1   **Supplementary Materials**

2   **Flood Frequency Analysis:** In this study Generalized Extreme Value (GEV) probability

3   distribution is fitted to annual maximum flood series (Jenkinson, 1955), widely adopted in

4   hydrological studies in several regions (El-Jabi et al., 2015; Kochanek et al., 2013; Leclerc and

5   Ouarda, 2007; O'Brien and Burn, 2014; Smith et al., 2015). GEV is expressed as thus:

6    $F(x | \tau, \alpha, \text{ and } k) = \begin{cases} \frac{1}{\alpha} \exp\left\{-\left[1 - \frac{\kappa(x-\tau)}{\alpha}\right]^{\frac{1}{\kappa}}\right\} \left[1 - \frac{\kappa(x-\tau)}{\alpha}\right]^{\frac{1}{\kappa}-1} & \kappa>0, x<\tau+\frac{\alpha}{\kappa}; \kappa<0, x>\tau+\frac{\alpha}{\kappa} \\ \frac{1}{\alpha} \exp\left[-\frac{(x-\tau)}{\alpha}\right] \exp\left\{-\exp\left[-\frac{(x-\tau)}{\alpha}\right]\right\} & if \kappa=0 \end{cases}$

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8   Where: τ, α, and k represent location, scale and shape parameters respectively of the distribution
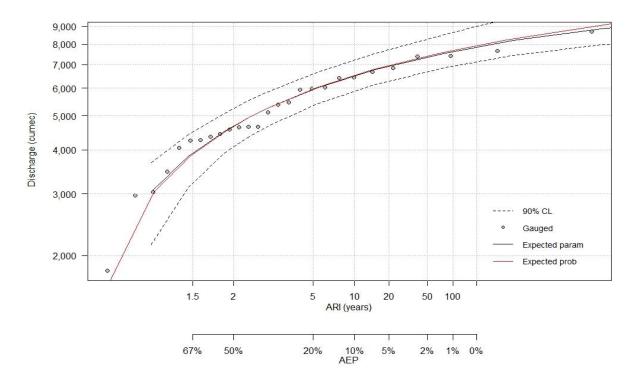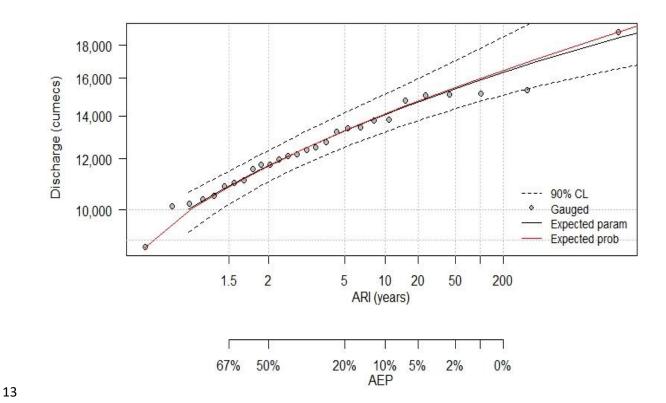
9   function.

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11   Figure S1: Baro flood frequency plot

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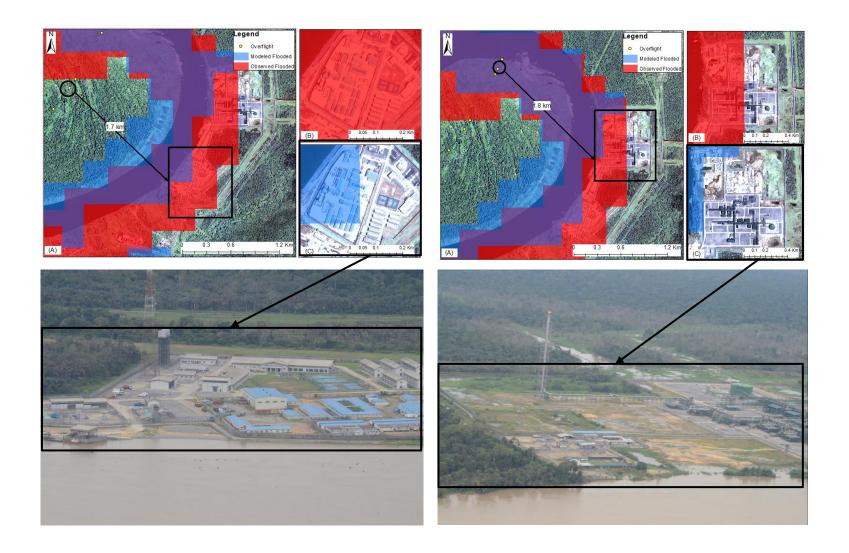14 Figure S2: Umaisha flood frequency plot

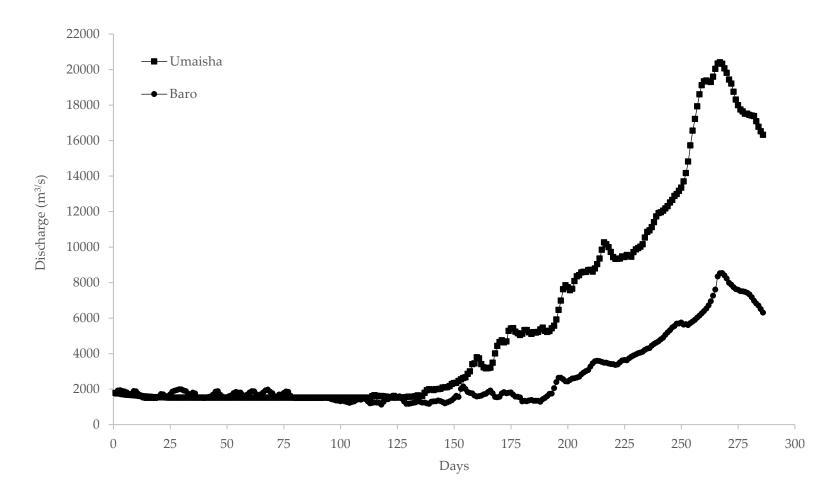Figure S3: Model, Observation and Overflight line of sight overlaid on high-resolution GeoEye Imagery.

Figure S4: Input hydrographs at the upstream boundaries of Umaisha and Baro