**Hydrology and
Earth System
Sciences
Discussions**

Interactive comment on "On the sampling distribution of the coefficient of L-variation for hydrological applications" by A. Viglione

Anonymous Referee #2

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The paper presents a pragmatic method to infer the sampling distribution of the coefficient of L-variation when the sample size is moderate to short and the parent distribution is among those frequently used in hydrology. The work is based on a previous paper of Elamir and Seheult (2004) who derived distribution-free estimators of the variances and covariances of L-moments. Through Monte-Carlo simulations it is shown that the log-Student t distribution outperforms in most of the cases other candidate distributions. A distribution-free bias correction for the sample L-CV and its variance is proposed to improve the fit. The results of the analysis are interesting and potentially very useful in an applied-hydrology context, as shown in Section 5. I really enjoyed reading the paper, which is well organised, sound, complete and well written. Therefore I recommend the publication of it on HESS.

Some minor comments follows.

page 5472, line 23: maybe it should be pointed out that the variance of the distribution of Eq. (10) is not var(t) because the variance of the Student distribution is not 1. The same consideration applies to Eq. (14).

page 5474, line 12: "should be uniformly distributed between 0 and 1". Please add a Reference (e.g., Laio et Tamea, 2007).

page 5474, line 9: change "N=10000 samples are" to "N=10000 samples of length n are".

page 5476, line 25: in how many cases the estimate of var(t) by Elamir & Seheult (2004) is negative?

page 5482, line 15: missing bracket after Eqs. (16) and (17).

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 5467, 2010.