

Abstract: Drought is one of the most damaging natural disasters. With the headlines of recent severe droughts, heatwaves and wild fires in the western U.S., how drought may respond to the greenhouse gas (GHG) induced global warming has become a major concern to our society. In this talk, I will first discuss various lines of evidence of increased drying during the recent decades over many low- and mid-latitude land areas, and then present hydro-climatic changes in the 21st century projected by global climate models, which show a very dire outlook of drought for the United States and many other land areas, although the magnitude of the drying differs among different measures of drought. In contrast to the recent drying over many regions in Africa, South and East Asia, southern Europe and eastern Australia, the continental U.S. has experienced a trend toward wetter conditions from the 1950s to the 1990s, thanks to the decadal climate oscillations in the tropical Pacific. However, this trend appears to have reversed direction since around year 2000, and both the natural and GHG forcings are now working together to produce a much drier U.S. than in the 1980s and 1990s, and this drying trend is likely to continue into the coming decades.