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INDIANA WATER RESOURCES RESEARCH CENTER

Indiana Climate Change Impacts Assessment Water Resources Report

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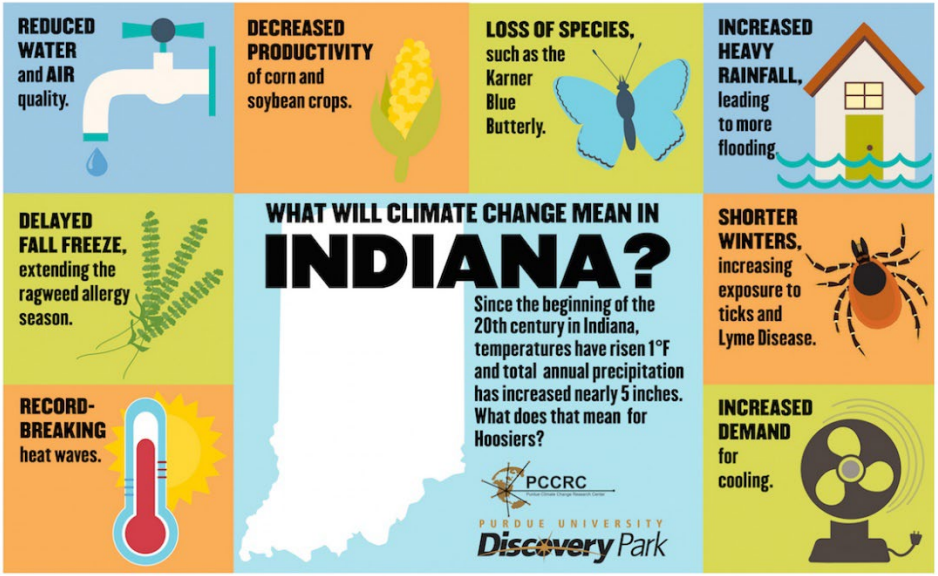
IN CCIA
Indiana Climate Change Impacts Assessment

- Work on the INCCIA reports started in 2017 and with the first reports released starting in 2018.
  - Nine published reports: Climate, Health, Forest Ecosystems, Urban Green Space, Agriculture, Aquatic Ecosystems, Tourism & Recreation, Energy and Water (released this summer).
- Water report involved groups from across the state:
  - Purdue University
  - Indiana University-Purdue Un
  - Indiana University
  - University of Notre Dame
  - U.S. Geological Survey, Ohio-Kentucky-Indiana Water Science Center
- Many others provided support and technical reviews of the document during its development.



