



# Sea Level Rise, Maritime Zones and Biodiversity

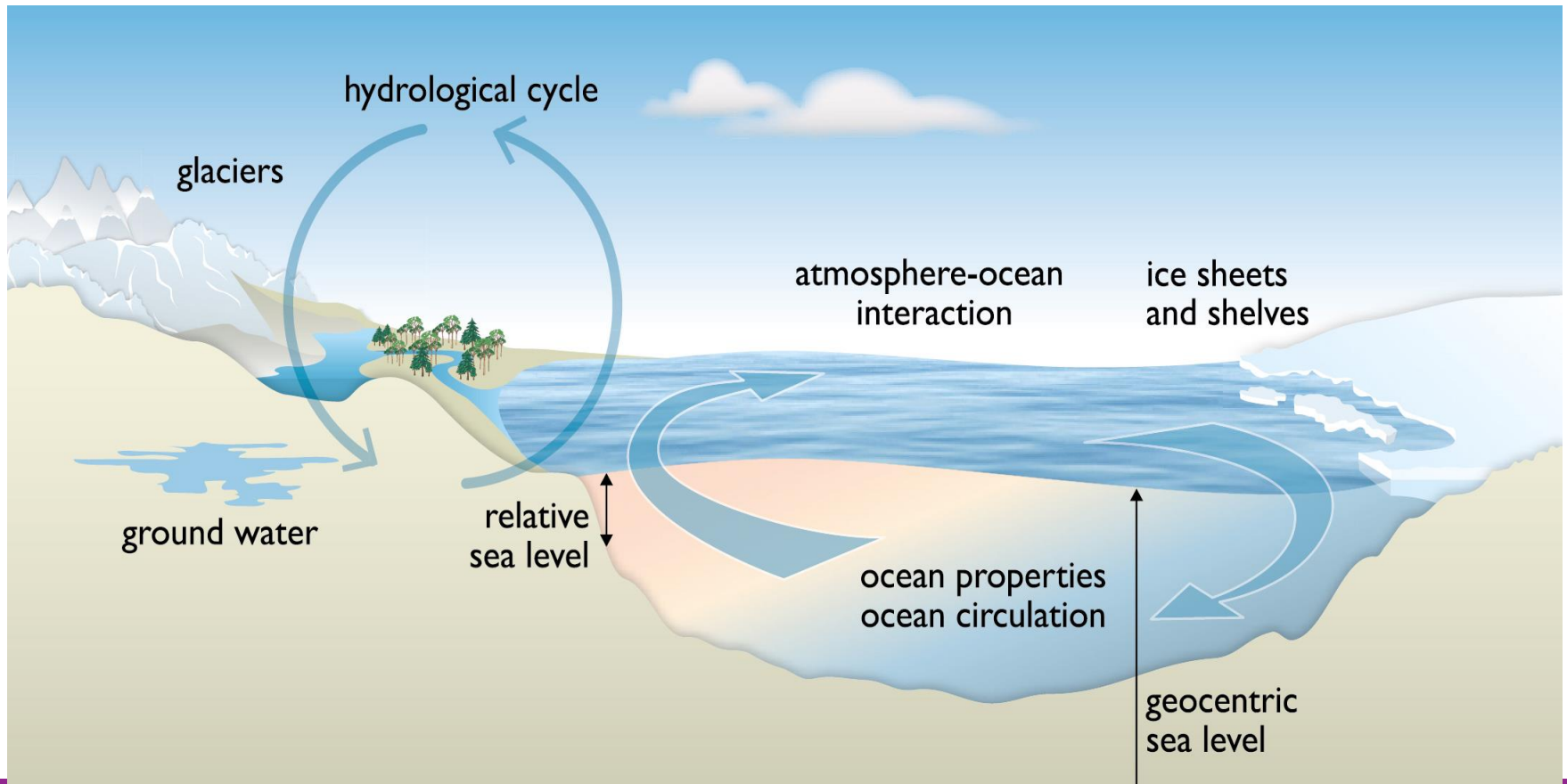
Never Stand Still

Law

**Professor Rosemary Rayfuse**

# The Causes of Sea Level Rise

- thermal expansion (ocean water expanding as it heats up)
- glacial and ice cap melt



