

This paper employs terminology for sea level based on Gregory et al. (2019).

Contemporary GRD: *GRD* due to ongoing changes in the mass of water stored on land in the cryosphere and hydrosphere.

Extreme sea level (ESL): The occurrence or the level of an exceptionally high or low local sea-surface height. FACTS models high ESLs, which can be caused, for example, by storm surges or exceptionally high tides.

Geoid: A surface on which the geopotential has a uniform value, chosen so that the volume enclosed between the geoid and the sea floor is equal to the time-mean volume of sea water in the ocean (including the liquid-water equivalent of floating ice).

Glacial isostatic adjustment (GIA): *GRD* due to ongoing changes in the solid Earth caused by past changes in land ice.

Global-mean sea-level (GMSL) rise: The increase in the volume of the ocean divided by the ocean surface area.

Global-mean thermosteric sea-level rise: The part of *GMSL rise* which is due to thermal expansion.

Gravitational, rotational and deformational (GRD) effects: Changes in Earth gravity and Earth rotation (which alter the shape of the *geoid* and thus sea-surface height), as well as viscoelastic solid-Earth deformation (which causes *VLM* and, by altering the shape of the ocean basin, affects sea-surface height).

Inverse barometer (IB) effect: The time-dependent hydrostatic depression of the sea surface by atmospheric pressure variations. In most GCMs, atmospheric pressure variations are not communicated to the ocean. In such GCMs, the change in the *IB effect* must be added to the change in simulated sea-surface height in order to produce a quantity comparable to observed *RSL change*.

Ocean dynamic sea-level change: The change in the mean local height of the sea surface above the geoid, excluding the change in the *IB effect*.

Relative sea-level (RSL) change: The change in local mean sea level relative to the local solid surface, i.e., the sea floor.

Sterodynamic sea-level change: *RSL change* due to changes in ocean density and circulation. Sterodynamic sea-level change is equal to the sum of *global-mean thermosteric sea-level change* and *ocean dynamic sea-level change*. Note that the quantity projected by the `tlm/sterodynamics` module of FACTS is the sum of *sterodynamic sea-level change* and the climatological change in the *IB effect*.

Vertical land movement (VLM): The change in the height of the sea floor or the land surface.