

SESSION: Technology, Instruments, Techniques II

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High resolution detection and tracking of Low Earth Orbit satellites using RISR-C

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Recently the University of Calgary was contracted by the Canadian Department of National Defense to examine the possibility of using the RISR-C radar for detecting and tracking satellites in high inclination orbits. During routine radar operations, hard targets (satellites) are detected in the topside ionosphere in every RISR-C beam several times per hour. During normal scientific operations, these hard targets can introduce a bias upon averaging which may affect determinations of routine parameters such as electron density. Despite this aspect, we have the opportunity to utilize this 2 MW, phased array radar for dedicated object tracking and detection operations. In theory, objects as small as 3 cm will be detectable at ranges up to 1000 km. Two distinct mode types have been developed to both passively detect unknown (at the time) objects passing through the radar Field-of-View (FOV) and actively target known objects. Several detections of known satellites (including, but not limited to, Canadian space satellites) have been obtained to date.