
Arctic Economic Council
3rd Top of the World Arctic Broadband Summit in Sapporo
Future Arctic Shipping
sea route connecting Europe and Asia
北極海運の将来 –欧州とアジアをつなぐ海路
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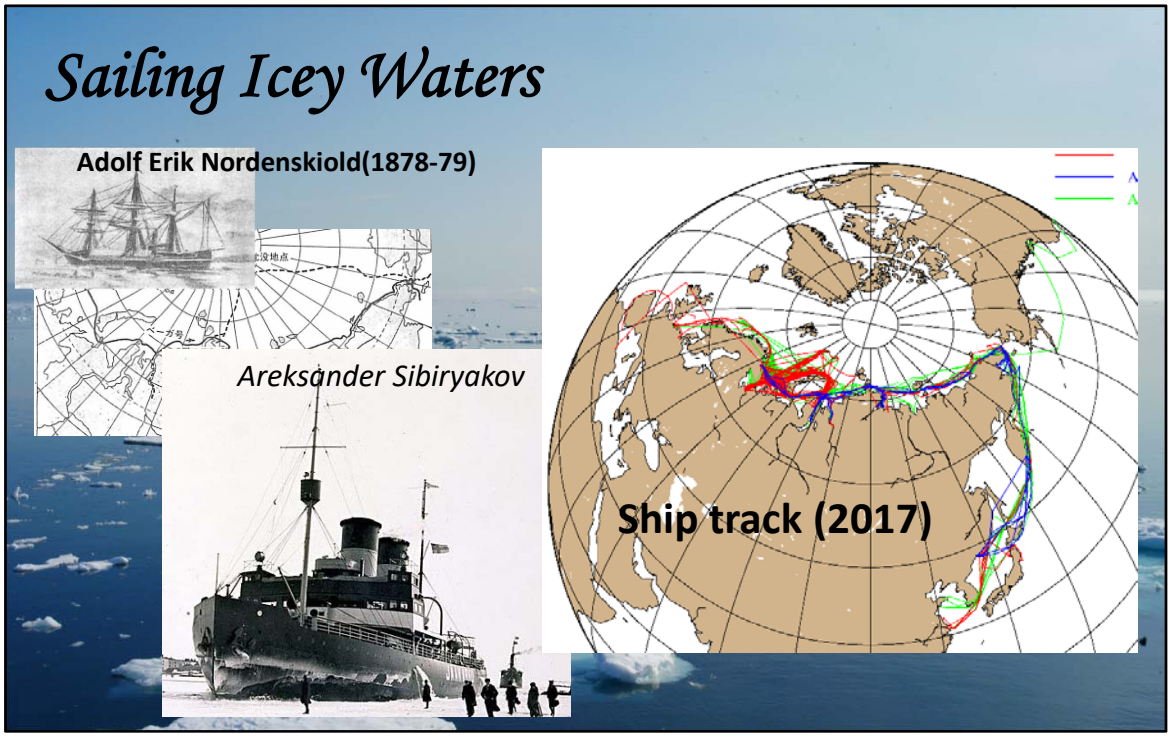
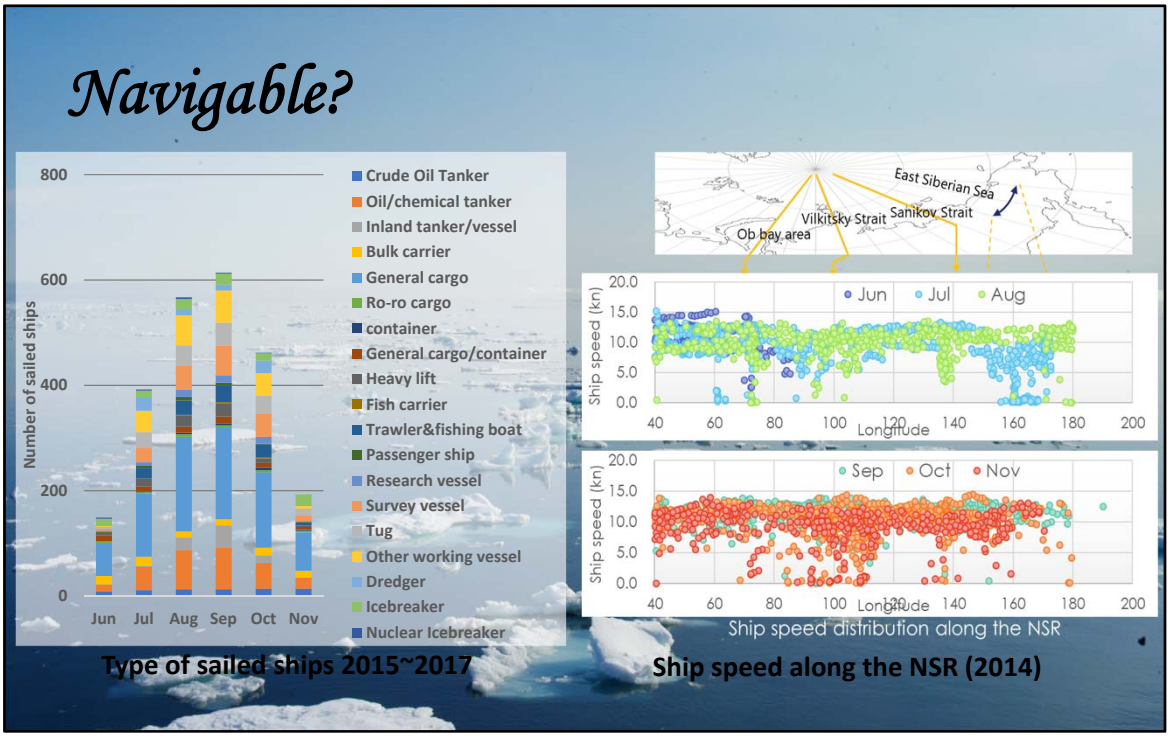
Photo : Institute of Arctic Observation Support



