



Assessing the future evolution of climate extremes favouring floods in Belgium by using the regional climate model MAR over the CORDEX.be domain

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In Belgium, most floods occur in winter as a result of intense precipitation events but also of the abrupt melting of the snow that covers the Ardennes summits. These conditions favourable to floods exhibit a decreasing trend over the 1959–2010 period resulting from the reduction in snow accumulation and the shortening of the snow season though extreme precipitation events show a positive but non-significant signal.

In this study, we investigate how these trends could evolve in a warmer climate by using future projections performed with the regional climate model MAR (for “Modèle Atmosphérique Régional”) in the framework of CORDEX.be, the Belgian EURO-CORDEX project. These future projections were obtained by nesting MAR into NorESM1-M and MIROC5 under the RCP8.5 scenario. Both of these global models were selected from the CMIP5 archive after evaluation of their ability to represent the current (1976-2005) mean climate over Europe.

Results show that the 2071-2100 period would be marked by an increase in both the frequency and the intensity of extreme precipitation events in winter with respect to 1976-2005. This would favour flooding events and therefore it would counterbalance the effect of a reduction in snow accumulation on climatic conditions favourable to floods in Belgium.