Global Sea Level Rise

The global sea level rise data (SLR) depicts the projected sea level rise for the world's oceans in 2100 from a baseline in 1995. The future projections are created based on the Fifth Assessment Report (AR5) of the IPCC, applying an ensemble of 28 general circulation models (GCMs) and the Representative Concentration Pathway (RCP) 8.5 with a high sensitivity. All the sea level / climate data has been processed following the guidelines of the Intergovernmental Panel on Climate Change (IPCC).

The SLR data also took vertical land movement (VLM) into account, which is a generic term for all processes that impact the elevation at a given location (tectonic movements, subsidence, ground water extraction), causing land to move up or down. This is typically a slow process with magnitudes commonly between 10 (sinking) and +10 (rising) mm/year. Local vertical land movement becomes relevant when looking at the local effects of sea level rise. The orders of magnitude are comparable, and VLM can thus either exacerbate or dampen the sea level rise experienced at a coastal location. In a place where VLM is upward (rising, like Norway), the local experienced SLR is smaller (local SLR can even be negative: sea level going down). When VLM is downward (sinking, like Manila), local experienced SLR is stronger. Because of its potential magnitude, local VLM must be considered when sea level rise effects are determined on a local scale.

Note that local sea level rise is usually different from the global mean (regardless of VLM), because of variations in currents, the amount of heating of the sea water (responsible for the thermal expansion), as well as the volume (depth) of the sea water affected. This is expressed in the normalized change patterns extracted from the GCM results. VLM was estimated from the direct observations (SONEL23) and observed tides archived by the permanent service for mean sea level (PSMSL24).