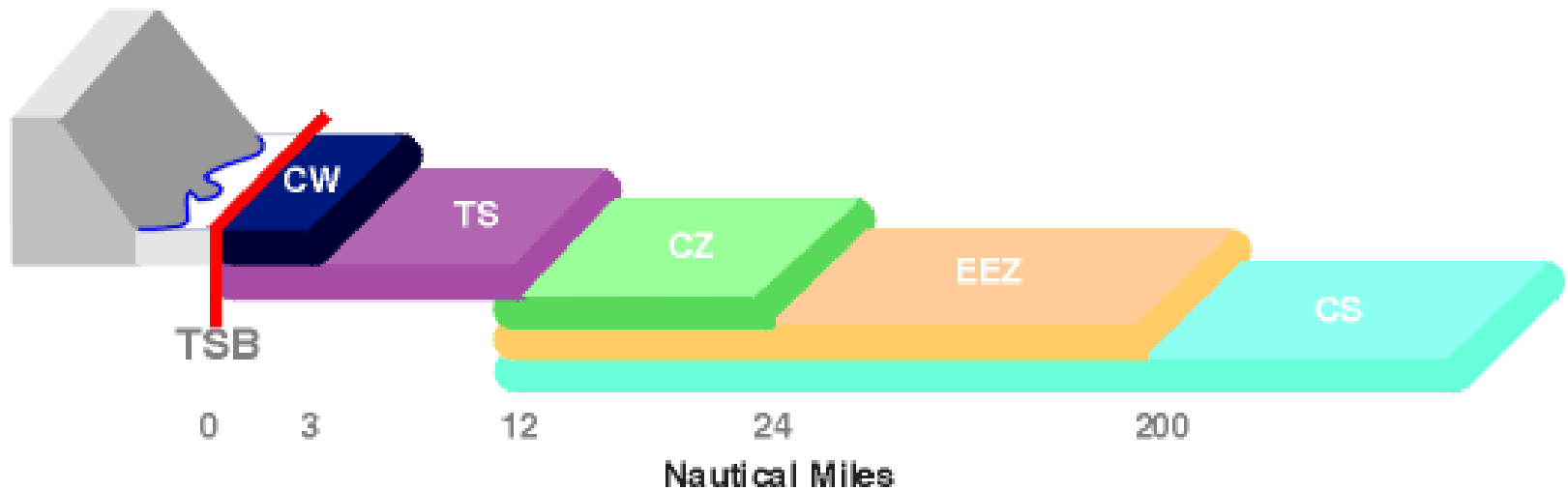
# IPCC 5<sup>th</sup> Assessment Report

- Over the last century global average sea level rose by 1.7 [1.5 to 1.9] mm per year, in recent years (between 1993 and 2010) this rate has increased to 3.2 [2.8 to 3.6] mm per year.
- The rate of sea level rise over the last century is unusually high in the context of the last 2,000 years.
- By 2100 sea level will rise between 0.3 and 1.0 meters depending on emission scenarios (compared to 1986–2005 baseline).
- Sea level rise will continue for centuries to thousands of years after greenhouse gas concentrations are stabilised due to the long lag times involved in warming of the oceans and the response of ice sheets.
- Impacts of sea level rise = effects on extreme sea level events such as high tides and storm surges and increased frequency or likelihood of extreme sea level events and resultant flooding.



# Sea Level Rise and Maritime Zones

## Maritime Zones



**TSB** Territorial Sea Baseline  
**CW** Coastal Waters  
**TS** Territorial Sea

**CZ** Contiguous Zone  
**EEZ** Exclusive Economic Zone  
**CS** Continental Shelf



MP 96/489.1



# The Baseline Dilemma

- Maritime zones are predominantly measured from ‘normal’ low-water line baselines
- Normal baselines are considered ‘ambulatory’: they may be unstable and subject to sometimes rapid changes
- Ambulatory baselines have implications for:
  - The extent and limits of maritime claims:
    - Permanent inundation of coastline, low-tide elevations and fringing reefs used as basepoints moves the baselines. So do the outer limits of a State’s maritime zones also retreat?
    - ‘Rocks which cannot sustain human habitation or economic life of their own’ are not entitled to an EEZ or continental shelf. So, if an island becomes uninhabitable does it lose its EEZ and continental shelf?
    - Islands/rocks that disappear may cease to generate any maritime zones
  - Enforcement issues
  - Delimitation of maritime boundaries
- Physical fixing/protection of coasts and baselines is prohibitively expensive and fraught with other problems – ie, environmental and political
- BUT: Need for stability to preserve maritime claims



# Resolving the Baseline Dilemma: Options under Existing Law

- LOSC Article 5 – fix zones by marking low-water line on officially recognised charts: problems re choice of charts and eventual disconnect between legal baseline and physical reality
- Increased use of straight baselines (contentious: to be used with caution)
- Establishment of outer limits of continental shelf where appropriate
- Bilateral maritime boundary delimitation agreements (AG and SPC project underway in South Pacific)
- LOSC Article 5 & Article 16(1): declare baselines by recourse to geographical coordinates - may require amendment of domestic legislation particularly in the Pacific. Include national or regional declaration that “changes in sea level do not impact on the maritime jurisdictions of Pacific SIDS”



