**Supplementary Material**

**Future Projection of Cryospheric and Hydrologic Regimes in Koshi River Basin, Central Himalaya, using Coupled Glacier Dynamics and Glacio-hydrological Models**

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**Table S1.** Hydrological station information for all the sub-basins of the Koshi River basin obtained from DHM.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sub-basin | Hydrological Station | Latitude(degree decimal) | Longitude(degree decimal) | Elevation(m a.s.l.) |
| Tamor | 684(Majhitar) | 27.1583 | 87.7125 | 533 |
| Arun | 606(Simle) | 26.925 | 87.158 | 152 |
| Dudhkoshi | 670(Rabuwa Bazar) | 27.2666 | 86.6638 | 460 |
| Likhu | 660(Sangutar) | 27.336 | 86.219 | 543 |
| Tamakoshi | 647(Busti) | 27.6347 | 86.0866 | 849 |
| Sunkoshi | 630(Pachuwarghat) | 27.5583 | 85.7527 | 589 |

**Table S2.** Meteorological station information for all the sub-basins of the Koshi River basin obtained from DHM, EV-K2-CNR and CMA.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sub-basin | MeteorologicalStation | Latitude(degree decimal) | Longitude(degree decimal) | Elevation(m a.s.l.) |
| Tamor | 13081419\*1403 | 26.9327.1527.55 | 87.3387.7587.78 | 36512051780 |
| Arun | 130513251301\*1317S55655 (Dinggri) | 27.1327.3627.5527.7628.6 | 87.2887.1587.2887.4187.26 | 4101190149725904300 |
| Dudhkoshi | 1206\*1219NamchePherichePyramid | 27.3127.527.8027.8927.95 | 86.586.5886.7186.8186.81 | 17202378356042585050 |
| Likhu | 12071224 | 27.4827.55 | 86.4186.38 | 15761662 |
| Tamakoshi | 1123\*11021103\* | 27.4627.6627.63 | 86.0886.0586.23 | 49519402003 |
| Sunkoshi | 1036\*101710061058S55664 (Nylam) | 27.6827.8627.862828.18 | 85.6385.5685.8685.5585.96 | 8651550200024803310 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Tamor | Arun | Dudhkoshi | Likhu | Tamakoshi | Sunkoshi |
| RCP4.5 | RCP 8.5 | RCP 4.5 | RCP 8.5 | RCP 4.5 | RCP 8.5 | RCP 4.5 | RCP 8.5 | RCP 4.5 | RCP 8.5 | RCP 4.5 | RCP 8.5 |
| Snow Melt (%) | 2021 - 2060 | 4 | 4 | 6 | 6 | 6 | 7 | 3 | 3 | 9 | 9 | 8 | 8 |
| 2061 - 2100 | 4 | 5 | 5 | 4 | 6 | 4 | 3 | 2 | 8 | 7 | 8 | 8 |
| Ice Melt (%) | 2021 - 2060 | 2 | 2 | 3 | 3 | 5 | 6 | 4 | 5 | 5 | 6 | 4 | 3 |
| 2061 - 2100 | 2 | 4 | 3 | 4 | 6 | 8 | 3 | 4 | 5 | 7 | 4 | 4 |
| Rain (%) | 2021 - 2060 | 49 | 49 | 38 | 38 | 47 | 47 | 49 | 49 | 46 | 46 | 43 | 44 |
| 2061 - 2100 | 49 | 47 | 38 | 37 | 47 | 46 | 50 | 50 | 46 | 45 | 43 | 42 |
| Baseflow (%) | 2021 - 2060 | 46 | 45 | 53 | 54 | 42 | 42 | 44 | 44 | 40 | 40 | 45 | 45 |
| 2061-2100 | 46 | 45 | 55 | 56 | 42 | 43 | 45 | 45 | 42 | 43 | 46 | 47 |

**Table S3.** Contribution from snow melt, ice melt, rain and baseflow to future discharge in all the sub-basins of the Koshi River basin under RCP 4.5 and 8.5 scenarios during two future reference periods: 2021 – 2060 and 2061 – 2100.