Projected changes in climate-related hazards across Europe during the 21ˢᵗ century

Category	Hazard	Index name	Northern Europe	Central Europe	Southern Europe
Heat and cold	**Mean air temperature**	Mean temperature	↗	↗	↗
		Growing degree days	↗	↗	↗
		Heating degree days	↘	↘	↘
		Cooling degree days	↗	↗	↗
	Extreme heat	Tropical nights	↗	↗	↗
		Hot days	↗	↗	↗
		Warmest three-day period	↗	↗	↗
		Heatwave days based on apparent temperature	↗	↗	↗
		Climatological heatwave days	↗	↗	↗
		Days with Universal Thermal Climate Index (UTCI) above a threshold	*This index has increased in recent decades in central and southern Europe whereas no robust trend was detected for northern Europe. Projections are not currently available.*		
	Frost	Frost days	↘	↘	↘
Wet and dry	**Mean precipitation**	Total precipitation	**Annual:** ↗ Summer: ⤬	**Annual:** ⤬ Summer: ↘	**Annual:** ↘ Summer: ↘
	Heavy precipitation and pluvial flood	Maximum consecutive 5-day precipitation	↗	↗	⤬
		Extreme precipitation total	↗	↗	→
		Frequency of extreme precipitation	↗	↗	→
	River flood	River flood index using runoff	⤬	↗	⤬
	Aridity	Aridity actual	↗	⤬	↗
		Consecutive dry days	→	↗	↗
	Drought *	Duration of meteorological droughts	↘	⤬	↗
		Magnitude of meteorological droughts	↘	↗	↗
		Duration of soil moisture droughts	*Increasing soil moisture droughts are projected for southern Europe. Constant or increasing droughts are projected for central Europe, and constant or decreasing droughts are projected for northern Europe.*		
	Fire weather	Days with fire danger exceeding a threshold	→	↗	↗
Wind	**Mean wind speed**	Mean wind speed	→	→	→
	Severe wind storm	Extreme wind speed days	*Increasing frequency and intensity of storms is projected for northern and central Europe; decreasing storm frequency but increasing intensity is projected for southern Europe.*		

Snow and ice	**Snow, glacier and ice sheet**	Snowfall amount	⤨	↘	↘
		Period with snow water equivalent above threshold	↘	↘	↘
Coastal	**Relative sea level**	Relative sea level rise	↗ **	↗	↗
	Coastal flood	Extreme sea level	↗ **	↗	↗
Open ocean	**Mean ocean temperature**	Sea surface temperature	↗	↗	↗
	Marine heatwave	Duration of marine heatwaves	*Projected increase in all European regional seas*		
	Dissolved oxygen	Dissolved oxygen level	*Most stations exhibit no robust trends in recent decades, but some stations in the Baltic Sea and the Greater North Sea show decreasing oxygen levels. Projections are not available.*		
	Ocean acidity	Ocean pH level	*Surface ocean pH levels are projected to decline (i.e., the water becomes more acidic) both in the open ocean and in enclosed seas.*		

Legend:

↗	Increase throughout most of a region / Europe
↓	Decrease throughout most of a region / Europe
⤨	Increases as well as decreases in a region / Europe
→	No significant changes from the current situation
	Direction of change deviates from a high confidence projection in IPCC AR6 Table 12.7 ***
	Direction of change deviates from a medium or low confidence projection in IPCC AR6 Table 12.7 ***
	Index computed and visualized based on a consistent climate projection dataset from the ETC/CCA
	Index computed and visualized based on projections from the Copernicus Climate Change Service
	Index visualized based on regularly updated EEA indicators
	Index without quantitative projections; summary assessment based on the IPCC AR6, the European Climate Data Explorer or an EEA indicator

Notes:
- Information refers to a high emissions (or forcing) scenario (i.e., RCP8.5); lower emissions scenarios usually show the same direction of projected change, but lower magnitude and/or robustness.
- 'Europe' refers to the land area of the 38 EEA member and cooperating countries (EEA-38) as of 1 February 2020. 'Coastal' indices refer to the coastline of EEA-38. 'Open ocean' indices refer to the European regional seas.
- The three European subregions ('Northern', 'Central' and 'Southern') are mostly consistent with the three IPCC climate reference regions in the IPCC AR6 that cover the EEA-38 countries (NEU, WCE and MED; see Section 2.2 for details).
- Underlined indices can be explored interactively in the European Climate Data Explorer.

- (*) The IPCC AR6 distinguishes different types of droughts, but their categorization is not consistent across chapters. Therefore, all drought types are subsumed here under a single hazard.
- (**) Relative sea level and extreme sea level may decrease in the northern Baltic Sea due to isostatic adjustment.
- (***) Differences in the assessment between this report and the IPCC AR6 may originate from differences in the specific indices chosen, delineation of regions, model ensembles, aggregation methods, interpretations of the available knowledge base, or clerical errors.