We study the cross-correlation among the parameters (echo power, Doppler velocity and spectral width) obtained with the Syowa Station HF radar. There is positive correlation between the absolute value of Doppler velocity and echo power. This correlation varies with MLT and geomagnetic activity. This is probably due to the difference of mechanisms to generate F-region irregularities. Particle precipitation may be play a important role to the generation of irregularities in the highest auroral activity regions.