Key Findings from the INCCIA Water Report

2050

Relative to
1971-2000 average

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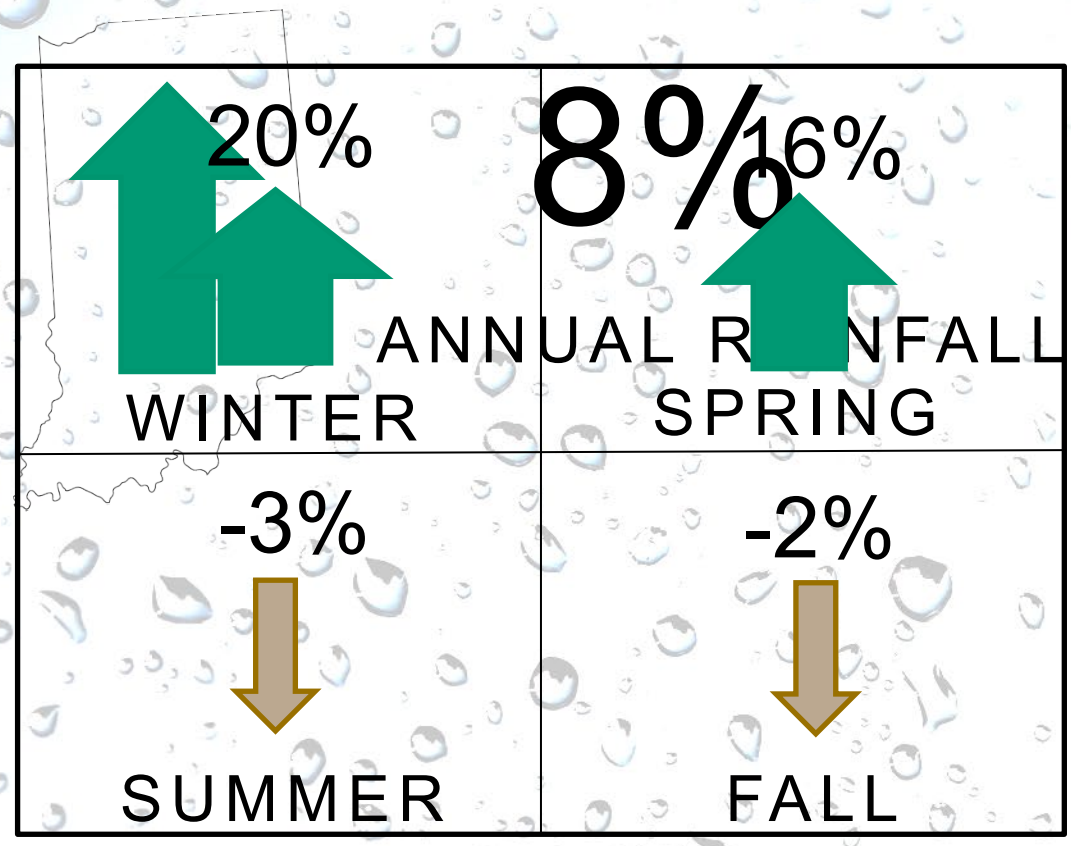
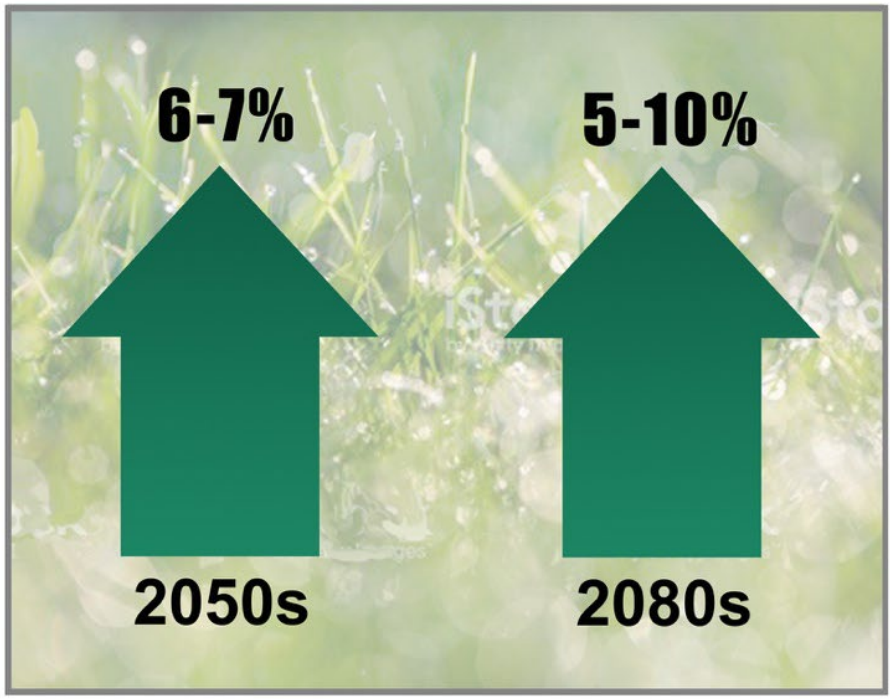


Statewide Average
Widhalm et al. (2018)

Future data based on high emissions scenario, 2050

Evapotranspiration

Annual amount of water lost to evaporation from surface water, soils, and plants



Percent change in Indiana's future annual average evapotranspiration compared to the historical statewide average (1984 to 2013). For the future projections, "2050s" represents the average of the 30-year period from 2041 to 2070 and "2080s" represents the average of the 30-year period from 2071 to 2100. The lower end of the projection range is based on the medium emissions scenarios. The higher end of the projection range is based on the high emissions scenario.

