



Sea-level rise: Solutions

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**making space
for sand**

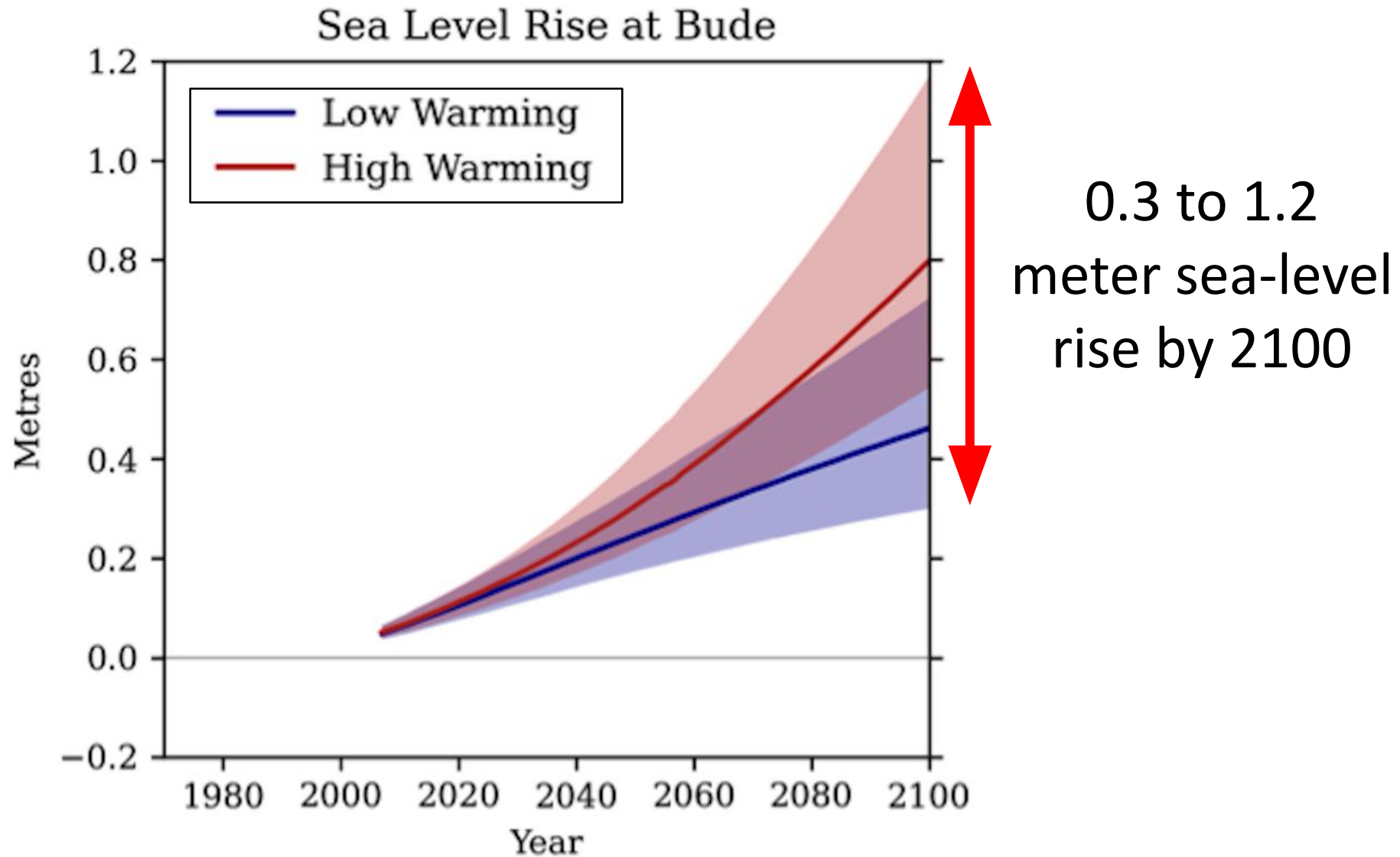




Outline

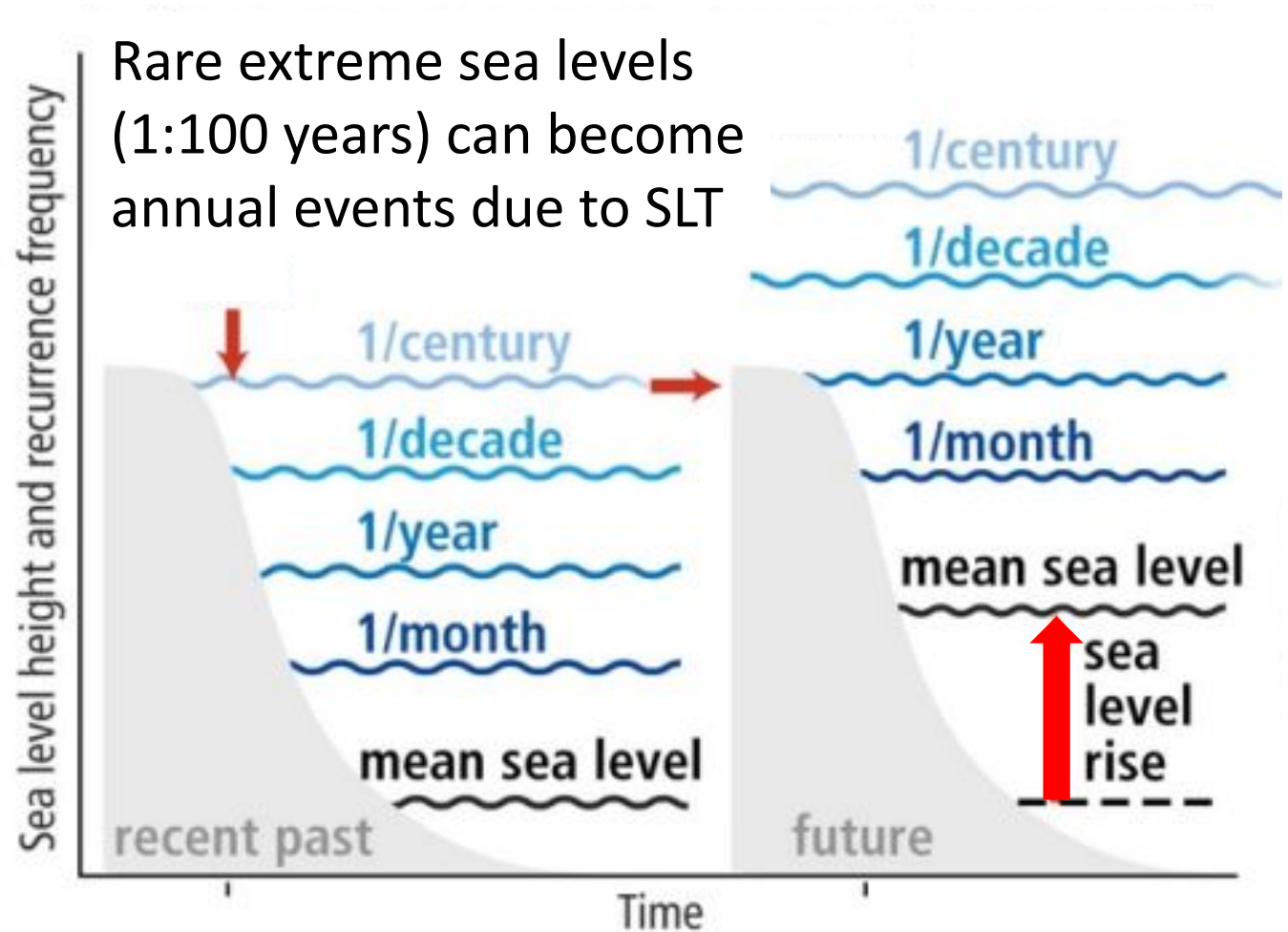
1. Sea-level rise (SLR)
2. Impacts of SLR
 - Enhanced coastal flooding
 - Enhance shoreline retreat
3. Solutions to impacts of SLR
 - Do nothing
 - Hold the line
 - Managed retreat
 - Advance the line
4. Take-home messages

