

Resolving the inshore fisheries with SAR-AIS data fusion

Lauren Biermann¹, Simon Chesworth², Alan McLarney³

¹Cefas, Lowestoft, UK

²exactEarth, Harwell, UK

³AstroSAT, Edinburgh, UK

Correspondence to: Lauren Biermann (lauren.biermann@cefas.co.uk)

Mandated Vessel Monitoring Systems (VMS) and Automatic Identification Systems (AIS) address only a proportion of ships that may pose concerns around security, safety, and/or illegal, unreported and unregulated (IUU) fishing. The activities of a vast number of smaller vessels operating along inshore regions of local and global coastlines have never been consistently monitored and are, thus, poorly understood. These large numbers of ‘dark targets’ ultimately spreads resources thinly within maritime organizations, with consequences for regulation and management, but also for the fishermen themselves.

For monitoring of larger vessels, the overarching concept of SAR-AIS data fusion is an operational technology already showing promise in the control of IUU tuna fishing in the Mediterranean, for example. For small vessel detection and identification, this talk explores a similar fusion strategy, but with a high-resolution synthetic aperture radar on the International Space Station (ISS) and Class B small vessel AIS (ABSEA).

Cefas are collaborating with exactEarth and AstroSAT to spearhead the development and launch of a new radar sensor for the ISS, which will have the ability to revisit key areas several times per day, and is capable of imaging through cloud and at night. These images alone will serve to improve understanding of inshore vessel movement patterns and behaviours, with benefits for management, protection of legal fishing rights, and policing of conservation zones. However, identification of vessels is key once unregulated activities have been identified, thus requiring small vessel AIS. ABSEA has already proven to be vital in South Africa, and their Maritime Safety (SAMSA) has deployed 50 Identifiers on a sample of small vessels from the fishing and commercial work boat communities.