

Z113b VERTECS: Selection of Observation Fields and Observation Simulation

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VERTECS (Visible Extragalactic background RadiatTion Exploration by CubeSat) is a 6U-sized satellite mission to observe the Extragalactic Background Light (EBL) for the study of the cosmic history from the dark ages to the present. The mission section is equipped with a 35 mm F/2 refractive telescope, a 3000×3000 pixel CMOS sensor, and four-color filters. The field of view of $3 \text{ deg} \times 3 \text{ deg}$ will be covered with the four bands by changing the satellite attitude to observe the same field in the four bands, and about 35% of the entire sky will be surveyed during the one-year mission period. In this study, we performed a numerical simulation of the observations during the mission period to estimate the number of observations required to measure the EBL with a target accuracy of approximately $1 \text{ nW/m}^2/\text{sr}$. The simulated observations were created by modeling the three components of foreground light (zodiacal light, diffuse galactic light, and integrated starlight) to match the filter colors of VERTECS and adding a constant EBL brightness of $10 \text{ nW/m}^2/\text{sr}$. The observation accuracy of the EBL is also affected by the uncertainty in subtracting foreground light, thus requiring analytical simulations using mock images. Through this study, we were able to create an actual analysis pipeline and develop a schedule capable of achieving the target observation accuracy. In this presentation, we will report on the process of creating mock images, verifying observation accuracy, and creating the observation schedule.