

**Evidence of phytoplankton light acclimation to periodic turbulent mixing  
along a tidally dominated tropical coastline.**

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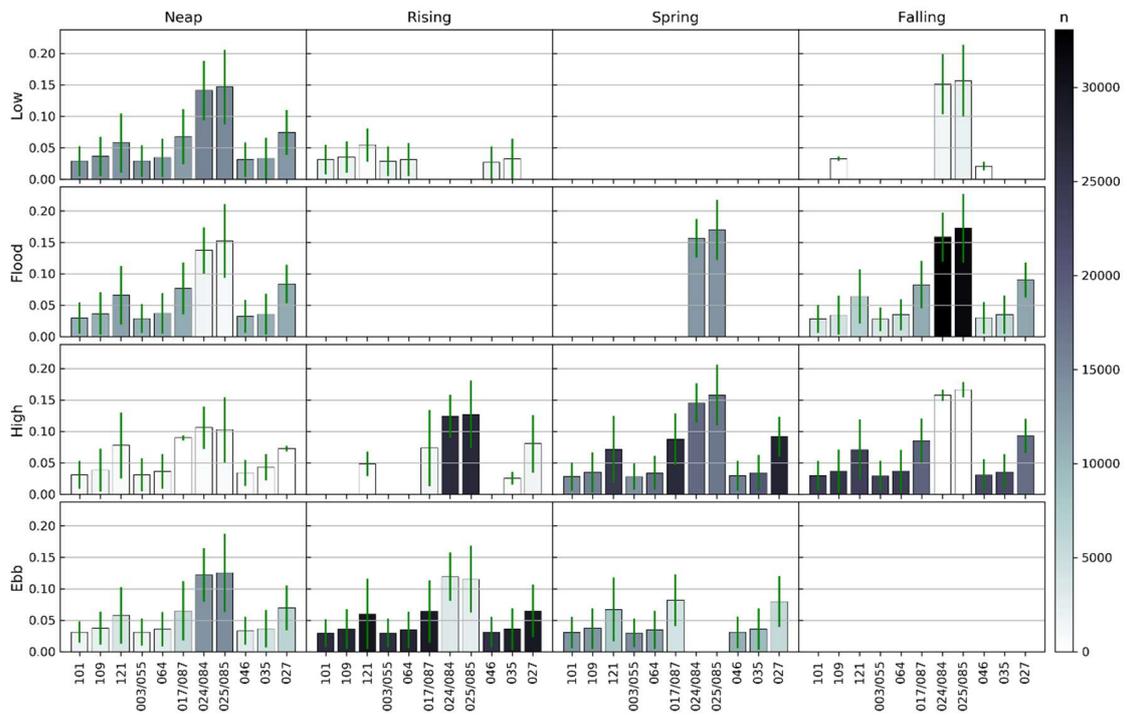
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## Introduction

Estimates of the light attenuation coefficient ( $k_d$  at 490 nm) were obtained from the MODIS ocean colour satellite record from 2002 – 2020, available through Australia’s Integrated Marine Observing System (IMOS), for each in-situ sample location. At each station a harmonic fit of the water surface elevation from the Regional Ocean Modelling System (ROMS) model was calculated to provide a 20-year timeseries of predicted tide for each station. Observations of cloud-free pixels within 2 km of each station were classified according to the tidal phase of the semi-diurnal (high water, ebb tide, low water and flood tide) and spring-neap (spring, falling, neap and rising) cycles at the time of pixel acquisition. Within each tide phase class, the mean and standard deviation of  $k_d$  was calculated to provide an estimate of changes in irradiance length scale ( $k_d^{-1}$ ) compared to the mixing length scale ( $l$ ).



**Figure S1.** Conditionally averaged MODIS  $k_d$  at 490 nm based on tidal phase of the semi-diurnal (high water, ebb tide, low water and flood tide) and spring-neap (spring, falling, neap and rising) cycles at the time of pixel acquisition. Cloud free pixels within 4 km of each station were utilised. Error bars show the 95% confidence interval of the mean and shading indicates the number of samples ( $n$ ) within each class.