Tidal current characterization at the Atlantic Marine Energy Test Site AMETS B

Two ADCP deployments were undertaken in 2016 and 2020* to characterise the tidal currents at AMETS B.

Both depoyments were carried out using Teledyne RDI Workhorse Sentinels (300 & 600 kHz) in self-contained mode with data only available after recovery. The instrument has a number of built-in quality control tests and also provides ancillary data such as Echo Intensity and Error Velocity which can be used by the end-user to further refine data quality. The most uncertain part of the data profile was that near the surface due to strong echo from the "hard" sea surface. In practice, this meant that the velocity data for the top 5-6 % of the water column were discarded during analysis.

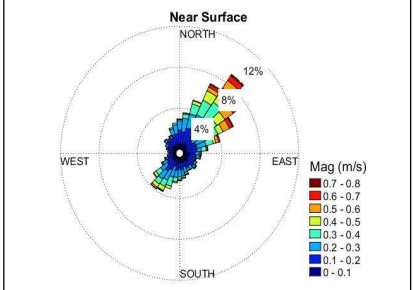
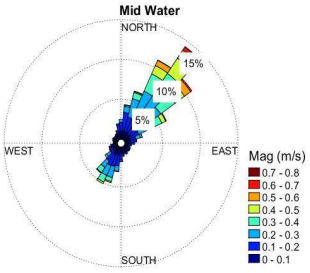
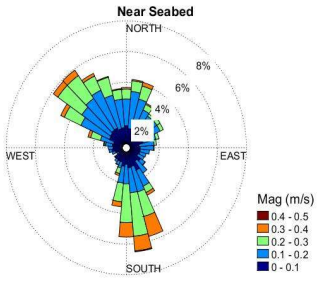
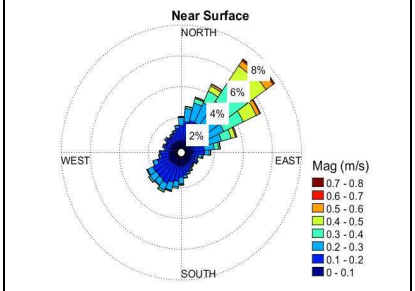
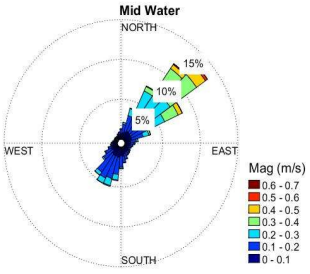
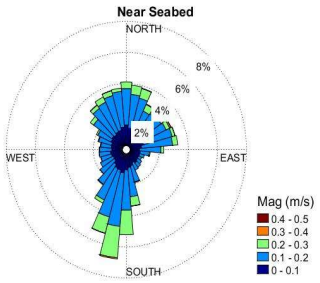
Deployment	Duration	Location	Instrument	Comments
AMETS_B_2016	20 Jul 2016 to 28 Aug 2016	Berth B	RDI 300 kHz	Data quality good
AMETS_B_2020	18 Apr 2020 to 09 Aug 2020	Berth B	RDI 600 kHz	Data quality is suspect

ADCP deployment details at AMETS B

For the analysis, the statistics and plots were undertaken for data bins at three different levels in the ADCP profile representing near-surface, midwater column, and near-seabed.

Deployment	Level	Min (m/s)	Mean (m/s)	Max (m/s)	StdDev (m/s)	Predominant Direction
AMETS_B_2016	Near Surface	0.015	0.238	0.785	0.146	Northeast - southwest
	Mid Water	0.002	0.204	0.709	0.135	Northeast – southwest
	Near Seabed	0.002	0.152	0.421	0.083	North-northwest – south-southeast
AMETS_B_2020	Near Surface	0.006	0.197	0.763	0.124	Northeast - southwest
	Mid Water	0.001	0.171	0.625	0.105	Northeast – southwest
	Near Seabed	0.001	0.128	0.451	0.059	North – south

Summary statistics of current speed (m/s) for full deployment periods

Deployment	Near Surface	Mid Water	Near Bed
AMETS_B_2016			
AMETS_B_2020			

Current roses at each level for full deployment periods

* The tilt of the AMETS_B_2020 instrument was approximately 14 degrees during the deployment period which is just below what is considered the safe threshold of 15-20 degrees for data acquisition. The statistics for the AMETS_B_2020 deployment are notably different from the AMETS_B_2016 deployment. In particular, the lack of variability in the current magnitude between Spring and Neap tides in this deployment is quite apparent. Given the above, this data should be treated with caution.