

Climate Change Summary, Pecos National Historical Park, New Mexico

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Climate Trends for the Area within Park Boundaries

- Temperature is increasing at a statistically significant rate of 1.3° C per century (Figure 1).
- Precipitation is increasing at a statistically significant rate since 1950 (Figures 2).
- Analyses of atmospheric measurements and other data show that emissions from cars, power plants, and other human activities are causing climate change (IPCC 2013).
- If we do not reduce our emissions, models project substantial future warming and slight decreases in precipitation (Figures 1, 2).

Vulnerabilities of Northern New Mexico

- Extensive dieback of piñon and ponderosa pine (Allen and Breshears 1998, Breshears et al. 2005) may continue if aridity continues to increase (Williams et al. 2013)
- Under high emissions, fire frequencies could increase up to 25% by 2100 (Moritz et al. 2012).
- Past warming has reduced snowpack widely and rainfall in some areas, which may continue to reduce summer streamflow and water supplies (Garfin et al. 2014).

Table. Historical and projected changes (data Daly et al. 2008, IPCC 2013; analysis Wang et al. in preparation). The table only gives central values. Figures 1-2 show the uncertainties.

	1950-2010	2000-2050	2000-2100
Historical			
temperature	+1.5°C/century (+2.7°F./century)		
precipitation	+42%/century		
Projected (compared to 1971-2000)			
Low emissions (IPCC RCP 4.5)			
temperature		+2.2°C (+4°F.)	+2.8°C (+5°F.)
precipitation		-1%	~0
High emissions (IPCC RCP 6.0)			
temperature		+1.8°C (+3.2°F.)	+3.2°C (+5.8°F.)
precipitation		-25%	-3%
Highest emissions (IPCC RCP 8.5)			
temperature		+2.8°C (+5°F.)	+5°C (+9°F.)
precipitation		~0	-4%

