Trenberth and Fasullo (2010) have noted “disproportionately large biases that exist in both reanalysis and global coupled models in the energy budgets of the SH that is directly linked to the simulation of clouds.” In particular, they note biases in the absorbed shortwave radiation in the clouds over the Southern Ocean. Much of this cloud cover has been observed by CloudSat (Mace et al. 2007) to be of low-level clouds (cloud tops below 3km) with a fractional cloud cover of 70-90%. Recent field observations (Morrison et al. 2010) suggest that such clouds commonly exist in a phase of supercooled liquid water rather than being glaciated or mixed phase. Morrison et al. (2011) constructed a climatology of the cloud-top phase, as defined by MODIS, over the Southern Ocean clouds and found that most of the low-level clouds exist as supercooled liquid water over the Southern, even at high-latitudes, even during the winter. In this work we focus on the wintertime storms that bring precipitation to SE Australia and Tasmania. Consistent with field observations, it is observed that SLW clouds are far more readily observed than over the western US. Consistent with the Morrison et al. climatology, it is observed that clouds topped with SLW are observed up to 35% of the time over the Great Dividing Range of SE Australia. These sensitivity of these clouds consisting of extremely high concentrations of supercooled liquid water to anthropogenic ice nuclei are then discussed.