

Exploring Atmospheric Properties from Color Change Observation of the International Space Station

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The purpose of this study is to attempt to make a low cost ozone map. The images of the ISS(the International Space Station) change their color from white to blue to red when the ISS appears and disappears. According to NASA's Science News(Dec.2011) the blue hue becomes stronger when sunlight passes through the ozone layer. In this study, we assume that the blue hue reflected from the ISS deepens as the ozone layer thickens. First, we photographed the ISS's light trails and measured RGB values, especially focusing on the B color code. Second, we estimated the ISS's positions and distance traveled through our photographs by comparing our the times at the beginning and end of each exposure and the total time elapsed in the composite image with the JAXA *Kibo o miyo* ISS location map. From these data, we researched the relationship between the amount of ozone and observed color changes of the ISS in our photographs. In conclusion, it is likely possible to create an accurate ozone layer map by using amateur pictures of the ISS. This method could replace current costly observation techniques.

Keywords: International Space Station, ozone layer

ISSの色変化から探る大気の性質

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