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IALA Headquarters**7 – NATIONAL MATTERS*****7.4 Finland*****National Matters Update by Finland****Windfarm related activities**

Finland and Sweden have a jointly coordinated winter navigation system in the Gulf of Bothnia (Figure 1). Icebreakers assist merchant vessels to ports and ice class rules and assistance restrictions make sure that the merchant vessels suitable for operations in ice are available. This winter navigation system is unique in the world globally in the volume of merchant vessel traffic in ice infested waters. The Gulf of Bothnia will probably also be the first ice-infested sea area where large maritime wind farms will be developed.

In recent years, there has been considerable interest in maritime wind power development with many windfarm areas under early phases of development in the Gulf of Bothnia. If a significant portion of the planned windfarm areas are realized, they will affect the navigation routes. Some planned areas are situated near fairway entrances or alongside fairways and will also affect the visibility and need for aids to navigation.

Even with the decreasing trend of sea-ice coverage in the Baltic Sea, the Bay of Bothnia is still ice covered each season and at least the coastal areas of the whole Sea of Bothnia receive an ice cover on most years. The ice conditions are most difficult in the Bay of Bothnia, and the ice cover is very dynamic in the area with mainly winds driving the movement of the ice field.

The effects of maritime windfarms on the dynamics of sea ice are still unknown but may be considerable. Wind farms have a potential to break moving ice as well as limit the movement of sea ice depending on prevailing ice and wind conditions. In both cases there is a potential for increased ridging.

The dynamic sea-ice cover including ridging and compressive ice fields poses a serious challenge to navigation in the area. As winters in the area are becoming milder due to climate change, the effect of the dynamics of the ice field to navigation are expected to become more severe. Furthermore, the dynamically changing sea-ice affects the traffic patterns, which may change even daily during the icebreaking season (Figure 1).

On national level, the Finnish maritime authorities have developed a guideline on issues to be considered in the coordination of maritime transport and wind farms. The guideline is available online: https://www.traficom.fi/sites/default/files/media/regulation/Merituulivoimaohje_EN.pdf.

Finland welcomes the plans (Task ARM-1.4.1/VTS-1.8.5) to develop a new IALA Guideline on Enhancing the Safety and Efficiency of Navigation around Offshore Renewable Energy Installations (OREI) and the possibility to contribute to the development of the Guideline.

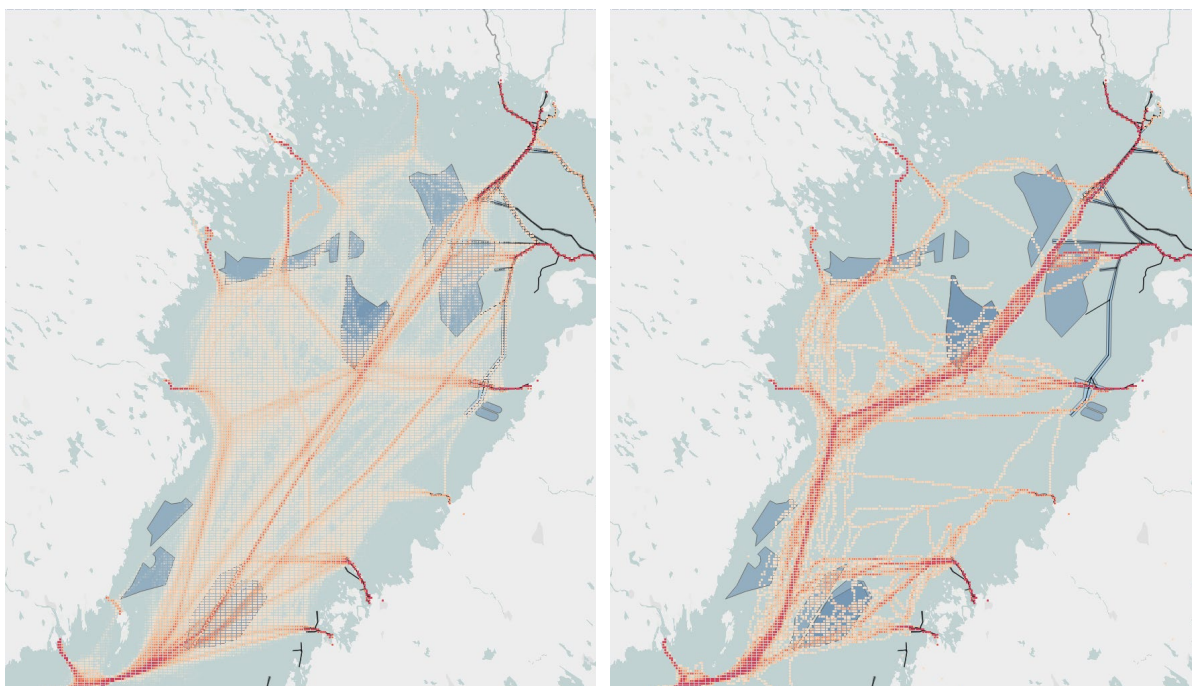


Figure 1. Example of differences in vessel traffic between the whole season (left) and one specific week during peak ice season (right) in Gulf of Bothnia. The spatial distribution of the traffic intensity varies significantly and rapidly during the icebreaking season. Official fairways (along the Finnish coast) are marked with black lines and the planned wind farm areas are highlighted with blue.