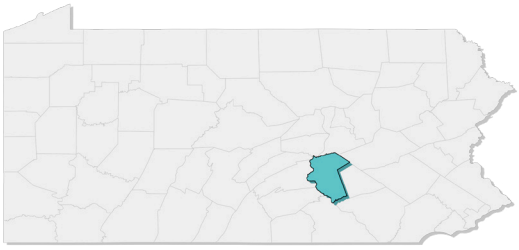
Community Climate Outlook
DAUPHIN COUNTY, PA

Dauphin County residents will face increasingly severe weather- and climate-related hazards, such as heat waves, flooding, and shifting seasons.



As the frequency and intensity of local hazards change, it is important for all of us to protect communities and local habitats. Using the best available evidence, scientists can project how climate (long-term averages in daily weather) will change in the future, and the effects this will have on local communities.

Climate information can guide decision-making to help us plan and prepare for future weather and climate hazards. It is important that action includes areas with limited resources and people at higher risk. With justice-minded planning and preparation, Dauphin County can build a resilient community for all residents and future generations.

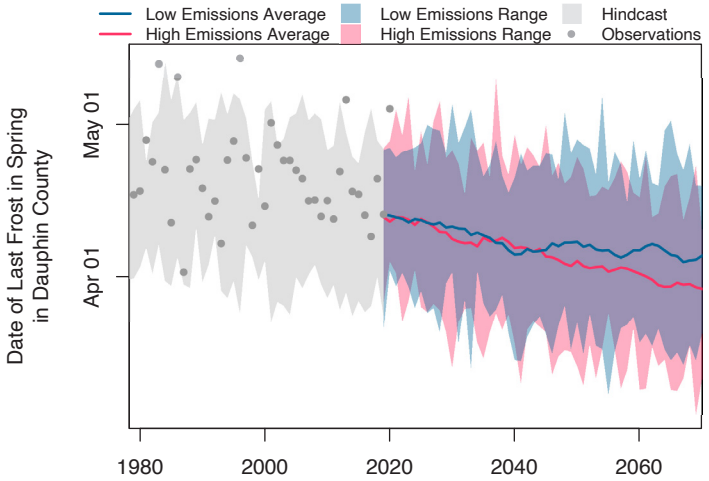
SHIFTING SEASONS

KEY MESSAGE: *Seasons are changing in length and timing in Dauphin County with an earlier spring, delay of fall, and shorter winter. While a longer frost-free period can benefit some crops or allow for double cropping, it can limit plant diversity, encourage invasive species, and threaten human and ecosystem health. Within the next 50 years (by 2070), the frost-free period will average 4 to 7 weeks[1] longer in Dauphin County.*

REDUCED HUMAN HEALTH: Milder winters help more ticks and mosquitos survive the winter and earlier springs make their biting season longer. Earlier springs also cause trees and flowers to bloom earlier leading to a longer allergy season.

Photo courtesy of E. Karits

EXPOSED CROPS: During a false spring, warm weather in late winter or early spring causes crops and plants to grow too early leaving them exposed to frost. Reduced snow cover from warm winters and longer summers increases the risk of drought. Crops will become more vulnerable to pests and invasive species as warmer weather also helps them grow and survive.



The graph shows the date of the last frost (less than or equal to 32°F) in spring. Dots represent observed dates of the last frost in spring and the gray shading shows the hindcast[2]. Two scenarios[3] of the future are shown as a high-emissions scenario (RCP 8.5) in red and a low-emissions scenario (RCP 4.5) in blue. Data for the future scenarios[3] are retrieved from Multivariate Adaptive Constructed Analogs (MACA), and observed data are from the Gridded Surface Meteorological Dataset (gridMET).

FUTURE SCENARIOS[3]: **Future climate will depend, in part, on the efforts that we take today to reduce carbon dioxide emissions** from the burning of fossil fuels like coal, oil, and methane gas. This fact sheet presents two scenarios[3] of future climate based on a combination of climate models scaled to Dauphin County, PA. The first scenario, a higher-emissions scenario (RCP8.5), assumes continued increase of fossil fuel emissions, with no mitigation. The second, a lower-emissions scenario (RCP4.5), is a scenario where we tackle the issue of emissions head-on by responsibly using our natural resources and implementing strategies that begin to reduce global fossil fuel emissions by 2050, stabilizing carbon dioxide concentrations before 2100.