1. Sea-level rise (SLR)



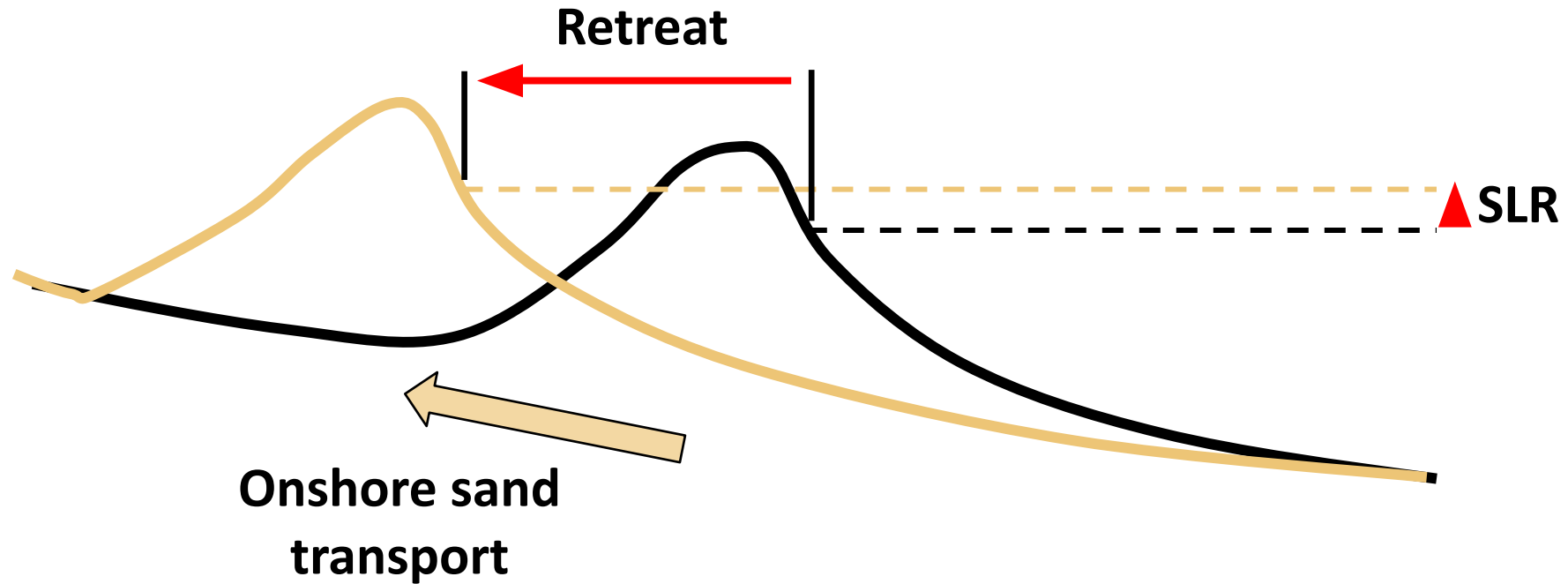
2. Impact of SLR

Enhanced coastal flooding



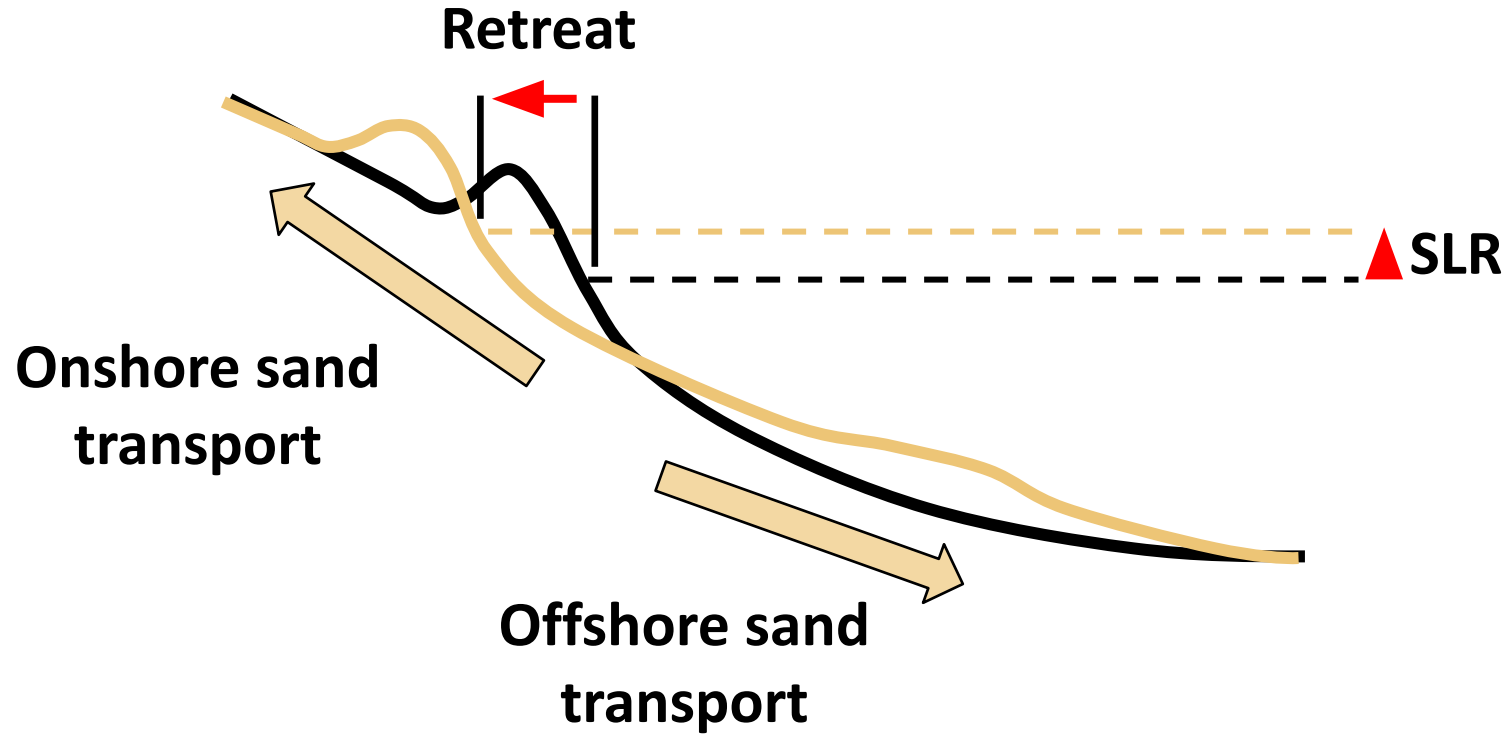
2. Impact of SLR

Enhanced coastal retreat – gentle coastal slope



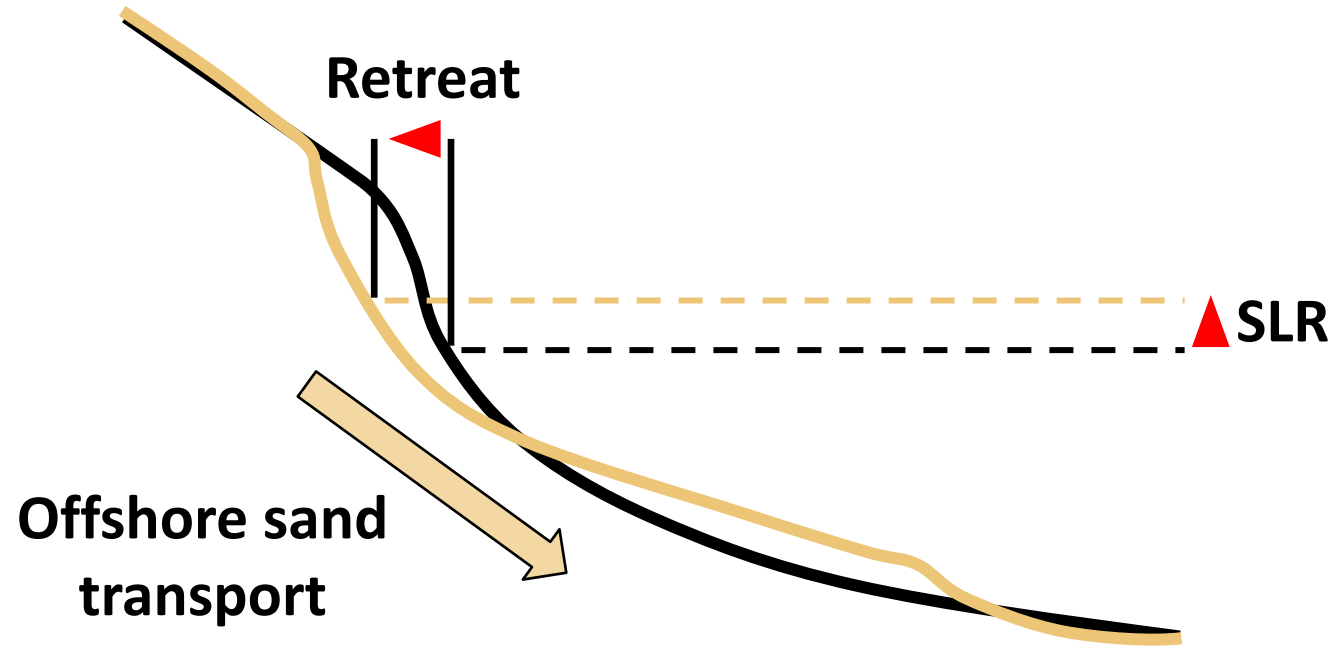
2. Impact of SLR

Enhanced coastal retreat – intermediate coastal slope



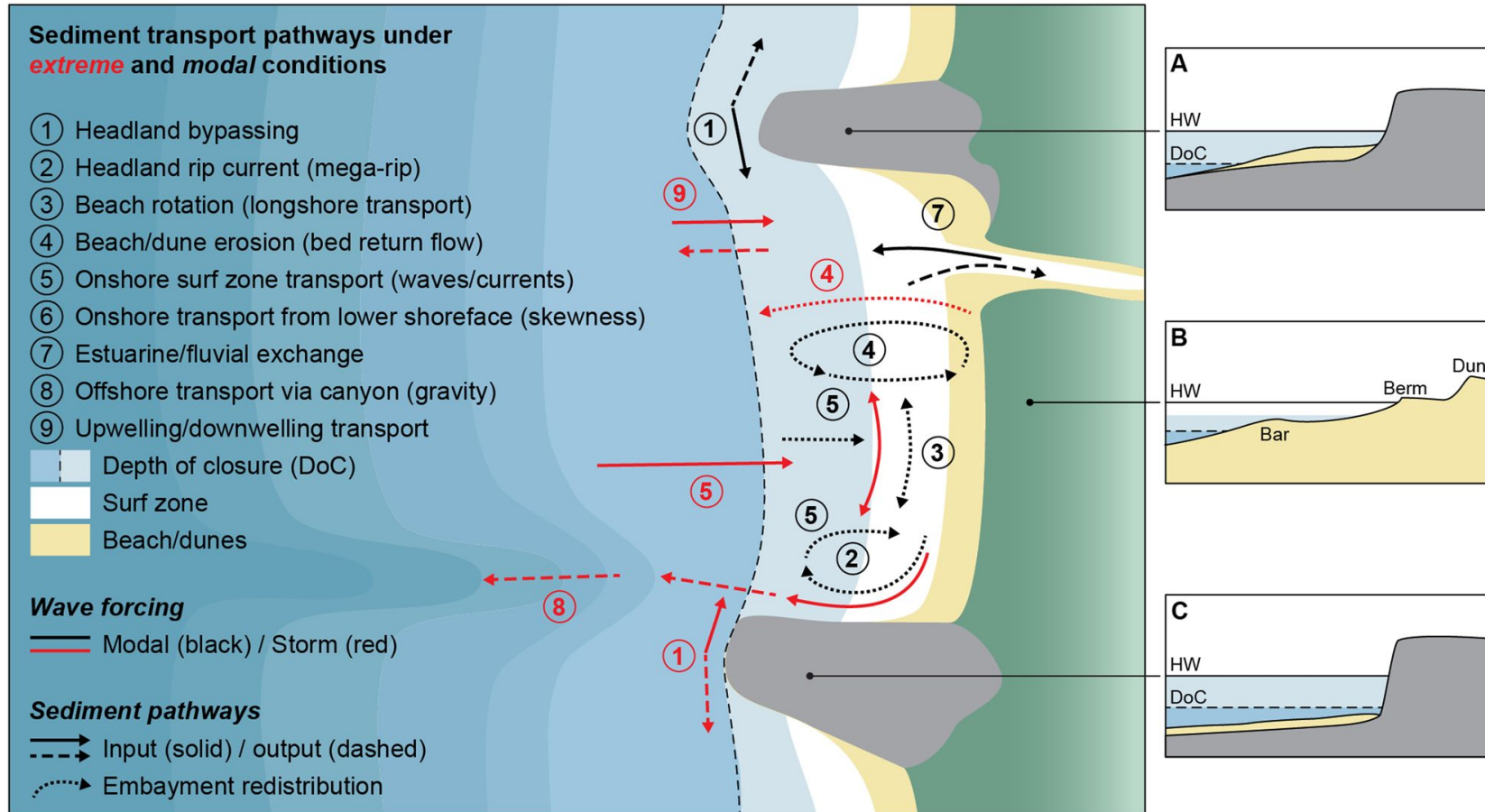
