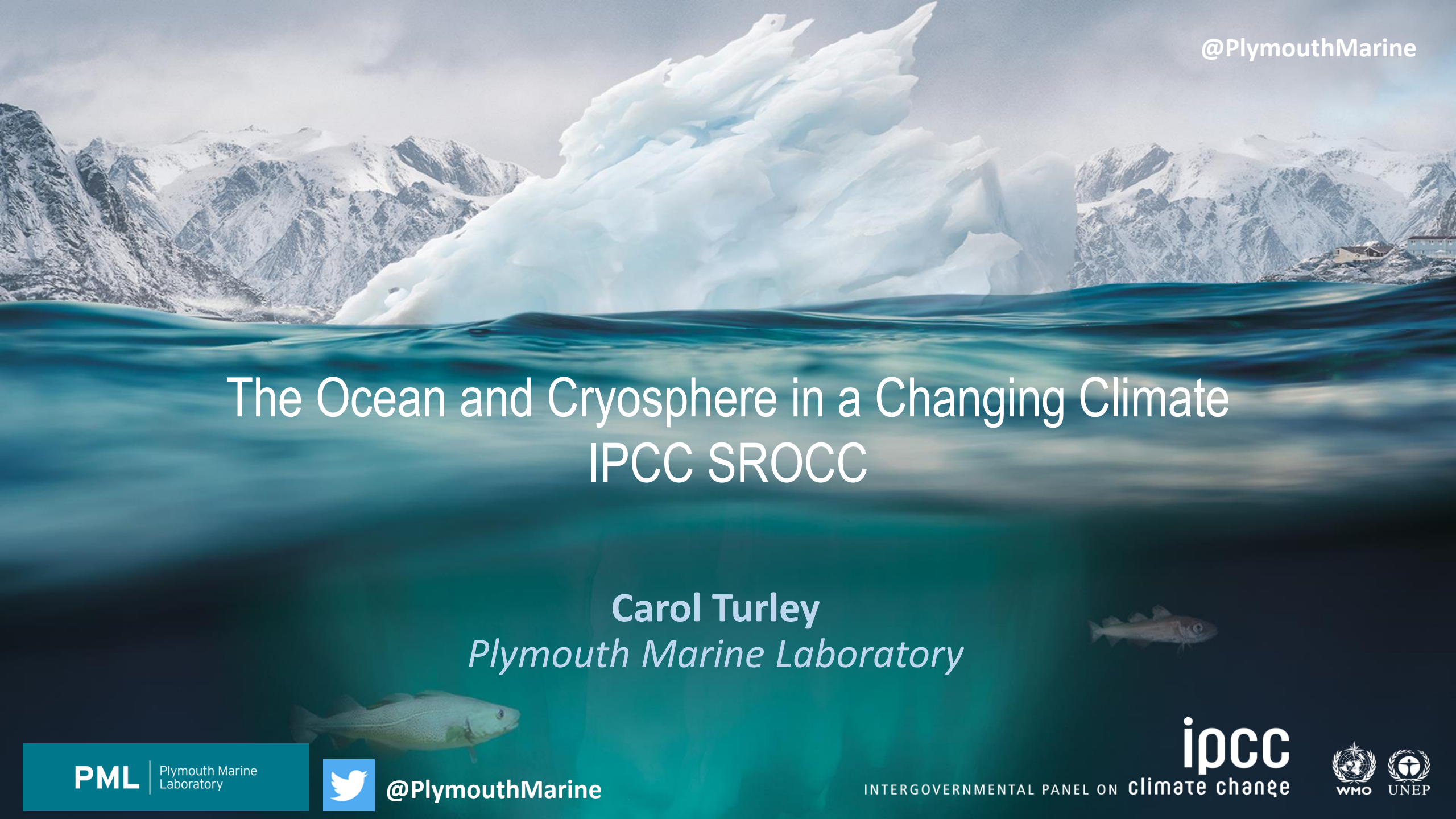

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The Ocean and Cryosphere in a Changing Climate
IPCC SROCC

