IAF EARTH OBSERVATION SYMPOSIUM (B1)
Interactive Presentations - IAF EARTH OBSERVATION SYMPOSIUM (IP)

Author: Mr. Harish Rao Ramavaram
Julius Maximilians Universität Würzburg, Germany, harishrao.ramavaram@gmail.com

Ms. Swetha Kotichintala
Space Generation Advisory Council (SGAC), United Kingdom, swetha_kotichintala@hotmail.com
Mr. Siddhesh Naik
Space Generation Advisory Council (SGAC), India, Siddhesh.Naik@SpaceGeneration.Org
Mr. Joshua Critchley-Marrows
Nottingham Scientific Ltd, United Kingdom, joshua.critchleymarrows@nsl.eu.com
Mr. Oniosun Temidayo Isaiah
Federal University of Technology Akure, Ondo state, Nigeria, Nigeria, temidayo.isaiah@spacegeneration.org
Ms. Mounika Pittala
Space Generation Advisory Council (SGAC), India, mounika.pittala@gmail.com
Ms. Stephanie Wan
Space Generation Advisory Council (SGAC), United States, Stephanie.wan@spacegeneration.org
Mr. Dennis Irorere
Space Generation Advisory Council (SGAC), Nigeria, denironyx@gmail.com

TRACKING OCEAN PLASTICS USING AERIAL AND SPACE-BORNE PLATFORMS: OVERVIEW OF TECHNIQUES AND CHALLENGES

Abstract

Irreparable damage is being caused to marine life of about 1 million seabirds and 100,000 marine mammals per year, with a rising tide of ocean plastics. It is estimated that there is approximately 8 million tons dumped into the oceans every year, with 46,000 pieces of plastic per square mile. This paper provides an overview of 3 different techniques that can be used for mapping and tracking marine litter: Airborne, Spaceborne, and GPS tracker buoys.

Typically, aerial platforms are used to scan ocean surfaces for ocean plastics. Due to the relatively low altitude of the aircraft borne imaging sensor, high resolution imagery can be obtained which facilitates detection of smaller pieces of plastics. Whereas satellite based remote sensing technique offers wider coverage area and homogeneity of data, though at the expense of resolution of the images making detection of smaller pieces of plastic difficult. Newer techniques like Short Wave Infrared (SWIR) and Hyperspectral Imaging can improve the accuracy of detection and standalone GPS tracker buoys would aid in tracking.

This paper will also address the socio-economic challenges of industries with direct impact viz., fishing and provide the economic and societal benefits of space and aerial technologies with detection. The policy recommendations will also cover the mitigation of this issue and help drive environmental discussions forward.