

Sustainability

Bill Barker, FAICP, FITE

City of Castle Hills

August 28, 2021

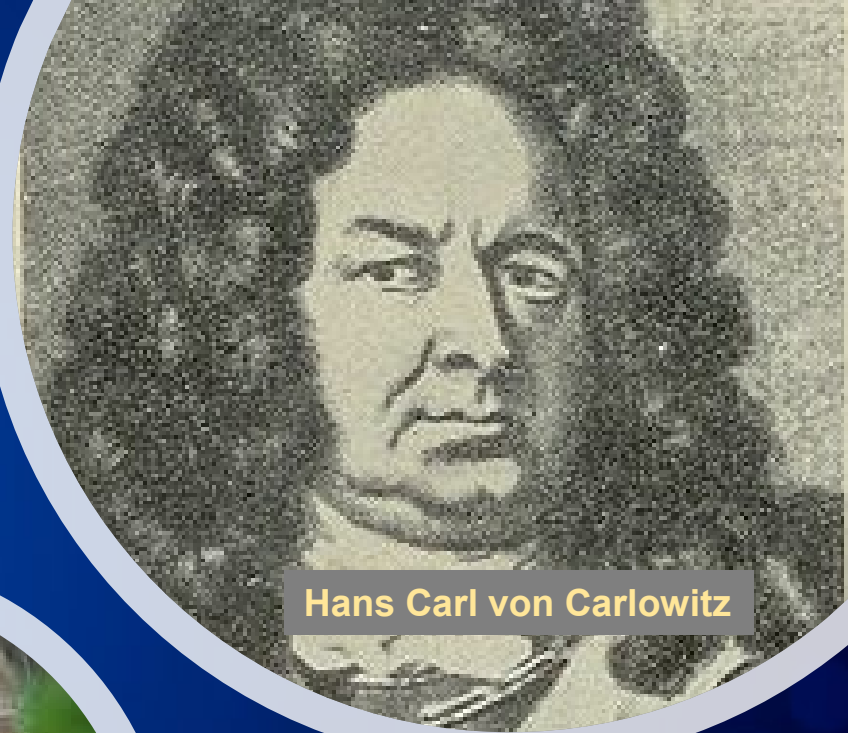


BLUF: Bottom Line Up Front

- Sustainability addresses continued human existence despite increasing use of limited natural resources
- “Planetary boundaries” are already being exceeded in some areas
 - Climate change
 - Biodiversity loss
 - Nutrient overloads
 - Land conversion
- In Central Texas, higher temperatures and less precipitation, but more intense rainfall, is expected
- Suggestions for Castle Hills

Definition

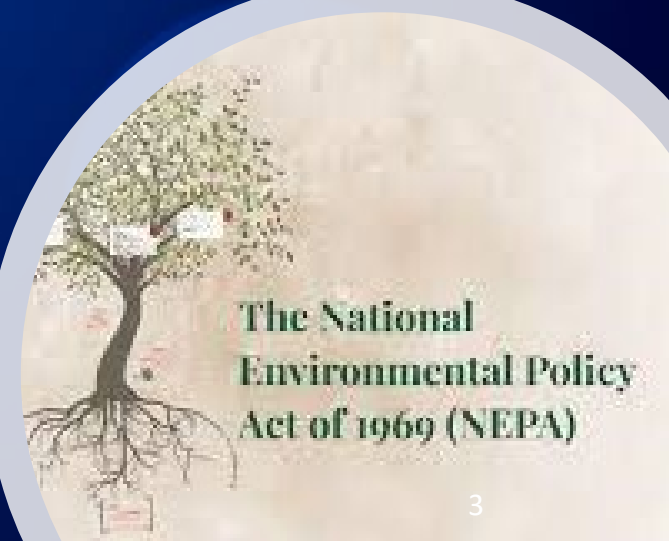
- 1713, Hans Carl von Carlowitz proposed **sustainable** forestry to deal with lack of timber causing the collapse of the mining industry and the smelting of ores which had consumed whole forests in Germany
- 1987 Brundtland report *Our Common Future* from the UN's World Commission on Environment and Development defined "**sustainable** development" as: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs"
- The National Environmental Policy Act of 1969 committed the United States to **sustainability**, declaring it a national policy "to create and maintain conditions under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic and other requirements of present and future generations."



