Supporting Information for "Sensitivity of Water Balance in the Qaidam Basin to the Mid-Pliocene Climate"

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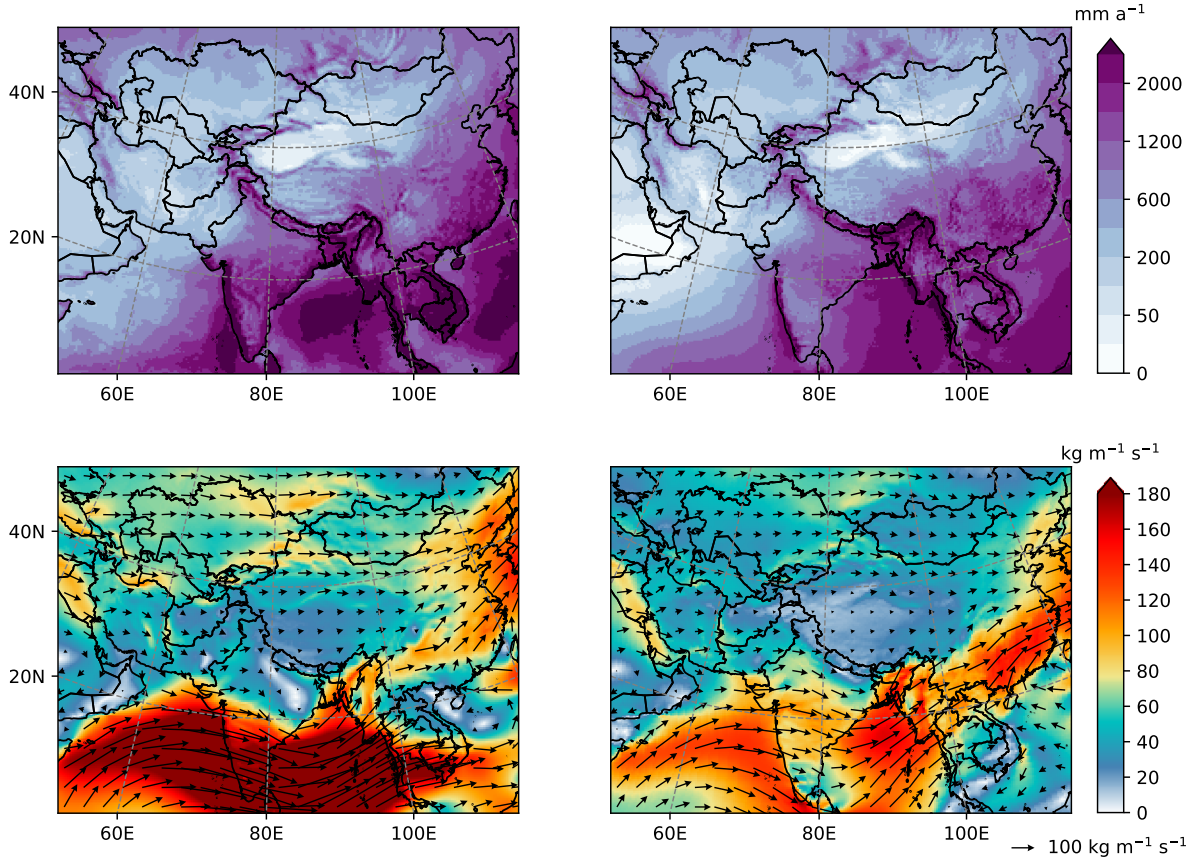

Figure S1. Comparison of annual precipitation (upper) and atmospheric water transport (lower) from PD (left) and ERA5 between 2000 and 2014 (right).

Setup files for the wrf model

namelist.wps

```
&share
 wrf_core = 'ARW',
 max_dom = 1,
 start_date = '2011-07-09_12:00:00',
 end_date = '2011-07-11_00:00:00',
 interval_seconds = 21600,
 io_form_geogrid = 2,
 debug_level = 0,
/

&geogrid
 parent_id         =   1,
 parent_grid_ratio =   1,
 i_parent_start    =   1,
 j_parent_start    =   1,
 e_we              =  281,
 e_sn              =  217,
 geog_data_res = 'usgs_lakes',
 dx = 30000,
 dy = 30000,
 map_proj = 'lambert',
 ref_lat   =  32,
 ref_lon   =  83,
 truelat1  =  32,
 truelat2  =  38,
 stand_lon =  83,
 geog_data_path = '/sim/wrf/static/WRFV4.0/',
 !opt_geogrid_tbl_path = 'geogrid/'

/

&ungrib
 out_format = 'WPS',
 prefix = 'ERA5_pl',
/

&metgrid
 fg_name = '/sim/forcing_data/GCM/PD/Post/IFF/GCM_PD',
 constants_name = './TAVGSFC',
 io_form_metgrid = 2,
/
```

