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Building on each other's work - Impact and inspiration of permafrost research from 1998 to 2017

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Research on permafrost has intensified in recent years, due to enhanced warming in the Arctic and in alpine regions, and the direct feedbacks between thawing permafrost and climate. To explore how scientists build on existing knowledge on permafrost and identify which studies inspire more research, we analyzed scientific articles published over two decades, before (1998-2007) and after (2008-2017) the 4th International Polar Year (2007/2008). We compared this bibliometric data to results from an online survey in which respondents were asked to list the most influential and inspiring publications on permafrost in their view.

While publications per year have more than doubled for multidisciplinary geosciences from 1998 to 2017, permafrost publications have increased more than six-fold for the same period, according to bibliometric data from Web of Science. Permafrost publications have increased the most in journals focusing on biogeosciences (e.g. Journal of Geophysical Research - Biogeosciences) but also in the broader geoscience and science journals (e.g. Geophysical Research Letters, Nature), reflecting a shift towards more carbon-cycle focused research in later years. From the survey, many listed books as the most influential publications and comments also revealed that conferences, photographs, movies and (non-science) books inspire permafrost researchers. Keeping track on how knowledge is collectively built within a scientific discipline and community, can help us to identify how to design impactful studies and how to coordinate research efforts in a time when high quality and impact research is badly needed.