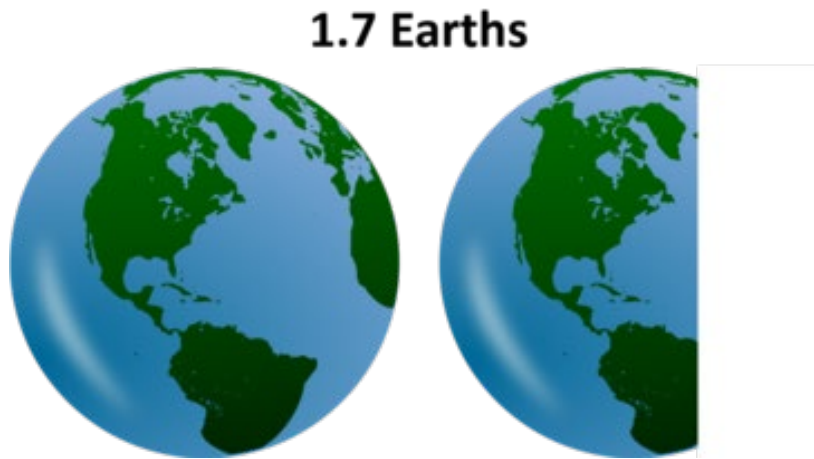
Hans Carl von Carlowitz



Gro Harlem Brundtland



How Are We Doing?



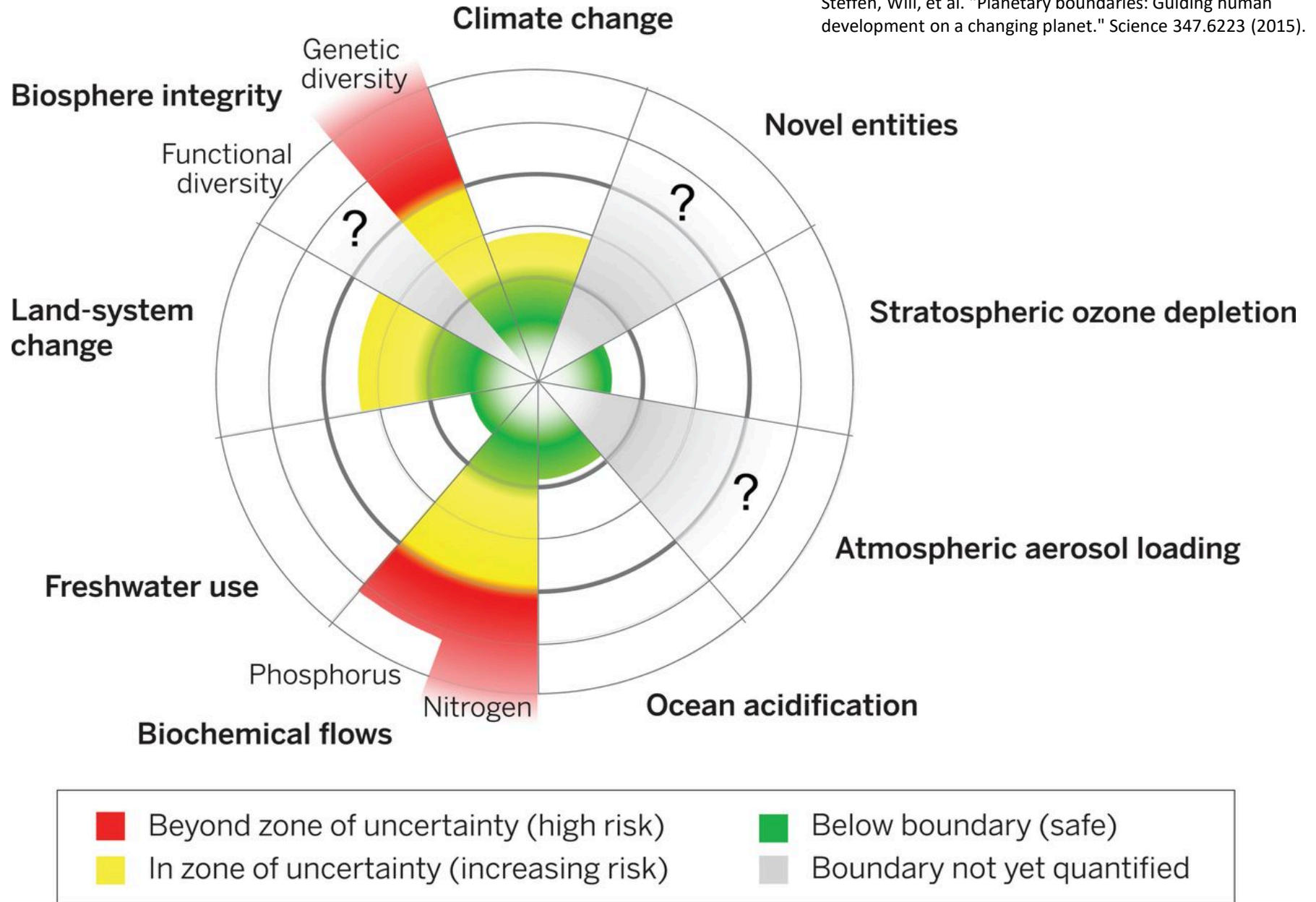
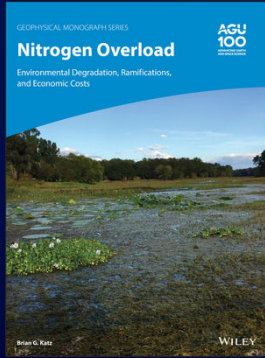
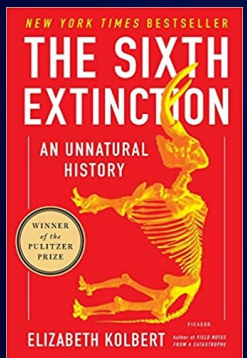
- Humankind is using natural resources 1.7 times faster than ecosystems can generate
- "Earth Overshot Day" happened on July 29, 2021
- If everyone on Earth lived like Americans, we would need 5 Earths to provide enough resources

