

Improving ADCP Measurements with Advanced Settings: Extended Velocity Range

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Acoustic Doppler Current Profilers (ADCPs) enable us to develop a better understanding of the ocean. These instruments are used to measure water current velocities over a depth range using the Doppler effect of sound. This study aimed to develop a better understanding of the capabilities and limitations of these devices, focusing mostly on the Extended Velocity Range (EVR) mode on the Nortek Aquadopp HR Current Profilers, which promises to reduce the phase wrapping, the abrupt change of the velocity. The study was completed in a span of nine weeks in which two different deployments were made, a month apart from each other, at Piermont Pier only a couple of minutes away from Lamont Doherty Earth Observatory. Two 2MHz Nortek Aquadopp Current Profilers with different head configurations were used and the data obtained was compared with some data obtained during the Falkor Expedition in 2016. All data was processed through a MATLAB script written and improved by various researchers at Lamont Doherty Earth Observatory. By applying a diverging colormap it was found out that the first test did not have any notable differences when compared to the data from Falkor, this was due to a software error disabling EVR. However, the second deployment barely showed signs of wrapping and a cleaner velocity profile was obtained. This showed that EVR mode seems to be affecting the data by potentially missing the turbulent structure.