Online material

Fig. Suppl.Material.1 Target vorticity pattern (left) based on the vorticity averaged between July 20th and July 31st 2016 with respect to the 1981-2010 climatology. The 30-year averaged June-July-August vorticity, with respect to the model’s climatology, is shown on the right. The view is restricted to Europe and Asia.

Fig. Suppl.Material.2 Averaged 500 hPa geopotential height from the perturbed simulation, where the averaged days are selected based on high pattern correlation values ($\geq 0.85$) with the ERA Interim 27-31 July averaged geopotential height.
Fig. Suppl.Material.3 Precipitation difference between selected days from years with relatively high and low SSTs over the Bay of Bengal. The selection of days is based on the resemblance of modeled and observed 500hPa atmospheric circulation.

Fig. Suppl.Material.4 Precipitation difference between the control simulation of the future climate and the control simulation of the present climate.
Fig. Suppl. Material.5 Averaged 500 hPa geopotential height from the perturbed future simulation, where the averaged days are selected based on high pattern correlation values ($\geq 0.85$) with the ERA Interim 27-31 July averaged geopotential height.

Fig. Suppl. Material.6 Averaged summer SSTs over the Bay of Bengal from the Had2SST dataset in grey bars, with fitted distributions of the summer SSTs over the same region from the present perturbed (blue) and future perturbed simulations (red). Observed SST value in May 2010 over the Bay of Bengal, just prior to the precipitation event in northern Pakistan, is given as the black vertical line [31].