



The seasonal cycle of the Arctic sea ice area: A sudden increase in the amplitude after 2007

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The variation in the Arctic sea ice is dominated by the seasonal cycle with little inter-annual correlation. Though the mean sea ice area has decreased steadily in the period of satellite observations, a dramatic transition in the statistics was initiated with the record low September ice area in 2007. The change is seen in the amplitude of the seasonal cycle while the annual mean ice area is steadily decreasing. The shape of the seasonal cycle is surprisingly constant for the whole observational record despite the transition to a new regime. A simple linear model, independent of the increased greenhouse warming, explains the shape of the seasonal cycle. Thus the dramatic climate change in arctic ice area is seen in the amplitude of the cycle and to a lesser extent the annual mean and the summer ice area. The reason why the climate change is most pronounced in the amplitude is probably related to the rapid reduction in perennial ice and thus a generally thinner sea ice.