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# Special Report on the Ocean and Cryosphere in a Changing Climate

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INTERGOVERNMENTAL PANEL ON climate change



The world's ocean (and cryosphere) have been 'taking the heat' from climate change for decades.

Consequences for nature and humanity are sweeping and severe.



Photo: Glenn R. Specht

Sea Level Rise



## Sea level rise and coastal extremes

- During the 20th century, the global mean sea level rose by about **15cm**.
- Sea level is currently rising **more than twice as fast** and will further **accelerate** reaching up to 1.10m in 2100 if emissions are not sharply reduced.
- Extreme sea level events which now occur rarely (e.g. Venice flood November 2019) during high tides and intense storms will become more common.
- Many low-lying coastal cities and small islands will be exposed to risks of flooding and land loss annually by 2050, especially without strong adaptation.

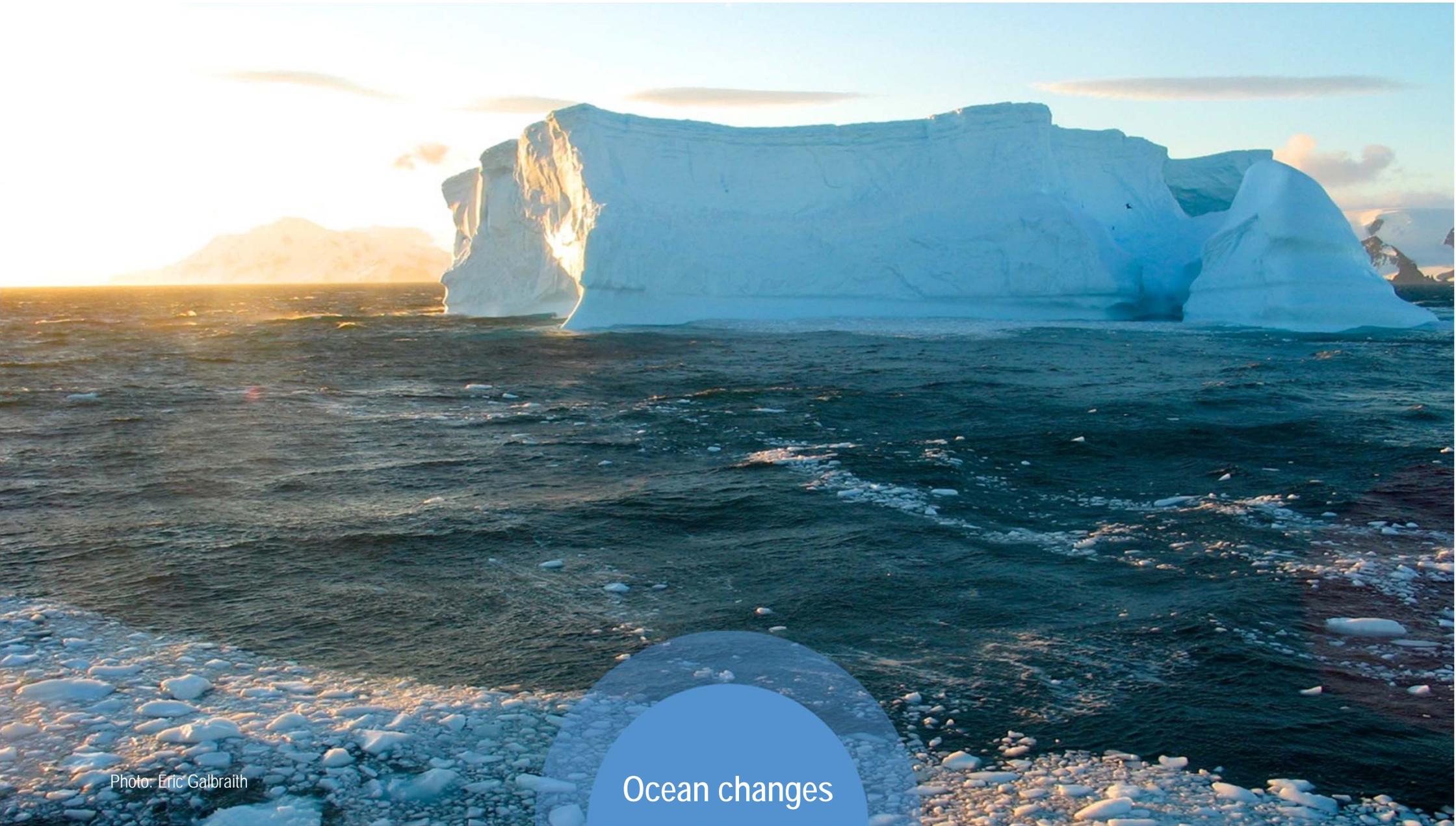


Photo: Eric Galbraith

Ocean changes



## Changes in the ocean

- The global ocean has warmed unabated since 1970 and will **continue to warm** throughout the 21<sup>st</sup> century.
- Ocean warming reduces mixing between water layers and therefore the supply of **oxygen and nutrients for marine life**.
- **Marine heatwaves** are becoming more frequent and severe, especially harming warm-water corals, kelp forests and the distribution of marine life.
- The ocean has taken up 20-30% of the human-induced carbon emissions. This **increases ocean acidity** in all ocean basins.



Photo: Mr. JK

Marine life



## Changes in marine life

- Changes in the ocean cause **shifts in fish populations**. This has reduced the global catch potential. In the future some regions will see further decreases but there will be increases in others.
- Communities that depend highly on seafood may face **risks to nutritional health and food security**.
- Reducing other pressures such as **pollution** will further help marine life deal with changes in their environment.
- Policy frameworks for **fisheries management** and **marine protected areas** offer opportunities for people to adapt.

The more decisively and earlier we act, the more able we will be to address unavoidable changes, manage risks, improve our lives and achieve sustainability for ecosystems and people around the world – today and in the future.