Access resources for adaptation, data references, and additional outlooks by visiting: *marisa.psu.edu/outlooks*

MARISA

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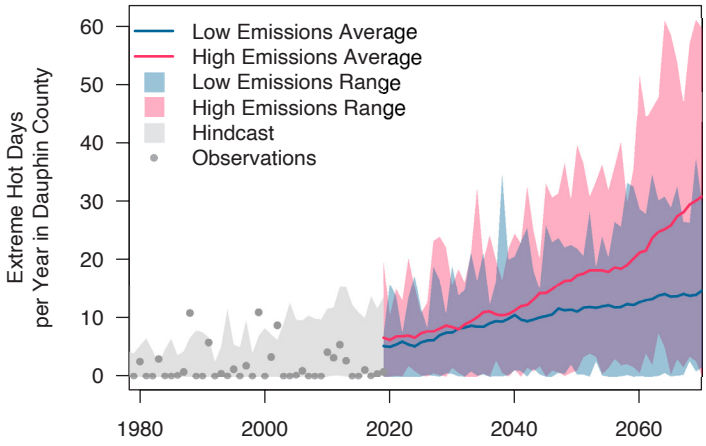
CHANGING TEMPERATURE PATTERNS

KEY MESSAGE: *Human health, stream and river health, and infrastructure are all threatened by higher temperatures. At 95°F, it is hard to keep indoor areas and our bodies cool. Dauphin County's summers are getting hotter. On average, Dauphin County sees 2 days per year in excess of 95°F.[1] Within the next 50 years (by 2070), Dauphin County can expect a yearly average of 15 to 31 days above 95°F, with associated increases in cooling costs, reduced air quality, and heat-related illnesses.*

HEAT-RELATED ILLNESSES: Heatwaves can kill people and pets. In Pennsylvania, more than 80 people have died from extreme heat between 2010 and 2019. Individuals at higher risk include children, pregnant women, older adults, outdoor workers, and lower-income residents.

REDUCED STREAM HEALTH: Across the Mid-Atlantic, stream temperatures increased roughly 2.5 degrees F from 1960 to 2010. Warmer water reduces habitat for cold-water fish and supports blue-green algae growth and waterborne illnesses in lakes and streams, disrupting recreational activities like swimming and fishing.


Photo courtesy of L. Laksbergs



The graph shows the number of days in a year with temperatures above or equal to 95°F. Dots represent observed annual days of extreme temperatures and the gray shading shows the hindcast[2]. Two scenarios[3] of the future are shown as a high-emissions scenario (RCP 8.5) in red and a low-emissions scenario (RCP 4.5) in blue. Data for the future scenarios[3] are retrieved from MACA, and observed data are from gridMET.

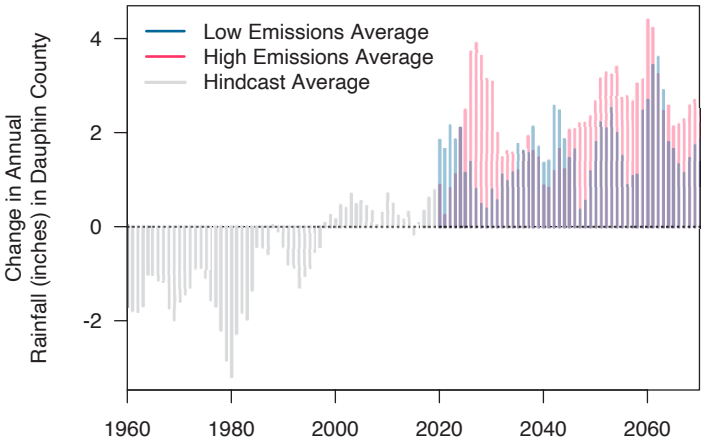
CHANGING RAINFALL PATTERNS

KEY MESSAGE: *Heavy rainfall in Dauphin County is increasing in frequency and intensity, causing flash floods, landslides, property damage, septic backups, well contamination, mold and indoor air quality issues, and impacts to water quality in local streams and rivers. Annual rainfall in Dauphin County will likely increase by an average of 2 to 3 inches (2050-2079 average compared to the 1990-2019 average).*

REDUCED HUMAN HEALTH: Rising water tables cause septic backups and groundwater pollution, putting drinking water at risk of contamination. Changing moisture levels impact the spread of mold and illness, including tick- and mosquito-borne diseases as high humidity promote their activity.


Photo courtesy of M. Goralski, Wikimedia Commons

FLOODING: Heavy rain overwhelms infrastructure and drainage systems, causing property damage and covering roads. Runoff from mountains and hills can lead to flash flooding of rivers and streams.



The graph shows the change in annual rainfall compared to the average between 1990 and 2019. The gray lines show the hindcast[2]. Two scenarios[3] of the future are shown as a high-emissions scenario (RCP 8.5) in red and a low-emissions scenario (RCP 4.5) in blue. Data for the future scenarios[3] are retrieved from MACA.

FOOTNOTES:

1 Relative to a 1990 to 2019 average.
2 Hindcasts are model results for a historical period. Hindcasts are useful for comparing observations with model estimates.
3 Scenarios are a plausible representation of future events. They are not predictions or forecasts, but they offer insight into the implications of developments and actions.

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