

West Virginia

Located in the eastern United States (U.S.), the state of West Virginia is known as the “Mountain State” due to its diverse topography and mountainous terrain. It encompasses approximately 62,755 km² (24,230 mi²) and has a population of 1,859,815 (est. 2010 U.S. Census). West Virginia is situated in the central Appalachian Mountains with an approximate mean elevation of 458 m (1,500 ft.) and is characterized by a humid subtropical climate in lower elevations and humid continental climate in higher elevations.

Temperature and precipitation patterns in the state are strongly influenced by the local Alleghany Mountains and the drainage basins of the Ohio River and Potomac/Chesapeake Bay watersheds. The state capitol, Charleston, is representative of the statewide climate averages with temperatures ranging from a mean of 0.78°C (33.4 °F) in January to 23.28 °C (73.9 °F) in July. Precipitation is uniform throughout the year with a slight increase during the summer months; the average annual precipitation is 111.89 cm (44.05 in.). However, higher elevation regions may average 3-6 °C (5-10° F) cooler and receive 50% or more precipitation, especially in the form of snow.

According to projections from the Intergovernmental Panel on Climate Change (IPCC) and the United Kingdom Hadley Centre’s climate model (HadCM2), an average annual temperature increase of 1.6 to 2.2 °C (3 to 4 °F) and a 20% increase in precipitation could occur by the year 2100 across the state of West Virginia. Since 1970, the average annual temperature in the region has already increased by 1.1 °C (2 °F). The increase has resulted in changes such as a longer growing season, increased heavy precipitation, reduced high elevation snowpack, and an earlier winter ice thaw on lakes and rivers.

These climate change scenarios point toward several potential socioeconomic and environmental impacts across West Virginia. Hay, which is the major agricultural crop produced in the state, could see yield increases of 25 to 30% with an increase in temperature and precipitation. With 97% of West Virginia covered by forest, the climate change could alter the composition and range of tree species found in the state. Eastern hardwoods may eventually be replaced by pine and scrub oaks, tree species with less commercial value. Higher elevation forests, such as old-growth and red spruce stands, would also likely diminish significantly. Warmer temperatures also could mean earlier spring snowmelts, increasing stream flows and the likelihood of flooding and flash flooding. Population centers here are most concentrated along valley floors and low elevation regions, areas most susceptible to flash flooding. Human health would also be adversely affected. Increased temperatures, precipitation and standing water would likely increase water (e.g., cholera) and vector-borne diseases (e.g., Lyme). Extreme heat related morbidity and mortality may become more common in a region where heat waves are presently rare.

The single most important economic resource (and greatest anthropogenic influence on climate) of the state is coal, which when burned as a fossil fuel, releases carbon dioxide (CO₂), a major greenhouse gas (GHG). The 2003 GHG emissions report by the West Virginia Department of Environmental Policy found CO₂ accounted for the majority of state emissions, followed by methane (CH₄) and nitrous oxide (N₂O); all three gases originate primarily from coal combustion for electricity production and coal mining operations. The West Virginia per capita GHG emissions were 16.1 million metric tons of carbon equivalent (MTCE) in 1999, nearly three times the national average, and new estimates show an increasing GHG emissions trend.

With tens of thousands of jobs and over \$3.5 billion in annual gross state product (GSP) directly related to coal, the state legislature has a majority in favor of continued coal production and use. West Virginia representatives in the U.S. Congress have shown a history of voting for energy resolutions that would benefit their state's economy, while opposing federal legislation on curbing GHG emissions. A formal action plan or commission for addressing climate change initiatives at the state level, including reducing GHG emissions, has not been put forth for West Virginia (or 20 other states) as of 2011.

SEE ALSO: Coal, Intergovernmental Panel on Climate Change (IPCC)

BIBLIOGRAPHY:

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