We make use of ALOS PALSAR data to map deformation in the San Francisco Bay region and as far south as Parkfield in central California. Most of the data acquired over this area are from ascending satellite tracks, and so we construct multiple ascending interferograms from five tracks covering the wider Bay area. These interferograms all have perpendicular baselines less than 2000 m and show excellent coherence in general. To increase the signal-to-noise ratio, the interferograms for each track are stacked. In terms of resolving horizontal tectonic signal, the San Andreas fault system is not optimally oriented for ascending tracks, so stacks covering a longer period of time will be required to enable robust measurements of interseismic deformation across the faults to be made. Localized areas of subsidence at known oil fields near Parkfield show up very clearly, and the highly agricultural San Joaquin basin, which is coherent in most interferograms, shows strong vertical motions. We make some comparisons with C-band data over the same area to highlight the advantages of L-band InSAR. We also show and discuss some examples of NW-SE-trending phase banding which is seen in several interferograms, and has also been encountered in interferograms for Tibet, for example.