Let's Map Floating Plastic in Waterways -Before it Reaches the Ocean!

Simon Ironside (New Zealand) and Gordana Jakovljevic (Bosnia and Herzegovina)

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SUMMARY

The effects of plastic pollution on the Earth's oceans are well documented, potentially catastrophic and increasing exponentially year on year. UN estimates suggest that >75% of all the plastic produced since 1950 has since become waste. The UN Environment Programme has calculated that each year more than 8 million tonnes of plastic ends up in the oceans. Eighty per cent of all litter in our oceans is made of plastic and, without action, by 2050 there will be more plastic in the sea than fish, by weight. This is an intolerable problem that needs immediate and far-reaching action to remedy. Eric Solheim, Head of UN Environment, speaking at the launch of the #CleanSeas campaign argued that it was past time to tackle the plastic problem that blights our oceans. 'We've stood by too long as the problem has gotten worse' he said, 'it must stop'. The surveying and spatial science profession agrees.

The transportation of land based plastic litter by rivers to the ocean is a significant contributor to the ocean pollution problem. However, much of the information on the quantity and type of plastic waste being transported is guesswork. Most of the available data is the result of empirical probability estimates or beach surveys, which are limited to small areas. Remote sensing data, artificial intelligence, and GIS tools have the potential to provide long-term, resource-effective, and accurate mapping and monitoring of floating plastics. However, the current knowledge gap in our fundamental understanding of the spectral signatures of floating plastic represents a major challenge in the application of remote sensing data to this serious environmental problem.

FIG Working Group 4.3 - Mapping the Plastic - a combined initiative of the FIG Young Surveyors Network and Commission 4 (Hydrographic Surveying), in conjunction with the University of Novi Sad (Serbia) and the University of Banja Luca (Bosnia and Herzegovina) and with assistance from Trimble has developed a world leading methodology to accurately extract floating plastic data (as

small as 1.0 cm in length) from multi-spectral UAV images using artificial intelligence deep learning algorithms.

This exciting, ground breaking process will enable the accurate mapping and classification of floating plastic in near real time, allowing us to better understand the volume and types of plastic within waterways, and will play an important role in highlighting unsustainable practices, identifying infrastructure shortcomings and informing robust land use controls with the ultimate goal of eradicating the dumping plastic waste into rivers.