

1 Sea clutter

Sea clutter is a specific form of spurious echo feature caused by anomalous propagation (AP, super-refraction) of the radar beam above bodies of water. Section ?? provides a background to AP and an illustration of AP conditions which include severe sea clutter echoes from the Baltic Sea, south of the Island of Gotland. In contrast to AP echoes from land, sea clutter is generated from waves with true velocities. Doppler filtering, which assumes that non-precipitation echoes are static in space, is not an effective method for identifying and treating sea clutter.

Baltic Sea Clutter

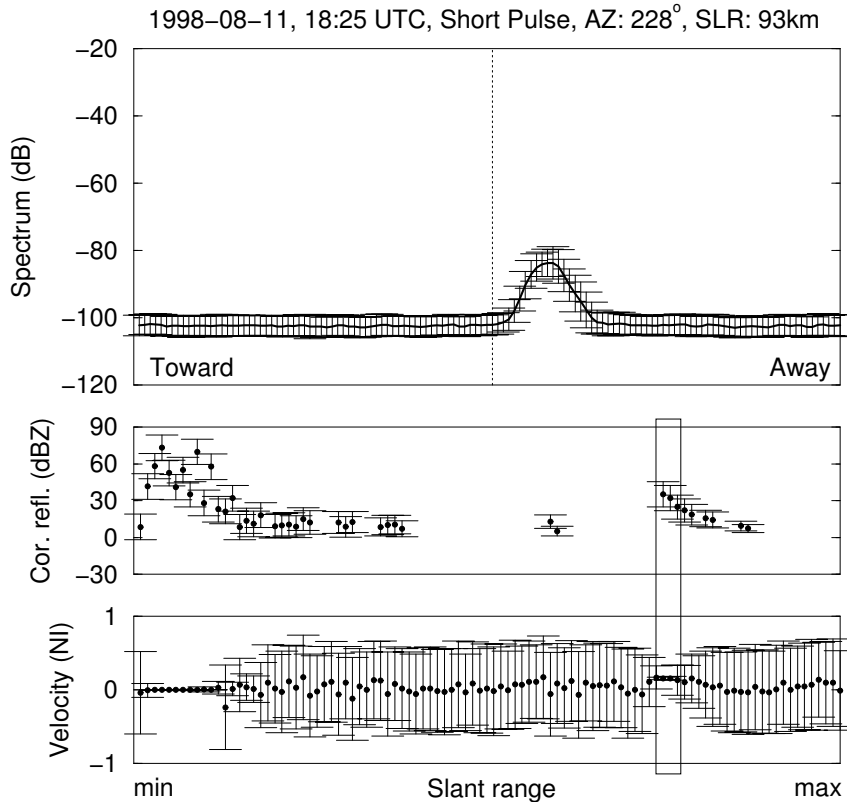


Figure 1: Short pulse ($0.5 \mu s$) spectra of clutter from the Baltic Sea. 100 bins per ray.

Multisource methods, e.g. Michelson and Sunhede (2004), are able to treat sea clutter, but it would be more attractive to derive effective methods based on signal processing techniques if possible. In order for such methods to be successful, they must somehow be able to identify multiple modes in the reflectivity spectrum, and treat each mode differently, assuming the wave and wind velocities and directions are different. Figure 1 contains a time series of spectra from a weak sea clutter signature measured from the radar located at Hemse, Gotland, Sweden.

2 References

- Michelson, D. B. and Sunhede, D., 2004. Spurious weather radar echo identification and removal using multisource temperature information. *Meteorol. Appl.* 11(1), 1–

14.