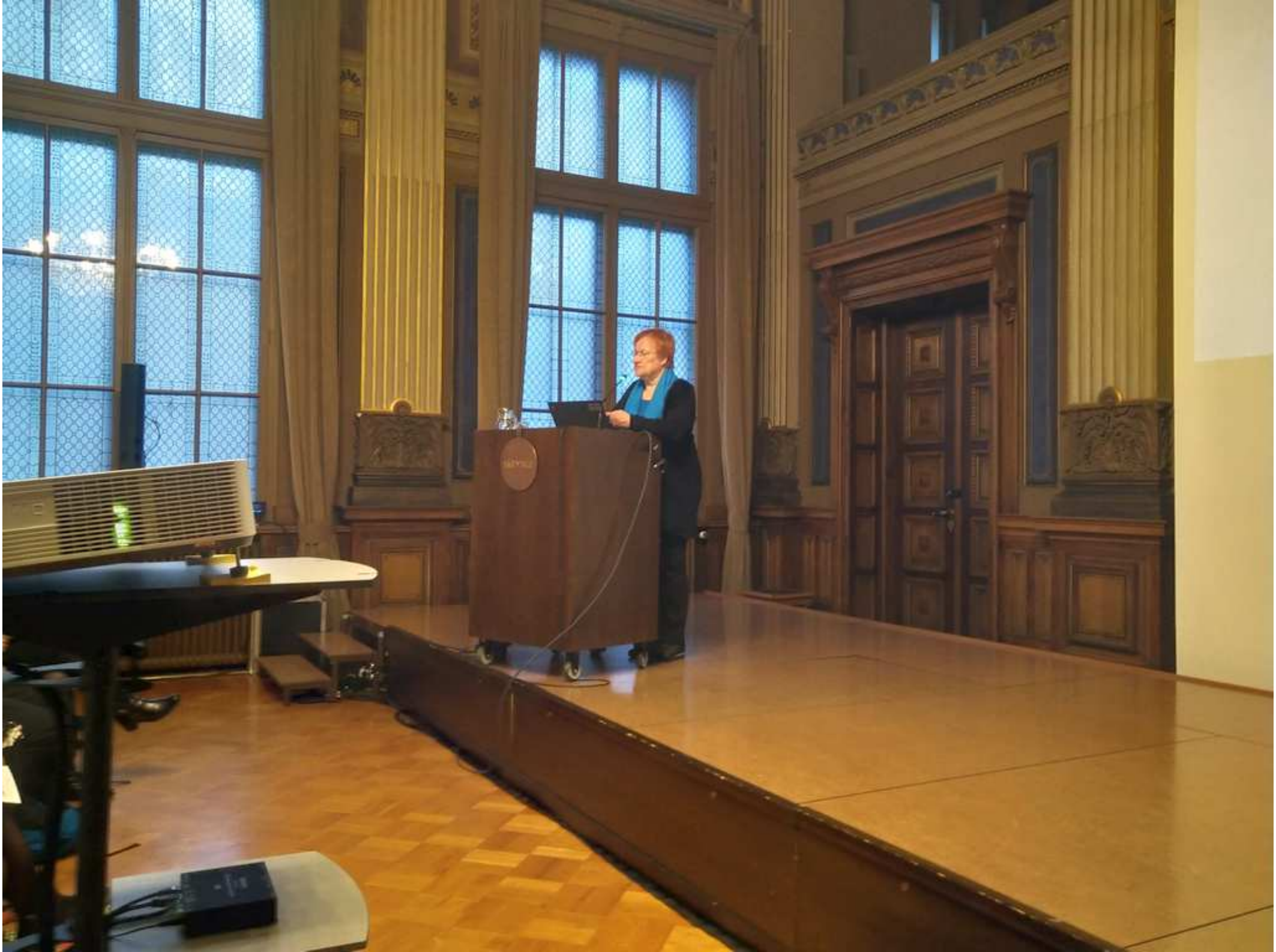
Научные дни Финского залива
«Лицом к общему будущему»

