

# The Northern Sea Route



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НТЦ Интернавигация

Joint Stock Company Internavigation Research & Technical Centre of Advanced Navigation Technologies

Bolshoy Trekhsviatitelsiy per., Moscow 109028 Russia

Tel: (495) 626-2501

Fax: (495) 626-2883

E-mail: [internavigation@rgcc.ru](mailto:internavigation@rgcc.ru)

On February 19, 2013 President of the Russian Federation approved a strategy for the development of the Arctic zone of the Russian Federation for the period of up to 2020

### **The priority directions of development of the Russian Arctic zone:**

a) Integrated socio-economic development of  
The Arctic zone of the Russian Federation;

b) Development of the Arctic transport system

c) Development of science and technology;

d) Creation of a modern information and  
telecommunications infrastructure;

d) Environmental security;

e) International cooperation in the Arctic



Narrative for previous slide:

In order to modernize and develop the infrastructure of Arctic transport system that ensures the preservation of the Northern Sea Route it is provides a unified development of the Arctic transport system of the Russian Federation as a national marine main line, focused on the year-round operation, including the Northern Sea Route and the adjacent meridional river and rail communications, and the airport network.

## The Northeast passage becomes a more and more popular route

In 2013 the number of permissions for shipping in the water area of the Northeast passage has grown up to 270 vessels what is fivefold more than the previous year.

In 2013 the first large-capacity tanker began its voyage through the Northeast passage two weeks earlier than in 2012.



Starting from August 15, 2013, IMO Secretary General Mr. Koji Sekimizu and Permanent Representative of the Russian Federation to the IMO Jury Melenas overcame 1,680 miles from Dixon (Kara Sea) to Pevek (East Siberian Sea) aboard an icebreaker.



## Narrative for previous slide:

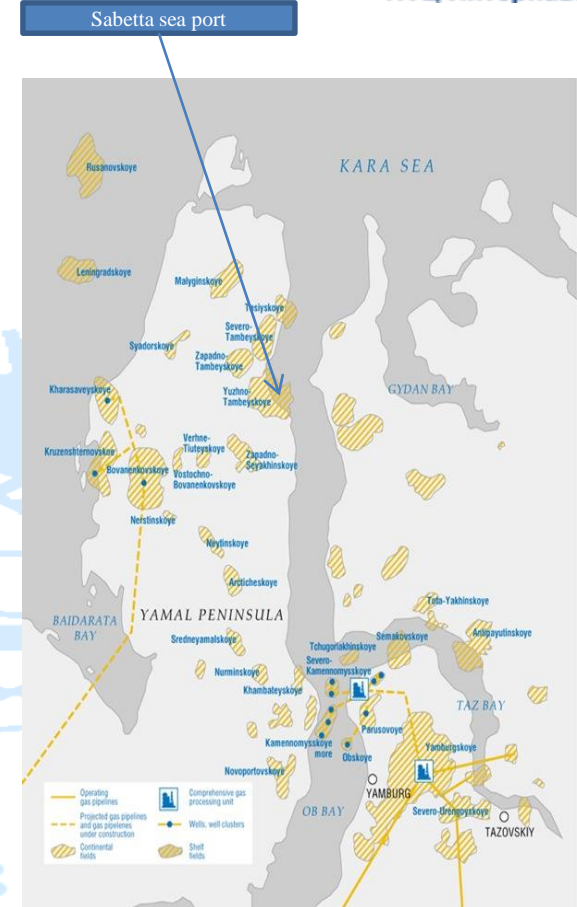
IMO's Secretary-General Mr. Koji Sekimizu and Permanent Representative from the Russian Federation to the IMO Jury Melenas at August 15, 2013 aboard the icebreaker Sekimizu overcame 1,680 miles from Dixon (Kara Sea) to Pevek (East Siberian Sea).

The purpose of journey is to see how the sheet ice changes by the climatic effect, and to appreciate how is it going with the preparation in services and infrastructure necessary for navigation in Arctic conditions at Siberian coast. He was personally acquainted with the difficulties that are inevitable when navigating in high latitudes - for example, severe weather conditions and the relative lack of good maps, communication systems and other navigational services that create problems for mariners.

