Light Fishing Boat Detection by VIIRS Low Light Imaging Data in the Inner Gulf of Thailand from October 2015 to September 2016.

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Abstract

This study aimed to compare the number of light fishing boat, trend of number of light fishing boat and relationship between Radiance of pixel in VIIRS DNB and DNB Spike Median filter Index (DNB SMI) by using VIIRS low light imaging data in the Inner Gulf of Thailand from 1 October 2015 to 30 September 2016 (12 months). The data used were VIIRS Boat Detection (VBD) Data from The Earth Observation Group and NOAA National Geophysical Data Center, Visible Infrared Imaging Radiometer Suite (VIIRS) Data from NOAA Comprehensive Large Array-data Stewardship System (CLASS) and location of light fishing boat (observe fieldwork) from SEAFDEC for analysis. The results showed that accumulate number of light fishing boat in the Inner Gulf of Thailand during study period (12 months) were 16,714 vessels and accumulate average were 1,393 vessels/month. In the closed area of the Inner Gulf of Thailand, during the close season (June to July) the accumulate number of light fishing boat were less than during the open season (August to May). From those results, the dense area of light fishing boat were assumed as the main fishing ground of the Inner Gulf of Thailand. In the main fishing ground, the accumulate number of light fishing boats were 12,126 vessels and accumulate averaged were 1,011 vessels/month. The high density period of light fishing boat were during 16 October till 15 February (Northeast monsoon) and the low density period were during 16 May to 15 October (Southwest monsoon). The trend analysis results of the number of light fishing boat in the two area: 1) inside-outside the closed area of the Inner Gulf of Thailand and 2) inside-outside the main fishing ground area of the Inner Gulf of Thailand showed that both area had high trend in Northeast monsoon period and low trend in Southwest monsoon period. The relationship between Radiance of pixel in VIIRS DNB and DNB Spike Median filter Index (DNB SMI) indicate that Radiance of pixel in VIIRS DNB has a high relationship to DNB SMI which had a positive relationship ($r = 0.73$). But the calculated SMI values of light fishing boat from observe fieldwork from the relationship's equation had all minus values, this may because of the position from observe fieldwork were located in the cloudy area as seen from the VIIRS DNB image. There had the case study which recommend that if SMI value were less than a threshold 0.035 that were identified to be not fishing boat therefore if there were cloudy area in the Inner Gulf of Thailand, there will be possible that the number of light fishing boat were more than 16,714 vessels in this study period.

Keywords: Detection / Light Fishing Boat / Visible Infrared Imaging Radiometer Suite / Closed of the Inner Gulf of Thailand