Nordenskjold succeeded in navigating whole route of the North East Passage in 1878-1879

Areksander Sibiryakov, which was a Russian icebreaker, made the first successful crossing of the Northern Sea Route in a single navigation without wintering in 1933.
After passing through the Bering strait, she sailed south and made a call at Port Yokohama after 65 days of voyage.

And today, against the background of sea ice retreat in summer, commercial shipping activity becomes reality.

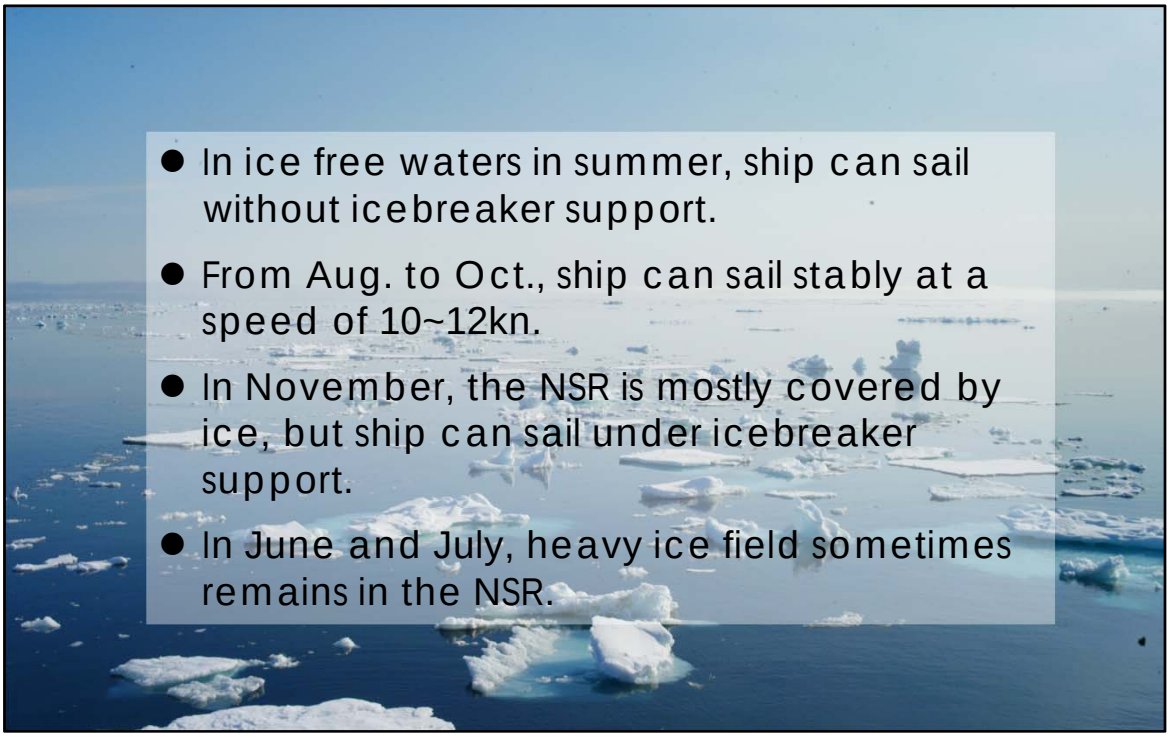


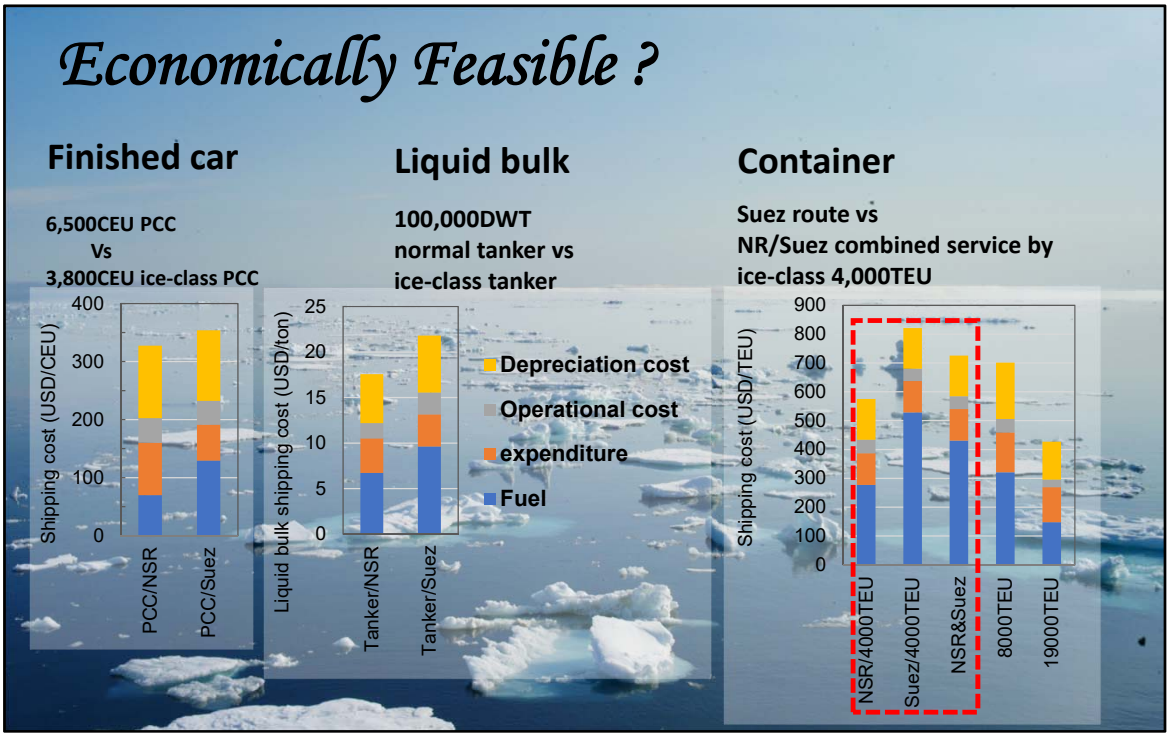
The left figure shows the total number of ships that sailed the NSR by month from 2015 to 2017.

