1. As per the authors, the temporal resolution of the modeling work was 3 h (line 270-271). Moreover, as per the authors, the temporal resolution of the precipitation dataset was 24 h (line 165-166). The conversion algorithm from 24 h to 3 h is not found in the current version of the manuscript. How was this conversion carried out in the integrated modeling environment? The computation of Rglac (eq.2 and eq.3) contradicts line 270-271.

Reply:

Thanks for the comments. The temporal resolution of the input and output is at daily scale. Thus, we replace it by "Here, the modeling framework at a 10 km ×10 km spatial resolution and a daily time step was adopted from Sun and Su (2020)."

2. As per eq.1 (line 278-282), Rvic is the runoff (surface+baseflow) computed by a model named Variable Infiltration Capacity (VIC). In other words, given the rainfall and the other defining parameters, the model generates the runoff for each pixel/grid (spatial resolution of 10km, see the attached pdf file). As per eq.1, the authors consider only the portion of the runoff (i.e., (1-f)Rvic) generated in a grid/pixel for the rainfall value given for that pixel/grid. What has happened to the other component (i.e., f*Rvic)? As per eq.2, the parameter DDF (i.e., the degree-day factor of glacier or snow melt, see line 284-285) doesn't account for this component (i.e., f*Rvic).

Reply:

The simulated total runoff of each grid is from both the glacierized and non-glacierized areas, that is,

$$R_i = f \times R_{glac} + (1 - f) \times R_{vic} \qquad (1)$$

Where, R_i is the total runoff (mm) in grid I, f is the percentage of glacier area. R_{glac} is the runoff (mm) from the glacier area calculated by the degree-day (DD) glacier

model, and R_{vic} is the sum of surface runoff and baseflow runoff (mm) for non-glacierized areas calculated by the VIC model, including both rainfall and seasonal snowmelt runoff.

The parameter DDF was used to account for runoff (mm) from the glacier area (R_{glac}).