The title (العنوان):

Spatial-temporal variability of seasonal daily minimum flows in southern Quebec: synthesis on the impacts of climate, agriculture and wetlands

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Abstract : This study compares the impacts of climate, agriculture and wetlands on the spatio-temporal variability of seasonal daily minimum flows during the period 1930–2019 in 17 watersheds of southern Quebec (Canada). In terms of spatial variability, correlation analysis revealed that seasonal daily minimum flows were mainly negatively correlated with the agricultural surface area in watersheds in spring, summer and fall. In winter, these flows were positively correlated with the wetland surface area and March temperatures but negatively correlated with snowfall. During all four seasons, spatial variability was characterized by higher daily minimum flow values on the north shore (smaller agricultural surface area and larger wetland surface area) than those on the south shore. As for temporal variability, the application of six tests of the long-term trend analysis showed that most agricultural watersheds are characterized by a significant increase in flows during the four seasons due to the reduction in agricultural area, thus favoring water infiltration, and increased rainfall in summer and fall. On the other hand, the reduction in the snowfall resulted in a reduction in summer daily minimum flows observed in several less agricultural watersheds.

Key words : The spatio-temporal variability ; agriculture and wetlands ; Temporal varility factors

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