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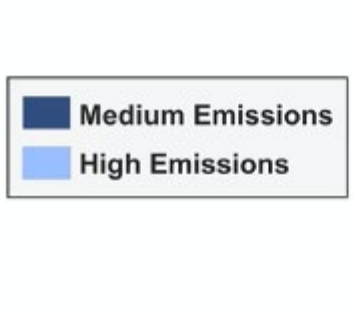
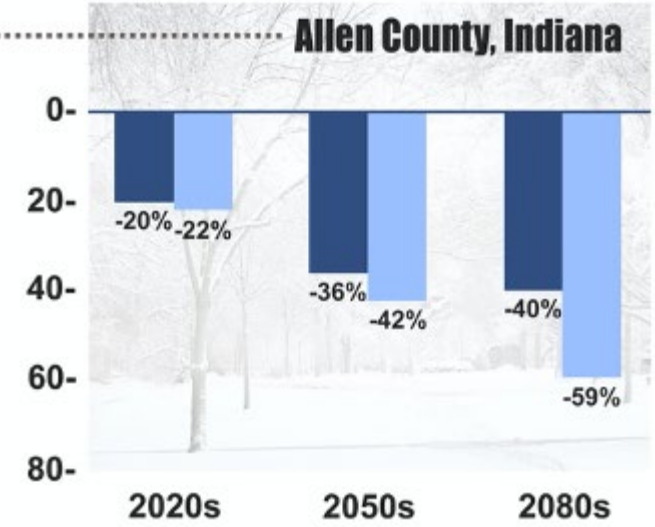
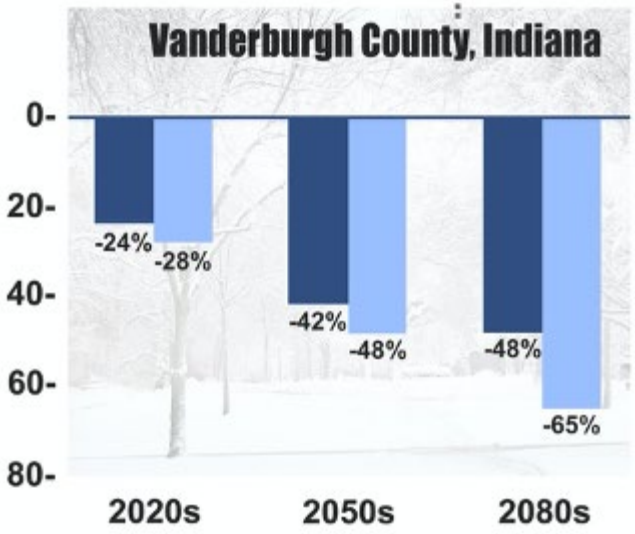
Declining Snowfall

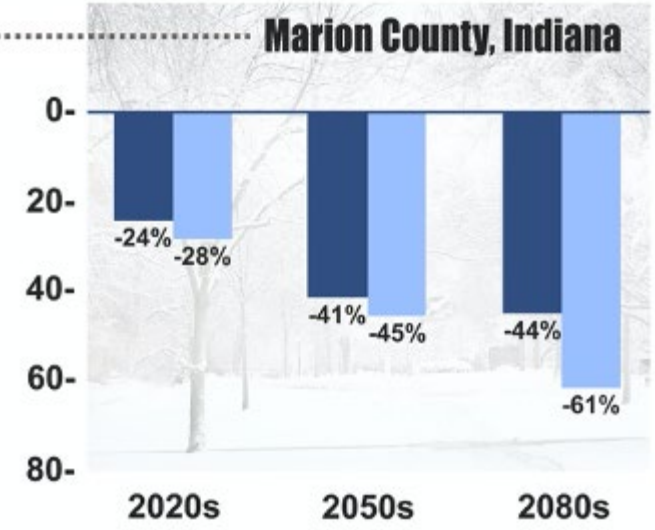
Percent change in future annual snowfall compared to past



Medium Emissions
High Emissions







Percent change in future snowfall compared to historical average snowfall (1915 to 2013). For the future projections, "2020s" represents the average of the 30-year period from 2011 to 2040, "2050s" represents the average from 2041 to 2070, and "2080s" represents the average from 2071 to 2100.

