

Interactive comment on “A water availability and low-flow analysis of the Tagliamento River discharge in Italy under changing climate conditions” by L. N. Gunawardhana and S. Kazama

F. Stel (Referee)

fulvio.stel@arpa.fvg.it

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General comment The paper deals with the local impacts of climate change. The Authors downscale the effects of the increase of temperature and the decrease of precipitation on the low-flow regime of the Tagliamento river. The paper is well written, well detailed and worth to be published on HESS. A few comments and suggestions are added with the intent to increase the readability of the work and to give Authors some additional opportunities to address with a greater detail this topic.

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Pag 144 line 2-3. It is not clear what is the meaning of the range in daily minimum temperatures (i.e., 0.57-2.47). Is it referring to the minimum and maximum values of minimum temperature for that decade (2000-2009) or what else. A few more words on this aspect might vanish all the Readers doubts. Moreover, in general and if possible, the use of tables makes easier the comparison of different measurements, shorten the paper and increase its readability.

Pag. 144 line 9. A simple picture (prepared by the Reviewer but not published so far) shows a nice (for the Reviewer) empirical relationship between yearly precipitation and distance from the 1000 m a.m.s.l. south contour line (figure 2). A similar empirical but less linear relationship can be found for the relationship between yearly precipitation and height a.m.s.l.(figure 1). It is interesting to see that the amount of precipitation decreases northward of the 1000 m a.m.s.l contour line with the same gradient of the southward decrease. This is interpreted by the barrier role played by the prealpine area.

Pag 144, line 16 (pag. 152, line 18) Usually, in meteorology the frost day is considered as a day in which minimum temperature is below 0 °C. In this work the average temperature is instead considered. Of course, every definition can be used and internal coherence is the fundamental aspect, but this stressed just to reduce misinterpretations of the term. This definition, different from the meteorological standards does not affect the conclusions of the work

Pag 146 line15 - pag 147 line 15 The model used is not an original contribution of the Authors and, inserted here in the text, interrupts somehow the flow of the discussion. The fact that Authors describe in detail the model used is for sure appreciated, but probably if it would be insert in an Appendix of the paper, the readability of this work might be increased.

Pag 148, line 13. The years 2001-2003 are chosen to determine the temporal changes of snow cover. These years, in particular 2003, were characterized by relatively small

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amounts of rain and by high temperatures in winter and low temperatures in winter. How this peculiarity might affect the conclusions of the Authors?

Conclusions One of the main characteristics of the Tagliamento river is its multicursal aspect. Even this is not an easy question, maybe the Authors might try to address the question of the persistence or fading of this aspect. In other words, the expected average increase in low-flow level together with the increasing of the low-flow events, will transform this multicursal river in a single cursal river or not?

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 9, 139, 2012.

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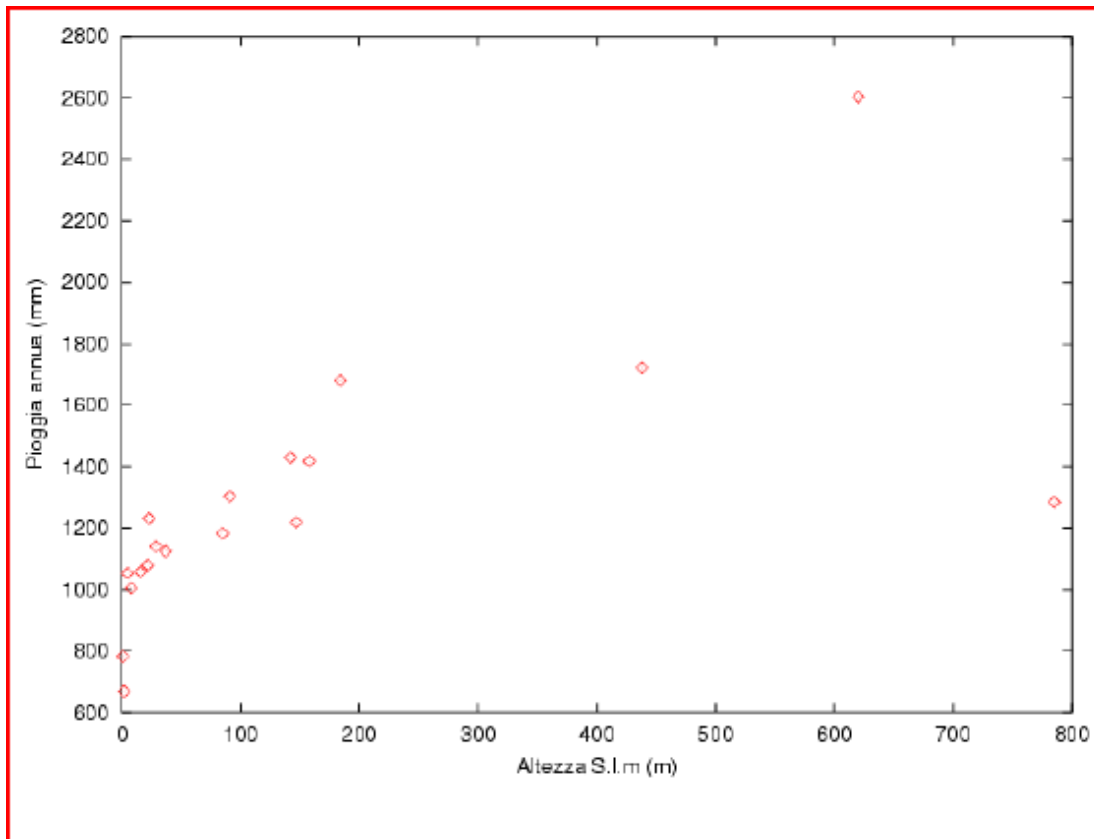