Nowadays in the IMO there is a process of preparing the draft international code of safety for ships operating in polar regions, which shall be discussed questions of constructing, equipping, operation, training of staff, provision of search-and-rescue and environmental protection measures for ships going out in the inhospitable waters surrounding both pole.



Cargo traffic in the Northern Sea Route will increase due to the Yamal gas fields



## Narrative for previous slide:

"About fifteen million tons of freight will from the Yamal peninsula port of Sabetta (development of gas fields) and about fifteen million - goods in transit". Each year, the port of Sabetta should ensure 220 ship calls. Besides, at present moment dozens of oil plumes in the Kara and Barents Seas are developed. "It is dozens of oil platforms, service for each of them will be provided by two or three ships. This refers to a significant number of ships to 2016-2017 years, that will go to Europe, China and Southeast Asia.



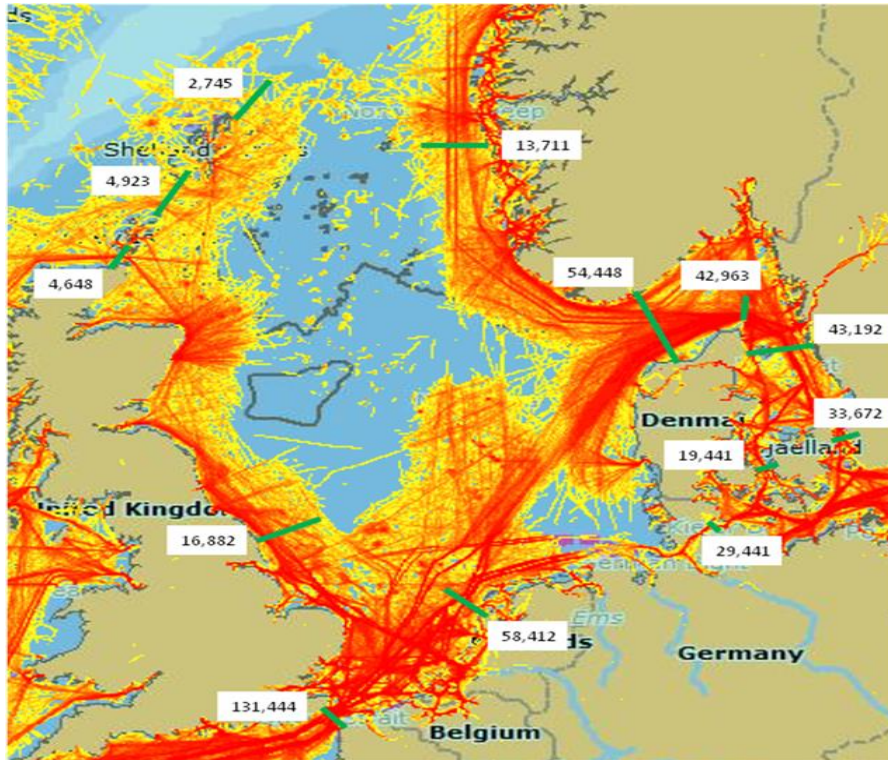
The Yong Sheng is the first container vessel in the world that passed through the short Northern Sea route between Asia and Europe in 2013



Narrative for previous slide:

The Yong Sheng vessel, which is owned by the State Chinese Company Cosco Group, with a displacement of 19,000 tons, will go down in history as the world's first container that went through the short Arctic route between Asia and Europe in 2013. Cosco believes that in a few years products from Asia in significant volumes will be able to be delivered by going through the Northern passage.