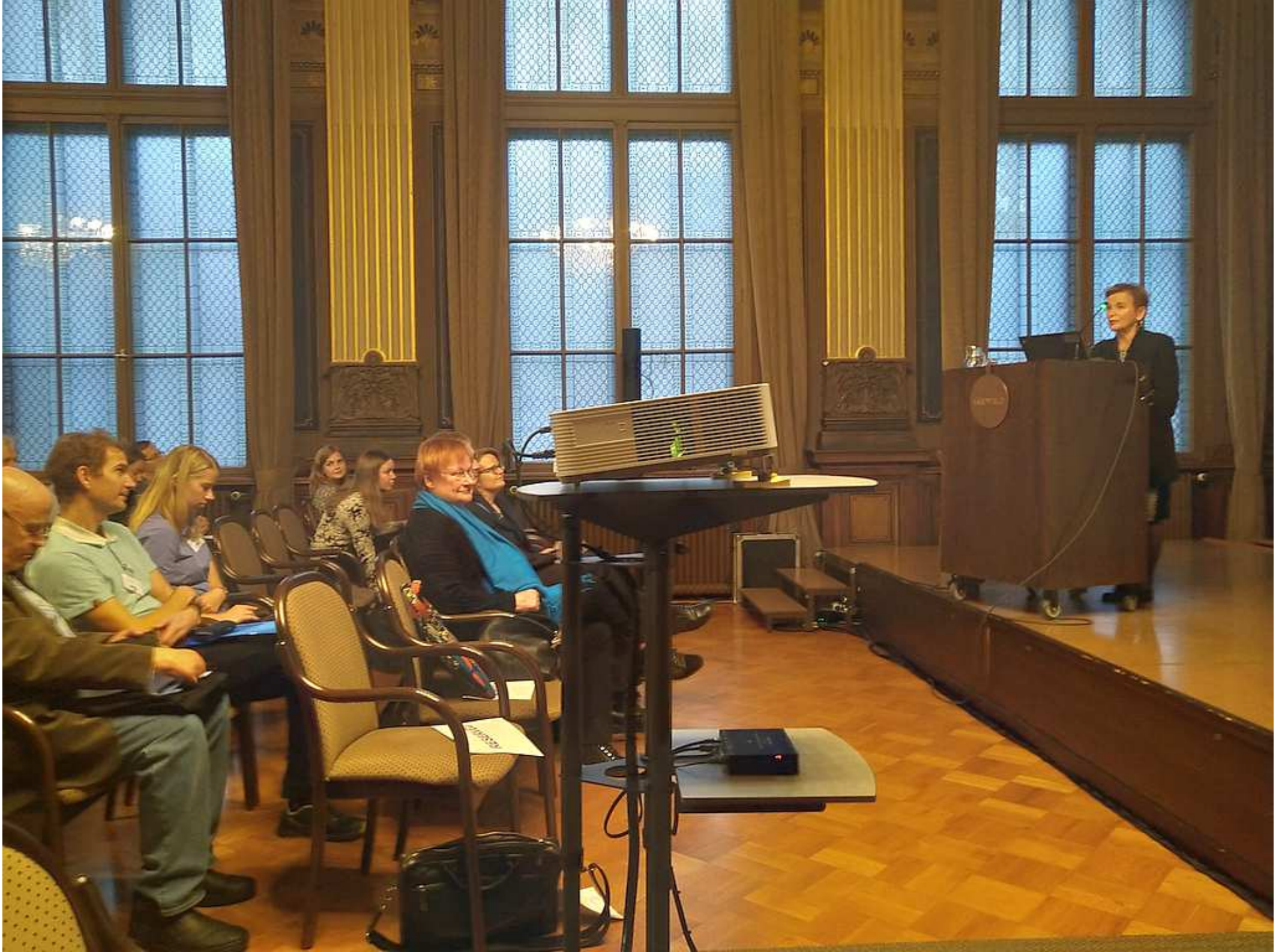
Хельсинки, 13-14 ноября 2019 г.