Carol Turley
Plymouth Marine Laboratory

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INTERGOVERNMENTAL PANEL ON climate change

WMO UNEP

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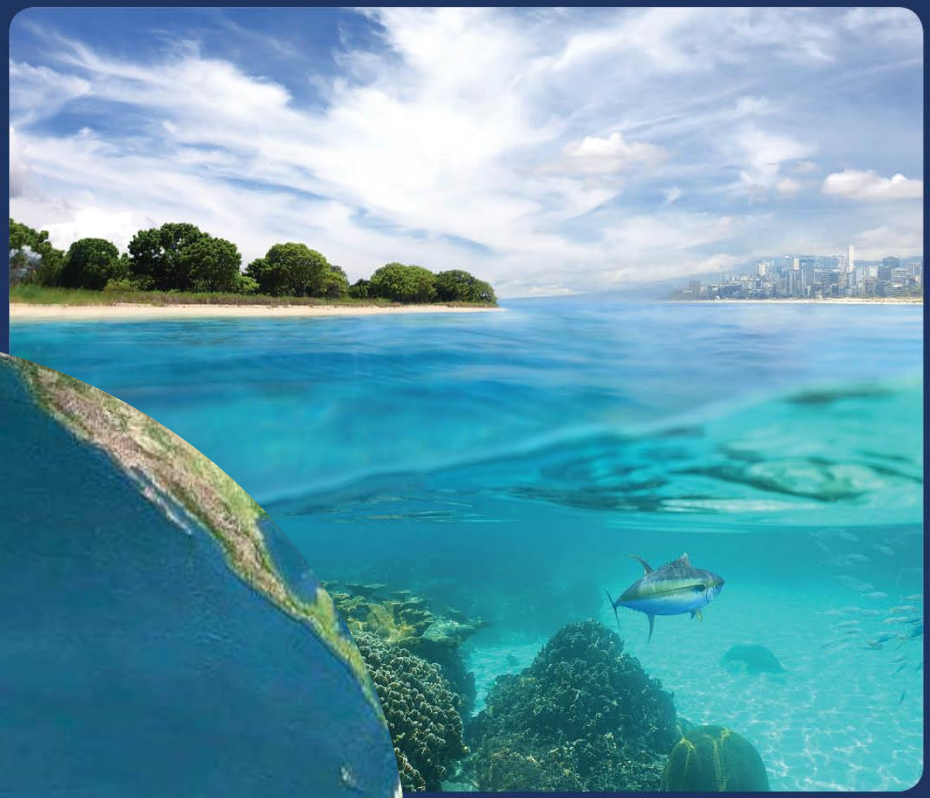
The Ocean and Cryosphere in a Changing Climate

From poles to equator

From beach to abyss



WG I WG II

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Extra heat in the Earth system

(93% in the ocean, only ~1% in the atmosphere)

