

PolarDARN radar signatures of polar cap arcs detaching from the auroral oval

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PolarDARN radars at Rankin Inlet and Inuvik can monitor plasma flows in the vicinity of optical forms occurring near the Resolute Bay zenith where OMTI all-sky camera makes auroral imagery. Several events of successful F-region echo detection are presented. Two types of events are considered: 1) detachment of an oval-aligned arc and subsequent propagation towards the pole and 2) poleward progression of a meridionally-aligned arc segment towards the Pole. We show mutual location of echoes and optical forms and discuss reasons for the locations of echo occurrence. The speed of the auroral forms progression and plasma flows (as measured by the radars) are compared to indicate that some of the arcs are ExB drifting while others moving much faster. We discuss fine features in the plasma flows structure around the arcs.