



ABSTRACT

The research was aimed to study NOAA/AVHRR-14 image application for detecting biophysical oceanography factors to determine and to map potential area for capturing zone of economically important small pelagis fish at Maccasar strait by utilizing Geographical Information System (GIS). The factors treated as data input into GIS analysis involved in this research, are Sea Surface Temperature (SST), Chlorophyl Index (CI), and Catch Per Unit Effort/ CPUE). SST and CI data were obtained from analysis of NOAA/AVHRR-14 image recorded on June 2001, while CPUE data were daily data during the research was being conducted. In addition to NOAA/AVHRR-14 image, other remote sensing image i.e Landsat TM recorded in 1996, path/row 114/63-64, covering part of South Sulawesi province were also used. The images were exploited as interpolation control to map potential area of small pelagis fish at the study area.

A series of image analysis started by conducting radiometric correction, i.e. atmospheric scattered and absorption, and geometric correction, i.e. referencing process to similar points of image in the field or on the map with coordinates previously known. Images resulted from such corrections then were analysed to obtain CI and SST. The CI was obtained by applying NDVI formula, while the SST by this formula, $SST(^{\circ}C) = \{1.017342(T4) - 2.139588(T4 - T5) + 0.779706(T4 - T5)(\text{Sec}\theta - 1) - 278.43\}$. Results of CI and SST from the images and CPUE were then correlated each of them with direct measurement data in the field. The map of potential area for capturing small pelagis fish at Maccasar strait was made by overlaying the SST, CI and CPUE maps.

Result of the study shows that SST, CI and CPUE maps can be derived from the NOAA/AVHRR image with an appropriate result according to small mapping consideration. Correlation among the biophysical oceanography factors indicated that there is close positive relationship between data from image analysis and field measurements. The CI on image and direct measurement at sea give $r=0.86$, the CI and CPUE with $r=0.83$. A negative relationship between TSS and CI was obtained with $r=-0.42$, as well as between SST and CPUE with $r=-0.43$. The relationship between SST image and direct measurement provide a high confidence with $r=0.92$. From the study, capturing zone map of small pelagis in Maccasar Strait can be made in small scale with a good result.