## Regions of traffic are different, problems are common



Container ship "Marco Polo", carries 16,000 containers, Asia - Europe, length 396 m, width 54 m

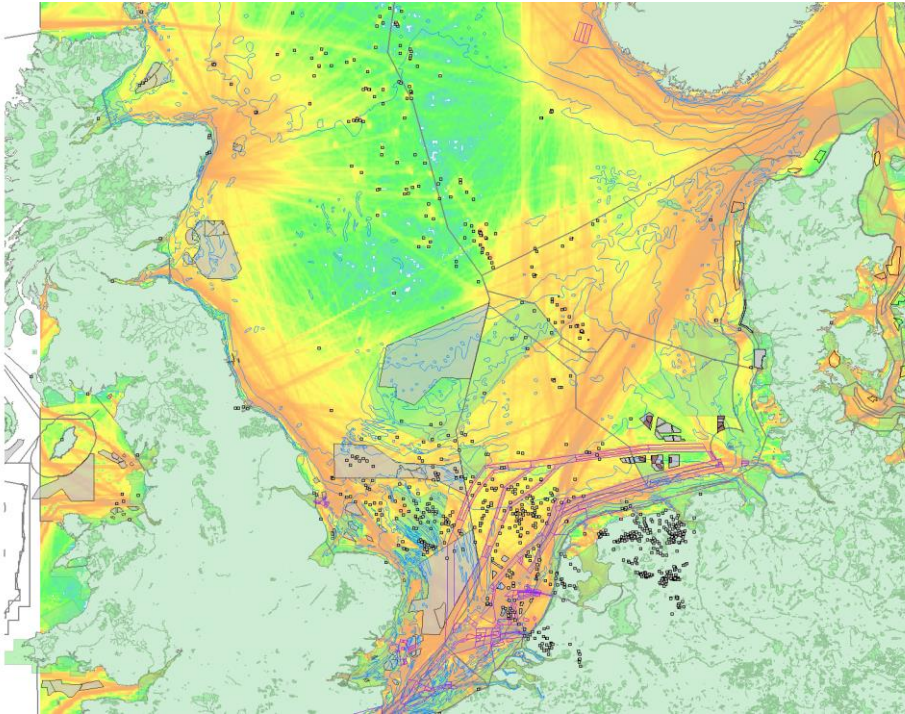
The traffic intensity in the narrowest part of the English Channel (32 km.) is 500 ships per day

Narrative for previous slide:

This slide shows the intensity of the traffic of the coast of European countries, where the problems associated with providing reliable navigation. Similar problems can be expected in the Arctic region with increasing of traffic intensity.

In the UK, these issues are successfully resolved with the help of new technologies used in the formation of the modern eLoran station.





Position densities diagram of oil platforms and wind power stations



Wind power stations

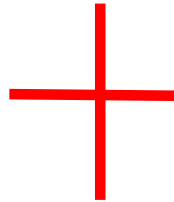
## Narrative for previous slide:

The problem of heavy traffic is added with the problem of increasing the number of different obstacles in the form of wind power stations and oil platforms.

The quantity of oil platforms in the Arctic region has significantly increased and will grow more, and the probability of creating of new wind power plants is very high. These problems are added to the very difficult climatic conditions in the Arctic region.



In addition to the GNSS an alternative independent autonomous navigation system is needed



