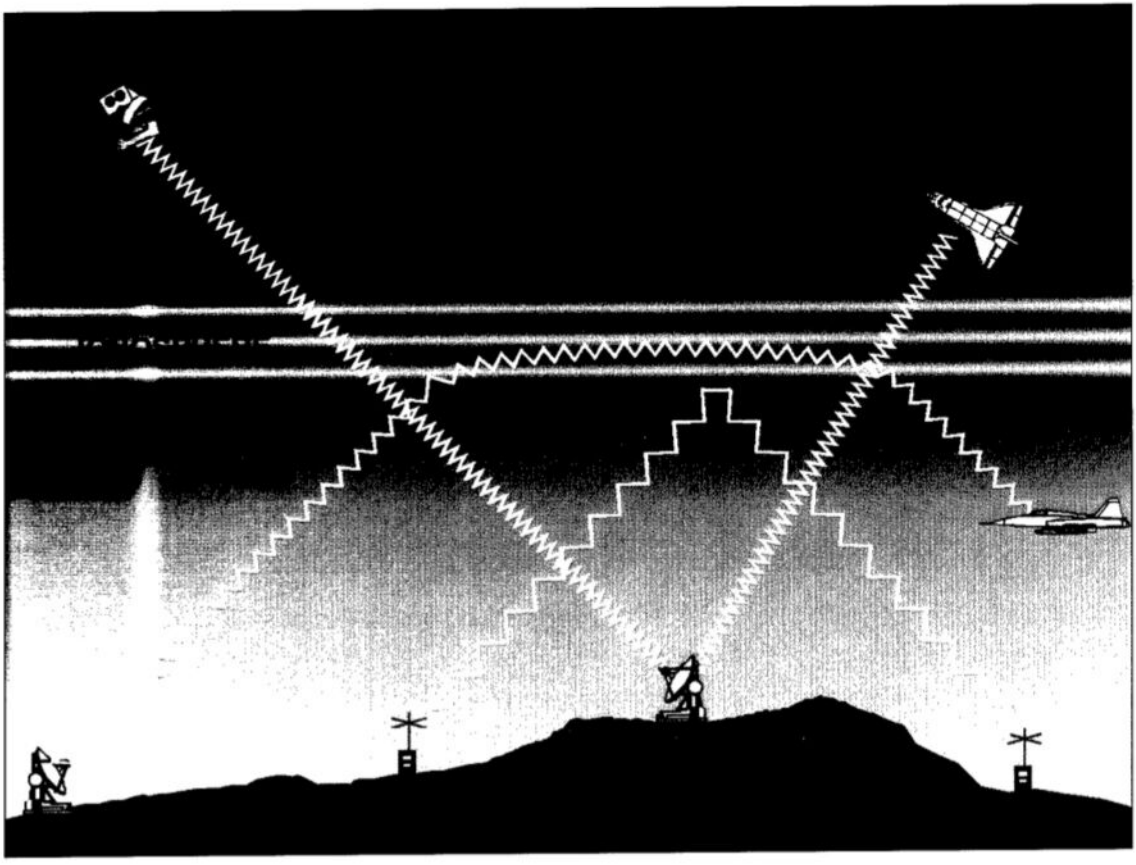
The presence of charged particles in the ionosphere controls the performance of many military and civilian systems using electromagnetic waves. On the low frequency end (VLF/ULF/HF), reflection of radio waves by the ionosphere allows for worldwide communications and Over-the-Horizon (OTH) radar operation. On the higher frequency end (VHF/UHF) transionospheric propagation is a ubiquitous element of numerous civilian and military communication, surveillance, and remote sensing systems. Paths linking satellites to the ground cross the ionosphere, and the system performance is often critically dependent on the state and structure of the ionosphere in the vicinity of these paths.



HF links using ionospheric reflection and transionospheric communication paths