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The Hong Kong University of Science and Technology

Department of Mathematics

Seminar on Applied Mathematics

Progress on upwelling studies in the China seas

by

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Abstract

East Asian marginal seas surrounding China exhibit rich ocean upwelling, mostly in response to the southwesterly summer monsoon. Upwelling in the China seas, namely, the South China Sea, the Taiwan Strait, the East China Sea, the Yellow Sea, and the Bohai Sea, has become increasingly important because the potential changes in the upwelling may have dramatic ecosystem, socioeconomic, and climate impacts. This paper reviews the progress of upwelling studies in the China seas since the year 2000, by presenting the principal characteristics and new understanding of 12 major upwelling regions in the China seas. Upwelling exhibits long-term variability at intraseasonal to multi-decadal scales as well as short-term variability frequently caused by tropical cyclones. It is also associated with the El Niño Southern Oscillation, local environmental variation, and biogeochemical factors. The coastal upwelling around Hainan Island and the upwelling or cold dome northeast of Taiwan Island are specifically highlighted because they have attracted great interest for decades. This paper summarizes upwelling mechanisms in terms of wind, topography, tide, stratification, and background flow, with applications mostly to the China seas. Finally, we propose some topics for future upwelling research, i.e., potential intensification of coastal upwelling under global climate change, downwelling, intrusion of upwelling into coastal embayments, and the influence of upwelling on fishery and biogeochemical processes.

Date: Friday, 8 Sept 2017

Time: 3:00p.m. – 4:00p.m.

***Venue: Room 4475, Academic Building
(near Lifts 25 & 26), HKUST***

All are welcome!