Austria climate change

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Explore historical and projected climate data, climate data by sector, impacts, key vulnerabilities and what adaptation measures are being taken. Explore the overview for a general context of how climate change is affecting Austria.

This page presents high-level information for Austria''s climate zones and its seasonal cycle for mean temperature and precipitation for the latest climatology, 1991-2020. Climate zone classifications are derived from theK?ppen-Geiger climate classification system, which divides climates into five main climate groups divided based on seasonal precipitation and temperature patterns. The five main groups areA(tropical),B(dry),C(temperate),D(continental), andE(polar). All climates except for those in theEgroup are assigned a seasonal precipitation sub-group (second letter). Climate classifications are identified by hovering your mouse over the legend. A narrative overview of Austria''s country context and climate is provided following the visualizations.

Austria can be divided into three climatic zones: the eastern part shows a continental Pannonian climate (mean July temperature >19?C, annual rainfall Nationally Determined Contribution (NDC) to the UNFCCC as an EU Member State in 2020, and its Seventh National Communication in 2018.

Austria''s temperature has risen roughly 2?C since 1880, twice as much as the global average. Regarding seasonal variations, spring and winter temperature increases have been the most marked, with autumn averages rising more slowly. The average numbers of hot days with temperatures of over 30?C and of tropical nights with lows above 20?C have increased significantly since 1900, especially in southeastern Austria.

For instance, tropical nights increased from one to two per year at the beginning of the century to over six per year in 1991-2019, including 23 in 2015 and 15 in 2019. Meanwhile, the number of cold days with a maximum temperature below -5?C has decreased since the middle of the 20th century.

Austria''s temperature is likely to continue increasing in upcoming decades. Under a high greenhouse gas concentration scenario,1 the average temperature could be up to 1-2?C higher in 2021-2050 than in 1971-2000, and 3.3-5.3?C higher in 2071-2100. Eleven more summer days and 4.3 more hot days per year are expected during 2021-2050, while there could be up to 8.7 more heatwave days2 by the end of the century than in 1971-2000.

According to the Austrian Assessment Report Climate Change 2014 and the Austrian strategy for adaptation to climate change (2017), energy infrastructure - particularly for electricity transmission and distribution - is highly vulnerable to climate change impacts. More frequent heatwaves and changes in extreme precipitation events could damage energy infrastructure and lead to power outages.

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Because higher temperatures are lowering the number of heating degree days (HDDs) and increasing cooling degree days (CDDs), energy demand for cooling during the summer and at altitudes of less than 1000m is rising. This increase is unlikely raise total energy consumption, however, because the reduction for heating will likely outweigh additional summer cooling demand.

Precipitation patterns in the 20th century show strong geographical and seasonal variations. While western Austria''s precipitation has increased 10-15% since the 1850s, the southeastern area is receiving 10-15% less.

Severe or extreme precipitation has become more frequent, while low- to medium-intensity precipitation events now occur less often. The probable intensification of extreme precipitation events and their associated floods and landslides are a potential threat to electricity supply security. During severe storms in October-November 2018, heavy rains and strong winds caused flooding, mudslides and power outages in the Alps-Adriatic region, and high water levels in Carinthian villages led to power outages for up to 10000 households. The heavy rains also raised the level of the Drava, a river that traverses Austria''s Tyrol and Carinthia regions, ultimately causing the St. Martin-Rosegg power station''s retaining wall to collapse, reducing the station''s output.

Annual precipitation is projected to be up to 8.7% higher in 2071-2100 than in 1971-2000,3 with winter precipitation significantly higher (+30%) in northeastern Austria4 while summer precipitation being relatively unchanged. Seasonal shifts in runoff patterns will persist in upcoming decades, with a decrease in the summer (particularly in southern Austria due to higher evaporation) and an increase in the winter owing to earlier snowmelt. Given that electricity demand is higher in the winter, greater winter runoff could boost electricity generation from Austria''s hydropower plants.

Tropical cyclones and storms5

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