Interactive comment on "Hydrograph separation: an impartial parametrization for an imperfect method" *by* Antoine Pelletier and Vazken Andréassian

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We would like to thank Dr J. Ding for his comment. The representation he suggests illustrates how the algorithm behaves during recessions.

In the 3 example hydrographs shown in the article, we isolated recessions – i.e. periods of time in which streamflow is decreasing – longer than 15 days and for each event, we plotted NISR-transformed streamflow, NISR-transformed baseflow and the difference between the two. The results are shown on figures 1, 2 and 3.

The method presented in the article is not intended to study particular recession events,

but to be applied on a whole hydrograph of several hydrological years. That is why it is difficult to analyse the events graphs below. However, we can see two phenomenons:

- the baseflow peak is sometimes delayed with respect to the streamflow peak: it represents the delayed effect of the slow component of streamflow, with respect to the quick component;

- in most events, streamflow converges towards baseflow at the end of the recession. At least, the difference is decreasing during recession, since baseflow is closer to streamflow during low-flows than during flood peaks.

This analysis is consistent with what we intend to do with the hydrograph separation method presented in the article.
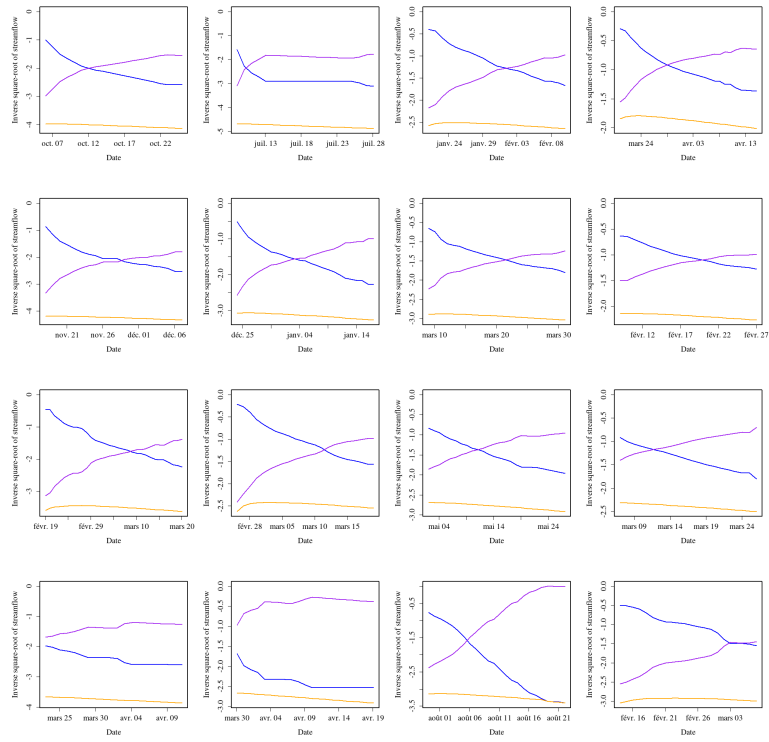
Fig. 1. NISR-transformed separated recessions of Vair river in Soulousse-sous-Saint-Élophe. In blue, NISR-transformed streamflow; in orange, NISR-transformed baseflow; in purple, the difference.
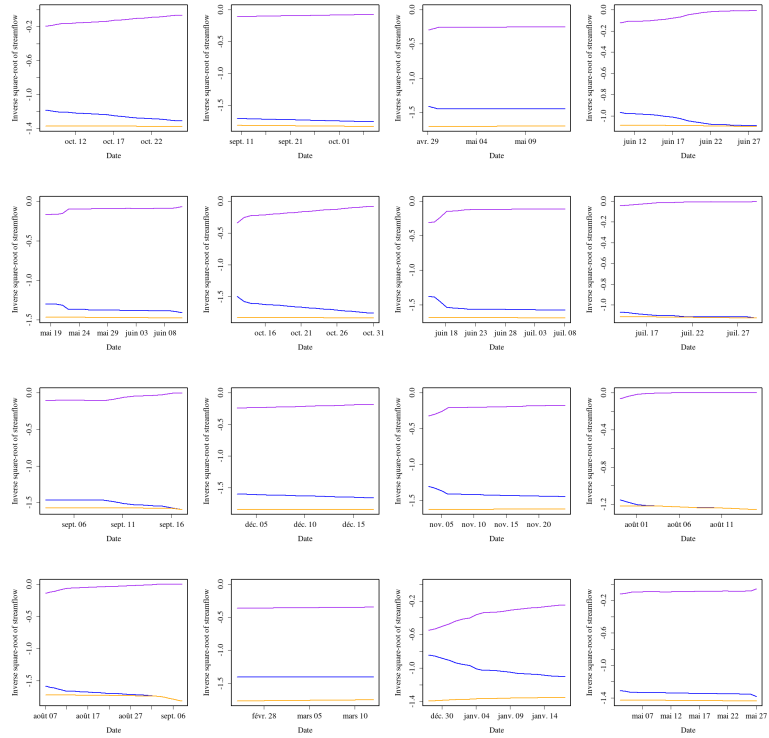
C3

Fig. 2. NISR-transformed separated recessions of the Petit Thérain river in Saint-Omer-en-Chaussée. In blue, NISR-transformed streamflow; in orange, NISR-transformed baseflow; in purple, the difference
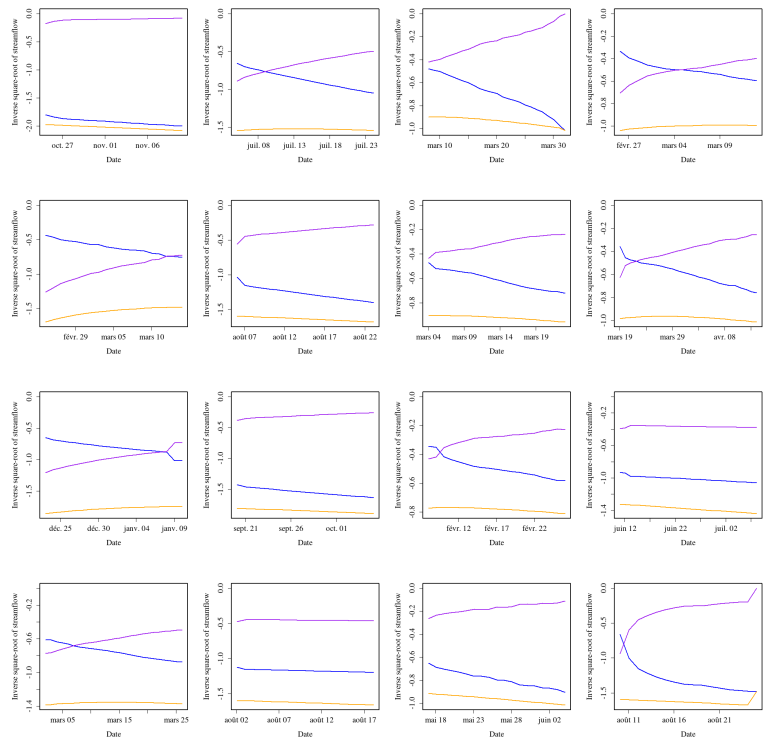
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Fig. 3. NISR-transformed separated recessions of Virène river in Vire-Normandie. In blue, NISR-transformed streamflow; in orange, NISR-transformed baseflow; in purple, the difference

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