

Objectives:

Aerosol optical properties are studied using data from ground-based and ship-borne sun and sky radiometer measurements. We are seeking in this data information on the aerosol optical properties with respect to their temporal and spatial variability and validation of Satellite and numerical models. Furthermore, effect of earth climate change with Aerosol and Cloud.

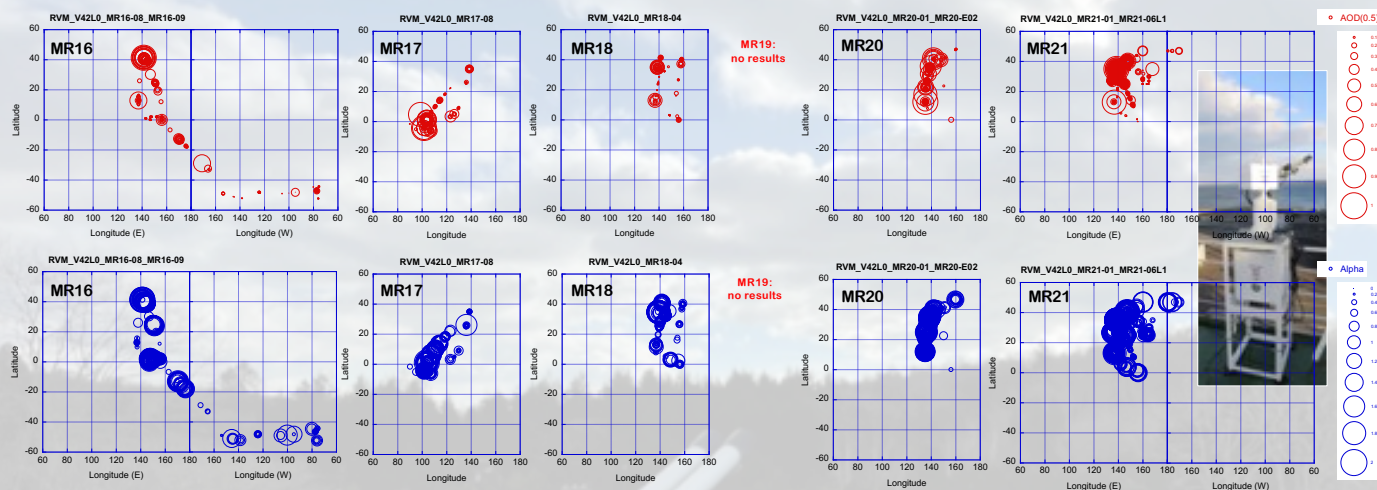


Fig.1 Aerosol optical depth at 0.5 μm (upper) and Ångström exponent (lower) during MR16-08 to MR21-06 Leg.1 cruise by R/V Mirai, JAMSTEC.

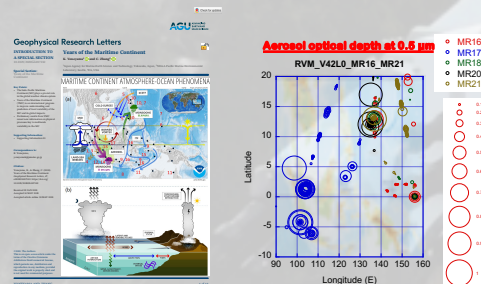


Fig.2 Aerosol optical depth at 0.5 μm at Tropical ocean areas during MR16-08 to MR21-06 Leg.1 cruise by R/V Mirai, JAMSTEC. (YMC campaign: Yoneyama and Zhang, 2020, GRL.)

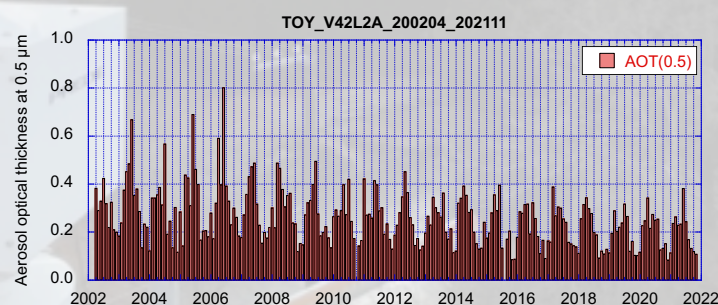


Fig.3 Monthly mean of Aerosol optical depth at 0.5 μm (AOT(0.5)) during 2002.04 to 2021.11 in Toyama, Japan.

Aerosol optical properties of JFY2021:

Due to the COVID-19, Observation & maintenance of the Sky radiometer could not be performed as usual for the past two years. Especially, it is difficult to Cruise campaign. We will show the three example results (Fig.1, 2 & 3) of JFY2021.

Figure 1 shows aerosol optical depth at 0.5 μm (upper) and Ångström exponent (lower) vs Latitude and Logitude during MR16-08 to MR21-06 Leg.1 cruise by R/V Mirai. The effects of the Anthropogenic (effective of continent) and Natural aerosols (e.g. Nishino-shima volcano) were confirmed in 5 years cruise. Figure 2 shows Aerosol optical depth at 0.5 μm at Tropical ocean areas during MR16-08 to MR21-06 Leg.1 cruise by R/V Mirai, JAMSTEC. (YMC campaign: Yoneyama and Zhang, 2020, GRL.). It is high AOD in the near the island area. Figure 3 shows monthly mean of aerosol optical depth at 0.5 μm (AOT(0.5)) during 2002.04 to 2021.11 in Toyama, Japan was slightly lower and lower by the 20 years long-term record with clearly seasonal cycle.

Activity of JFY2021:

Momoi et al., 2022, PEPS (accepted).
<https://doi.org/10.1016/j.scitotenv.2021.148026>.
<https://doi.org/10.1016/j.atmosenv.2020.117923>.

SKYRAD-net web page:
<http://skyrad.sci.u-toyama.ac.jp/>

Summary: Although it was affected by the COVID-19, it was possible to continue observing about 50 to 70 % (Maintenance 30%) in this JFY2021.

Major topics: Monthly mean of AOD was slightly lower and lower by the 20 years long-term record at Toyama, Japan site.

The effects of the Nishino-shima and the other volcano were confirmed in several Japan site.

JFY2022 plan: We will continue observing in the JFY2022 below topics and plan.

Ground-based: Unzen/Nagasaki site will be start.

Ship-borne: We have plan to one R/V Mirai cruise in the JFY2022.

