Very Low Frequency (VLF) radio waves propagate with little attenuation within the Earth-ionosphere waveguide (EIWG). Perturbations of the lower ionosphere produce a modification in the geometry of the EIWG, resulting in a disruption of the VLF propagation conditions. A model based on Wait's mode theory and ionospheric parameters is developed to investigate subionospheric VLF wave propagation and the effects of different waveguide properties. Although the bulk of VLF energy reflects off the lower ionosphere, a small portion leaks up into space. This leaves a fingerprint of the modal interference pattern of the fields at the reflection height. This pattern can be detected by spacecraft and is a good method of observing how the fields vary spatially and the effect that different propagation conditions have on the modal pattern. Simulations are compared to averaged data taken over a year from the DEMETER satellite over the NWC transmitter to test the validity of the model. FDTD techniques are utilised to perform further comparison with simulations and data.