

## The comparison of the production rate of comets' coma using EUV spectroscopic observations by Earth-orbited satellite

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Comets are not easily affected by space weathering since they have a large orbital eccentricity and stay far away from the Sun for a long time. Therefore, most comets are thought to keep the information on the material distribution and temperature environment of the early solar system. In particular, the difference in the production rate and spatial distribution of the comets' atmosphere (coma) of different molecular species reflects the composition ratio and composition distribution of the nuclear surface. Thus, remote sensing of coma is important to estimate the formation environment and thermal history of comets.

In this study, using the EUV spectroscopic observations by the Earth-orbiting satellite "Hisaki", we first deduced the vertical distribution of H atoms and CO molecules of six comets including C/2013 US10 (Catalina). Subsequently, the one-dimensional dynamic coma model was constructed and compared with the observations to estimate the production rate of H<sub>2</sub>O molecules and CO molecules in the coma and its temporal variability.

Our result shows that, in particular, C/2013 US10 (Catalina) has a large production rate of H<sub>2</sub>O and CO, which suggests it may have a large active region on the surface of its nuclear.

In this presentation, we discuss the formation environment and nuclear surface of each comet through the comparison of the molecular production rate of comets' coma obtained by EUV spectroscopic observations.

Keywords: comets, C/2013 US10 (Catalina), tenuous atmosphere, Hisaki, EUV spectroscopic observation