



Transport and mixing in Cook Strait, New Zealand

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Cook Strait forms a 22 km-wide connection between the Tasman Sea and the Southwestern Pacific. The scale of the land mass results in the M2 tide being close to out of phase across the Strait, resulting in large tidal flows. Even in depths of 300 m tidal peak currents of 1 m/s are common, and near sharp topography currents more than twice this are observed. Here we present new observations of the flow and variability in the Strait with a focus on the coastal regions including ADCP surveys, moorings and turbulence microstructure deployments. New modeling results based on this work compare a number of numerical approaches with each other and with the observations. The work indicates how tidal rectification, residual and wind-driven flows and mixing all combine to influence transport to the centre-east of New Zealand.