From poles to equator

From beach to abyss

Impacts on marine ecosystems

Temperature increase

- Sea-level rise
- De-oxygenation
- Storms & heat waves
- Nutrient supply

Extra CO_2: Ocean acidification

WG I | WG II

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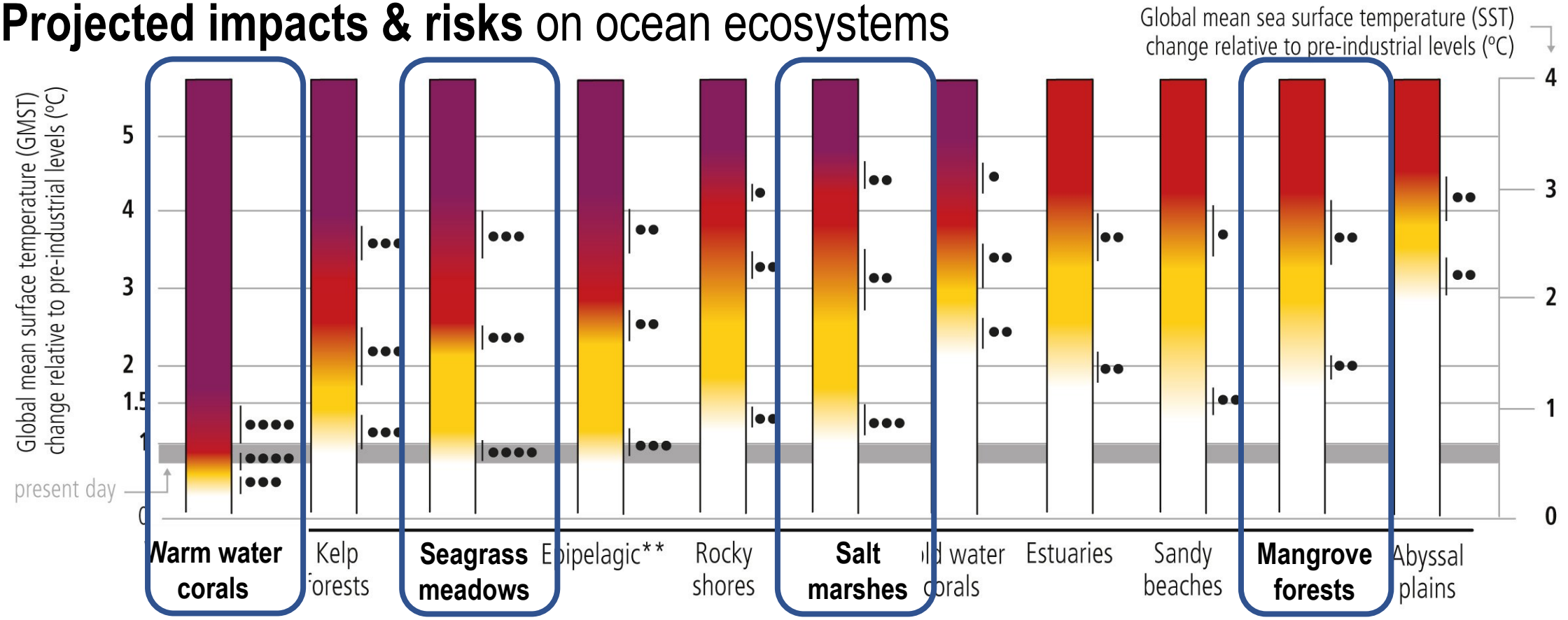
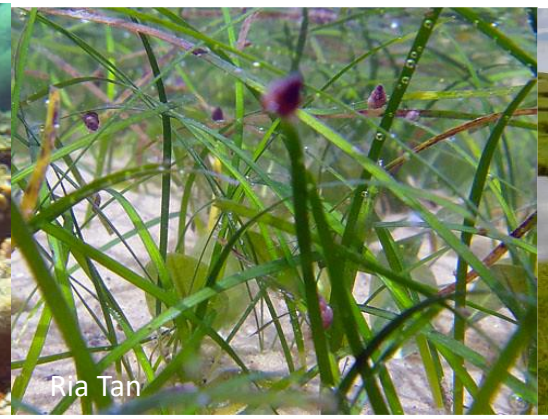
Extra CO_2: Ocean acidification

With knock-on impacts on **ecosystem services** and **human well-being**

Projected impacts & risks on ocean ecosystems




Steve Evans Wikimedia Commons


Ria Tan


Lorne Gill/SNH


Steven Lutz /Blue Forests

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The Greenland and Antarctic **ice sheets are losing mass, accelerating global sea level rise**. They will continue to melt, committing the planet to **long-term global sea level rise.**

Arctic sea ice is declining in every month of the year, and is getting thinner.

Permafrost is thawing, with the potential of adding more greenhouse gases to the atmosphere.

Photo: Jess Melbourne Thomas

Polar Regions

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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 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.