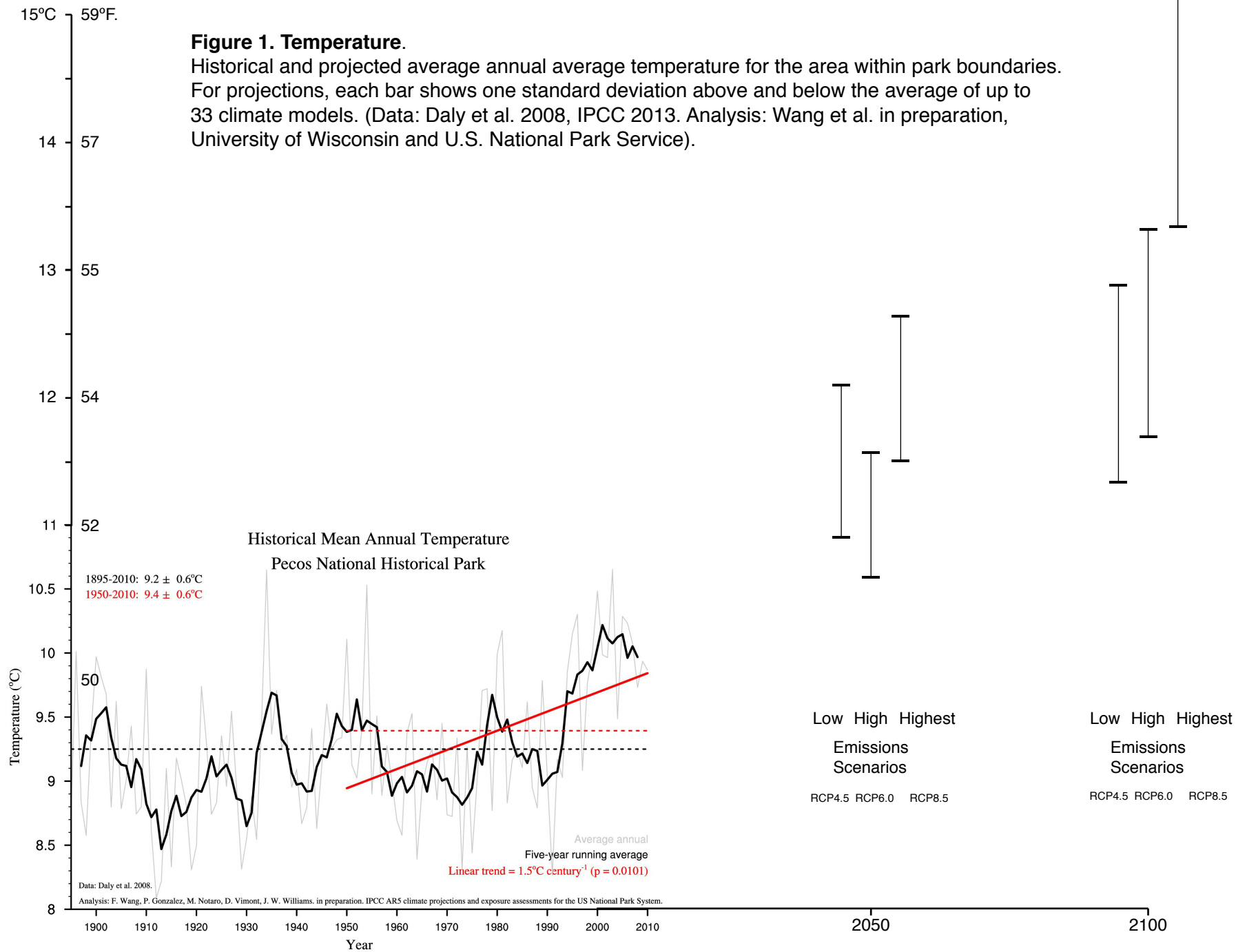
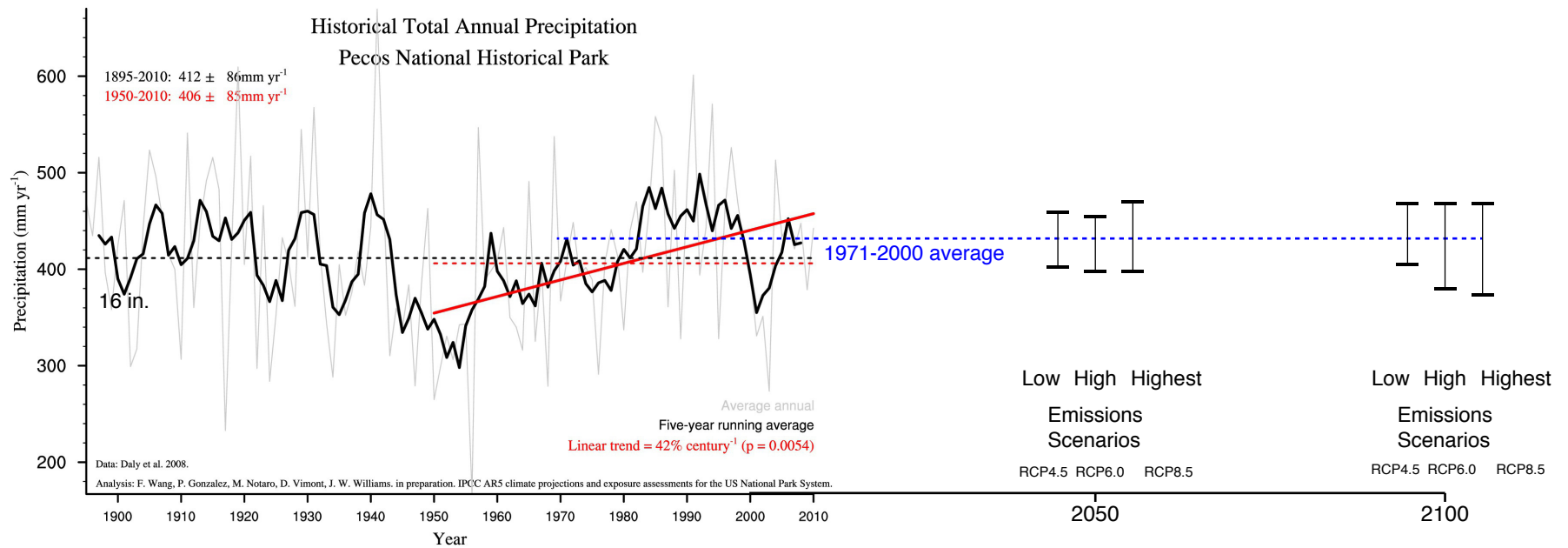


Figure 2. Precipitation.

Historical and projected annual total precipitation for the area within park boundaries. For projections, each bar shows one standard deviation above and below the average of up to 33 climate models. (Data: Daly et al. 2008, IPCC 2013. Analysis: Wang et al. in preparation, University of Wisconsin and U.S. National Park Service).



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