OBSERVED/PROJECTED CLIMATE CHANGES AND ASSOCIATED IMPACTS FOR SALISBURY, MARYLAND

Projected Trends % CHANGE BY 2100 ● Models vary

▼▼	▼	–	▲	▲▲
	-30%	-5%	+5%	+30%

CLIMATE CHANGES	METRIC	TREND	OBSERVED/PROJECTED CHANGES
Air temperature	Minimum temperature AVG DAILY MIN TEMP (°F)	▲	50.5°F (+4.3°F) by 2050 and 55.9°F (+9.7°F) by 2100[1] COMPARED TO HISTORICAL AVERAGE OF 46.2°F FROM 1961–1990
	Maximum temperature AVG DAILY MAX TEMP (°F)	▲	71.4°F (+4.5°F) by 2050 and 76.5°F (+9.6°F) by 2100[1] COMPARED TO HISTORICAL AVERAGE OF 66.9°F FROM 1961–1990
Extreme heat	Days over 90°F # OF DAYS WITH MAX TEMPS >90°F	▲▲	59.6 days (+195%) by 2050 and 105.6 days (+423%) by 2100[1] COMPARED TO HISTORICAL AVERAGE OF 20.2 DAYS PER YEAR FROM 1961–1990
Precipitation	Annual precipitation AVG INCHES PER YEAR	▲	45.8 in (+6.5%) by 2050 and 48.5 in (+12.9%) by 2100[1] COMPARED TO HISTORICAL AVERAGE OF 43.0 INCHES PER YEAR FROM 1961–1990
	Seasonality	▲	Significant increase in winter (+13.6% by 2100) and spring (+8.1%) rainfall, with slight increases in summer (+1.8%) and fall (+3.8%) precipitation[2]
Extreme precipitation	Amount 20-YEAR RETURN PERIOD TOTAL	▲	13% increase in amounts during 20-year events projected by 2050; 22% increase by 2100[3]
	Frequency # OF DAYS WITH 2” RAIN IN 24 HOURS	▲	1.2 days (+33%) by 2050 and 1.7 days (+89%) by 2100[1] COMPARED TO HISTORICAL AVERAGE OF 0.9 DAYS PER YEAR FROM 1961–1990
Sea level rise	Relative sea level change INCREASE FROM SEA LEVEL IN 2000	▲▲	50% probability of 1.3 ft by 2050 (5% probability of exceeding 2.1 ft); 50% probability of 3.0 ft by 2100 (5% probability of exceeding 5.4 ft)[4]
Hurricanes	Intensity MAGNITUDE OF SURFACE WINDS	▲	+8% per decade in global hurricane intensity from 1979–2017[5]
	Speed RATE OF FORWARD MOTION	▼	-16% in rate of forward motion for North Atlantic hurricanes from 1949–2016, significantly increasing local rainfall totals[6]
	Frequency	▲▲	+100% in the probability of an active hurricane season from 1982–2020[7] Likely increase in U.S. landfall frequency of Category 4-5 hurricanes[8]
Storm surge	Coastal flooding 100-YEAR FLOOD RETURN PERIOD	▲▲	Return period of present day 100-year flood decreases to 7.06 years in Norfolk, VA by 2100[9]

