

# **Spectral Reflectance Analysis of Oil Seepage using ASTER Image Data and Laboratory Experiment**

**Yessy Arvelyna, Masaki Oshima**

Tokyo University of Marine Science and Technology Department of Marine Information System Engineering  
yessy\_a@e.kaiyodai.ac.jp

The detection of natural oil seepage on the sea surface can be used as an aid for searching a new oil field. On the other hand, oil seepage is a major source of sea pollution in the world. Therefore the detection and validation of oil seepage detection using remote sensing data is necessary. This paper discusses the oil seepage detection using spectral reflectance analysis derived from ASTER image data over coast off Akita Peninsula, West of Japan. The occurrences of natural oil seepage in study area have been reported and verified by sea truth data. The laboratory experiment is done to measure spectral reflectance of 8 oil samples with different density, from heavy oil to light oil. The empirical function of spectral reflectance of oil slick to seawater is introduced for the measurements under various conditions. The empirical function between spectral reflectance derived from experiment and ASTER image shows good reliability. The results show that natural oil seepage has unique spectral characteristic at 520-600nm of visible channel; thus it can be detected from other oceanic features