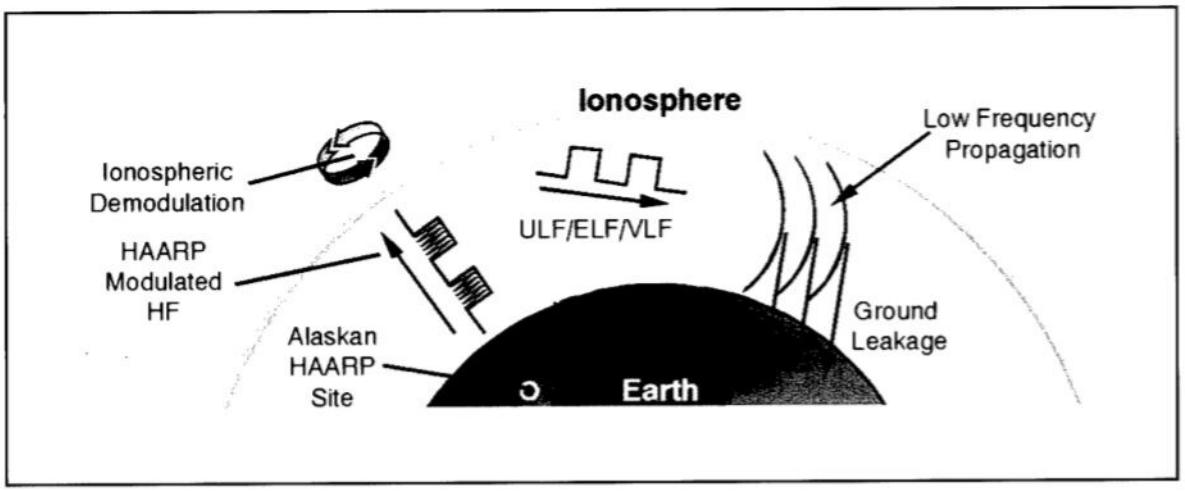
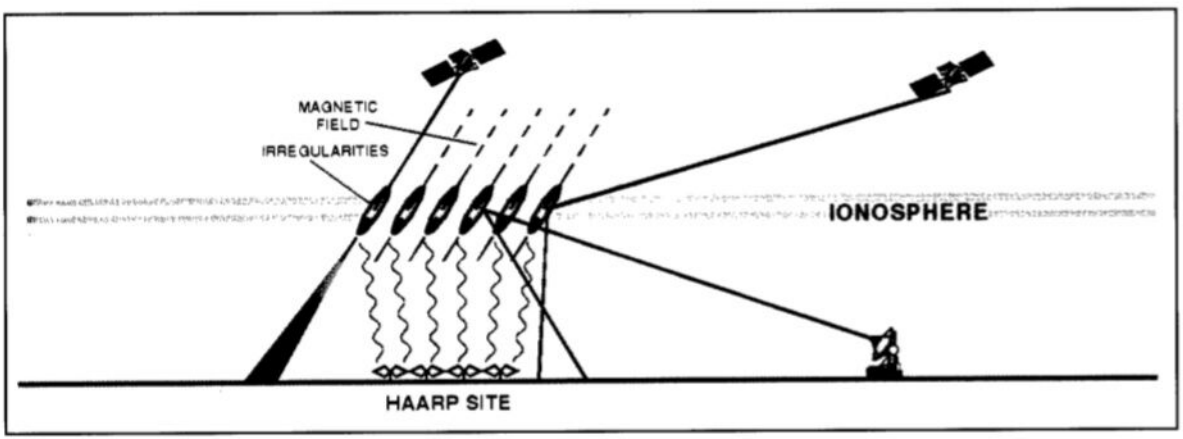


ULF/ELF/VLF waves created by ionospheric demodulation of amplitude or frequency modulated HF signals from the HAARP transmitter. The low-frequency waves are guided by the waveguide formed between the ground and the ionosphere. These waves propagate unattenuated over thousands of kilometers. Energy leakage through the sea and ground allows for communication with submarines and underground exploration.

formed by the ground and the ionosphere, in the manner that many low-frequency communication systems are used by the Navy.

When the energy is deposited in the F Region near the peak of the electron density, it creates striations in the local ionospheric electron density. The striations are rodlike and are aligned with the magnetic field. They can act as specular field aligned scatterers (FAS) that reflect frequencies from HF to UHF in a highly directional manner. The FAS could modify the signals traversing them as well as provide new communication links.



HF power from the HAARP transmitter incident on the ionosphere creates structures in the electron density. These structures, acting as Bragg scatterers, create new ground-to-ground and ground-to-space HF/VHF/UHF links. They can also affect the performance of conventional satellite-to-ground VHF/UHF links.