

Spatial-temporal investigation of ice dynamics over the Amery ice shelf

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Amery ice shelf – Lambert glacier system (AIS-LGS) is one of the Earth's largest glacier systems that drains about 16% of the Antarctica continent and is the third largest embayed ice shelf. The three important glacier (Fisher, Mellor and Lambert) feeding Amery Ice Shelf; which leads to increasing in the speed of AIS. One fourth of Antarctic ice is being drained out through this Glacier-ice shelf system; and spatio-temporal investigation of this ice flow has immense scientific importance in the era of climate change. The velocity of Lambert glaciers system is responsible for the increase in the velocity of AIS. A study carried out for the period of 2-decade and change in ice velocity of AIS is observed. The MODIS data of 17 years (2000-17) is used to compute the change in the speed of AIS. The normalised cross correlation technique is used to evaluate the change in speed of AIS. The observed average advancement in the frontal portion of the AIS is approx. 1 km/year. Total advancement of Amery ice shelf observed between 1997 and 2016 was ~3400 sq. Km which seems to be very crucial. The speed of AIS depends upon the back force of the Lambert glacier systems; and there are many different reasons for increasing the ice velocity of AIS-LGS. Increase in the speed of AIS also contributes in the widening and lengthening in the Amery's rift. The mass loose from the frontal portion of the ice shelf is the form of ice bergs calving and basal melting. The velocity of glacier is important aspects of glaciology. The AIS-LGS study helps to determine the study of expansion in the area. The movement of the glacier system serves as the control constraints to understand mass balance.

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