Study on electrodynamic characteristics of small-scale auroras

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We have conducted a simultaneous EISCAT-optical observation in March 2003 in order to determine electrodynamic characteristics of small-scale auroras. In this campaign, we used the EISCAT Tromsoe UHF radar looking at the magnetic field aligned direction, a low-light, high resolution TV camera, two digital cameras at Tromsoe (Geographic latitude: 69.6 deg North). We have developed a new analysis method that is capable of obtaining much higher time resolution data (~ 4 sec) than usual (more than 20 sec) and applied it to small-scale auroras such as discrete auroras and black auroras.