# Resolving the Baseline Dilemma: New International Approaches

Substantive questions:

- Freezing baselines vs freezing outer limits
- The time from which the baselines are frozen

Procedural mechanisms:

- Develop customary international law (ie state practice)
- Protocol to UNFCCC
- Modify the Law of the Sea Convention by:
  - Formal amendment of LOSC
  - Decision of SPLOS
  - Supplementary agreement
    - » Adopted by SPLOS initiative
    - » Separate conference (ie Fish Stocks approach)
    - » UNGA Resolution (ie PART XI approach)



# Sea Level Rise and Biodiversity

## Primary effects

physical impact on coastal low/lying zones. Some plants and animals will drown while others will be affected by changes in parameters such as available light, salinity and temperature which will modify coastal ecosystems.

## Secondary effects

impacts on habitat availability and distribution of species caused by human and agricultural displacement from low/lying zone (the problem of coastal squeeze)

## IPCC AR5

‘evolutionary rates are not fast enough for sensitive animals and plants to adapt to the projected rate of future change’

likely species extinctions run into the 100’s of thousands





# International Law and Biodiversity

Fragmented legal regime consisting of global and regional agreements, including:

Convention on Biological Diversity

World Heritage Convention

Ramsar Convention on Wetlands of International Importance

Convention on Migratory Species

Regional Wildlife conventions (Europe, Africa, Americas)

Regional Birds conventions

Polar Bear Agreement

Regional Seas Agreements

These regimes are ill-equipped to respond to the challenges of spatial shifts and changes in phenology, species abundance and species interaction that will be caused by climate change



# Convention on Biological Diversity

SLR is part of broader discussion on climate change and biodiversity under discussion since 2000.

Frames protection of biodiversity as a key component in enhancing the resilience of ecosystems to environmental change to ensure their ability to continue to provide ecosystem services to humans

2006 – 2010 in depth review reveals good understanding of the links between biodiversity and climate change but poor implementation of biodiversity considerations into climate change mitigation and adaptation activities. Calls for promotion of adaptation measures aimed at increasing ecosystem resilience – particularly re marine and coastal biodiversity

## 2011 Aichi Biodiversity Targets

- 5: Halve rate of biodiversity loss by 2020
- 10: Anthropogenic pressures on coral reefs and vulnerable ecosystems to be minimised by 2015
- 11: By 2020 at least 10% of coastal and marine areas, especially those of particular importance for biodiversity and ecosystem services, 'to be conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures and integrated into the wider landscapes and seascapes.

Already admitted that current progress is insufficient to achieve the Targets



# World Heritage Convention

- Protects both cultural and natural heritage of Outstanding Universal Value
- Climate change and SLR will amplify and accelerate major existing management problems and threat affecting integrity of sites
- 79 sites listed as natural or mixed (natural/cultural) – 18 threatened by SLR (plus 9 cultural sites).
- Current projections – at least one fifth (111-150) of all World Heritage sites (both cultural and natural) will be underwater in the coming centuries
- SLR may result in listing on WH in Danger list
- SLR may render OUVs for original inscription wholly redundant and lead to de-listing and need for re-nomination (which may not be possible)
- Commission has adopted Strategy to assist parties to implement adaptation and management responses but query their efficacy and issues of state responsibility relating to failure to pass on cultural heritage to future generations



# RAMSAR Convention

Conservation and 'wise use' of wetlands of international importance

Wise use = 'maintenance of their 'ecological character'

864/2208 Ramsar sites are coastal sites, 85% of which will be affected by SLR of 1 meter  
30% - more than 50% of the area is at risk  
9% more than 90% the area is at risk

Query how convention mechanisms will function in face of loss of and threat to these areas



# Some questions for the ILA Committee

- How will these regimes manage under conditions of gross uncertainty?
- How can they manage in the face of increasing loss of their 'asset' base'?
- What new principles may need to be developed to serve as organising principles for biodiversity conservation in the face of SLR? ie, how to make the hard decisions as to what to save and what to lose?
- If we admit we cannot preserve biodiversity what other goals should we aim for?
- What are the short/medium/long term prognoses for the continued existence and vitality of these essentially 20<sup>th</sup> century legal regimes? Will/should/can they be terminated?
- What are the effects of principles like fundamental change of circumstances, supervening impossibility of performance, force majeure, etc, on the obligations of states under these regimes?

