Correction to: Automatic threshold and run parameter selection: a climatology for extreme hourly precipitation in Switzerland

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The original version of this article unfortunately contained a mistake. Please find below the relevant part of the Appendix, with changes in the last 2 formulae.

Let ℓ_i , j_i , i_i , d_i , denote for a single observation i : the log-likelihood, the score function, the expected information, and the difference between score function and expected information, respectively. Let the derivative with respect to θ be denoted by a prime. Let $\mathbb{I}(A)$ be the indicator function for the set A . Then, for a given (u, K) pair,

$$\begin{aligned}\ell'_i(\theta) &= -\frac{\mathbb{I}(c_i^{(u,K)} = 0)}{(1-\theta)} + \frac{2\mathbb{I}(c_i^{(u,K)} > 0)}{\theta} - c_i^{(u,K)}, \\ j_i(\theta) &= \frac{\mathbb{I}(c_i^{(u,K)} = 0)}{(1-\theta)^2} + \frac{4\mathbb{I}(c_i^{(u,K)} > 0)}{\theta^2} \\ &\quad + \left(c_i^{(u,K)}\right)^2 - \frac{4c_i^{(u,K)}}{\theta},\end{aligned}$$

$$\begin{aligned}i_i(\theta) &= \frac{\mathbb{I}(c_i^{(u,K)} = 0)}{(1-\theta)^2} + \frac{2\mathbb{I}(c_i^{(u,K)} > 0)}{\theta^2}, \\ d_i(\theta) &= \frac{2\mathbb{I}(c_i^{(u,K)} > 0)}{\theta^2} + \left(c_i^{(u,K)}\right)^2 - \frac{4c_i^{(u,K)}}{\theta}, \\ d'_i(\theta) &= -\frac{4\mathbb{I}(c_i^{(u,K)} > 0)}{\theta^3} + \frac{4c_i^{(u,K)}}{\theta^2}.\end{aligned}$$

Let $D(\theta) = (N-1)^{-1} \sum_{k=1}^{N-1} d_k(\theta)$ and $I(\theta) = (N-1)^{-1} \sum_{k=1}^{N-1} i_k(\theta)$ denote the sample means of d_i and i_i . The sample variance of $D(\theta)$ is:

$$V(\theta) = (N-1)^{-1} \sum_{k=1}^{N-1} \left\{ \left[d_k(\theta) - D'(\theta) I(\theta)^{-1} \ell'_k(\theta) \right]^2 \right\}.$$

The Information Matrix Test (IMT) Statistic is then:

$$IMT(\hat{\theta}) = (N-1) D(\hat{\theta})^2 V(\hat{\theta})^{-1}$$

where θ has been replaced by the estimated value of $\hat{\theta}$.

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