Developing a hydrological monitoring and sub-seasonal to seasonal forecasting system for South and Southeast Asian river basins

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10 Supporting information

Figure S1: Comparison between retrospective simulations and hindcast simulations in the Mekong basin of (a) monthly time series of precipitation, (b) monthly climatology of root zone soil moisture (RZSM), (c) inter-annual correlations of basin-averaged RZSM standardized anomaly and precipitation, and (d) monthly standardized anomaly of RZSM (the red error bars represent for the standard deviation of separate hindcast ensemble members). Please note that the time axis for monthly time series are rearranged so that the data for the same month is grouped.

20 Figure S2: Same as Fig. S1, but for the Brahmaputra basin.

25 **Figure S3: The largest lead month when the difference of RZSM forecast skills between hindcast-RIC and hindcast-CIC against retrospective simulations still remains statistically significant.**

30 **Figure S4: Interannual correlation of precipitation between retrospective simulations (i.e. CHIRPS) and hindcasting simulations (i.e. downscaled GEOS-S2S-V1 precipitation) which is computed using precipitation data from year 2000 to 2017 in months May (1-month lead time) to January (9-month lead time) (subplot (a) to subplot (i)). The hatches denote the areas with statistically significant correlation at 0.95 confidence level.**

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Figure S5: Fractions of areas of different drought categories in Ganges basin calculated using RZSM data from retrospective and hindcast-RIC simulations from (a) May to (i) January.

Figure S6: Same as Fig. S5 but for the Brahmaputra basin.

Figure S7: Same as Fig. S5 but for the Indus basin.