An important assumption in space physics is that magnetic field lines can usually be treated as electrostatic equipotentials. The assumption is based on the fact that charged particles can easily spiral along magnetic field lines and equalize any potential differences that may arise. The assumption tells us that electrodynamic processes occurring at both ionospheric ends of a closed magnetic field line should be very similar, even when there might be substantial inter-hemispheric differences in ionosphere-thermosphere conditions (e.g. seasonal effects). The net result is to produce a common electrostatic potential structure for the entire magnetic flux tube that includes averaged effects of electrodynamic influences at both ends and the flux tube moves collectively, at least, in steady state. In this presentation we examine the validity of this assumption using measurements of ionospheric plasma drift obtained from the Super Dual Auroral Radar Network (SuperDARN). We present several event intervals in which north-south pairs of SuperDARN radars with nominally conjugate fields of view observed simultaneous measurements of ionospheric convection. We use empirical magnetic field models to map the radar measurements between the hemispheres to rigorously examine the consistency between the flows. We interpret the results in terms of seasonal influences, IMF-related asymmetries in magnetosphere-ionosphere parameters, as well as inaccuracies in the magnetic field line tracings. A particular emphasis is placed on examining subauroral features (e.g. the subauroral polarization stream or SAPS) observed simultaneously by the mid-latitude Wallops radar in the northern hemisphere and the new Falkland Islands radar in the southern hemisphere.