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Future change in seasonal march of snow water equivalent due to global climate change

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Western side of Honshu Island in Japan is one of the heaviest snowfall areas in the world, although the location is relatively lower latitude than other heavy snowfall areas. Snowfall is one of major source for agriculture, industrial, and house-use in Japan. The change in seasonal march of snow water equivalent, e.g., snowmelt season and amount will strongly influence to social-economic activities (ex. Ma et al., 2011). We performed the four numerical experiments including present and future climate simulations and much-snow and less-snow cases using a regional climate model. Pseudo-Global-Warming (PGW) method (Kimura and Kitoh, 2008) is applied for the future climate simulations. NCEP/NCAR reanalysis is used for initial and boundary conditions in present climate simulation and PGW method. MIROC 3.2 medres 2070s output under IPCC SRES A2 scenario and 1990s output under 20c3m scenario used for PGW method. In much-snow cases, Maximum total snow water equivalent over Japan, which is mostly observed in early February, is 49 G ton in the present simulation, the one decreased 26 G ton in the future simulation. The decreasing rate of snow water equivalent due to climate change was 49%. Main cause of the decrease of the total snow water equivalent is strongly affected by the air temperature rise due to global climate change. The difference in present and future precipitation amount is little.