The northern part of Hikurangi subduction margin is an area of weak interseismic coupling and regular slow slip events occurring at shallow depth (10-15 km). The mechanisms for slow slip initiation are poorly understood but fluids contained in the subduction interface are thought to play a major role. A 3-D inversion of magnetotelluric data from 34 sites, on the Raukumara peninsula shows an electrically conductive dipping zone at the interface, suggesting the presence of interconnected fluids. Seismicity occurs above the subduction interface only in an area where the conductive zone broadens and connects with the overlying sediments in the accretionary wedge, suggesting that we are seeing upward migrating fluids.