



Seasonal controls of the short term variability of pCO₂ at the Scotian Shelf

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Coastal and marginal seas play a crucial role in the global carbon cycle by linking its terrestrial, marine, atmospheric and shallow sediment compartments. However, the reliable understanding and assessment of the carbon cycling in coastal and marginal seas is hindered by the very high variability in time and space. Here we investigate the variability of the surface water partial pressure of CO₂ (pCO₂) at the Scotian Shelf region, located in the NW Atlantic Ocean at the boundary between subtropical and subpolar gyres. We rely on four years of hourly observations of the surface water pCO₂ and accompanying parameters, recorded by an autonomous instrument moored at 44.3N, 63.3W. Using statistical methods, we unravel the mechanisms which control the surface water pCO₂ from daily to monthly time scales, and how these controls vary by season.