Common regional changes

- Annual mean surface air temperatures and precipitation will continue to increase during the 21st century under all assessed emissions scenarios in both Polar regions (high confidence).
- There is high confidence that mean precipitation and precipitation intensity will increase, the Arctic is projected to be dominated by rainfall, and in Antarctica rainfall will increase over the coastal regions.
- There is high confidence that glaciers have lost mass in all polar regions since 2000 and will continue to lose mass at least for several decades, even if global temperature is stabilized.
- Both major ice sheets – Greenland and Antarctica – have been losing mass since at least 1990, with the highest loss rate during 2010–2019 (high confidence), and they are projected to continue to lose mass.

Recent and future changes in ice sheets

Greenland and Antarctic Ice Sheet cumulative mass changes in gigatonnes (recently observed and projected by models under SSP1-2.6 and SSP5-8.5 scenarios) and equivalent sea level change (in meters). Maps show recent elevation changes (meters/year).
The observed increase in relative sea level rise is virtually certain to continue in the Arctic (other than northeastern Canada and west coast of Greenland) contributing to more frequent and severe coastal flooding and shoreline retreat along sandy coasts.

Current Arctic sea ice cover (both annual and late summer) is at its lowest level since at least 1850 (high confidence) and is projected to reach practically ice-free conditions at its summer minimum at least once before 2050 under all scenarios.

Projected changes (SSP5-8.5 scenario) in mean annual temperature and total precipitation at 2°C global warming compared to 1850–1900 for the Arctic (left) and Antarctic (right).

Mean annual temperature

Total precipitation

Links for further information:
TS.2.5, TS.4.3, TS.4.3.2.8, Figure TS.11
2.3, 3.4.4.3, 8.3, 8.4, 9.3, 9.4, 9.5, 9.6, 11.3,
12.4, Atlas.11, Figure 9.17, 9.18