**Supplementary Table 3:** Relative area increases of glacial lakes (>0.1 km2) under four SSP scenarios for different regions of HMA in 2100. Values are a model ensemble mean. Data for 2018 based on Shugar et al. (2020). NA values indicate the potential development of glacial lakes in regions without identified lakes (>0.1 km2) in 2018.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *Region name* | Situation in 2018 | | Relative increase in 2100 (%) | | | |
| *Lakes (>0.1 km2)* | *Lake area (m2)* | *SSP126* | *SSP245* | *SSP370* | *SSP585* |
| Karlik | 2 | 262655 | 0 | 0 | 0 | 0 |
| Ladakh | 5 | 950079 | 0 | 0 | 0 | 0 |
| Pachakshiri | 5 | 775766 | 0 | 0 | 0 | 0 |
| Transhimalaya W | 5 | 1096060 | 0 | 0 | 0 | 0 |
| Transhimalaya E | 6 | 1438673 | 0 | 0 | 0 | 0 |
| Alatau | 9 | 1126437 | 0 | 0 | 0 | 0 |
| Goikarla Rigyu | 23 | 5406742 | 0 | 0 | 0 | 0 |
| Tien Shan N | 26 | 4464989 | 0 | 0 | 0 | 0 |
| Karakoram E | 6 | 1978974 | 0 | 0 | 0 | 0.4 |
| Zanskar | 36 | 7217015 | 1.4 | 3.4 | 4.9 | 5.1 |
| Transhimalaya C | 29 | 7649814 | 2.1 | 3.9 | 6.2 | 7.6 |
| Pir Panjal | 7 | 2368533 | 4.4 | 5.7 | 7.1 | 9.3 |
| Himalaya E | 17 | 4158318 | 4.1 | 5.6 | 8.7 | 9.4 |
| Hindu Kush W | 31 | 6064072 | 1.0 | 1.7 | 6.2 | 10.2 |
| Pamir C | 38 | 18343608 | 4.6 | 6.6 | 10.0 | 15.6 |
| Hindu Kush E | 42 | 9406078 | 6.5 | 9.5 | 12.8 | 19.4 |
| Nyianqentanglha W | 15 | 2634445 | 26.5 | 31.9 | 33.4 | 33.9 |
| Kangchenjunga | 76 | 31688628 | 29.2 | 33.2 | 35.4 | 37.8 |
| Hengduan | 38 | 6639288 | 26.2 | 32.9 | 36.6 | 38.7 |
| Qilian | 16 | 3935467 | 20.2 | 27.0 | 39.4 | 45.2 |
| Bhutan | 123 | 50936198 | 17.3 | 37.1 | 44.4 | 48.7 |
| Bogda | 4 | 1116715 | 34.4 | 53.4 | 54.1 | 54.6 |
| Rolwaling | 29 | 29990508 | 48.9 | 53.8 | 56.0 | 57.3 |
| Dhaulagiri | 75 | 24064815 | 46.0 | 55.0 | 61.5 | 64.6 |
| Nyianqentanglha E | 102 | 45628198 | 51.9 | 57.9 | 62.8 | 67.6 |
| Annapurna | 11 | 5902311 | 46.2 | 55.9 | 63.6 | 68.8 |
| Namchabarwa | 1 | 272508 | 59.7 | 59.7 | 79.7 | 80.2 |
| Nanga Parbat-Haramosh | 15 | 3588195 | 71.5 | 74.5 | 88.0 | 99.1 |
| Tien Shan W | 33 | 15057721 | 80.9 | 92.8 | 97.0 | 99.9 |
| Bayan Har | 2 | 505721 | 86.0 | 86.1 | 86.0 | 107.3 |
| Mahalangur | 76 | 34282830 | 60.9 | 78.5 | 96.8 | 110.3 |
| Kangto | 11 | 2445838 | 97.9 | 144.7 | 165.6 | 174.3 |
| Kangri Garpo | 55 | 20382167 | 184.7 | 194.4 | 202.1 | 205.6 |
| Kumaon Chandi | 7 | 1904833 | 119.0 | 167.8 | 195.9 | 238.6 |
| Tien Shan C | 38 | 12435405 | 178.1 | 237.1 | 283.9 | 352.2 |
| Hissar Alay | 5 | 1082152 | 358.3 | 406.0 | 454.6 | 517.2 |
| Nun-Kun | 22 | 9204797 | 359.3 | 436.3 | 503.3 | 590.6 |
| Kun Lun E | 7 | 1712261 | 297.5 | 294.9 | 386.2 | 595.6 |
| Karakoram NW | 1 | 107264 | 118.4 | 161.0 | 343.3 | 639.6 |
| Borohoro | 13 | 1975044 | 460.9 | 629.7 | 656.1 | 669.6 |
| Karakoram W | 8 | 3517635 | 316.0 | 420.9 | 598.3 | 742.8 |
| Kun Lun W | 7 | 4978669 | 491.0 | 631.7 | 653.2 | 849.1 |
| Tangulha | 10 | 4644461 | 286.4 | 392.7 | 604.0 | 873.9 |
| Inner Tibet SE | 4 | 877165 | 152.7 | 256.3 | 608.9 | 965.1 |
| Pamir N | 15 | 5300858 | 701.6 | 834.6 | 988.7 | 1135.0 |
| Kun Lun C | 3 | 474472 | 273.0 | 582.1 | 913.4 | 1564.4 |
| Inner Tibet W | 1 | 220397 | 299.7 | 596.6 | 1252.1 | 2089.9 |
| Lahaul Spiti | 1 | 248050 | 1372.0 | 1646.4 | 2031.5 | 2611.2 |
| Pamir Sabykol | 1 | 129716 | 641.0 | 1556.8 | 2535.8 | 2731.4 |
| Banderpunch Gangotri | 2 | 414318 | 2294.8 | 2890.2 | 3600.6 | 4596.5 |
| Karakoram C | 10 | 2331707 | 5162.8 | 6221.1 | 6776.0 | 8628.3 |
| Altun | 0 | 0 | 0 | 0 | 0 | 0 |
| Pamir W | 0 | 0 | 0 | 0 | 0 | 0 |
| Inner Tibet C | 0 | 0 | NA | NA | NA | NA |
| Karakoram NE | 0 | 0 | NA | NA | NA | NA |
| Hindu Kush N | 0 | 0 | NA | NA | NA | NA |
| Inner Tibet NE | 0 | 0 | NA | NA | NA | NA |