Methane (CH4) is an important greenhouse gas. Using atmospheric CH4 measurements to estimate CH4 emissions requires a good understanding of how CH4 is transported in the atmosphere. Hence, simulations of atmospheric CH4 concentration have been made with two atmospheric models, namely ACCESS and CCAM, as part of the Transport Model Intercomparison project, TransCom-CH4. The simulations ran for the period 1990-2008 and used six different sets of surface CH4 emissions, while the chemical CH4 sink was modelled using prescribed OH and stratospheric loss fields. Radon, sulphur hexafluoride and methyl chloroform tracers were also simulated. Model output has been analysed for two Australian sites with in-situ CH4 measurements: Cape Grim, Tasmania (AGAGE in-situ data) and the CO2CRC Otway project, Victoria. Cape Grim is a coastal site, observing periods of clean (baseline) air from the Southern Ocean and periods of non-baseline air, influenced by emissions from South Eastern Australia including Melbourne. Otway is a rural location, 4 km from the coast, where the land use is predominantly dairy farming, resulting in a large local CH4 signal from enteric fermentation (diurnal amplitudes up to 250 ppb). Nevertheless, during well mixed periods, measured CH4 concentrations at Otway may be similar to the baseline CH4 concentrations measured at Cape Grim or represent broader regional South Eastern Australian emissions. Preliminary findings indicate that CH4 at Otway and non-baseline CH4 at Cape Grim are sensitive to the choice of wetland emissions. There is also some indication that Melbourne emissions may be underestimated in these simulations.