Tamaki, Y., M. Inatsu, R. Kuno, and N. Nakano, 2016: Sampling downscaling in summertime precipitation over Hokkaido. *J. Meteor. Soc. Japan*, **94A**, 17-29.
https://doi.org/10.2151/jmsj.2015-023

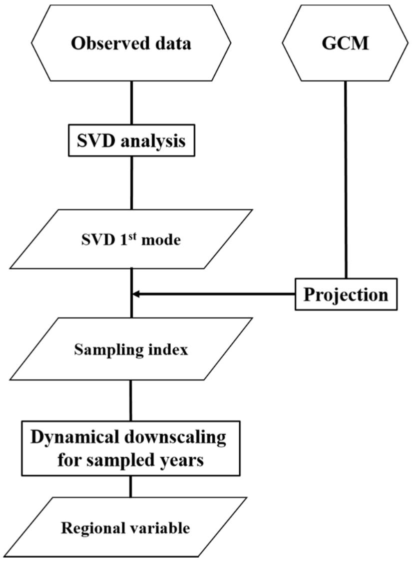

Fig. 1 Procedure of SmDS.

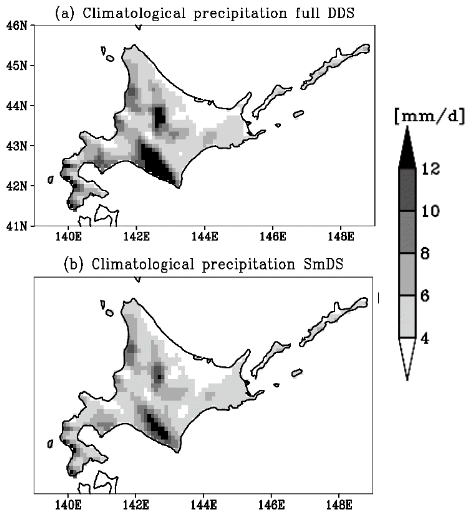

Fig. 2 (a, b) The daily mean precipitation (mm day^{-1}) for (a) dynamical downscaling for 30 years and (b) the SmDS, with the shading as the reference in the right.

- The sampling downscaling (SmDS) method (Fig. 1) in which a regional atmospheric model is integrated for sampled years was conducted for summertime precipitation over Hokkaido.
- We selected the top and bottom two years of the general circulation model (GCM) projection onto the first SVD mode (sampling index as in Fig. 1) where heavy precipitation is correlated with the moisture flux convergence in the synoptic field.
- The spatial distribution in the mean precipitation in SmDS was similar to that in the dynamical downscaling for 30 years (Fig. 2). This indicates that SmDS can be applied to the place where the synoptic field strongly controls the local precipitation.
- We also statistically considered the error in SmDS. It turned out that the mean in SmDS depended on the correlation coefficient between local and synoptic variables, the number of samples, and the standard deviation of seasonal mean precipitation. It was also demonstrated the SmDS selected the group of years where extreme events likely occurred and another group where they rarely occurred.