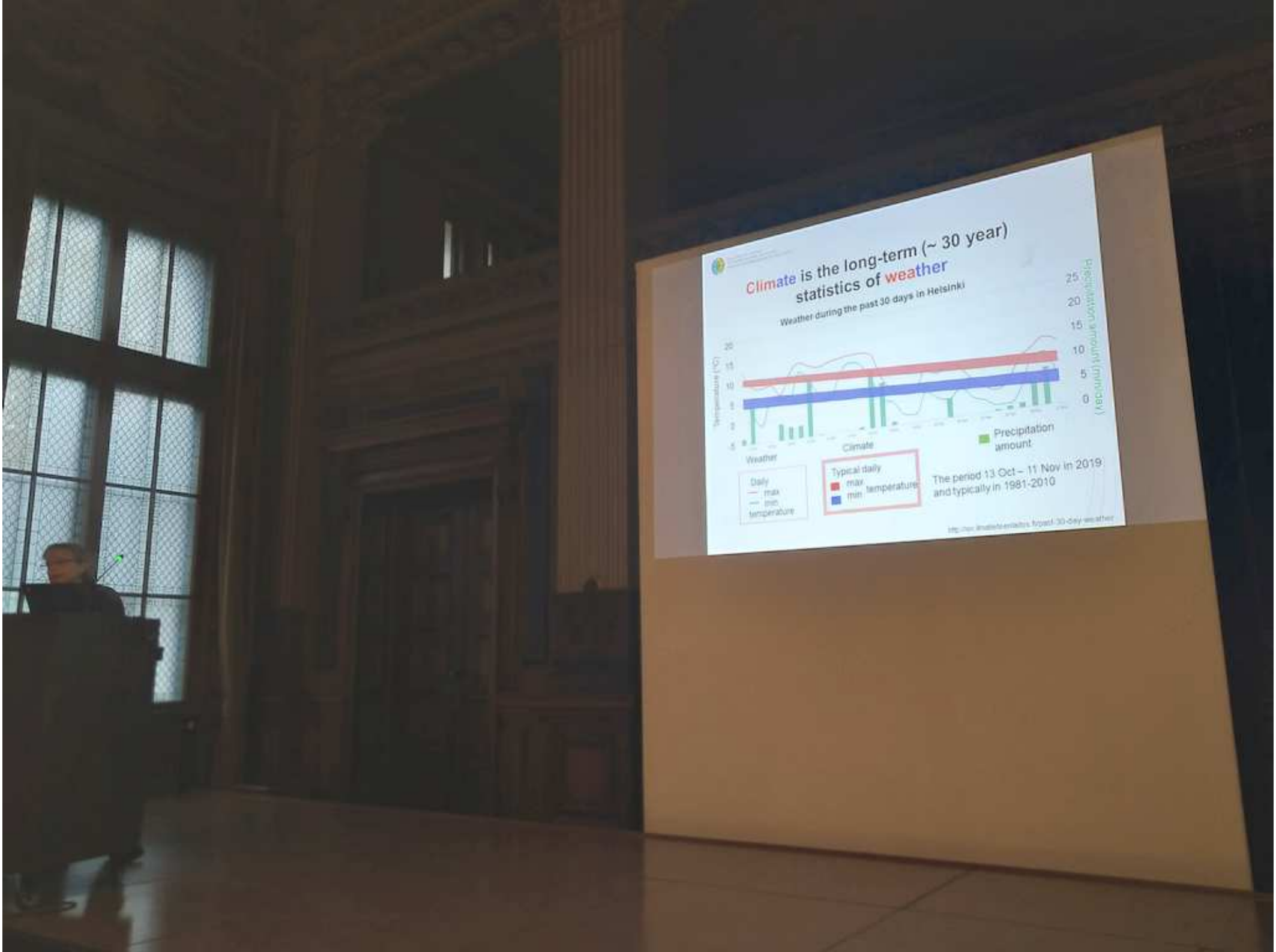
Фото

Н.В. Аладин


ALLEGRO






Climate is the long-term (~ 30 year) statistics of weather
Weather during the past 30 days in Helsinki
Precipitation amount (mm/day)
Weather
Climate
Precipitation amount
Daily
max
min
temperature
Typical daily
max
min temperature
The period 13 Oct – 11 Nov in 2019 and typically in 1981-2010


