

数値氷河水文学モデルによる底面水圧の季節変化 Seasonal changes of basal water pressure computed from numerical glacier hydrology model

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Seasonal velocity changes at mountain glaciers have been known since 1980s (e.g., Iken and Bindschadler, 1986), and those at Greenland Ice sheet were detected in early 2000 (Zwally et al., 2002). While such short-term glacier dynamics have not been taken into account in the standard "long-term" glacier modeling, this is not only due to the limitations of computational resources but also due to the lack of clear understanding of the effects of meltwater on glacier dynamics. On one hand, spring/early summer speed-up has been well-documented and studied from both observational and theoretical sides. On the other hand, although the wintertime initiation of glacier surge in Alaska has been empirically known, it should be noted that no extensive wintertime velocity measurements have been performed because of logistics problems; slower glacier/ice-sheet velocities have been implicitly assumed. However, Abe and Furuya (2014) detected those signals at the quiescent surge-type glaciers in Yukon/Canada. Moreover, at the two surging glaciers in the West Kunlun Shan, NW Tibet, Yasuda and Furuya (2015, submitted) detected seasonal modulation signals in their surface velocity data, indicating ~200 % increase of surface velocities from fall to winter.

キーワード: 氷河表面速度, 季節変化, 氷河水文学, 底面水圧
Keywords: glacier surface velocity, seasonal change, glacier hydrology, basal water pressure