Supplementary Data

Increasing potential of biomass burning over Sumatra, Indonesia induced by anthropogenic tropical warming

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Figure S1. Seasonal variability of observed $P_{\text{accum}}$ over southern Sumatra. Blue, orange, yellow and red curves indicate the seasonal variability of $P_{\text{accum}}$ derived from Global Historical Climatology Network (GHCN) station data averaged for normal, El Niño (EN), positive phase of IOD (pIOD) and coinciding EN-pIOD years, respectively.
Figure S2. June–October mean SST difference between atmospheric general circulation model (AGCM) control run (ALL) and no-anthropogenic warming (NAT) runs (the former minus the latter).
Figure S3. Probability of drought frequency change over Sumatra under anthropogenic warming. Ensemble mean of atmospheric general circulation model (AGCM) control run (ALL) (black) and no-anthropogenic warming (NAT) (blue) runs. The dashed black line represents the drought threshold based on the ALL run.
Figure S4. October $P_{\text{accum}}$ change over Sumatra for 2001–2050 in Representative Concentration Path (RCP) 8.5 runs against Atmospheric Model Intercomparison Project (AMIP)+Pattern runs. Both values have been scaled by the tropical-mean SST increase as in figure 4. Estimates of $\pm 50\%$, $\pm 75\%$ and $\pm 90\%$ ranges are shown by bars.
Figure S5. Probability of drought frequency change (%) over the maritime continent due to anthropogenic warming. The change is based on drought frequency difference between 2001–2050 and 1951–2000 of the Coupled Model Intercomparison Project Phase 5 (CMIP5) multimodel ensemble (MME). Dots indicate grid boxes where the absolute of the model ensemble mean is greater than its spread.
Table S1. Temporal correlation in mean seasonal cycle of precipitation for 1979–2005, averaged over southern Sumatra, between the Coupled Model Intercomparison Project Phase 5 (CMIP5) historical run and corresponding Atmospheric Model Intercomparison Project (AMIP) in nine models.

| Model                  | Correlation |
|------------------------|-------------|
| CanESM2                | 0.96        |
| CCSM4                  | 0.72        |
| CNRM – CM5 – LR        | 0.55        |
| HadGEM2 – ES           | 0.80        |
| IPSL – CM5 – LR        | 0.72        |
| MIROC5                 | 0.74        |
| MPI – ESM – LR         | 0.96        |
| MPI – ESM – MR         | 0.76        |
| MRI – CGCM3            | 0.57        |