A large portion of the U.S. population, infrastructure, and industry is located in flood prone areas. As a result, floods cause an average of nearly 140 deaths and cost roughly $6 billion annually, excluding flooding caused by Hurricane Katrina which cost $200 billion alone (www.usgs.gov/hazards/floods/; USGS, 2006). In the U.S., the computation of flood risk for planning by Federal agencies is done following guidelines in Bulletin 17, for which the latest update, Bulletin 17B, was published in 1982 (IACWD, 1982). That update includes the skew map published 30 years ago in the original Bulletin 17 (WRC, 1976), and a list of areas needing additional research. It is time to update that remarkable document to address long-standing problems listed in the document, recent advances that address those problems, and the current national interest in flood risk (Stedinger and Griffis, 2008). Of particular concern are the appropriate representation and use of historical and interval data, computation of regional skew and its actual precision, and honest uncertainty assessments. Changes should maintain the statistical credibility of the guidelines and provide more accurate risk and uncertainty assessments. Future changes should also address how to incorporate likely climate variability and climate change, as well as the uncertainty in such projections.
Actual and potential climate change and climate variability will increasingly challenge hydrologists, civil engineers and planners concerned with flood risk. The 2000 National Research Council report, *Improving the American River Flood Frequency Analysis*, addressed the apparent increase in flood risk for the City of Sacramento in the last century (NRC, 2000). While many explanations were possible, the committee concluded: “Based upon the present understanding of climate dynamics, it is not possible to assess the relative contributions of natural and anthropogenic factors to this observed increase.”

Extensions of the log-Pearson type 3 model of flood risk to included changes in flood risk over time is relatively easy mathematically. A simple mathematical structure can address anticipated changes in overall scale (described by the log-space mean), or the shape of the distribution (described by the log-space standard deviation and skew). The use of ENSO to anticipate changes in flood risk from year-to-year in the United States illustrates the use of this mathematical representation of the impact of climate variability on flood risk. However projecting flood risk into the future is more problematic. Efforts to project the trend in the Mississippi River flood series beg the question as to whether an observed trend will continue unabated, has reached it maximum, or is really nothing other that climate variability so that the risk in expectation will soon return to its long-term average.

Overall, we do did not know the flood risk at a site now because of limited records for a site, and the imprecision of regional relationships, assuming annual floods are independent over time. If we allow for historical climate variability, we know even less. In water-supply management we often use period-or-record planning, which hides uncertainty. Now with climate change, we need to project from the uncertainty of our current knowledge based upon the past record to estimate the risk in the future. Formulating models is easy, but are they credible? A model adding a trend in scale (log-space mean) is attractive and simple. Uncertainty can be added, but would such an addition be accepted? To be defensible we should base flood-risk forecasts upon some change in climate-characteristics for which we have a physical-causal basis for multi-decadal projections. And even if climate has been stationary, for at least a century man has been changing and will continue to change the landscape and hydrologic systems across the United States. Change in flood risk is not new.