Sea-level Research: Big Themes of the Next 10 Years

WCRP Grand Challenge on Regional Sea-level Change and Coastal Impacts

42nd Session of the WCRP Joint Scientific Committee, June 2021

1. Thresholds, stability and rates of loss of the Antarctica and the Greenland ice sheets.
2. Understanding the commitment to sea-level rise over decades and centuries under different emission pathways and the implications for coastal adaptation and mitigation.
3. How can we use GIA information to constrain ice sheet changes?
4. How can we better understand the relation between large-scale open ocean sea level change and coastal sea level changes in order to translate the open ocean signal to coastal signal?
5. How do we combine sea level rise projections with forecasts on seasonal to decadal time scales to provide more meaningful guidance on sea level rise impacts?
6. How can we incorporate long- and mid-term sea-level projections into hydrodynamic models to constrain coastal extreme sea level projections and explore coastal sea level impacts?
7. How can we set-up regional and global sea-level budget studies and a linked consistent Earth energy budget to be repeated on a recurring basis? (frequency of recurrence to be decided)
8. Moving to sea-level rise being a direct and explicit output in Earth-System Models (ESM) such that we capture the feedbacks between all ESM components.
9. How can sea-level projections be best used with the range of decision analysis methods to develop effective, efficient and equitable adaptation solutions?
10. How can we maximize the value of sea-level science and projection range (including high end) for adaptation planning and close the gap between sea-level science and practise/user needs?
11. How can we capture the non-climate components of relative sea-level change that are essential for climate risk and adaptation assessment and develop appropriate scenarios, including human-induced subsidence.
12. How should coastal climate services evolve and scale as coastal adaptation action multiplies and accelerates?