



The Kinect as a low cost high resolution small scale LiDAR for water surface and shallow subsurface measurements

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The Microsoft Kinect, a video game input device designed for the Xbox system, can be used by earth scientists as a low cost high resolution LiDAR sensor. The device can see through at least 1 m of clear still water, or image the surface of opaque water. When observing through water the measurement is distorted by the refraction at the air/water interface. We present initial results of a calibration for sub-aqueous measurements, and describe a method for measuring sub-aqueous features and water height. When waves exist on the surface the signal is further convoluted and both the waves and subsurface are captured in the signal. We discuss signal deconvolution and techniques for capturing the relative and/or absolute values of surface waves and subsurface features.