

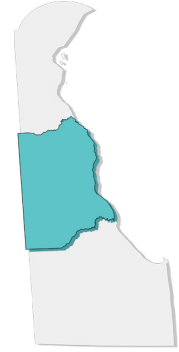
# Community Climate Outlook

## KENT COUNTY, DE

Kent County residents will face increasingly severe weather- and climate-related hazards, such as **heat waves, flooding, and storm surge**.

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, Kent County can build a resilient community for all residents and future generations.



## SEA LEVEL RISE



**KEY MESSAGE:** As temperatures warm, land ice melts and seawater expands causing sea levels to rise around the world and in Delaware Bay and Chesapeake Bay. Between 1960 and 2019, sea levels near Kent County rose roughly 0.8 feet leading to more frequent and severe coastal flooding, and property damage. Sea levels will rise an additional 0.7 to 2.6 feet in the next 50 years (by 2070), submerging property, destroying habitat for horseshoe crabs, and permanently reshaping Kent County's coastline.



**FLOODING:** Rising sea levels allow tides, waves, and severe flooding to push further inland. This causes more frequent high tide flooding and increases the impacts of storm surge, putting low-lying housing, commercial property, and infrastructure at risk.

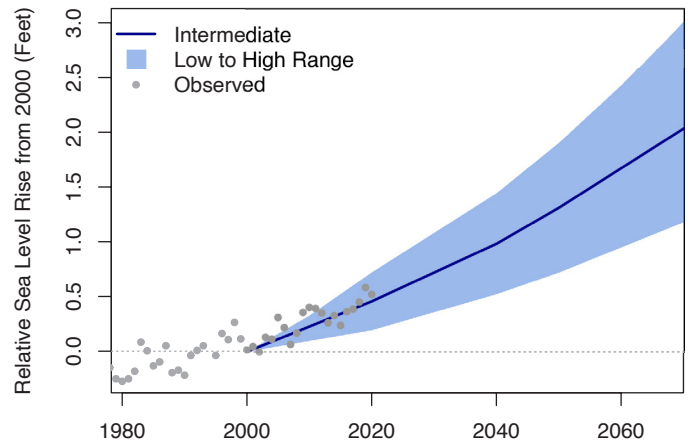


Photo courtesy of B. Dickerson, flickr



### LOSS OF WETLANDS, FARMS, AND BEACHES:

Wetlands, beaches, and dunes protect communities and infrastructure from coastal storms, support tourism, and provide unique habitats. Saltwater intrusion can alter wetland species and force farmers to abandon fields, and coastal erosion eats away the beaches and dunes.



The graph shows the projected change of sea level in feet above mean sea level relative to 2000. The blue line shows the intermediate scenario (50% probability) and the blue shading shows the low to high scenario range (5 to 95% probability) of sea level rise used for official planning purposes in the state of Delaware. Dots show the observed changes in sea level in Lewes, DE. Data for the future scenarios<sup>1</sup> are based on a high-emissions scenario (RCP 8.5).

**FUTURE SCENARIOS<sup>1</sup>:** 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<sup>1</sup> of future climate based on a combination of climate models scaled to Kent County, DE. 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](https://marisa.psu.edu/outlooks)



## CHANGING TEMPERATURE PATTERNS



**KEY MESSAGE:** Human health, wildlife, and infrastructure are all threatened by higher temperatures. At 95°F, it is hard to keep indoor areas and our bodies cool. Kent County's summers are getting hotter. On average, Kent County sees 4 days per year with temperatures above 95°F (1990-2019 average). Within the next 50 years (by 2070), Kent County can expect a yearly average of 21 to 40 days above 95°F, with associated increases in cooling costs, reduced air quality, heat-related illnesses, and damage to runways and roads at Dover Air Force Base.



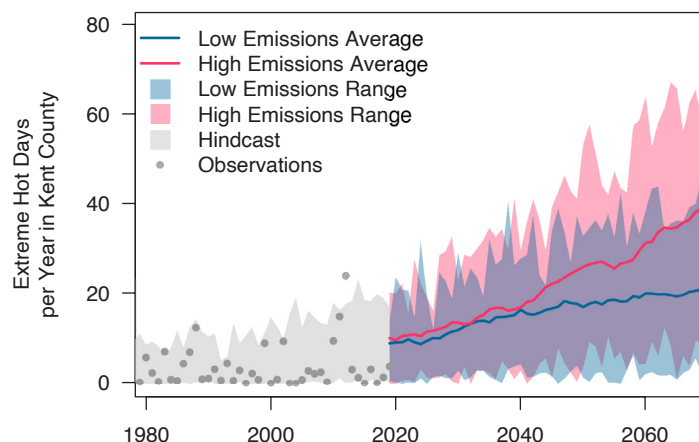
**HEAT-RELATED ILLNESSES:** Heatwaves can kill people and pets, and can cause difficulty breathing, exhaustion, cramping, and heatstroke. Individuals at higher risk include children, pregnant women, older adults, outdoor workers, and lower-income residents.



**DISRUPTED WILDLIFE:** Every spring, shorebirds including the Red Knot pass through Kent county to feast on horseshoe crab eggs. As temperatures increase, warmer weather earlier in spring can cause horseshoe crabs to lay eggs earlier, leading shorebirds to miss out on key food for their migration.



Photo courtesy of B. Greg, USFWS, Pixnio



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<sup>2</sup>. Two scenarios<sup>1</sup> 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<sup>1</sup> are retrieved from Multivariate Adaptive Constructed Analogs (MACA), and observed data are from the Gridded Surface Meteorological Dataset (gridMET).

## CHANGING RAINFALL PATTERNS



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



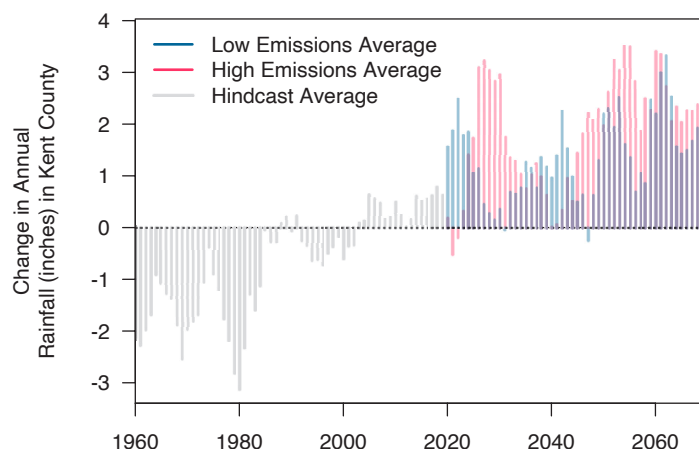
**FLOODING:** Heavy rain overwhelms infrastructure and drainage systems, causing property damage and covering roads.



Photo courtesy of C. Tombleson



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



The graph shows the change in annual rainfall compared to the average between 1990 and 2019. The gray lines show the hindcast<sup>2</sup>. Two scenarios<sup>1</sup> 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<sup>1</sup> are retrieved from MACA.

### FOOTNOTES:

<sup>1</sup> 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.

<sup>2</sup> Hindcasts are model results for a historical period. Hindcasts are useful for comparing observations with model estimates.