**Summary of datasets for flooding analysis reported in Wobus et al. (2019)**

1. **Wobus\_Flood\_Damages\_huc10.xlsx** – contains total flood damages for floods of each specified recurrence interval, organized by HUC10, for watersheds with RiskMAP data from 3 or 5 recurrence intervals. Also includes lookup table to crosswalk from HUC10 to NCA region, and from HUC10 to the ReachID associated with the modeled flow data.
2. **CONUS\_model\_dT.xlsx** – contains the year that each of the 29 models evaluated meets the specified temperature threshold relative to 2001-2020 baseline, on a CONUS average basis. Sheet “Summary” in that workbook is the main result from that analysis.
3. **annmaxs\_all85.mat** – Contains annual maximum timeseries from all nodes in the geospatial fabric as modeled by NCAR/USBR in the VIC downscaled hydrologic dataset. These are the raw data used to generate extreme value statistics for baseline (2001-2020) and future time periods (see below). Variables are “reaches” (57116x1) with reachIDs; “modelnames85” (1x29) with model IDs; “years” (150x1) with years from 1950-2100; and “annmaxs\_rcp85” (57116x150x29) with annual maximum flow values by reachID, year and model. Note the step function in annual maximum flows as reported by Wobus et al. (2017) in the year 2000 – do NOT compare pre-2000 vs post-2000 data

**Analysis steps, as outlined in Wobus et al. (2019)**

1. Baseline expected annual damage (EAD) analysis
   1. Gather data from “Wobus\_flood\_damages\_huc10.xlsx” for three or five return intervals
   2. Plot damage vs probability as in Wobus et al., Figure 3
   3. Calculate area under the curve as a proxy for expected annual damages.
   4. Aggregate results up to NCA region, using lookup table in Wobus\_Flood\_Damages\_huc10.xlsx
2. Hydrologic projection analysis
   1. Find appropriate midpoint for 1C, 2C, 3C, 4C or 5C warming thresholds for each GCM, from spreadsheet “CONUS\_model\_dT.xlsx”
   2. Extract 20-year window of annual maximum data from file annmaxs\_all85.mat, for each of the GCMs with middle year corresponding to the year that the specified threshold is achieved.
   3. Aggregate the resulting 280 annual maxima to create a sample of flows representing each temperature threshold.
   4. Calculate the GEV parameters of a distribution representing the baseline time period, and calculate the magnitude of the 10-year through 500-year RI events for each node.
   5. Re-calculate the GEV parameters for each future time period, and determine the new recurrence interval of each of the historical events (e.g., see Figure 1 in Wobus et al., 2019).
3. Future expected annual damage (EAD) analysis
   1. Use climate-adjusted changes in frequency for each event to shift damage curves, as shown for example in Wobus et al., Figure 7.
   2. Calculate area under curve for each temperature projection and compare.
   3. Aggregate results up to NCA region, using lookup table in Wobus\_Flood\_Damages\_huc10.xlsx