

DROUGHT and FLOODING trends on the Eastern Shore

What is happening and why?

In the next 50 years, the ESVA is likely to face longer dry periods followed by sudden, intense rainfall and storms.

In these projections, the soil dryness changes depending on location.

2025-2040 Projections
Increased temperature and more frequent dry days (less than 0 mm/day of precipitation) are projected. **This reduces soil moisture and increases evapotranspiration.**

2050-2080 Projections
The dryness trend is projected to reverse, and ground moisture level may range from moderate to extreme wetness.

As temperatures warm, the frequency and intensity of extreme rain events may increase even if average annual rainfall doesn't drastically increase. Dry extremes will shift to wet extremes because warmer air can carry more moisture. **This may lead to short, intense rainfall events, which leads to more flooding.**

What does this mean?

The future likely holds more water instability: longer dry periods followed by sudden, intense rainfall events.

When water comes down quickly and intensely, it can't infiltrate into the ground and will increase flooding.

Adaptation strategies

Communities will need flexible, adaptive infrastructure that don't plan for just "wetter" or "drier," but for both, and for **rapid changes between the two conditions.**

Continuing to monitor ground conditions is important for both farmers and communities because the soil condition can directly affect plant growth and soil saturation. This impacts food production, water supplies, flooding potential, and the economic well-being of both rural and urban populations.

Co-Produced by Residents of the Eastern Shore & The Eastern Shore Livability Hub Team

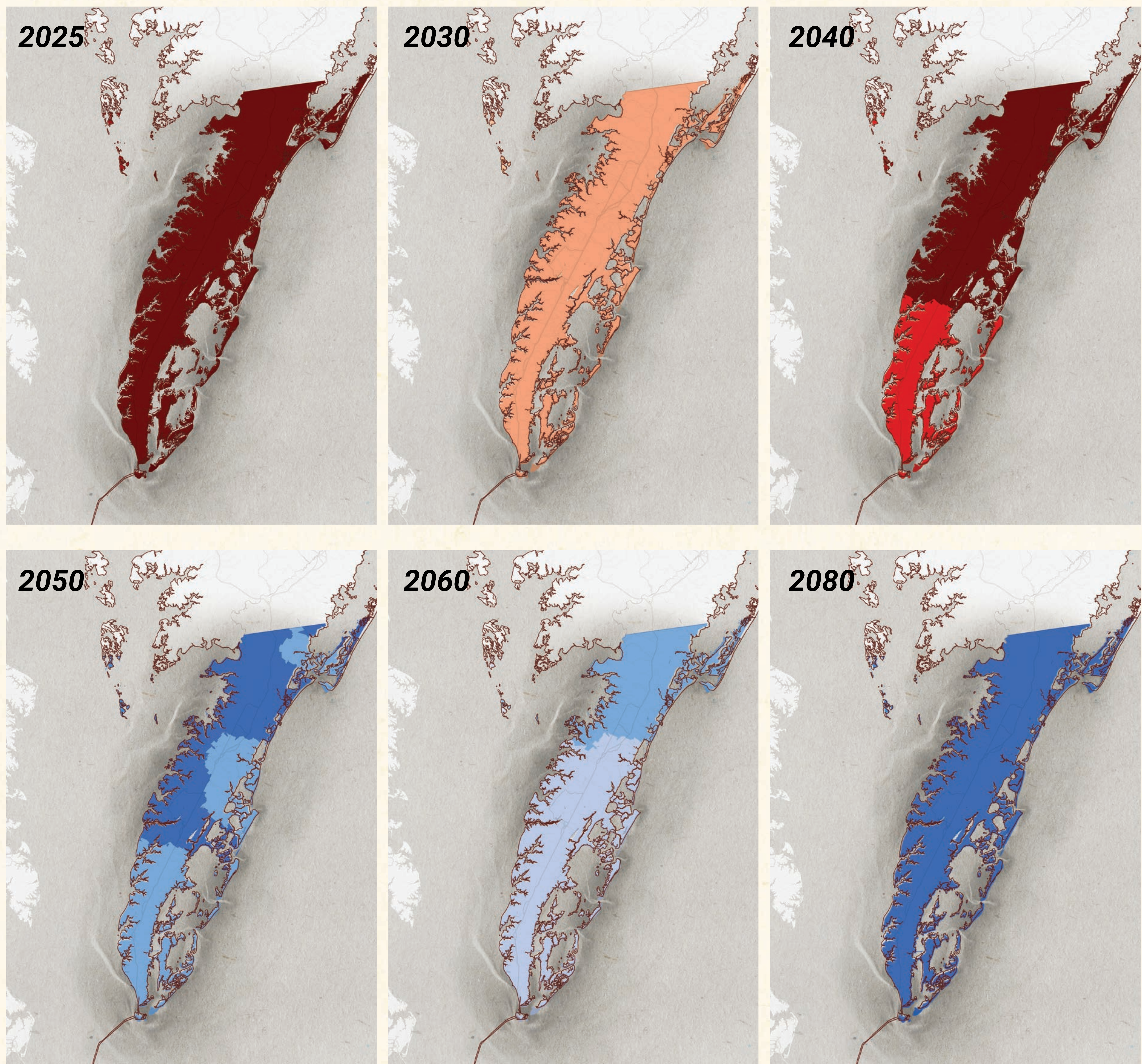
Tran, T. N. D. & Lakshmi, V. 2024. "Enhancing human resilience against climate change: Assessment of hydroclimatic extremes and sea level rise impacts on the Eastern Shore of Virginia, United States." *Science of The Total Environment*, 947, 174289. <https://doi.org/10.1016/j.scitotenv.2024.174289>.

Data is generated using the Soil and Water Assessment Tool (SWAT) released by the U.S. Department of Agriculture's Agricultural Research Service. Projections are extracted from the NASA Earth Exchange Global Daily Downscaled Projections (NEX-GDDP-CMIP6) dataset that meets the Paris Agreement's 1.5 degree target.

Jones, Natalie. 2022. "The Vicious Circle of Drought and Flood." *Innovation News Network*, September 2022. <https://www.innovationnewsnetwork.com/the-vicious-circle-of-flood-and-drought/24999/>.

Art by Daniel Carmelo

U.S. METEOROLOGICAL INDEX OF GROUND WETNESS AND DRYNESS*



*This data is averaged within census block groups and may not reflect the specific needs of a location.