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SPATIO-TEMPORAL ANALYSIS OF OIL SPILLS IN THE PERUVIAN AMAZON

Abstract

Oil is a hydrocarbon that is considered a fundamental raw material since the twentieth century, due to this complex processes have been implemented for its extraction and transportation, during these processes oil spills often occur. This type of disaster often occurs either because a bad practice or an accident. The oil spills are a major environmental pollutant, affecting the biodiversity of flora and fauna of the ecosystems where it is produced and even human health. In recent years there were several catastrophic oil spills in the Peruvian Amazon, in 2016 has been the year that has registered more disasters in the Peruvian Amazon, in January at least 2000 barrels of oil spilled affecting at least 1900 inhabitants. In February of the same year 1000 barrels of oil spilled affecting 2543 inhabitants in the department of Loreto. The year 2018 was also a year in which multiple oil spills occurred, the most harmful was in November where at least 8,000 barrels have been spilled. These are just some of the more than 36 oil spills registered in the Peruvian Amazon between 2008 and 2018, which have caused environmental damage that will take time to be recovery. On the other hand, the health and lives of at least 400 indigenous communities have been damaged, of which, according to the Ministry of Health, 57Given this problematic, the present study seeks to identify and monitor oil spills that have occurred in the Peruvian Amazon using Synthetic Aperture Radar (SAR) technology, which will allow us to obtain spatial, spectral and geometric characteristics and physical characteristics such as backscatter levels, to identify and characterize an oil spill in the study area. The present study has the objective of making a spatio-temporal analysis of the oil spills that occurred in the Peruvian Amazon, which will allow us to identify the area of extension of the oil spill, generate identification maps of the affected areas to carry out recovery work and remediation of the ecosystem. Thus, the first step of a future early warning oil spill identification system for the Peruvian Amazon will be developed, since in the face of the occurrence of this type of disaster, action must be taken immediately to implement a containment plan with the objective of reducing the damage produced for the oil spill.