Quality of AIS Services for Wide-Area Maritime Surveillance

Abstract:
The paper presents the ship tracking capabilities in the Maritime Situational Picture (MSP) built from non-classified AIS (Automatic Identification System) data from up to 8 AIS satellites as well as terrestrial AIS. The results represent state-of-the-art of cooperative long-range capabilities. During 2011–2013, the Joint Research Centre (JRC) of the European Commission has carried out two campaigns for counter-piracy surveillance under the name “Piracy, Maritime Awareness and Risks” (PMAR), each for 6-month; the first focussed on the seas off the Horn of Africa, the second on the Gulf of Guinea. The AIS performance was analysed in terms of the number of ships seen (up to 2,850 in the second campaign), the freshness (average maximum time gap between AIS messages over all ships was 4.4 hours), the fraction of ships that are updated every 3 hours (increased from 21% in January 2012 to 49% in March 2013), and other indicators. The marginal value when adding data sources was analysed. E.g., considering the data from the various AIS providers in March 2013, it is found that the average number of ships detected per day increased by 384 when increasing from one to two providers and by another 31 adding the third provider, whereas terrestrial AIS increased the number of ships with another 93. The average maximum time gap was reduced from 10.9 hours to 4.4 hours in steps of 1.9, 2.7 and 1.9 hours. These results enable choices on how many satellites or data sources to use for a certain required performance.

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