

ATS/CIRA Colloquium

*Atmospheric Science 50<sup>th</sup> Anniversary Speaker*

**Greg Holland**

CSU ATS Masters 1981 and Ph.D. 1983

Visiting CSU ATS from the National Center for Atmospheric Research, Boulder, CO

**Response of High-Impact Weather to Climate Variability and Change**

Hosted by Wayne Schubert

**Thursday, April 5, 2012**

**ATS room 101; Discussion will begin at 3:30pm  
Refreshments will be served at 3:00pm in the coffee lounge**

Societal vulnerability to weather arises largely from relatively rare events at the extremes of the spectrum. Examples include: extended droughts, heat waves, major hurricanes, extreme local rainfall and snowfall, ice storms, European wind storms, and severe local storms and tornadoes. Our vulnerability to property loss and societal disruption also is increasing as society becomes more complex and interconnected, and as private, industrial and commercial development expands in high-risk areas. Understanding and predicting variations and changes in weather extremes is thus a major societal issue, encompassing urban commercial and industrial planning, watershed maintenance and design, insurance types and premiums, and government policy.

In this presentation I first examine the difficulties of differentiating climate change from variability and the question of when observable human-induced climate change commenced. I then discuss the use of extreme value theory to objectively assess the intensity and frequency of extreme events and their response to climate variability and change. These two themes lead to the suggestion that weather extremes respond strongly to relatively small climate changes and, somewhat non-intuitively, that such variability and change is best interpreted through weather extremes. Finally the potential climate change contributions to current global hurricanes will be assessed.

Link to colloquium videos and announcement page: <http://www.atmos.colostate.edu/dept/colloquia.php>