Study the behavior of average equivalent admittance of a rough surface at low grazing angles and devise a computationally feasible way of treating radiowave propagation in an inhomogeneous half-space bounded by a rough surface.

Solve the problem of propagation over a perfectly conducting, deterministic rough surface under the parabolic approximation and obtain the reflection coefficient via Monte Carlo simulations;

Replace the rough surface by a flat surface having a non-constant admittance such both have the same reflection coefficient in the specular direction;

Propagation over a non-constant admittance plane will be formulated in terms of field marching between vertical planes.

Low grazing angle forward propagation over a perfectly conducting random rough surface was studied using the PE approximation in the X-band. Furthermore we used SSFT to evaluate propagation in an inhomogeneous half-space bounded by a non-constant admittance plane. This technique needs admittance data over a wide range of grazing angles.

Comparison with Rough Evaporation Duct Experiment Data

Comparison with Wallops Island 1998 Experiment Data

Comparison with First-Order Smoothing Approximation

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