Safety and available  
navigation

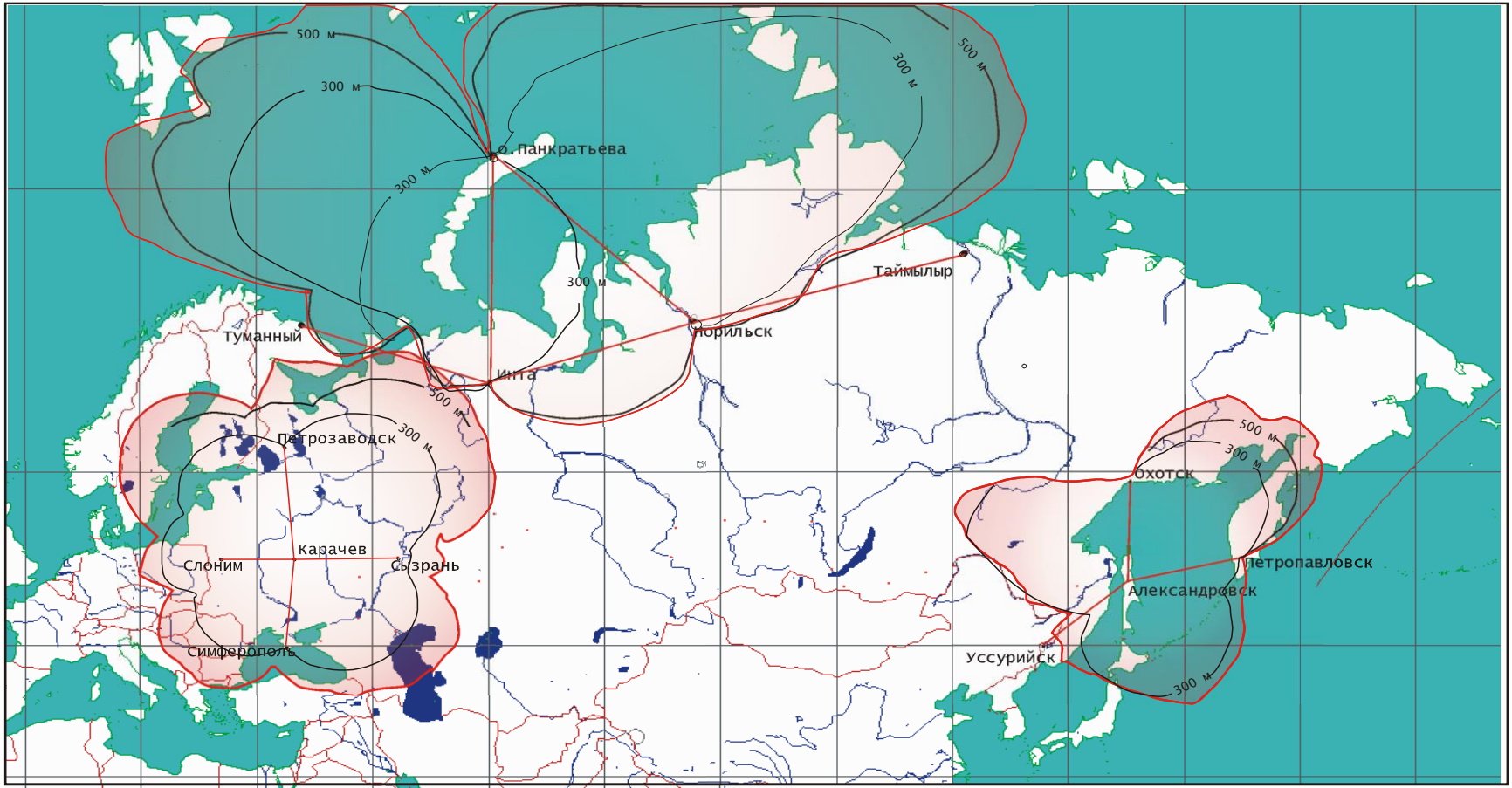
## Narrative for previous slide:

Current status of radionavigation systems allows to consider that global navigation satellite systems (GNSS) are the undisputed leader in the part related to the spatial scope of work zones and accuracy of navigational tasks' solution.

Unfortunately, such characteristics of the generated radionavigation field, including the accessibility and integrity, to this day do not fully meet the requirements of consumers, critical to the application of navigation-timing technologies.