CLIMATE CHANGE, HUMAN IMPACTS
AND MARINE ECOSYSTEMS
Jonne Kotta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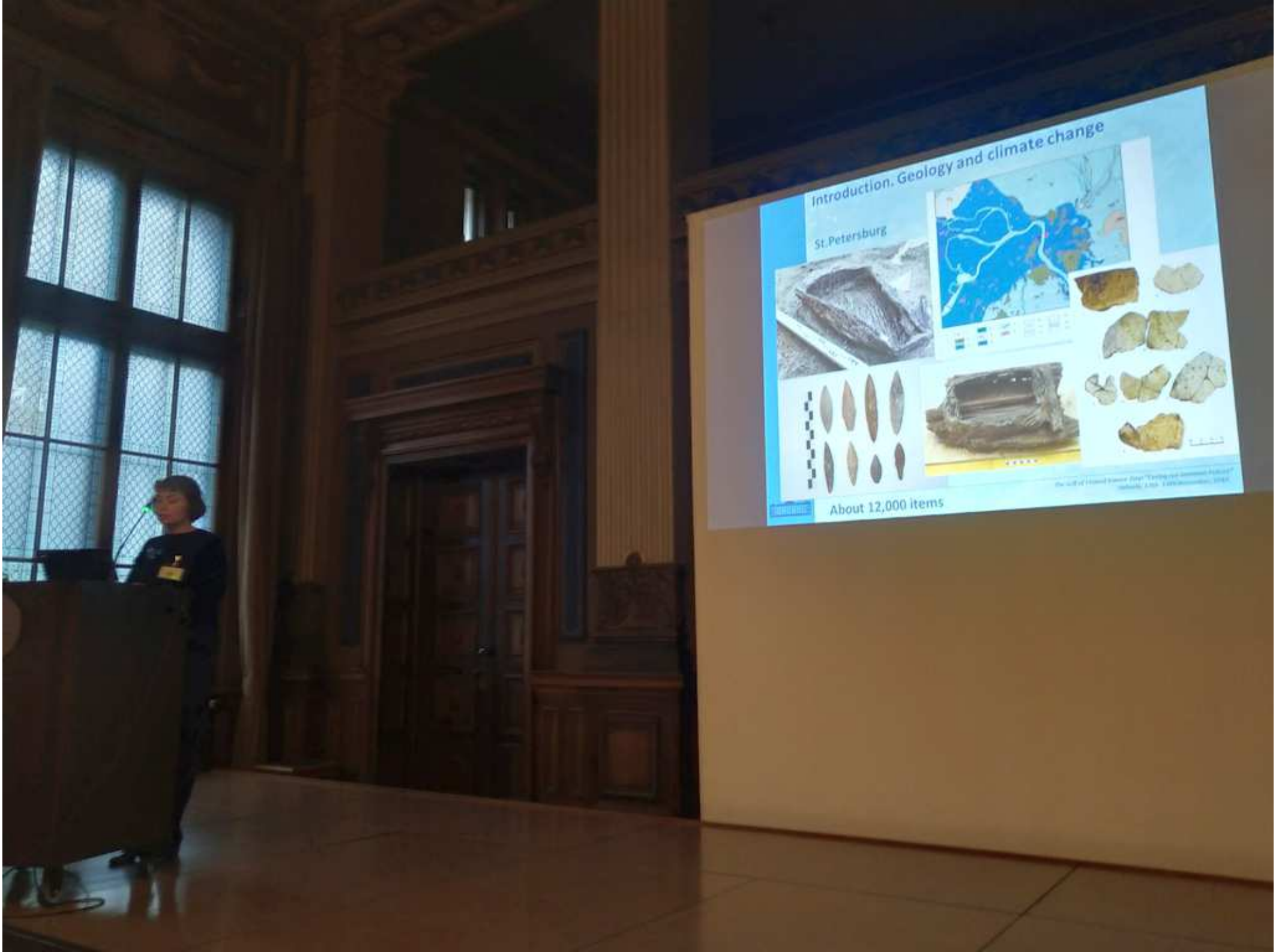
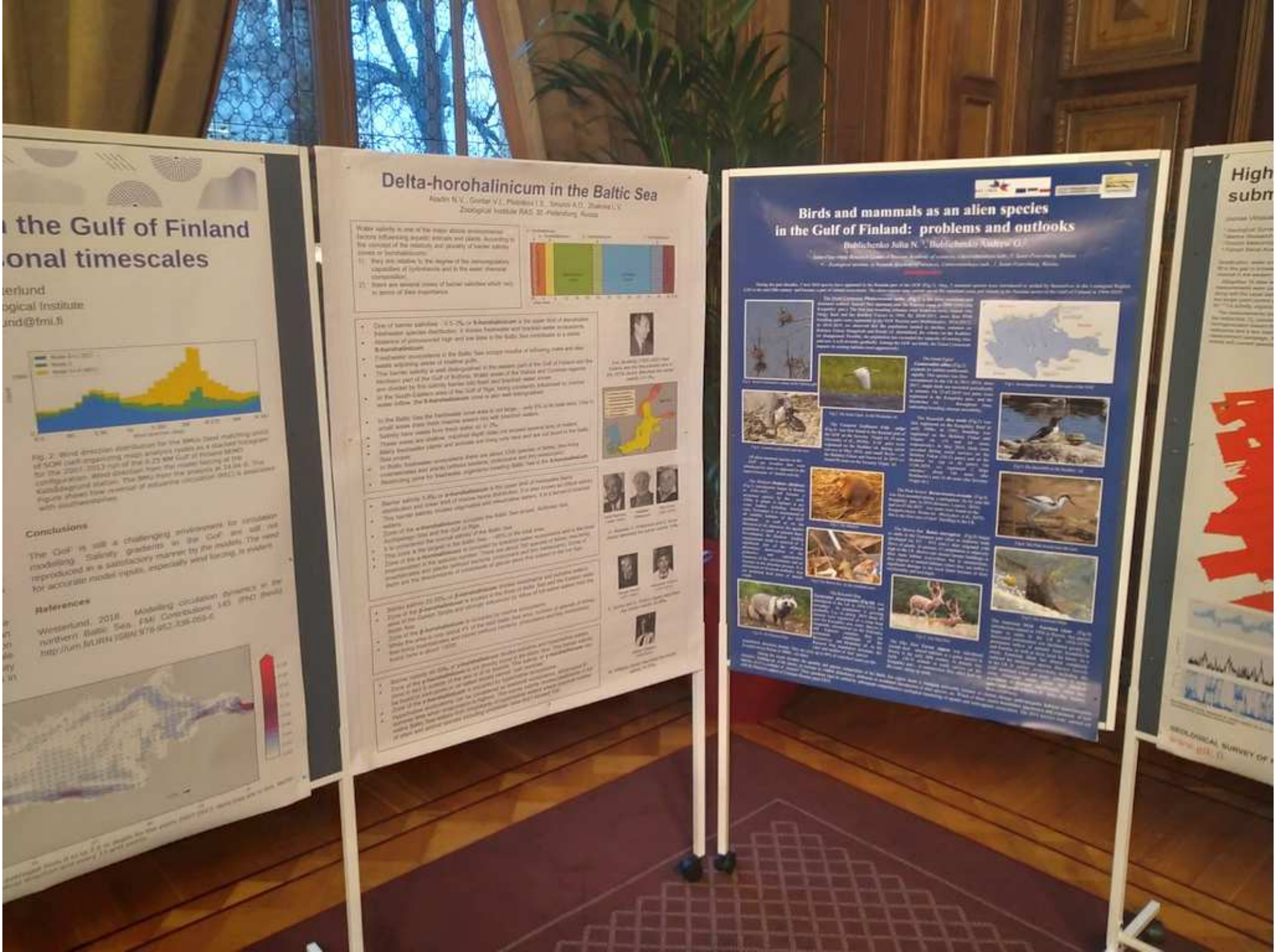

