Inferring spatial variation in primary productivity using Chlorophyll a satellite data around Mauritius Island

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Satellite data is being increasingly used due to limited accessibility to remote sites and cost of the frequency of sampling. This study used AquaMODIS chlorophyll a data to infer primary productivity variation around Mauritius Island located in the Western Indian Ocean. The main sites included 6 fishing reserves (Poudre D'Or, Poste la Fayette, Trou D'Eau Douce, Grand Port, Riviere Noire, Port Louis) and 2 marine parks (Balaclava and Blue Bay). Ocean color images and data from Level 3 bearing a resolution of 4km were used for the years 2002 to 2015. The image was then processed on SeaDAS and an average of 5 grids was selected for specific sites. If a black grid (owing to atmospheric conditions) was found among the 5 selected grids, it was removed and the average was recalculated so as to minimize the error. It was found that the eastern side of Mauritius had the highest chlorophyll concentration and thus we can infer that this side was more productive. Out of the 6 fishing reserves, Trou D'Eau Douce in general exhibited the highest productivity during the 14 years of study in terms of average chlorophyll a concentration (0.579 ±0.074 mgm-3) followed by Grand Port (0.230 ±0.022mgm-3). At Trou D'Eau Douce a significant drastic increase in chlorophyll a level was found from 2005 onwards and Grand Port also followed similar trend. The marine park of Blue Bay (South East) showed significantly higher chlorophyll a concentration compared to Balaclava (North West). Variable primary productivity may have implications for fisheries management.