In June, sea ice condition is usually harder than other summer months so that the number of ship is small.
The number of ship is increasing toward September, then decrease in October and November.

General cargo ship and tanker is the top two dominant ship type.

Actual ship speed along the NSR can be seen in the right figure.
Most of the ships sailed at a speed of 10 to 12 knots.
Based on the analysis of satellite AIS, ships sailed independently in ice free waters without icebreaker in mid summer to early fall.
Even in November, when most of the NSR is covered by sea ice, ships sailed at a speed of 10 knots under Russian nuclear icebreaker support.


In ice free waters in summer, ship can sail without icebreaker support.
From Aug. to Oct., ship can sail stably at a speed of 10~12kn.
In November, the NSR is mostly covered by ice, but ship can sail under icebreaker support.
In June and July, heavy ice field sometimes remains in the NSR.

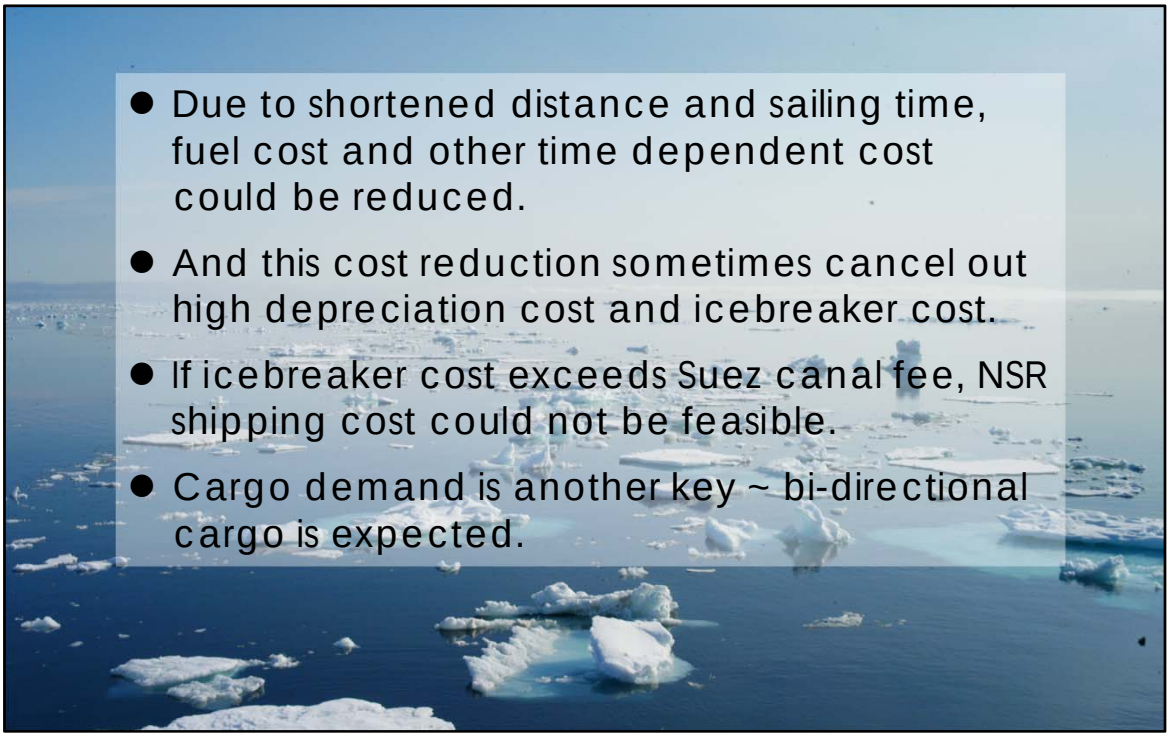


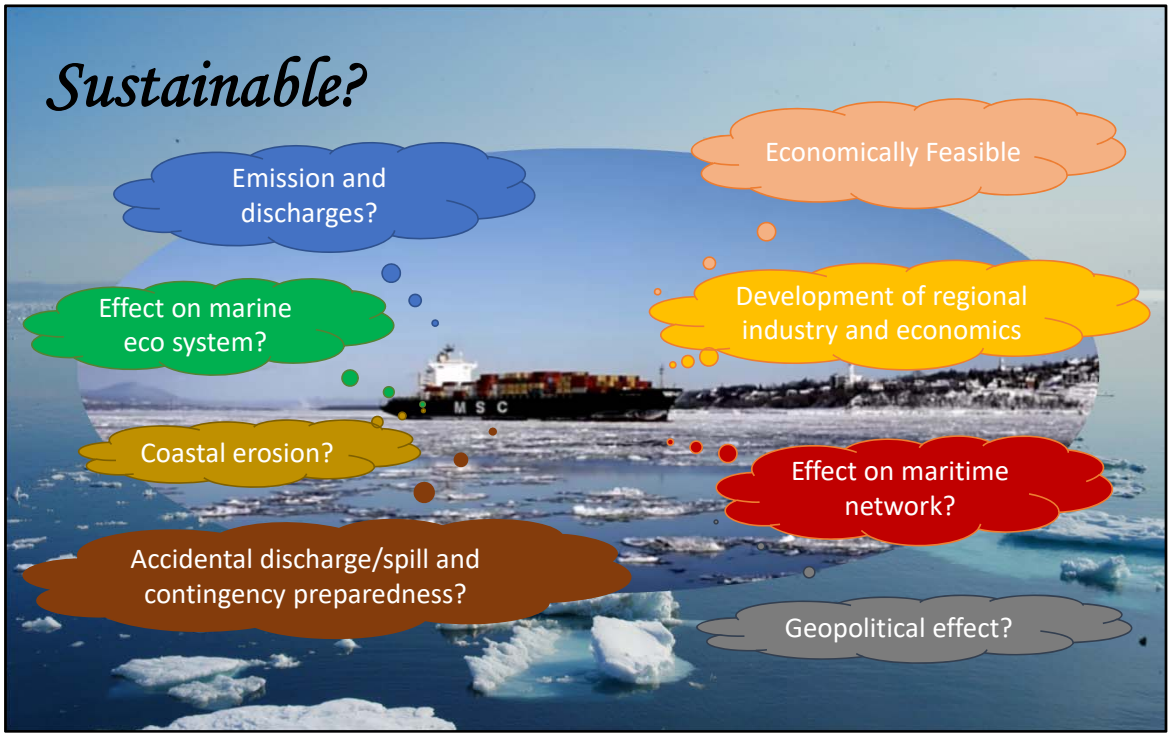
I'd like to show you three scenarios of Arctic shipping.

The First one is finished car shipping from Bremerhaven to Yokohama.
In NSR scenario, 3800ceu ice class PCC is used. On the other hand, 6,500CEU PCC is used in the Suez Canal route scenario.
To compare these scenarios, NSR showed positive result.

The second is liquid bulk shipping from Baltic Sea to Japan by 100,000DWT tanker.
In spite of using expensive ice class tanker, NSR scenario showed good result due to shortened shipping distance.

And the third is container.
Here, seven 4000TEU ice class container ship is used to operate 49 days loop to serve weekly at three ports in Asia and three ports in Europe.
The ice class container ship operates 150days via NSR in summer and 215days via Suez Canal route in winter.
This combined scenario costs almost the same as 8000TEU ship service via Suez Canal in 84 days loop with 10 port calls.
However, NSR scenario could not be comparable against recent liner service by 19000TEU class ships.


Due to shortened distance and sailing time, fuel cost and other time dependent cost could be reduced.
And this cost reduction sometimes cancel out high depreciation cost and icebreaker cost.
If icebreaker cost exceeds Suez canal fee, NSR shipping cost could not be feasible.
Cargo demand is another key ~ bi-directional cargo is expected.



We also need to concentrate sustainability which would be multifaceted.
There will be many factors in sustainability of shipping such as environmental, economical, industrial and social point of view.

Continuous sea ice retreat will expand navigable period.

