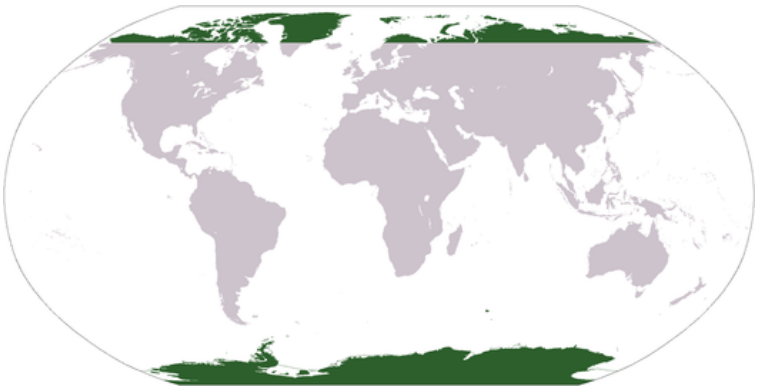
Polar environments: TASK

- **Create a visual diagram/mind map (A3 Poster size) that compares/contrasts the physical conditions of the Arctic and Antarctica.**
- **Include images and notes on adaptations needed to survive in these extreme environments.**
- **Be creative**

The polar regions and hot arid areas both come under extreme environments because of their unique characteristics. Polar regions are located in areas of high latitude, whereas arid areas cover more latitudes but are mostly located in the tropics. The high latitudes mean that the temperatures are extremely cold; winters are very cold, up to -50oC with few or no hours of light. These areas are also considered dry areas due to the low levels of precipitation with most of it falling as snow. The coldest of areas support no life at all. The map below demonstrates where these climates can be located.

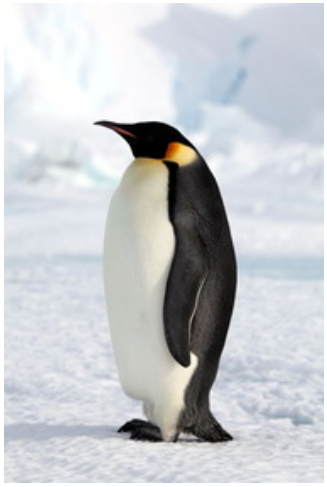


Antarctica
Antarctica can be called a desert because of its low levels of precipitation, which is mainly snow. In coastal regions, about 200 mm can fall annually. In mountainous regions and on the East Antarctica plateau, the amount is less than 50 mm annually. Evaporation is not as high as other desert regions because it is so cold, so the snow gradually builds up year after year. There are also strong winds, with recordings of up to 200 mph being made. Antarctica has the coldest land temperature recorded on the Earth, -89.2°C. The average annual temperature is around -50°C. It is a challenging environment and no one lives there permanently.

The ecosystem of Antarctica has adapted to the harsh climatic conditions. These harsh conditions limit the complexity of the food web.

- On land, there are no trees or shrubs, and very few flowering plants. Mites and midges are at the top of the food chain (excluding the Antarctic sub-islands). Organisms are small, with a low total biomass.
- Penguins, seen on land, rely on food in the sea for their energy and so are part of the marine ecosystem.

Unlike the land, the waters surrounding Antarctica are rich in life. The cold temperatures increase the movement between surface water and deeper water, encouraging the phytoplankton to photosynthesise. The food webs in the oceans are more complex than on the land, and contain more biomass including both whales and pen



Antarctic: Penguins
- Remain active to keep high temperatures
- Thick skin and fat to keep warm
- Social behaviour techniques (huddle)
- Black skin to absorb heat
- Feathers to provide a waterproof layer and warmth
- Webbed feet for more powerful swimming and streamlined to reduce drag in water.