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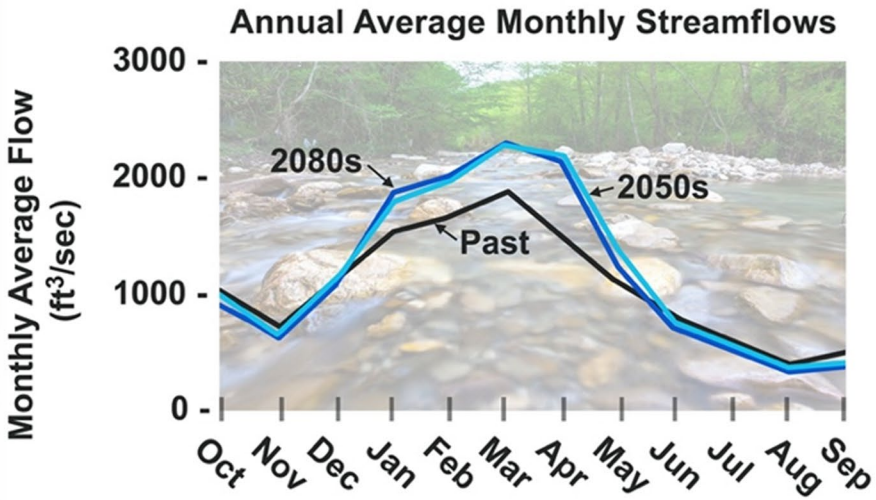
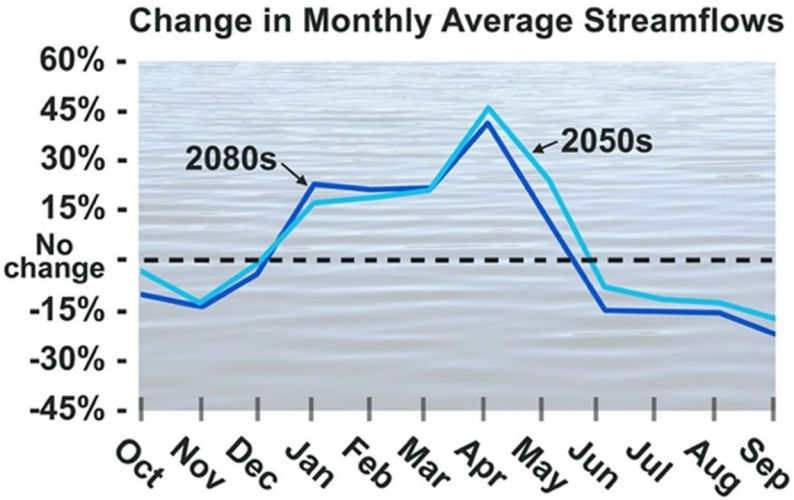
Based on high emissions scenario for 2050s

Higher Highs, Lower Lows

White River near Indianapolis, IN





MEDIUM EMISSIONS SCENARIO

All values are simulated discharge for comparison purposes. Past is an average for the period 1984 to 2013. For the future projections, “2050s” represents the 30-year period from 2041 to 2070, and “2080s” represents the 30-year period from 2071 to 2100. Percent change on right panel is relative to the 1984 to 2013 average.

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Water Quality

- Increased surface runoff will likely lead to more sediment and nutrients in state waters.
- Increased water temperatures will likely contribute to more *e. coli* outbreaks and harmful algal blooms.
- Lower summer flows can also lead to increased concentrations of pollutants.

Droughts

- Hotter and potentially drier summers will likely lead to more frequent "flash droughts" at the end of the growing season.
- More precipitation (wetter winters and springs) reduces the likelihood of severe multi-year drought events.


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Thank You!
To read the full water report visit
https://ag.purdue.edu/indianaclimate/water-report/