

## 2021 Aso volcano eruptions observed using polarimetric weather radars

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Explosive eruptions occurred at Mount Aso on October 14 and 20, 2021. Aso had an explosive eruption in 2016 with a plume height reaching about 12 km above sea level (about 10.5 km above the crater rim) (e.g., Sato et al. (2018)). After that, Mt. Aso became active from 2019 to 2020, although the maximum plume height was 2 km above the crater rim at that time.

Both eruptions on October 14 and 20 were observed by operational weather radars, including the JMA operational Weather Radar (Fukuoka) and XRAIN. Radar analysis shows that the plume heights of the two eruptions were both about 5 km above sea level (3.5 km above the crater rim), which is lower than the 2016 eruption but higher than the 2019-2020 eruptions.

The Fukuoka radar was recently upgraded to dual polarization in 2021, and this was the first eruption of Mount Aso captured after the update. The correlation coefficient ( $\rho_{hv}$ ) of the October 14 eruption was high, and hence the plume appeared to be water-rich. In contrast, the  $\rho_{hv}$  of the October 20 eruption is lower than that of the previous eruption, suggesting that the degree of pyroclastic mixing was greater in this case.

### References:

Sato, E., Fukui, K., and Shimbori, T. (2018) Aso volcano eruption on October 8, 2016, observed by weather radars. *Earth Planets Space*, **70**, 105.

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