

Interactive comment on “Identifying runoff processes on the plot and catchment scale” by P. Schmocker-Fackel et al.

Anonymous Referee #4

Received and published: 30 August 2006

GENERAL COMMENTS

The paper addresses an important question in hydrology, namely, how knowledge on runoff generation processes can be gained, based on available data, and how this knowledge can be used to improve rainfall-runoff modelling. It extends previous work on the identification of spatial distribution of runoff generation processes. It makes a significant contribution, since it shows how dominant runoff processes can be identified based on available data. The paper is definitely within the scope of HESS.

The overall quality of the paper is very good. It is concise and well structured, the assumptions and methods are clearly outlined. Tables and figures are necessary and instructive.

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SPECIFIC COMMENTS

I would like the authors to elaborate on the following issues (some additional sentences should suffice):

Transferability of method: The authors base their work on (1) extensive field data (eg 44 soil profiles) for identifying DRP using the Scherrer & Naef (2003) scheme, and (2) available maps, eg Zurich soil map. I would like to have additional information on the transferability of the method, eg: Are the used maps available throughout Switzerland? Can the method directly be applied in other areas, outside the test catchments? What would be the steps/effort to apply the methods outside the test catchments, outside the region, outside Switzerland etc?

Meaning of dominant runoff process given the event dependency of runoff generation: It may be possible that on a certain area different runoff processes occur due to event characteristics. For example, the authors state (page 2075, line 18): “During low intensity events or when vegetation cover is dense, however, another process normally occurs.” Does this mean that the identified DRP is valid only for certain event characteristics (eg intense precipitation)? Is it conceivable to have 2 or more DRPs for a certain area, conditioned on different event characteristics?

Catena consideration (page 2079); Active areas vs contributing areas (2080): The authors found that hillslope interactions and the problem of active vs contributing areas can be neglected in their test catchments. Is it possible to make a more general comment on the impact of these simplifications when the method is applied outside the test catchments?

TECHNICAL CORRECTIONS

Page 2065, Line 21: ... the method's ...

Page 2065, Line 28: published map limits its suitability for estimating ...

Page 2066, Line 7: ... differentiated ...

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Page 2067, Line 19: ... Ror catchment (2.1 km²) and the Isert ...

Page 2068, Line 4: ... In the Isert catchment about ...

Page 2068, Line 26: ...scale of 1:5000, and is based on 3 to 7 sample... ??

Page 2069, Line 20: ... The fast (??) subsurface flow is ...

Page 2071, Line 3: ... with a mean of 80 mm and a standard deviation of 50 mm ??

Page 2075, Line 19: ...gently sloping hillslopes.

Page 2077, Line 7: ...DRP distribution even though they are Ě

Page 2077, Line 24: ... in Ror and 14% in Isert Ě

Page 2078, Line 2: These interactions are only considered when they influence the soils directly.

Page 2079, Line 19: ...consequently in the DRP mapping.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 3, 2063, 2006.

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