namelist.input

```
&time_control
 run_days = 1,
 run_hours = 12,
 run_minutes = 0,
 run_seconds = 0,
 start_year = 2011,2011,2011,
 start_month = 07, 07, 07,
 start_day = 09, 09, 09,
 start_hour = 12, 12, 12,
 start_minute = 00, 00, 00,
 start_second = 00, 00, 00,
 end_year = 2011,2011,2011,
 end_month = 07, 07, 07,
 end_day = 11, 11, 11,
 end_hour = 00, 00, 00,
 end_minute = 00, 00, 00,
 end_second = 00, 00, 00,
 interval_seconds = 21600,
 input_from_file = .true., .true., .true.,
 history_interval = 180, 60, 60,
 frames_per_outfile = 1000, 1000, 1000,
 restart = .false.,
 restart_interval = 5000,
 io_form_history = 2,
 io_form_restart = 2,
 io_form_input = 2,
 io_form_boundary = 2,
 debug_level = 0,
 auxinput4_inname = "wrflowinp_d<domain>",
 auxinput4_interval = 360,
 io_form_auxinput4 = 2,
 iofields_filename = "./add_out_d01.txt",
 ignore_iofields_warning = .false.,
/

&domains
 max_dom = 1,
 time_step = 120,
 time_step_fract_num = 0,
 time_step_fract_den = 1,
 s_we = 1, 1, 1,
 e_we = 281, 382, 711,
 s_sn = 1, 1, 1,
 e_sn = 217, 253, 296,
 s_vert = 1, 1, 1,
 e_vert = 28, 28, 28,
 eta_levels = 1.000000,0.993000,0.983000,0.970000,0.954000,0.934000,0.909000,0.880000,
              0.829576,0.779151,0.728727,0.678303,0.591744,0.513694,0.443454,0.380375,
              0.323853,0.273326,0.228273,0.188210,0.152689,0.121294,0.093643,0.069378,
              0.048173,0.029725,0.013753,0.000000,
 num_metgrid_levels = 31,
 num_metgrid_soil_levels = 5,
 dx = 30000, 10000, 2000,
 dy = 30000, 10000, 2000,
 grid_id = 1, 2, 3,
 parent_id = 1, 1, 2,
 i_parent_start = 1, 85, 202,
 j_parent_start = 1, 84, 115,
 parent_grid_ratio = 1, 3, 5,
 parent_time_step_ratio = 1, 3, 5,
 feedback = 1,
 smooth_option = 0,
 hypsometric_opt =1,
 interp_theta = .true.,
 lagrange_order = 1,
 /

&physics
 mp_physics = 10, 10, 10,
 ra_lw_physics = 1, 1, 1,
 ra_sw_physics = 1, 1, 1,
 radt = 30, 10, 2,
 sf_sfclay_physics = 1, 1, 1,
 sf_surface_physics = 2, 2, 2,
 bl_pbl_physics = 1, 1, 1,
 bldt = 0, 0, 0,
 cu_physics = 10, 10, 0,
 cudt = 5, 1, 1,
```

```
 isfflx = 1,
 icloud = 1,
 surface_input_source = 1,
 num_soil_layers = 4,
 mp_zero_out = 0,
 num_land_cat = 28,
 sst_update = 1,
 usemonalb = .false.,
 rdmaxalb = .true.,
 seaice_threshold = 271,
/

&fdda
/

&dynamics
 hybrid_opt= 0,
 rk_ord = 3,
 w_damping = 1 ,
 diff_opt = 1, 1, 1,
 km_opt = 4, 4, 4,
 diff_6th_opt = 2, 2, 2,
 diff_6th_factor = 0.12, 0.12, 0.12,
 base_temp = 290.,
 damp_opt = 3,
 zdamp = 5000., 5000., 5000.,
 dampcoef = 0.2, 0.2, 0.2,
 khdif = 0, 0, 0,
 kvdif = 0, 0, 0,
 non_hydrostatic = .true., .true., .true.,
 moist_adv_opt = 1, 1, 1,
 scalar_adv_opt = 1, 1, 1,
 use_theta_m = 0,
 epssm = 0.1, 0.1, 0.5,
/

&bdy_control
 spec_bdy_width = 5,
 spec_zone = 1,
 relax_zone = 4,
 specified = .true., .false., .false.,
 nested = .false., .true., .true.,
/

&namelist_quilt
 nio_tasks_per_group = 0,
 nio_groups = 1,
/

&grib2
/
```