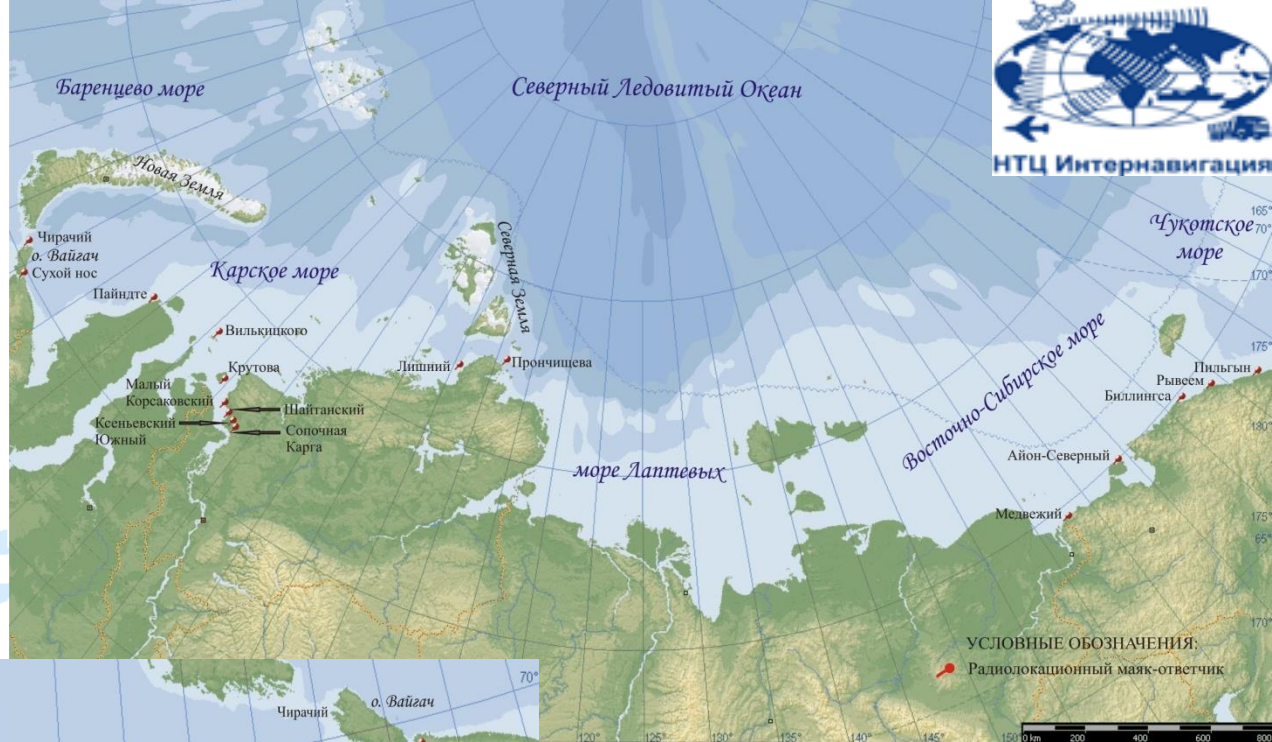
In areas with a difficult weather conditions, heavy traffic navigation it is not enough to have radionavigation systems software of only one type (GPS, GLONASS, then - GNSS). In addition to the GNSS it is needed an alternative independent autonomous navigation system.

## The existing radionavigation chains along the Northern Sea Route



Narrative for previous slide:

Currently, Northern and Far North radionavigation chains operates on the Northern Sea Route in the Arctic region. Areas of the north-eastern part of the Northern Sea Route are not lighted by radionavigation field.

