

Mapping Plastic using UAV Multispectral Images

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SUMMARY

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Chair FIG Working Group 4.3 – Mapping the Plastic

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The effects of plastic pollution on the Earth's oceans are well documented, potentially catastrophic and increasing exponentially year on year. Almost every piece of plastic ever made is still on our planet in one form or another. Plastic waste is omnipresent in waterways from river banks and coastal areas to the most remote parts of the ocean. However, there is still a lack of accurate data on the amount and spatial distribution of plastic. Currently, most of the available data represents the results of empirical estimates or beach surveys which are time consuming, relatively expensive and limited to small areas.

Remote sensing data, artificial intelligence, and GIS tools have a great potential to overcome

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limitations and provide the long-term, resource-effective, monitoring of floating plastics. However, the knowledge gap in the fundamental understanding of the spectral signatures of floating plastic represents the major challenge in the application of remote sensing data in this area. WG 4.3 has developed methodologies to successfully analyse the spectral signatures of floating and submerged plastic from multi spectral images captured with UAV's equipped with multi-spectral cameras, deep learning artificial intelligence algorithms and GIS tools in near real time.

The results of our work to date show that multispectral data can be effectively used for the detection and quantification of floating plastics, enabling us to accurately map plastic waste in river systems and coastal areas, both on land and in the water. Remote sensing-based identification of plastic waste combined with near real time automated image analysis represents a breakthrough in the global plastics battle.

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