Figure S1: Global land regions classified by the local observations-based Aridity Index in the different datasets providing precipitation indices based on daily station observations (MERGEDEX), or daily gridded precipitation fields (REGEN). The AI calculated based on CRU was remapped to the native resolution of each dataset.
Figure S2: Model-specific aridity masks during the historical period 1951-2010 (merging 1951-2005 from the historical simulations and 2006-2010 from RCP8.5 simulations).
Figure S3: Model-specific aridity masks during the future period 2071-2100 in the simulations following the RCP8.5 scenario.
**Figure S4**: Model-specific aridity masks during the future period 2071-2100 in the simulations following the RCP4.5 scenario.
Figure S5: As Figure 3 but using the model-specific aridity masks (from the past climate period 1951-2010, see Figure S6), as opposed to using the observational mask in Figure 3.
Figure S6: As Figure 3 but using the model-specific aridity masks (where masks from the past climate period 1951-2010 (Figure S6) and future 2071-2100 (Figures S7/S8) overlap), as opposed to using the observational mask in Figure 3.
Figure S7: Same as Figure 2, but masking CMIP5 models to grid cells that have sufficiently complete data in MERGEDEX.
Figure S8: Same as Figure 3 but masking the CMIP5 models to grid cells that have sufficiently complete data in MERGEDEX.
Figure S9: Ensemble average changes in the RCP8.5 simulations 2071-2100 relative to 1951-1980 in (left) PRCPTOT and (right) Rx1day for grid cells in each aridity class (based on observed aridity classes shown in Figure 1.)
Figure S10: Aridity index associated with the annual maximum precipitation extremes (Rx1day), based on REGEN (all stations version). (a) Climatological average AI (same as Supplementary Figure S1c), (b) average AI in the months when Rx1day occurs each year, (c) average AI in the months preceding the month when Rx1day occurs.