

Mapping of sea ice extent by help of remote sensing methods

Abstract

The aim of this thesis is to show utilization of remote sensing methods for monitoring of sea ice by way of an example of Beaufort Sea. In first part of this thesis resulting from the available information in the literature. A short principle of remote sensing is introduced. Some of observation satellites are mentioned, above all Envisat ASAR, whose data are used in the second part of this thesis. Further, some researches concerning the monitoring of sea ice are analysed. The applied visual and radar data are described in detail for monitoring of polar areas. The advantages and limit of these data are mentioned. In the conclusion of this first part, the researches monitoring the sea ice in Beaufort sea are mentioned. The second part of this thesis is demonstrative the extent of sea ice in two chosen areas in Beaufort sea. On the basis of eleven radar Pictures provided for free from an European space agency, a classification of two types of sea ice (first-year sea ice, ice floes/multiyear sea ice) was effected. In the watched areas, there was noted a larger extent of sea ice in 2003 than in 2009. The minimum of the ice area in both years was in the month of September. In the Pictures, there is a perceptible progress of ice floes which is directed by the sea stream. The reader can obtain information about the utilization and processing of radar data and their utilization at the monitoring of sea ice in the polar regions.

Keywords: sea ice, monitoring, remote sensing, radar data, visual data