Supplementary Material

Figure S1 shows the global annual mean net radiation flux for the reference runs and 10BC and 5SF cases in CGCM (atmosphere-ocean coupled model) and SOM (atmosphere-slab ocean coupled model) groups.

Figures S2a and S2b show the zonal mean changes in specific humidity flux density ($q \cdot v$) caused by 10BC and 5SF in CGCM group at different levels. It is seen that 10BC (5SF) causes northward (southward) cross-equatorial moisture transport at the low level, which is the direct reason for the 10BC-induced northward and 5SF-induced southward shifts of the ITCZ.

![Figure S1. Net radiative flux (W m$^{-2}$) at the TOA in CGCM (solid lines) and SOM (dashed lines).](image-url)
Figure S2. Latitude-altitude cross section of zonal-mean change in specific humidity flux density (northward positive, \((\text{g kg}^{-1}) \cdot (\text{m s}^{-1})\)) caused by (a) 10BC and (b) 5SF in CGCM group.