Introduction. Geology and climate change
St.Petersburg
About 12,000 items


the Gulf of Finland
onal timescales
Conclusions
References
Delta-horohalinicum in the Baltic Sea
Birds and mammals as an alien species
in the Gulf of Finland: problems and outlooks


Vision – what to achieve?
Estonian marine area has a good environmental status, diverse and balanced use and promotes the growth of blue economy
Principles – how to achieve?

horohalinicum in the Baltic Sea

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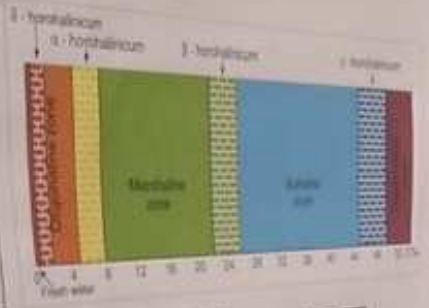
Zoological Institute RAS, St.-Petersburg, Russia

alinity is one of the major abiotic environmental
nfluencing aquatic animals and plants. According to
cept of the relativity and plurality of barrier salinity
or horohalinicums:
ey are relative to the degree of the osmoregulatory
apacities of hydrobionts and to the water chemical
omposition;
here are several zones of barrier salinities which vary
n terms of their importance.



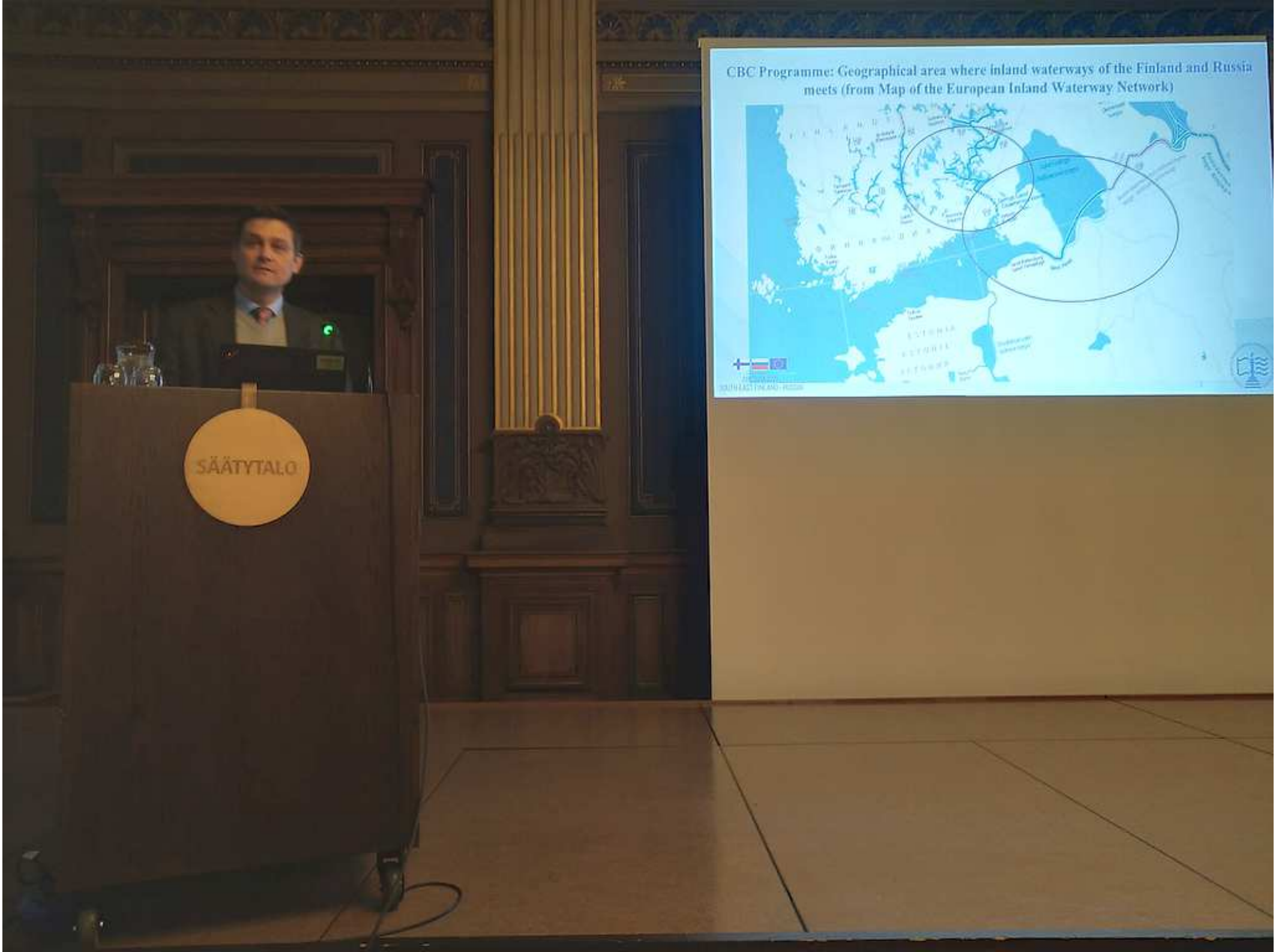
One of barrier salinities – 0,5–2‰ or **δ-horohalinicum** is the upper limit of stenohaline freshwater species distribution. It divides freshwater and brackish-water ecosystems.
Absence of pronounced high and low tides in the Baltic Sea contributes to a stable **δ-horohalinicum**.
Freshwater ecosystems in the Baltic Sea occupy mouths of inflowing rivers and also waste adjoining areas of shallow gulfs.
This barrier salinity is well distinguished in the eastern part of the Gulf of Finland and the Northern part of the Gulf of Bothnia. Water areas of the Vistula and Curonian lagoons are divided by this salinity barrier into fresh and brackish water zones.
In the South-Eastern area of the Gulf of Riga, being constantly influenced by riverine water inflow, the **δ-horohalinicum** zone is also well distinguished.

