The Joint Australian Tsunami Warning Centre (JATWC) is responsible for issuing tsunami warnings within the Australian region. To a large extent, these are based on numerical guidance provided by the T2 tsunami scenario database, which has recently been implemented for operational use within the JATWC. During an event, the closest T2 scenario is selected and modelled tsunami amplitude values near the Australian coastline from that scenario are used as a proxy for impact, in order to derive an appropriate level of warning.

Since the T2 scenarios are pre-computed, they are necessarily based on idealised initial conditions that may introduce gross errors into tsunami forecasts. This study presents a technique by which sea-level observations from deep-water tsunameters may be used to improve tsunami forecasts, both by providing guidance on optimal scenario selection and by reducing errors in forecast sea level. The study also includes a discussion of how observations are processed into an appropriate form and techniques by which any improvements can be measured and objectively validated.

The technique is demonstrated and tested for the 2010 Chile earthquake. The tsunami generated by this rupture was the first large, ocean-wide tsunami to have occurred since the deployment of the Pacific tsunameter network was completed. It provides an excellent case study as the tsunameter network yielded a high number of tsunami observations.