Sea Level Rise & Coastal Extremes


The world's ocean have been 'taking the heat, the melted water and the CO_2' from climate change for decades.
Consequences for nature and humanity are sweeping and severe.
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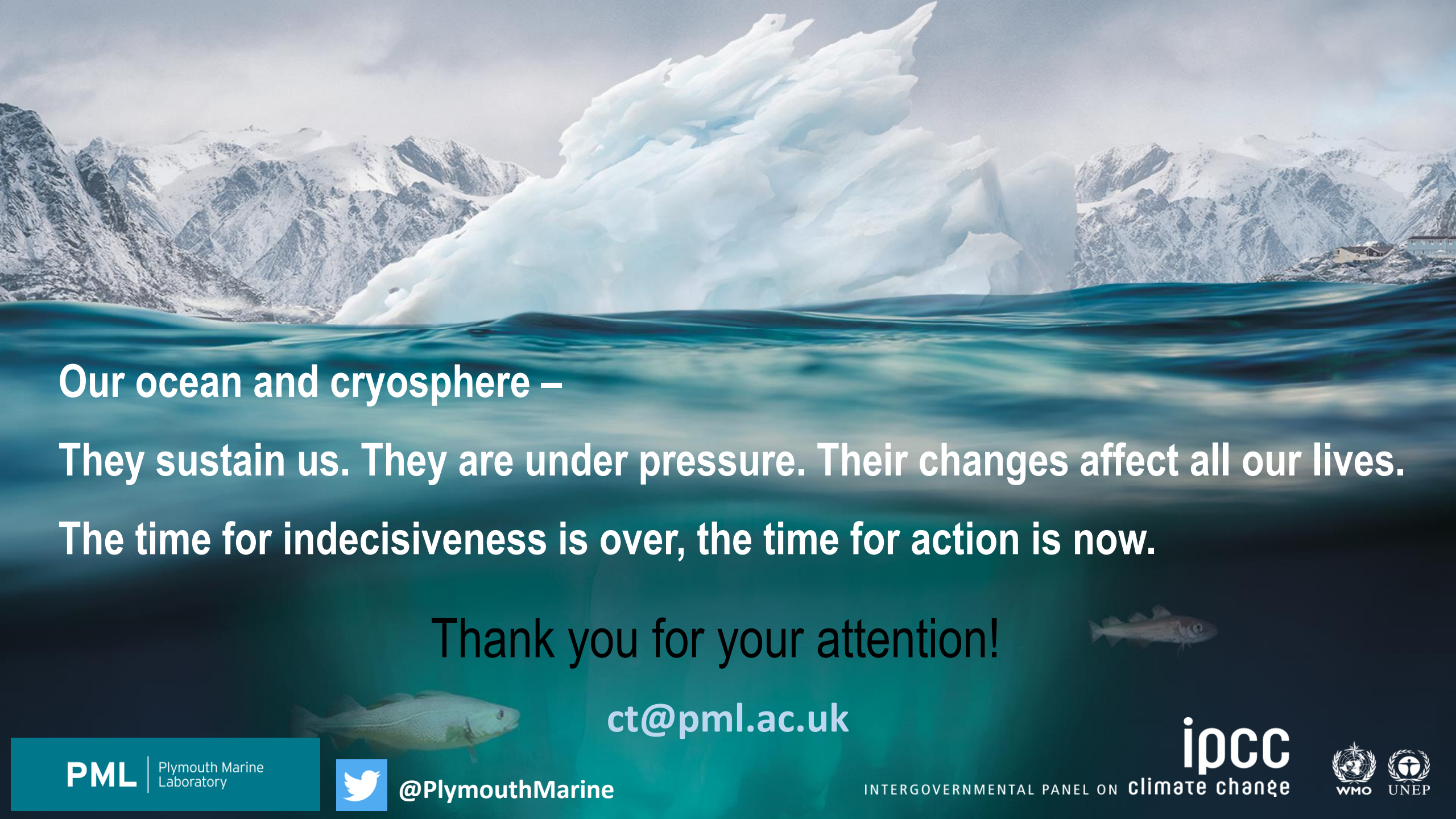
UNEP



Our ocean and cryosphere –

They sustain us. They are under pressure. Their changes affect all our lives.

The time for indecisiveness is over, the time for action is now.

Thank you for your attention!

ct@pml.ac.uk

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