Supporting Information for

Global streamflow and flood response to stratospheric aerosol geoengineering

Liren Wei¹, Duoying Ji¹, Chiyuan Miao², John C. Moore¹,³,⁴

¹College of Global Change and Earth System Science, Beijing Normal University, Beijing 100875, China
²State Key Laboratory of Earth Surface Processes and Resource Ecology, Faculty of Geographical Science, Beijing Normal University, Beijing 100875, China
³Arctic Centre, University of Lapland, P.O. Box 122, 96101 Rovaniemi, Finland
⁴CAS Center for Excellence in Tibetan Plateau Earth Sciences, Beijing 100101, China
Figure S1: Relative difference of three river streamflow indicators between G4 (2030-2069) and RCP4.5 (2030-2069), as percentages of the mean of G4 and RCP4.5: $100\% \times \frac{2(G4 - RCP4.5)}{(G4 + RCP4.5)}$, projected by BNU-ESM. From Top, to bottom represents long-term mean flow ($Q_{m}$); Middle, high flow ($Q_{5}$); and Bottom, low flow ($Q_{95}$). Grid cells with river discharge less than 0.01 mm/day are masked. Hashed areas indicate locations where the streamflow changes are significant at the 95% level.

**CanESM2**

Figure S2: As for Figure S1 but for CanESM2
Figure S3: As for Figure S1 but for GEOSCCM.
Figure S4: As for Figure S1 but for MIROC-ESM.
Figure S5: As for Figure S1 but for MIROC-ESM-CHEM.
Figure S6: As for Figure S1 but for NorESM1-E.
Figure S7: Multi-model ensemble median of return periods for discharge which correspond to 50-year return period in the historical simulation (1960-1999) under (a) G4, (b) RCP4.5 scenarios and (c) the relative difference of G4 and RCP4.5, as percentages of mean of return periods: $100\% \times \frac{2(G4 - RCP4.5)}{G4 + RCP4.5}$. i.e. mean annual discharge for historical period less than 0.01 mm/day were masked out.
Figure S8: As for Figure S7 but for 100-year return periods.