Response to reviewer-2 on NHESS article: Hydrometeorological multi-model ensemble simulations of the 4 November 2011 flash-flood event in Genoa, Italy, in the framework of the DRIHM project

The authors would like to thank the reviewer for his/her comments which helped to improve the quality of our paper

The manuscript reports accurate analyses regarding the impact of the uncertainties affecting a set of meteorological and hydrological models. Nevertheless, additional evaluations and descriptions about two aspects, whose explanation would improve the manuscript, could be carried out:

a)Why exactly those models were considered. This is particularly important for the hydrological analysis, where both spatially explicit and lumped models are considered. Moreover, it is not clear how the hydrological models accounts for the initial conditions. This should be better specified in the paper.

The reason to include these models is their availability on the DRIHM platform. The following text has been added (page 12, line 17):

"These models were selected due to their availability on the DRIHM platform. DRiFt and HBV are continuous simulation models and therefore they estimate the basin initial condition by applying model equations to antecedent precipitation. RIBS is an event-based model and initial condition is specified as a probability distribution of initial states inferred from calibration"

b) The authors should discuss strategies to reduce the uncertainties affecting the forecasts. Indeed, one key use of the explicit uncertainty assessment is to identify observations and data which can be exploited to reduce the spreading of uncertainty.

The authors completely agree with the key use of an uncertainty assessment as suggested by the reviewer. The following lines have been added to the discussion presented in the conclusion (page 24, line 21): "Also, certain uncertainties have been identified through the use of the DRIHM hydrometeorological chain. These uncertainties could be targeted in future studies by integrating improved observational datasets which compensate for the uncertainties and by the use of corrected or modified physical parameterisations."

SPECIFIC COMMENTS

1) "In this sense, the most relevant aspect is to predict the occurrence of an episode where significant flows are expected; accuracy in the quantitative prediction of peak flow is of less importance." I agree with this sentence, but the authors should discuss more clearly why the accurate peak flow prediction is of less importance.

We agree with the reviewer on the importance of elaborating on this idea. The following text has been added (page 21, line 11):

"In the context of early warning the main concern is the detection of a potentially dangerous event to properly organize civil defence activities. At an early stage of storm development the analysis is based on precipitation forecasts from different models and therefore large uncertainties may be expected on the exact location and amount of predicted rainfall thus preventing an accurate prediction of peak flow."

2) Table 1: Titles are not fully understandable

The title of table 1 have been re-written and are now hopefully more easily understood:

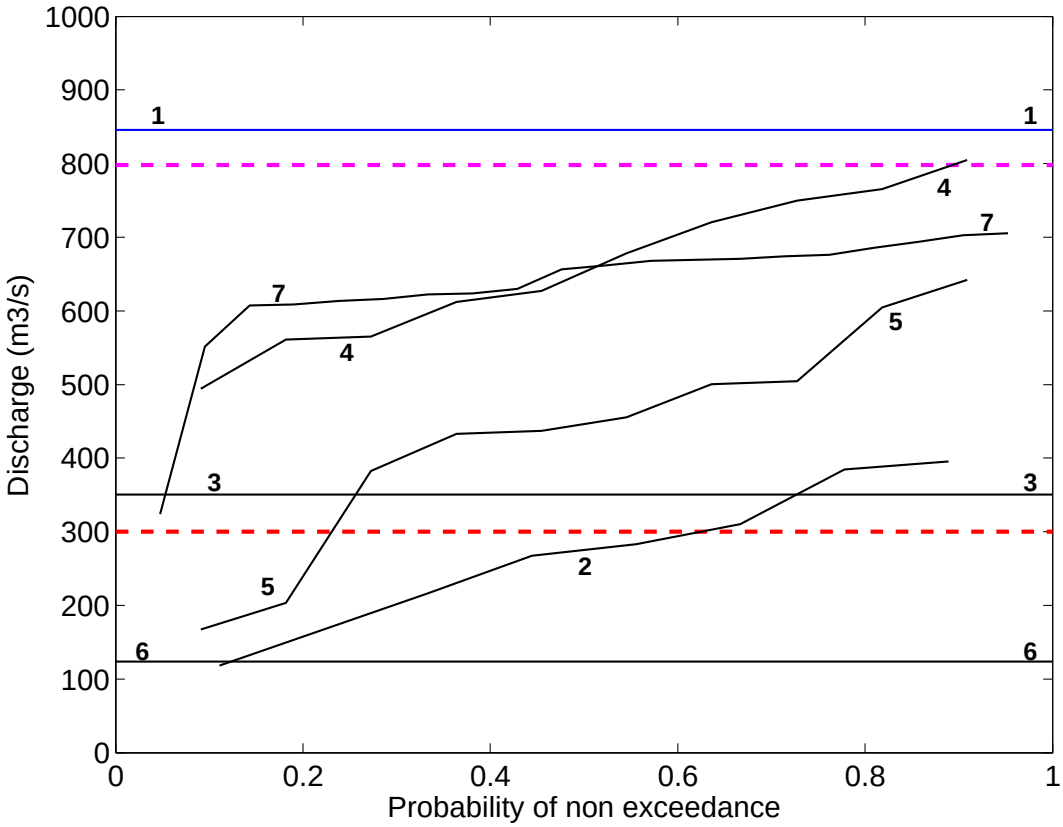
"Rain Source Description No. of members Resolution(km) No. of DriFt and HBV members No. of RIBS members"

3) Fig 12. The temporal resolution of the observations and simulations should be reported here.

We have added the following text to the figure caption:
"Observations and simulations are represented with a temporal resolution of 1 hour."

4) Fig. 15: the dotted magenta line, which corresponds to the observed peak discharge, is very hard to identify.

Figure 15 has been redrawn using a thicker magenta line as per the example below


1000
900
800
700
600
500
400
300
200
100
0
0
0.2
0.4
0.6
0.8
1
Discharge (m3/s)
Probability of non exceedance
1
1
4
7
7
4
5
3
3
2
5
6
6