2. Impact of SLR

Enhanced coastal retreat – steep coastal slope



2. Impact of SLR

Enhanced coastal retreat – role of sediment budget



3. Solutions to impacts of SLR

Adaptation toolbox



3. Solutions to impacts of SLR

Do nothing



- Sensible when nothing at risk
- Implications along the coast (generally positive)
- Easier said than done – social justice argument

3. Solutions to impacts of SLR

Hold the line

Repair sea defences Torcross



Beach nourishment Bacton, Norfolk



- Sensible when lots at risk
- Implications along the coast (negative)
- Expensive and no long-term solution

3. Solutions to impacts of SLR

Managed retreat

Stearth Peninsula, Somerset

BEFORE



AFTER



3. Solutions to impacts of SLR

Managed retreat

2020



2120s



- More sustainable solution
- Implications along the coast (generally positive)
- Requires accommodation space
- Challenging to implement – needs community buy-in

3. Solutions to impacts of SLR

Advance the line

Sand Engine, Netherlands

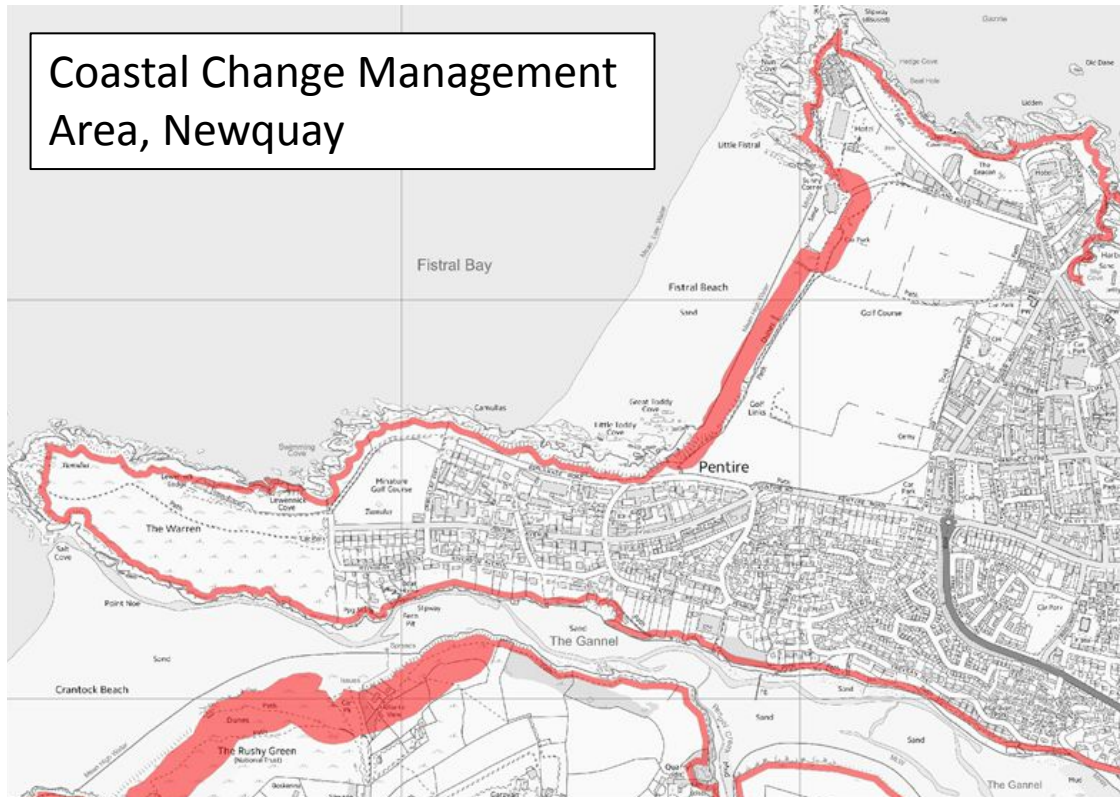


- New ‘solution’
- Implications along the coast (generally positive)
- **Very** expensive

