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Climatologists point to effects of a changing climate including more extreme weather patterns, (long term droughts, increases in rainfall intensities, and prolonged flooding), sea level rise, and increasing temperature of the earth. According to NOAA data, over the last 17 months, eight (8) extreme rainfall events with less than a 0.2% chance of occurring (termed a 500 year event) have happened. Studies have shown that warmer air is able to hold more water vapor which eventually forms clouds and come to the ground as rain. Therefore, with higher ground temperatures, more water vapor and the volume of rain is higher.

Analysis of observational data from the last 30 years has shown that rainfall intensity is increasing. Whether this change in climate is anthropogenic or not, does not change the fact that flooding events and rainfall intensities are increasing. The effects on our dams, levees, and reservoirs will need to be reviewed. In particular, the effects on our drainage basins and flood hydrology will be discussed. With higher potential runoff in our drainage basins and increased flood flows into our reservoirs, hydrology for a given site is likely to continue to change. With higher potential inflows into our reservoirs comes with it the potential for dam failures as observed recently in Texas, South Carolina, and Louisiana. Major Hurricanes such as Katrina and Sandy caused devastating damage, breached many dam and levee systems and threatened many other facilities.

The topic of making our dams and reservoirs more resilient to withstand the effects of a changing climate will be studied in detail. Topics such as armoring our dams with RCC to allow overtopping, increasing our spillway capacity by various means, raising dams, parapet walls, and fuse plugs are only a few topics which will be covered. Examples of project work to deal with these increasing risks will be provided.