[1] U.S. Climate Resilience Toolkit Climate Explorer (https://crt-climate-explorer.nemac.org), generated using the high-emissions (RCP 8.5) scenario for the average of 2040–2049 and 2090–2099 time periods compared to historical conditions (average of 1961–1990).
[2] Alder, J. R. and S. W. Hostetler, 2013. USGS National Climate Change Viewer. US Geological Survey (https://doi.org/10.5066/F7W9575T), generated using the high-emissions scenario (RCP 8.5) for a late-century (avg. of 2075–2099) time period compared to recent conditions (1981–2010).
[3] D. R. Easterling et al., in Climate Science Special Report: Fourth National Climate Assessment, Volume I, D. J. Wuebbles et al., Eds. (U.S. Global Change Research Program, Washington, DC, 2017), pp. 207–230.
[4] D. F. Boesch et al., “Sea-level Rise: Projections for Maryland 2018” (University of Maryland Center for Environmental Science, Cambridge, MD, 2018). Both the central estimate (50% probability SLR meets or exceeds) and the upper limit of the very likely range (5% probability SLR meets or exceeds) are presented here, for the high-emissions scenario (RCP 8.5).
[5] J. P. Kossin, K. R. Knapp, T. L. Olander, C. S. Velden, PNAS. 117, 11975–11980 (2020).
[6] J. P. Kossin, Nature. 558, 104–107 (2018).
[7] P. Pfleiderer, S. Nath, C.-F. Schleussner, Weather and Climate Dynamics. 3, 471–482 (2022).
[8] T. R. Knutson, J. J. Sirutis, M. A. Bender, R. E. Tuleya, B. A. Schenkel, Climatic Change. 171, 28 (2022).
[9] T. L. Mayo, N. Lin, Weather and Climate Extremes. 36, 100453 (2022).

LIKELY IMPACTS ASSOCIATED WITH PROJECTED CLIMATE CHANGES*	
Housing	• Increased risk of damage to housing and critical infrastructure (e.g., utilities) following storms, floods, and extreme heat • Increased heat stress in developed areas, exacerbated by large areas of impervious surfaces and lack of vegetation • Increased energy demand during heat waves, straining electrical grids and potentially resulting in power outages and increased costs • Exacerbation of existing patterns of inequity for low-income neighborhoods and other vulnerable communities who are more likely to experience heat island effects, poor drainage, etc.
Transportation	• Damage to transportation infrastructure (e.g., roads, bridges, culverts) following storms, floods, and extreme heat events • Road blockages and loss of access due to extreme events and sea level rise, impacting evacuation routes, emergency access, and other critical travel • Slower travel or road closures due to melting asphalt, overheating engines, and other impacts of extreme heat • Loss of electricity due to flooding or heat waves, limiting use of electric vehicles and impacting public transit • Decreased use of non-motorized transit due to more frequent/severe inclement weather
Open Space	• Reduced growth and productivity of native vegetation due to heat stress and increases in evapotranspiration • Expansion of non-native invasive plants, insect pests, and diseases, with associated impacts to native plants and wildlife • Increased risk of harmful algal blooms in freshwater, estuarine, and nearshore marine environments, impacting water quality and potentially causing widespread mortality of fish and other aquatic organisms • Changes in plant survival due to more frequent coastal inundation and/or saltwater intrusion into freshwater habitats, likely altering the distribution of native plant communities (e.g., salt marsh vegetation) • Increased flooding and erosion, impacting native plant communities as well as public and management access to greenspace • Increased heat stress for people and wildlife using open space areas as well as changes in patterns of recreational use (e.g., heavier use of sites with water features, increases in maintenance costs) • Altered or decreased ecosystem functioning on conservation lands due to changes in hydrology, thermal regime, and plant species composition and distribution

* All icons from the Noun Project: (1) Housing icon created by Carlos Dias; (2) Road icon created by Jorge Namos; (3) Trees icon created by David Khai

Resources:

- U.S. Climate Resilience Toolkit Climate Explorer (https://crt-climate-explorer.nemac.org)
- Maryland and the District of Columbia State Climate Summary 2022 (NOAA, https://statesummaries.ncics.org/chapter/md/)
- Sea-Level Rise: Projections for Maryland 2018 (https://www.umces.edu/sites/default/files/Sea-Level%20Rise%20Projections%20for%20Maryland%202018_0.pdf)
- Northeast Chapter of the Fourth National Climate Change Assessment (https://nca2018.globalchange.gov/chapter/18/)
- Coastal Inundation Predictions for Maryland (http://geronimo.hpl.umces.edu/mingli/)
- NOAA Sea Level Rise Viewer (https://coast.noaa.gov/slr/)

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