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Trends of ice cover duration in Finnish lakes in 1963–2015

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Long data series of freezing and breakup observations are available from the lakes in Finland. Some of these series were started already in the former half of the 19th century. In this study, the duration of ice cover, together with the freezing and breakup dates in 1963–2015 have been analyzed for 50 lakes covering the whole country. A statistically significant linear trend (99.9%) towards a shorter duration was detected in 30 lakes. Fifteen lakes had a shortening trend with a significance of 99 per cent and the rest, three lakes with a significance of 95 per cent. For freezing, the corresponding numbers for a delaying date were seven, 14 and 20, for an earlier breakup they were 39, eight and three. None of the stations had opposite trends.

In about half of the lakes, the shortening of the ice duration was 26–34 days. The shortening was almost twice as long in Southern Finland than in Northern Finland. For freezing date, half of the shifts were between 17–24 days, for breakup date between 11–14 days.

Many lakes in Southern and Central Finland had their record early breakup in spring 2014. Most of the longest series had the previous record from the spring of 1921. By far the latest breakup during the observation history had occurred in 1867. In Southern and Central Finland, the difference from that breakup date to the second latest is typically 2–3 weeks.