

レナ川流域における消雪時期と春期河川流量の関係

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Trends in the timing of snow melt date and river discharge in Lena river basin

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Arctic sea ice has been shrinking due to the recent global warming. In particular, the sea ice thickness is found to be thinning in Laptev Sea due to the effects of river discharges inflow into the Arctic Ocean (Park et al., 2017; Watanabe et al., 2017). This study derived snow melt dates in the Lena river basin (LRB) from 1982 to 2013 by analyzing satellite-derived long-term snow cover extent products of JASMES (Hori et al., 2017), and compared them with Lena river monthly discharge data based on the R-ArcticNET (v4.0) and Arctic Great Rivers Observatory (Arctic-GRO) datasets. Fig. 1 (a) indicates the time series of Lena river monthly discharges (RMDs) in May and June and also those of satellite-derived snow melt date (SMD) in half-month unit, while Fig. 1 (b) show the relations between SMDs and RMDs in May and June. SMD in LRB has been decreasing since late 1970's, which is considered to occur in accordance with the increase of May RMDs. In particular, the decrease in SMD and the increase in May RMD are accelerated in the late 2000's. On the other hand, RMDs in June tend to decrease during the same period possibly indicating that due to the accelerated snow melting snow cover in LRB tends to melt away in May and might no longer remain in June. These results suggest that the impacts of snow melt water on the monthly discharges in Lena river and also on the melting of the Arctic sea ice have been changing in recent three decades.

Satellite data source:

JASMES <http://kuroshio.eorc.jaxa.jp/JASMES/index.html>

River discharge data sources:

R-ArcticNET <http://www.r-arcticnet.sr.unh.edu/v4.0/index.html>

Arctic-GRO <http://www.arcticgreatrivers.org/>

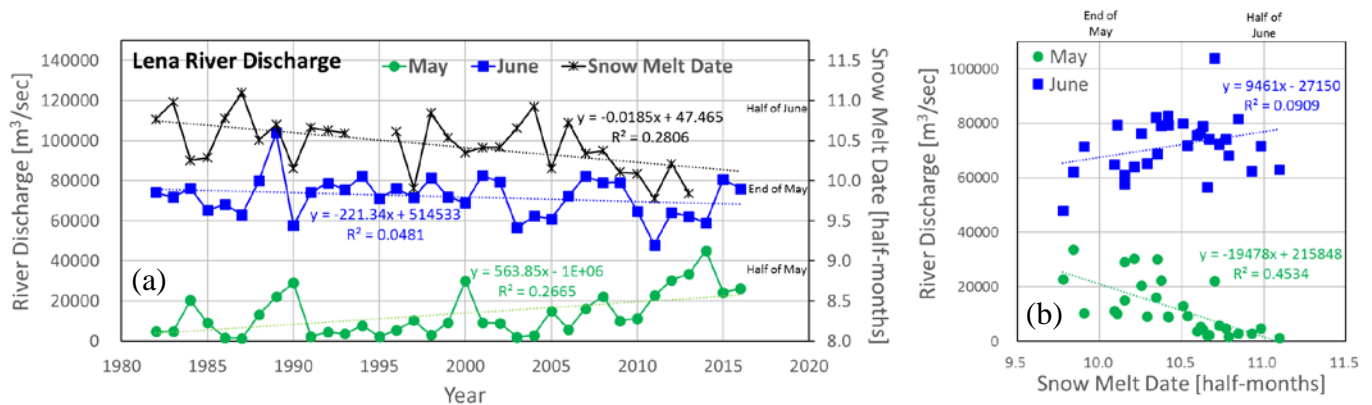


Figure 1. (a) Time series of monthly discharge of Lena river in May and June and satellite-derived snow melt date (SMD) in half-months, (b) Relation between snow melt date and monthly river discharge.

References

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