<https://www.uni-bremen.de/en/umweltmanagement/news/details/heute-ist-earth-overshot-day-2021>

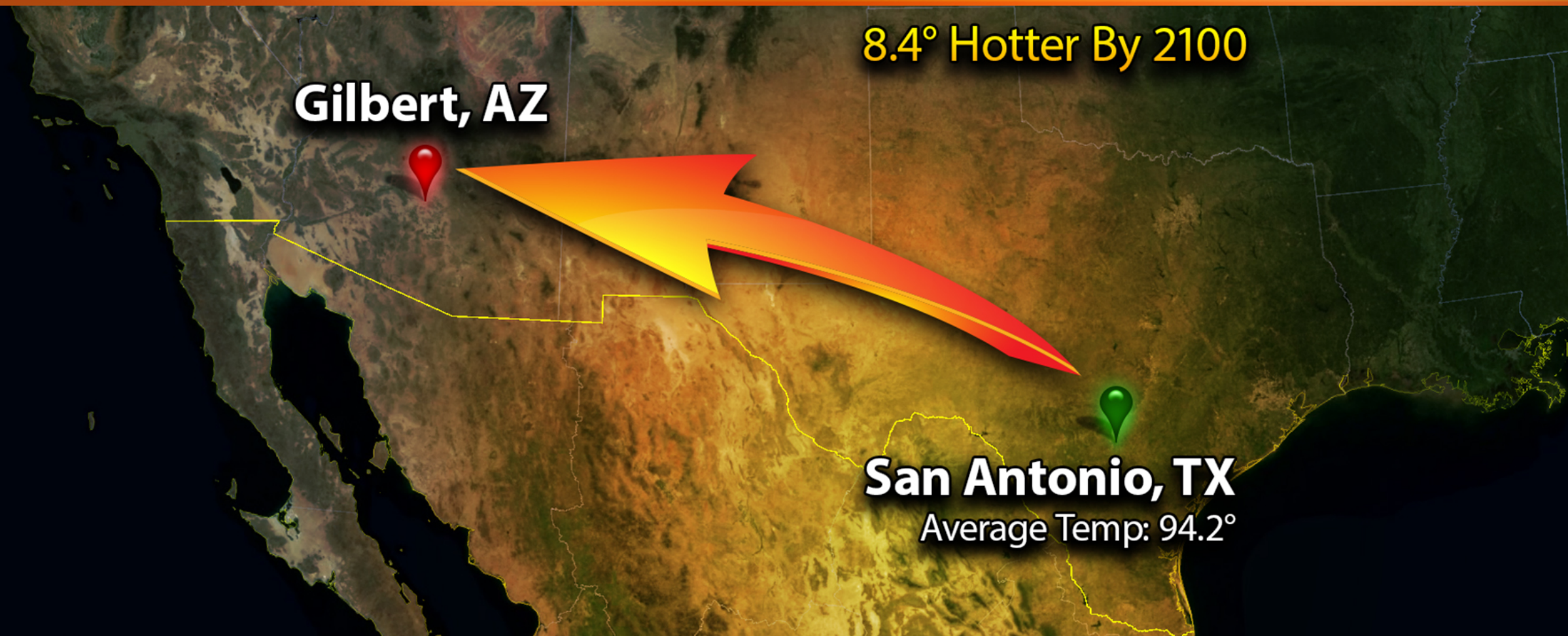
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Planetary Boundaries

