

## Influence on climate change caused by aerosol released from forest fires in Sumatra Island

\*Kosei Sawada<sup>1</sup>, Akari Taura<sup>1</sup>, Shoji Kawarabayashi<sup>1</sup>, Nana Iwadate<sup>1</sup>, Takahiro Yoshii<sup>1</sup>, Fiolenta Marpaung<sup>1</sup>, Kensuke Watanabe<sup>1,3</sup>, Nobuyasu Naruse<sup>1,2</sup>, Yukihiro Takahashi<sup>1,3</sup>

1.Global Science Campus, Hokkaido University, 2.Institute for the Advancement of Higher Education, Hokkaido University, 3.Graduate School of Science, Hokkaido University

Aerosols in the atmosphere, by blocking the sunlight, can have a direct influence on the climate (direct effect). When the number of aerosols increases in the atmosphere, the size of cloud particles can be reduced because the water content in the atmosphere is finite: aerosols can be a core of clouds. The finite amount of moisture leads to the large lifetime of clouds and the increase of cloud density, allowing increasing the reflection efficiency of the sunlight. This effect called as indirect effect. Both of the effects work to cool the Earth. On the other hand, the aerosol, the specific fine particles such as black carbon, absorbs sunlight. Thus, There is a large significance to quantitatively clarify the influence of aerosols on the climate, since it depends on the sources and the types.

This study aims to clarify the influence of aerosols on the climate, which the aerosol released from forest fires in Sumatra Island. MODIS and Landsat8 satellite data were used.

In the previous work, there is a report that quantitative estimation of the influence of aerosols on the climate was performed. The aerosols were released by the Kilauea volcano in Hawaii Island. They showed that the size of cloud particles with increasing aerosol decreases (indirect effect). The present study was also as the same manner.

Keywords: Aerosol, Cloud core, Remote sensing