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Simulating streamCow in the CheliA basin of west northern Algeria using the SWAT model

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المستودع الرقمي للمدرسة مبني على المنصة المفتوحة DSpace و يتم إدارته من طرف مديرية المكتبة للمدرسة العليا .

كل الحقوق محفوظة للمدرسة الوطنية العليا للري.

Abstract : In Northern Algeria, the Cheliff watershed has been severely affected by a decline in runoff since the 1970s due to a decrease in rainfall. However, the sensitivity of watersheds to this decline is variable and involves complex processes. This basin contains several dams that supply the population with water for drinking as well as for irrigation purposes to ensure a good agricultural yield necessary for food security of more than 5 million inhabitants. Rational and optimal management becomes an absolute necessity in new climatic conditions. It will be done based on efficient modelling tools. The development of high-performance models is more than necessary for a better assessment of potential and risks in the short, medium and long term, to adopt an efficient strategy in the water sector which have to be in line with ground reality. To do this, the soil and water assessment tool (SWAT) is a very reliable way to simulate the hydrological behaviour of the region. In this study, the SWAT model was applied to five dam-feeding basins in the Cheliff basin and its outlet on a monthly scale. The results obtained are very satisfactory with R^2 values ranging from 0.69 to 0.79, Nash–Sutcliffe efficiency coefficient between 0.68 and 0.78 and bias percentage between -21% and -1.5%. The Oued Cheliff hydrogram modelled by the SWAT at the Sidi Belattar station (basin outlet) showed that surface flow represents 58.3% and 37.3% lateral flow and 4.4% that feeds deep aquifers. The models developed will be used as decision-making tools by water-resource managers.

KEYWORDS : Cheliff watershed ; SWAT ; Dams ; Hydrological behaviour ; Water balance.

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