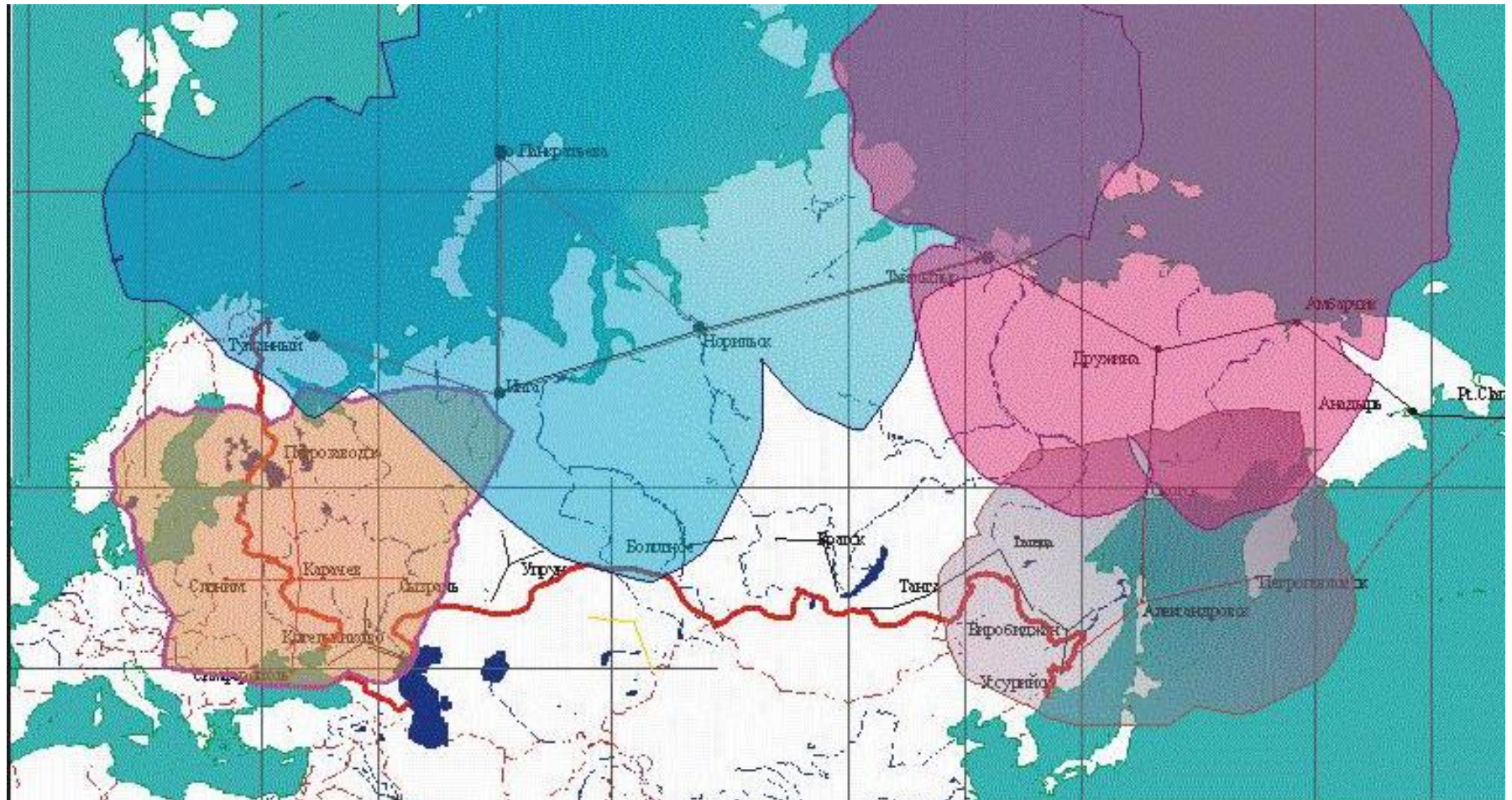


Narrative for previous slide:

Sea markers and radar responder beacons operates in the western part of the Northern Sea Route.  
In the middle, in the Laptev and East Siberian seas there is almost no navigation aids.



## Example of placing radionavigation stations for providing radionavigation field coverage along the Northern Sea Route



Narrative for previous slide:

In 80-90 years (*in the 1980's and 90's*), there were plans to equip the Arctic region with radionavigation field by Chayka stations in Russia.

This presented variation of Chayka stations' location can be used at this time.

## **The Conclusion:**

1. Nowadays radionavigation maintenance of the Northern Sea Route is insufficient.
2. High risks of environmental disasters exist.
3. Navigation support by way of only one type (GNSS) of radio navigation systems in areas with heavy weather conditions and dense traffic is insufficient.
4. In addition to the GNSS an alternative independent autonomous navigation system is needed.
5. Additional radionavigation stations are needed for reliable radionavigation support along the whole Northern Sea Route.
6. There are lots of countries interested in a safe radionavigation support of the Northern Sea Route.
7. It is recommended to consider mutually beneficial international projects to provide radionavigation support of the Northern Sea Route.

# Thank you!

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