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## Possibilities of Using AIS Satellite Data for Comprehensive Monitoring of the Vessel Activity through the Example of a Fishing Fleet

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**Abstract.** The Automatic Identification System (AIS), installed on all large vessels and many smaller ones, was originally intended to prevent ship collisions. Currently, the signals of this system are actively used by ground-based and satellite equipment to track the location of ships in the world's oceans. The constant flow of terrestrial and satellite AIS data makes it possible to create a continuous history of the vessel movements around the globe. Knowing the purpose (type) of a vessel, it is possible to detect various types of activity based on its location and the nature of its movement.

As part of monitoring fishing activities, important points for assessing the activity of a vessel are: the fishing activity of the vessel in a certain area, approaching other vessels (possible overload of catch/products), concealing its activities by turning off the AIS transmitter, substituting the transmitted location.

The paper discusses the features of detecting various types of fishing activity of vessels, mechanisms for detecting anomalous behavior, and determining the substitution of a vessel's location based on AIS satellite data. The results of modeling the placement of AIS signal receivers on a constellation of satellites for continuous global monitoring of water areas are presented.

Modeling has shown that when installing AIS receivers on the spacecraft of the promising Gonets-M1 constellation, the resulting volume of data will make it possible to solve the problems of automatic identification of fishing activities of vessels.

**Keywords:** AIS, shipping monitoring, fishing activity detection, Gonets-M1

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