

UP 8: Ozeanographie

Zeit: Mittwoch 12:00–12:30

Raum: HS 5

Hauptvortrag

UP 8.1 Mi 12:00 HS 5

The Changing Arctic Ocean: Observing Consequences of the 2012 Sea Ice Minimum in the Central Arctic —

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In September 2012 the Arctic sea ice extent dropped to a new record minimum of 3.61 million square kilometers. In light of these drastic changes, questions arise as to the future of the Arctic ocean system, its productivity and biodiversity. Concurrent to the sea ice minimum, the expedition ARK-XXVII/3 *IceArc* (Sea ice - ocean - seafloor interactions in the changing Arctic) investigated the biology, chemistry

and physics of sea ice and the impact of sea ice loss on the Central Arctic Basins. By integrated process studies, matter and energy fluxes were compared at locations with varying ice cover. Ice-, ocean- and seafloor moorings were deployed to observe sea ice thickness, circulation of Atlantic water and corresponding particle flux. We observed high biomasses of algae associated with sea-ice, and a massive export of sub-ice algal biomass to the deep-sea floor, as a result of the vast sea ice melt. The thinning ice supports a higher productivity of sub-ice diatoms by transmitting more light for a longer period. Furthermore, the increasing wind drift of ice floes may cause a better nutrient replenishment in the stratified surface layer. If the sea-ice retreat continues, substantial changes in the biogeochemistry and biodiversity of the ice-covered Arctic basins are to be expected.