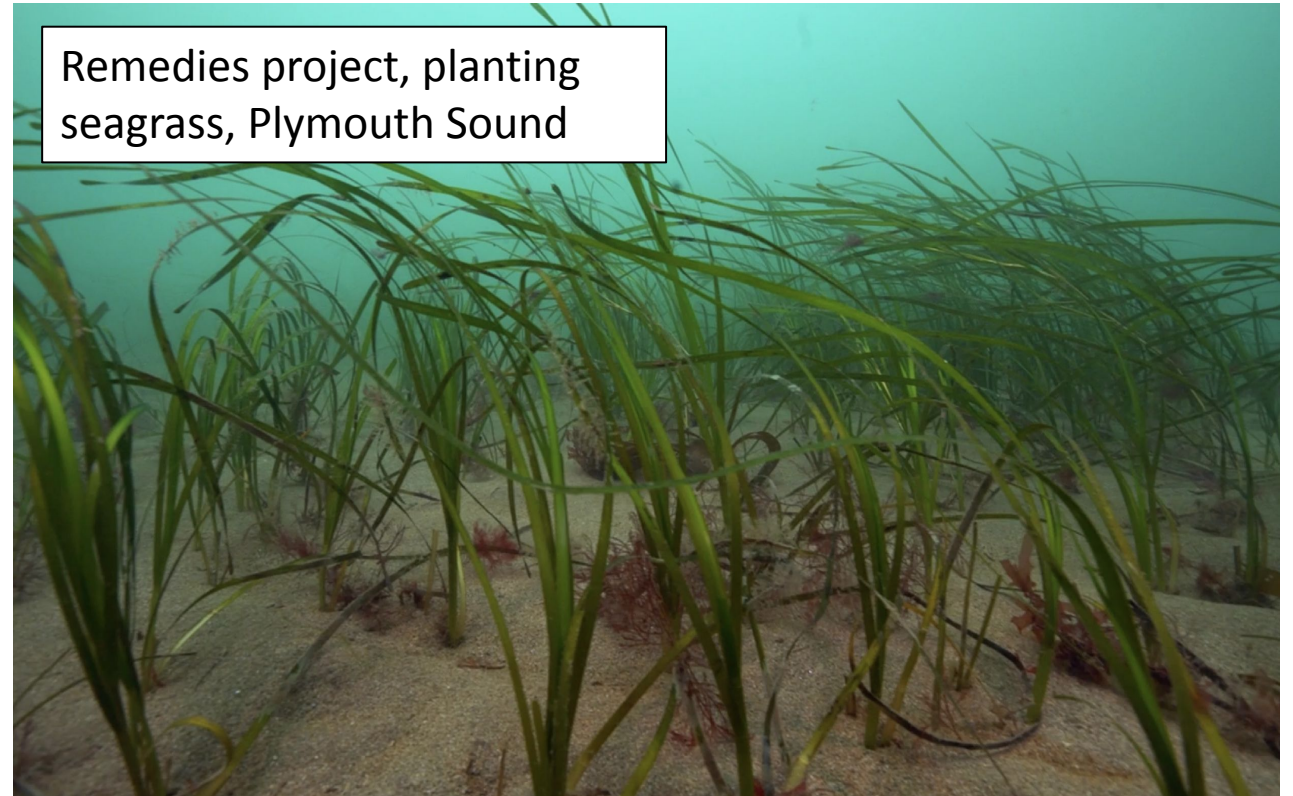
3. Solutions to impacts of SLR

Coastal planning and nature-based solutions

Coastal Change Management Area, Newquay



Remedies project, planting seagrass, Plymouth Sound



4. Take-home message

- Sea level is rising and will continue to rise over the next few hundred of years
- Sea level can be up to 1 m higher by 2100 than present
- This will lead to increased magnitude and frequency of coastal flooding
- It will also lead to increase in shoreline retreat (erosion)
- Coastal response can be highly variable (slope, sediment supply)
- Different adaptation options are available to deal with sea-level rise
- Selecting adaptation tool requires careful consideration of many factors
- Prevention is better than cure: planning!