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Atmospheric anomalies, mesoscale eddies and algal blooms in Arabian waters**Sergey A Piontkovski**
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Shelf waters of Oman and other countries around the Gulf and the northwestern Arabian Sea are subjected to periodic algal blooms which led to huge economic losses because of their impact on fisheries, desalination plants and recreational activities. Remotely sensed and directly sampled seasonal algal blooms of the Gulf and the western Arabian Sea were analyzed with regard to seasonal and inter-annual changes of spatial-temporal characteristics of mesoscale (cyclonic and anticyclonic) eddies observed in both regions. Satellite derived (4 to 9-km spatial resolution MODIS Aqua and VIRS) daily Level-3 data for the sea surface heights, sea surface temperature and chlorophyll-a concentration were used to retrieve weekly time series of parameters and images of their spatial distribution covering 16 years (2000-2016). Data on phytoplankton taxonomy came from the sampling carried out on board research vessels (including ships of opportunity). In the Gulf of Oman and the northwestern Arabian Sea, the dinoflagellate algae *Noctiluca scintillans* dominated the biomass of phytoplankton during winter blooms. The location of chlorophyll-a maxima was associated with centers of cyclonic and peripheries of anticyclonic eddies which had the size of 100-200km. Both exhibited a bimodal seasonal pattern of their occurrence. In terms of eddy footprints at sea surface, positive and negative sea surface height anomalies matching the range of 10-20 cm were the most numerous. The frequency of eddy occurrence and algal blooms exhibited inter-annual variations. The relationship between atmospheric anomalies (in the form of El-Niño Southern Oscillation and Indian Ocean Dipole), eddies and algal blooms is discussed.

Biography

Sergey A Piontkovski is currently an Associate Professor, Department of Marine Science and Fisheries, Sultan Qaboos University. He is the author and co-author of 60 peer-reviewed research papers, 3 books, 8 book chapters and 50 conference presentations. His research interests have ranged from physical oceanography to marine ecology and mesoscale physical-biological interactions. His recent research studies have focused on climate-related variability of physical, chemical and biological characteristics of the Arabian Sea.

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