From butterflies to atmospheric rivers: a journey with heavy tails

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With

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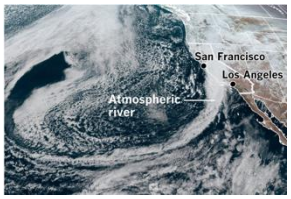
In this talk we present two examples of statistical research driven by questions from the sciences. The first example considers questions from ecology, evolution and climate change. We ask whether relatively specialized and generalized insect herbivores represent a dichotomy rather than a continuum from few to many hosts attacked and whether diet breadth changes with increasing plant diversity toward the tropics. We show that the distribution of diet breadth shifts globally with latitude. These results have implications for how food webs respond to environmental and climate change, as well as for ecosystem management and restoration.



The second example comes from the climate and weather extremes research, with particular interest in the Atmospheric Rivers (AR) which bring most of the California's annual precipitation. We developed and implemented a vector generalized linear model (VGLM) for precipitation events in the western US. The VGLM allows covariates for modeling storm events. We present results showing the fit of the VGLM for the storms in the South Lake Tahoe and Reno areas.

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