Interactive comment on "Seasonal streamflow forecasts for Europe – I. Hindcast verification with pseudo- and real observations" *by* Wouter Greuell et al.

Wouter Greuell et al.

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Referee #2 Christel Prudhomme (hess-2016-603-RC2)

We thank Christel for her more critical (than RC1) but very constructive review. Some of her remarks are in line with those of RC1, some are additional. Below we will discuss the main remarks, details can be found in hess-2016-603-RC2-author-reply.pdf.

A number of remarks have to do with the structure of the paper: - RC2 requests a better description of the main findings of cited literature mostly in the introduction, but also in other parts of the paper, and how these influenced the objectives of our study. We now recognize that this indeed can, should and will be improved, together with some

additional references as suggested by RC1. - With RC1, RC2 suggests to move the first part of the discussion, the part explaining the present figure 10 to the Methodology section. We will do so. - RC2 asks repeatedly for suggestions/recommendations for further analysis. We recognize this omission, but of course have thought about that rather extensively. We will add such suggestions where appropriate in the discussion As a result of these 3 points, and some others, both the introduction and the discussion section will be largely rewritten.

Some remarks pertain more to the science of our analysis: - RC2 asks for a better description of the deterministic performance of the model used (VIC) prior to its use in a probabilistic seasonal forecasting context. We will do so based on and referring to previously published work, both from our own group (Greuell et al. 2015, Haddeland et al., 2012; van Vliet et al. 2012) and from others. More in particular we will try to relate good and bad forecasting skill for certain regions/basins and seasons in Europe to previously identified strengths and weaknesses in VIC performance , i.e. strengths/weaknesses to reproduce historical river flows across Europe. - This issue partially overlaps with the RC2 request to better analyse the potential relation between basin size and model hindcast skill. Without focussing on individual basins (which is one the directions for future work we'd like to take). We will prepare, present and discuss a graph similar to the present Fig 5d, but then relating difference between actual and theoretical discharge skill to basin size. This will be a new piece of analysis leading to a yet unknown outcome. Thus we will also increase the relative importance of section 3.3 better justifying the title of this paper.

Altogether, we believe that by following most of the recommendations by both RC1 and RC2 we will be able to significantly improve the structure and readability of the paper, as well as improving the scientific quality by some additional analysis and especially much better 'embedding' in previous work, both our own and that of others. Finally, priori to resubmission we'll have a language check done by a native speaker.

Please also note the supplement to this comment:
http://www.hydrol-earth-syst-sci-discuss.net/hess-2016-603/hess-2016-603-AC2-
supplement.pdf

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