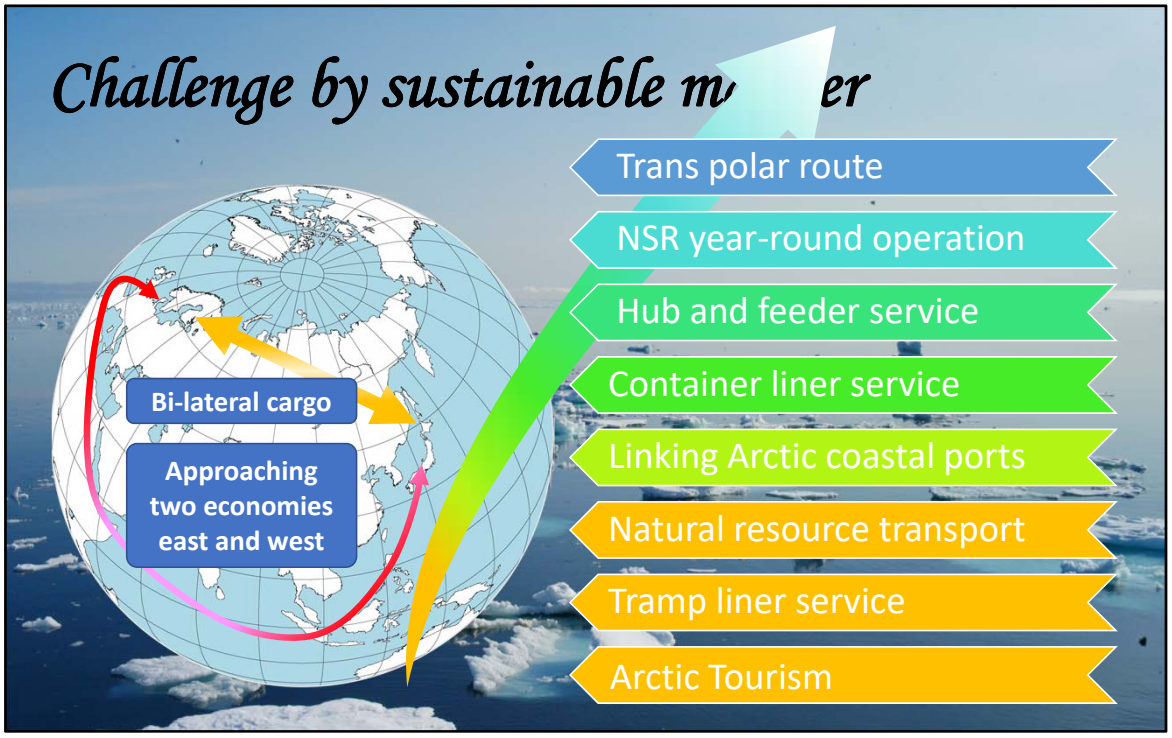
Expanding ice free water area will make navigation easier, cheaper and safer.

Ice free summer in NSR waters means there is little multi year ice through the year.

This will enable a ship to navigate year-round.

And trans polar route will become reality.

However, expansion of ice free water will cause amplification of sea wave, and movement of ice floe as well.



New ideas could be floating from the Arctic Ocean in short, mid and long term perspective.
NSR will draw two economies closer.
Bilateral cargo will be a key driver to develop Arctic shipping.

Tramp service between Europe and Asia has already been conducted mainly by Cosco shipping.
Crude oil is already transported from the Pechora Sea and Kara Sea coast year round.
LNG transport has just started from Yamal Peninsula.
Arctic tourism is becoming hot topic.

Remote Arctic coastal area could be accessible.

Container liner service will become true or not in mid future? If so, hub and feeder network will also be a topic.

NSR year round transit operation will be discussed among shipping sectors.
Also, trans polar route will become possible for icebreaking cargo ships.

At the same time, challenge and development for sustainable shipping must be carried out.
We need to develop counter measure for both accidental and regular release of agents and other impact to the Arctic environment from shipping activity.


Thank you for your attention