Report on the campaign observation at Athabasca, Canada on Aug 28th to Sept 6th, 2024

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From August 28th to September 6th, 2024, our group went to Athabasca, Canada and made a campaign observation of aurora. Our members set up two ZWO all-sky cameras camera with all-sky lens at Athabasca University Geophysical Observatory II (AUGO-II, 54.60°N, 246.36°E) and one camera at AUGO-I (54.71°N, 246.69°E) for the campaign observation during our stay. I set up a Sony a7s camera at AUGO-II to test the color aurora observation at a higher speed. We restored the ZWO cameras before we come back to Japan, and leaved the Sony a7s camera at AUGO-II to replace the Nikon camera for continuous two-point observation with another Nikon camera at AUGO-I. During our stay, we successfully observed an intense auroral substorm, and several small auroral activities.

We left for Athabasca from Tokyo on August 28<sup>th</sup> and arrived at AUGO-II, Athabasca in the afternoon of local time. I tested the Sony a7s camera outside of AUGO-II on the first night. Compared with the images with 30 s exposure time simultaneously taken by the Nikon camera inside of AUGO-II, Sony camera successfully took the all-sky images with 5 s exposure time at a frame rate of 4 frames per sec. With a shorter exposure time, we expect that the Sony camera will be able to perform better in identifying the fine structure and fast motion of the subauroral emissions. In the evening on August 31<sup>st</sup>, we were fortunate to observe a strong substorm event, during which the Sony camera was operated in the AUGO-II and captured a complete development of the substorm aurora. I leave the Sony camera at AUGO-II after we return to Japan, as we expect this camera will be able to work for a longer lifetime with electric shutter.

I would like to give my special thanks to the PBASE project and the traveling support program from ISEE for supporting us in making field observations. I want to give thanks to Graduate school of engineering, Nagoya University for financial support on instrumentation purchase. I sincerely appreciate my supervisor for his navigation and valuable introductions. I also want to thank the local faculties, Prof. Martin Conners and Dr. Raju Aryal, for giving us places to set up instruments and other help.



Figure 1. Test image taken by Sony A7S camera at 0711 UT on Aug 29, 2024 at AUGO-II



Figure 2. Image from Nikon camera at 0711 UT on Aug 29, 2024 at AUGO-II



Figure 3. Image of the substorm auroral arc by Sony A7S camera at 0630 UT on Aug 31, 2024 at AUGO-II