- In the Baltic Sea the freshwater zone area is not large, – only 6% of its total area. Only in small areas does fresh riverine waters mix with brackish waters.
- Salinity here varies from fresh water up to 2‰.
- These areas are shallow, maximal depth does not exceed several tens of meters.
- Many freshwater plants and animals are living only here and are not found in the Baltic Sea proper.
- In Baltic freshwater ecosystems there are about 1200 species of fishes, free-living invertebrates and plants (without bacteria, protozoans and tiny metazoans).
- Restricting zone for freshwater organisms invading Baltic Sea is the **δ-horohalinicum**.

Barrier salinity 5-8‰ or **α-horohalinicum** is the upper limit of freshwater fauna distribution and lower limit of marine fauna distribution. It is also known as critical salinity. This barrier salinity divides oligohaline and mesohaline waters. It is a kernel of brackish waters.

- Zone of the **α-horohalinicum** occupies the Baltic Sea proper, Bothnian Sea, Archipelago Sea and the Gulf of Riga.
- Considered the normal salinity of the Baltic Sea, ~40% of the total area.
- **α-horohalinicum** is the largest in the Baltic Sea – is occupied by brackish-water ecosystems and is the most species number. There are about 700 species of fishes, invertebrates, protozoans and tiny metazoans). Salinity
- **α-horohalinicum** is occupied by brackish-water ecosystems and is the most species number. There are about 700 species of fishes, invertebrates, protozoans and tiny metazoans). Salinity
- **α-horohalinicum** divides mesohaline and oligohaline waters, number of species of fishes, invertebrates, protozoans and tiny metazoans.
- the West of Baltic Sea and the Eastern water by inflow of fully saline waters from the
- % of inhabitants of glacial lakes that existed in the Ice Age.


STOCKMANN


CBC Programme: Geographical area where inland waterways of the Finland and Russia meets (from Map of the European Inland Waterway Network)
SÄÄTYTALO


SÄÄTYTALO


Car tires – a major source of microplastics
In Finland, the estimated release of tire wear particles is
5 348–10 528 tonnes per year
(Suikkanen & Setälä, unpublished report)
SÄÄTYTALO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