An Accelerated decline in the Arctic sea ice cover: A record minimum in Summer 2018

Arctic and Antarctic have seasonal sea ice extent, which plays a crucial role in regulating the global climate. Arctic sea ice extent typically attains a seasonal maximum in March and minimum in September. During the course of the modern satellite record (1979 to present), sea ice extent has declined significantly (-0.55 million km2/decade i.e., -4.73%) in all the months, with the decline being most pronounced in September (-0.80 million km2/decade i.e., -12.48%). Arctic sea ice extent declined rapidly to an unprecedented low in the summer of 2018, raising a concern of its disappearance. The maximum Arctic sea ice extent was recorded 7.67 million km2 in September 1980, however, Arctic sea ice extent in September 2018 dropped to 4.59 million km2, tying for the sixth lowest minimum in the satellite record along with 2008 and 2010. This year’s minimum extent (September, 2018) ranked behind 2015 (fifth lowest), 2011 (fourth lowest), 2007 and 2016 (tied for second lowest), and 2012 (lowest, 1.20 million km2). Incidentally, the events of twelve lowest extents in the satellite era have occurred in the last twelve years. These conditions could have likely resulted from (1) anomalous warm southerly winds during spring, advecting ice poleward from the Siberian Sea, and (2) persistent low pressure and high temperatures over the Arctic Ocean in summer, promoting ice divergence and rapid melt. The current study demonstrates that the sea ice variability is linked to warming-cooling processes, and in turn supplemented by the cumulative effect of ocean currents, winds and other ocean-atmospheric parameters.