- High risk
 - Biodiversity
 - Nutrient overload
- Increasing risk
 - Land conversion to human uses
 - Climate change
- Note interactions!



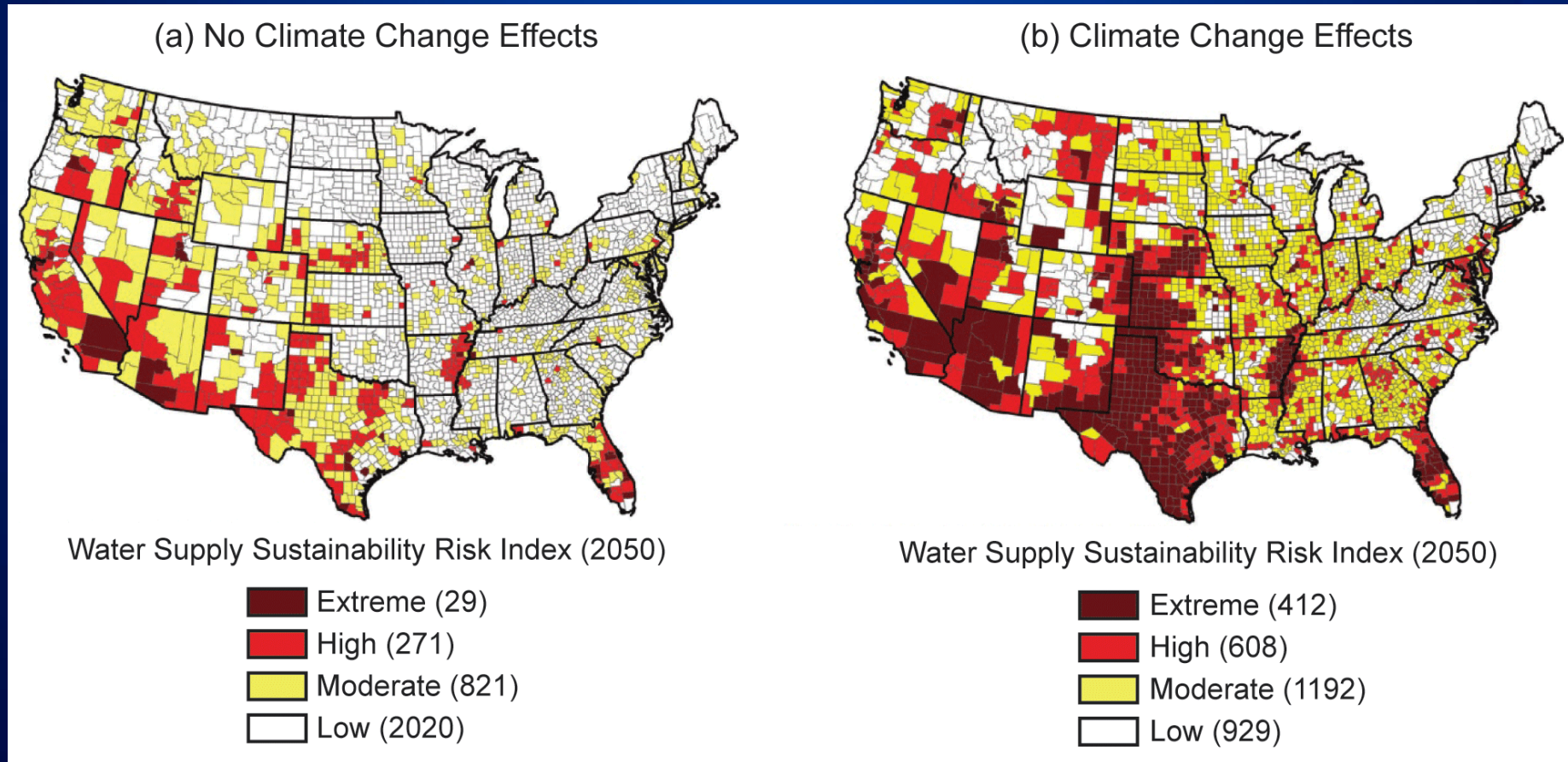
Where Your Summer is Headed



Future summer temperatures based on continuing with current emissions trends.
Current temperatures: PRISM Climate Group, Oregon State University, <http://prism.oregonstate.edu>, accessed July 1, 2014.
Projected temps: CMIP5 multi-model ensemble dataset.

CLIMATE  CENTRAL

Water Supplies Projected to Decline

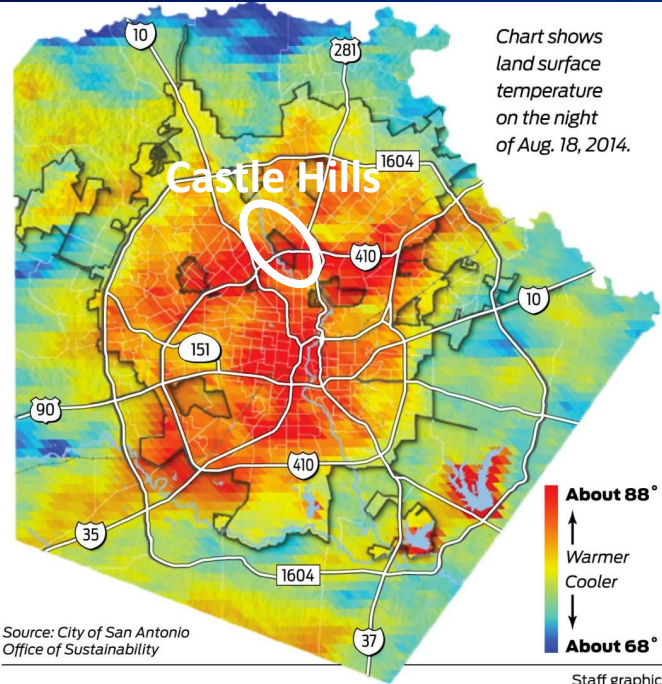


Roy, Sujoy B., et al. "Projecting water withdrawal and supply for future decades in the US under climate change scenarios." *Environmental science & technology* 46.5 (2012): 2545-2556.

Figure source: Reprinted with permission from Roy et al. 2012.

