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## An affordable and reliable device for direct bed shear stress measurements

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The entrainment and transport of sediment by hydrodynamic mechanisms is strongly related to bed shear stress exerted by flow. Therefore, to quantify sediment transport and to determine sediment incipient motion conditions, accurate estimations of bed shear stress are required. Most of the existing methods used in hydraulics and river engineering to determine bed shear stress are indirect, and are mostly restricted to limited flow conditions or contain a large degree of uncertainty. Although devices to perform direct measurements of boundary shear stress exist, they are normally based on expensive technology. We developed a shear plate for direct shear stress measurements, using relatively low cost components. In this work we present preliminary results of measurements performed with the new shear plate, to characterize the bottom shear stress generated by a ship propeller. The data result in the expected quadratic relation between bed shear stress and jet velocities, and also give evidence of a good reproducibility. We show that the new shear plate appears to be a promising device for reliable measurements of submerged boundary shear stress under a wide range of environments and flow conditions.