**14 years of MODIS-derived timing of spring phytoplankton bloom in the Salish Sea, Canada.**

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The Fraser River sockeye salmon fishery is one of the most important for British Columbia, and the stocks have generally declined in the past decade in part due to the variability of the timing of phytoplankton bloom in the Salish Sea. 14 years of MODIS imagery were analyzed to derive the timing of spring phytoplankton bloom in the Salish Sea. First, the (i) standard NIR, (ii) SWIR, and (iii) modified MUMM+SWIR atmospheric correction methods were evaluated against AERONET and in situ reflectance data. The results showed that NIR (R2443nm= 0.76, N=661 AERONET; R2489nm= 0.68, N=34 in situ spectra) and MUMM+SWIR (R2443nm= 0.74, N=662; R2489nm= 0.45, N=22) behaved similarly, except for the higher performance of the MUMM+SWIR in the 443nm band. Second, evaluation of the OC3M derived Chla retrievals for the different atmospheric correction methods revealed superior accuracy for the MUMM+SWIR corrected imagery (R2=0.7, slope=0.89, N=16 for +/-1hr). Improved accuracy is possible with regional Chla models using the fluorescence and/or red/green wavelengths. Third, Chla products were organized into 8-days composites, and the median Chla values were extracted from north and central regions to define year day of spring bloom initiation (YDI). For the central region, YDI generally occurs from mid-late March to early-mid April. The most delayed YDI was mid-April in 2010, and the earliest in 2004 and 2009 in the beginning of March. The north region shows earlier YDI from 2004-2008 and 2012; however, in the last years a similar trend as the central region was observed.

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