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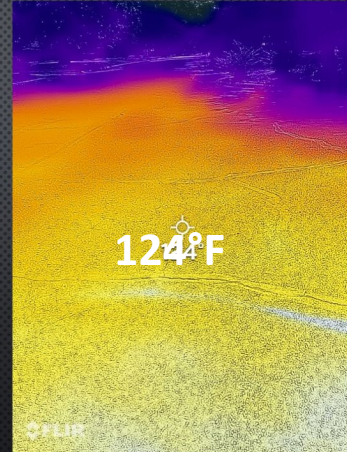
Castle Hills Ideas



LEED Credit Categories



Cas Hills Drive, June 24, 2021, 5:29 pm, 93° F



First LEED Platinum City Hall project in the United States, Greensburg, KS, population 863 (2019)

City of Castle Hills Suggestions

- Reduce greenhouse gas emissions
 - Electrify City fleet and/or use hybrid vehicles
 - Rebuild City Hall to energy efficient LEED standards
 - Make City more pedestrian, bicycle and transit friendly
- Value water
 - Pursue LEED City Hall
 - Encourage drought tolerant, xeriscape landscaping
 - Promote Low Impact Development, including pervious pavement
- Cool the city
 - Promote white and green roofs
 - Encourage more trees and greenspace
 - Reduce impervious pavement
 - As streets are resurfaced, use cool pavement coating

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