Fig. 1. Relationship between yearly rain amount and height above means sea level using in situ measurements

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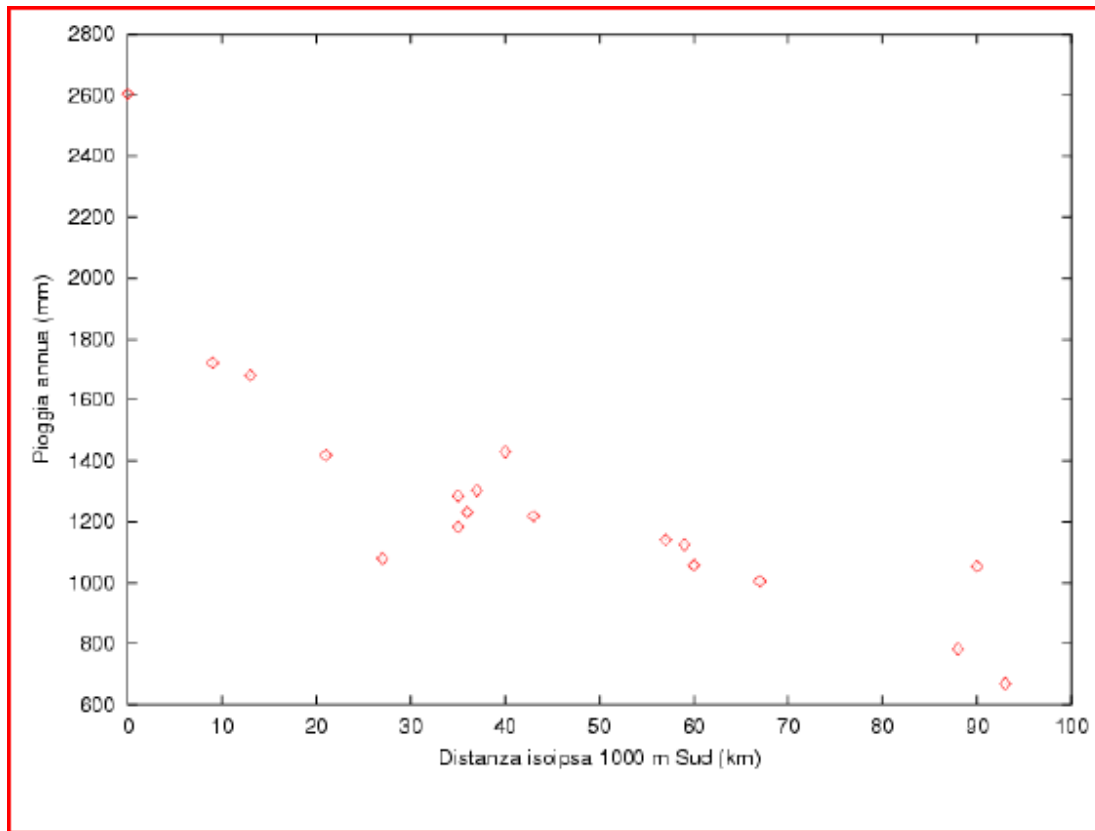


Fig. 2. Relationship between yearly rain amount and distance from the south contour level of 1000 m above mean sea level using in situ measurements

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