

# Sea Level Projections in Coastal Planning

## Definitions

### Introduction

In our questionnaire on the use of future sea levels in planning, we use terms that may be unfamiliar to you. These terms relate to both natural processes and planning processes. The terms appear in the survey in blue underlined text. This document defines those terms.

- **Adaptation pathways:** Planning approaches that focus on the sequence of events over time and the tipping points necessary to shift paths. Dynamic adaptation policy pathways (DAPP) is a specific adaptation pathways approach.
- **Baseline or reference:** An initial sea level used for comparisons.
- **Co-produced:** The process of understanding and/or developing actionable science through active collaboration between scientists and policymakers.
- **Coastal processes:** The movement of water, sand, and land in coastal settings. This includes storm surge, wave setup, wave runup, tides, climate cycles, and in some cases groundwater.
- **Decision scaling:** A decision-making process that informs planning processes and uses a decision analytic framework to reveal the full range of climate information that is needed to best inform the decision at hand.
- **Dynamic adaptation policy pathways (DAPP):** A specific version of adaptation pathways. In this approach people identify alternative ways forward (pathways), that could, singly or in combination, meet agreed objectives, performance or levels of service, despite deepening uncertainty, while remaining responsive to changes when this might be needed (dynamic). Pathways can be combinations of short-term actions and long-term options, Essential is the specification of a monitoring system with actions to be taken when a specific adaptation threshold is reached, identifying early signals and triggers (decision points) for switching pathways or revisiting decisions, ensuring sufficient lead time for implementation.
  - Qualtrics definition: A specific adaptation pathways planning approach where planners identify alternative planning pathways that could meet agreed objectives.
- **Glacial isostatic adjustment:** The ongoing movement of land once burdened by ice-age glaciers. Land is moving up where glaciers once existed and moving down in adjacent areas where glaciers did not reach.
- **Land subsidence:** The gradual or sudden sinking of the Earth's surface from subsurface movement of earth materials.

- **Lifespan:** The functional working life of a project. It is the full length of time a project will be in use at this location (including regular repair and maintenance). Typically, engineers and planners select a planning horizon aligned with a project's "design life." The design life is the period of time during which the asset or facility is expected to perform within its specified parameters; in other words, the life expectancy of the asset or facility as constructed. However, most structures and facilities are in service at their given locations far beyond their design life as defined above. An asset might have a design life of 30 years, but might in reality be in service for 50-, 75-, or 100-years or more with regular repair or maintenance.
- **Perigean-spring tides** (i.e. King tides): The highest tides occurring 3 or 4 times per year when the gravitational pull of the sun and moon align.
- **Planning approaches:** The method by which a plan is generated, including the selection of models, priorities, and data.
- **Risk profiles:** A quantitative analysis of the types of threats an asset, a project or a place face.
- **Riverine processes:** The movement of water, sediment and land in river settings.
- **Robust decision-making:** A decision-making planning processes which is meant to produce decisions that have satisfactory performance across a large range of plausible futures.
- **Scenario planning:** A decision-making planning process characterized by the generation and examination of several potential alternative scenarios. These scenarios may include both sea level rise and socioeconomic conditions.
- **Tectonic effects:** Movement of the Earth's surface in response to seismic causes.
- **Upper estimate:** The highest future sea level estimate based on extreme but plausible information. It is often referred to as H++.
- **Wave runup:** The maximum vertical extent of wave uprush on a beach or structure above the still water level.
- **Wave setup:** The increase in mean water level due to the presence of breaking waves