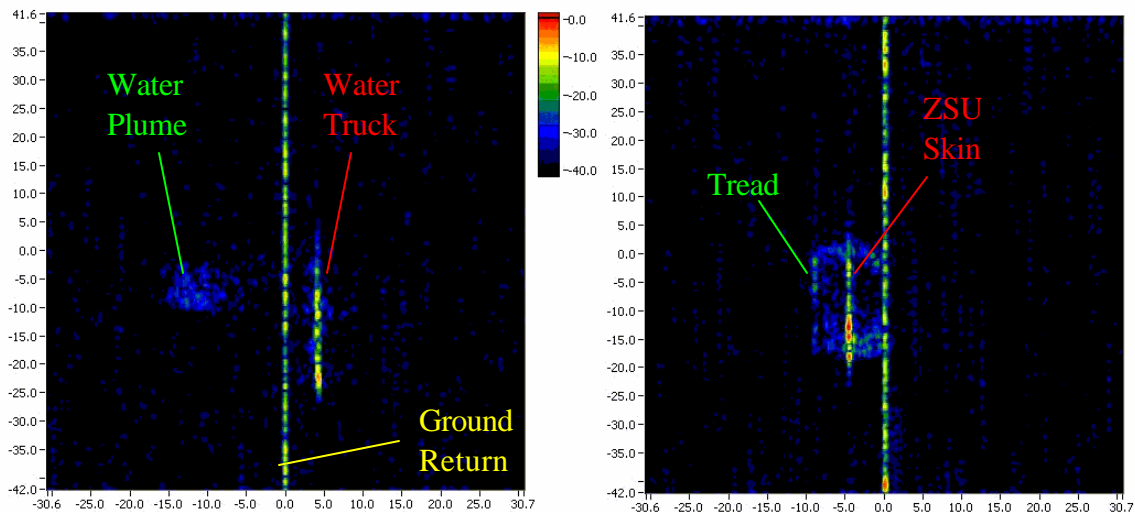


## SCI E-Series Measurements at China Lake, California

The SCI E-Series prototype Radar participated in a ground target signature collection at the Naval Air Warfare Center's China Lake facility in 2001. The site was atop a mountain, overlooking a steep valley on the north ranges. The E-Series prototype's small, light form factor allowed it to be carried up the steep dirt road in the back of a 4 wheel drive SUV.

The lookdown angle employed was about 17 degrees and the slant range to the target was 10000 feet. The peak power used was 400 milliwatts. No external amplifier was needed. The E-Series prototype can operate at low peak power because of the dual integration gains of linear frequency modulation in fast time and Doppler processing in slow time. The user-friendly data reduction tools allowed a look at the data within minutes of the time that it was collected.



The figure above shows range-Doppler images of a water truck at left and a ZSU tracked vehicle at right. The vertical axis is range in feet and the horizontal is range rate in ft/sec. The bright vertical line at image center is the zero Doppler ground return.

The water truck was approaching the radar and spraying a plume of water from the back. The truck skin return is visible to the right of the ground return and the water spray is visible to the left.

The ZSU was moving away from the radar. Its skin return is the brightest pixels to the left of the ground return line. The tread is the oval-shaped feature that encloses the ZSU skin. The top of the tread is moving away from the radar at twice the target body and is visible at twice the target body range rate. The bottom tread is in contact with the ground and so has essentially zero range rate. The front and back of the tread show the speed transition from twice target speed to 0 and back.