Hydrology and Earth System Sciences

Discussions

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comment

Interactive comment on "Streamflow forecasts from WRF precipitation for flood early warning in mountain tropical areas" *by* María Carolina Rogelis and Micha Werner

Anonymous Referee #1

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Overall, convincing case that finer spatial resolution and bias correction does not improve forecast skill of heavy precipitation in regions of tropical convection. However, statistical post processing to create a probabilistic forecast does enhance the ability to forecast a probability of precipitation at short lead times.

Given this, I recommend more discussion from a physical perspective of how the probit model method derives it's skill. It seems that this is the first stage (probit model) creates the biggest value in post-processing, rather than the second stage (quantile regression); it may be worth evaluating that.

p4 l20: I infer that you do not use a NWP ensemble (either based on GPS or WRF),

but a single "deterministic" GPS->WRF forecast. That should be emphasized here for clarity.

p4 l35: For clarity, reflect the language on p2 l32 here to keep clear the distinction between DBS and probit post processing.

p5 l10: The word "pre-processing" is unclear here, as it suggests *before* running WRF; do you mean post-processing?

p5 l13: As reference values the *observed* (?) time series of mean areal precip

p5 l20: Need more detail here: what periods were used in WRF and OBS to generate the gamma functions? Just the 107 storm days? This is relevant later to the extent the same periods are used for training and evaluation.

p5 l25: A more qualitative and physically based description needed here that does not depend on the reader fully understanding the statistical method. Is information from the neighborhood used for probability to form an ensemble? Below, what are the x covariates physically?

p8 l10: Why include SSclim and SS0 if not discussed?

p9 l21: Computed from the 107 selected storm days? Are the CDFs for the same days as used to train the bias correction?

p10: delete empty section 3.3

p10 l5 *shown* in Eqn 3 to Eqn 14

p12 l18: I recommend deleting fig 10 since it is barely discussed and expanding discussion of Fig 11.

p13 l22: Fig 12 doesn't show this... Is there a missing figure?