

Validation of GCOM-C products relating oceanic aerosols by shipborne measurements

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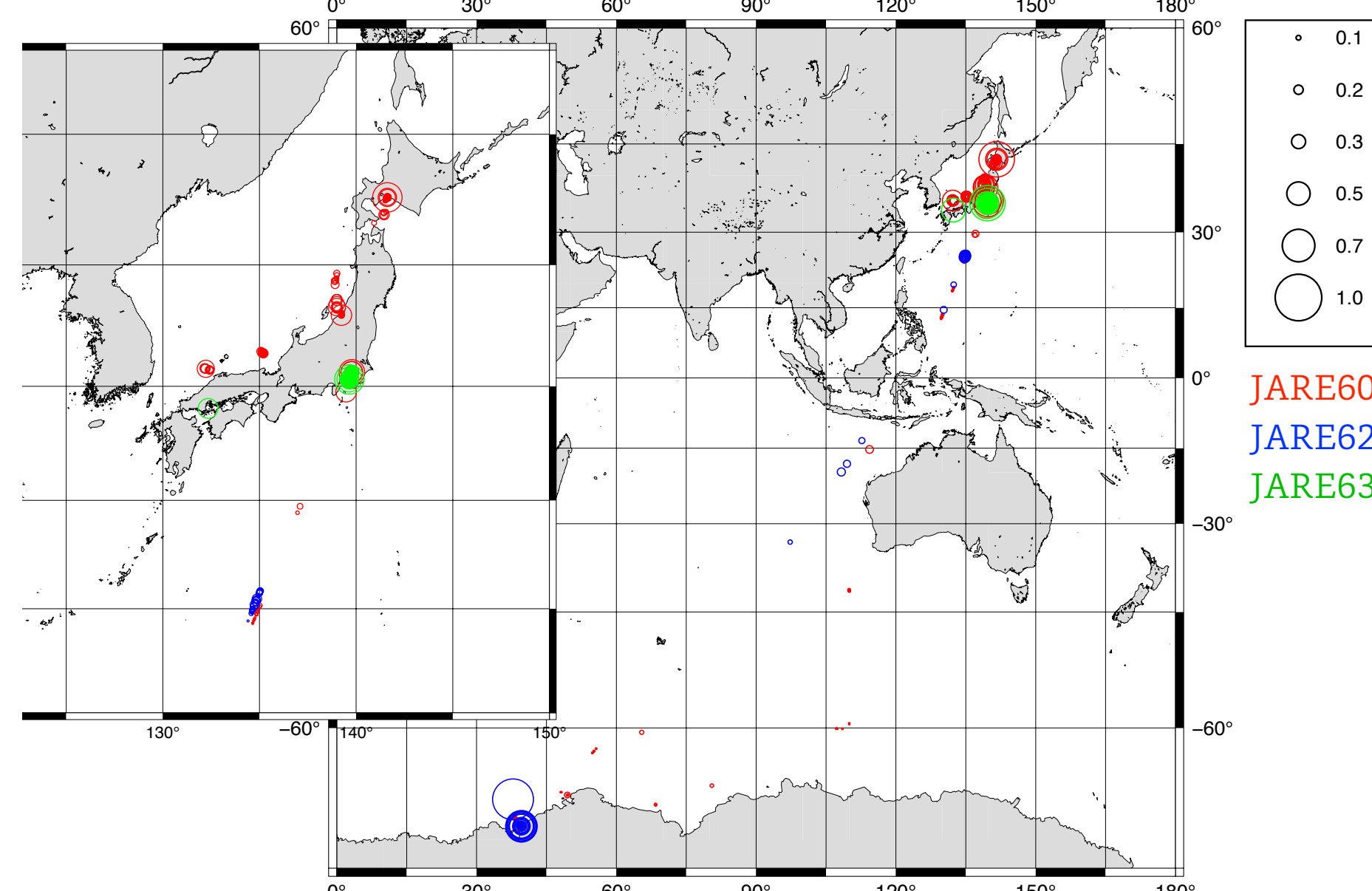
Development of SAUREs

- Ship-borne AUREometers (SAURE) are developed.
- and installed to Japanese Icebreaker Shirase and Korean Icebreaker Araon.
- Araon's SAURE is still down because I could not visit to Korea.

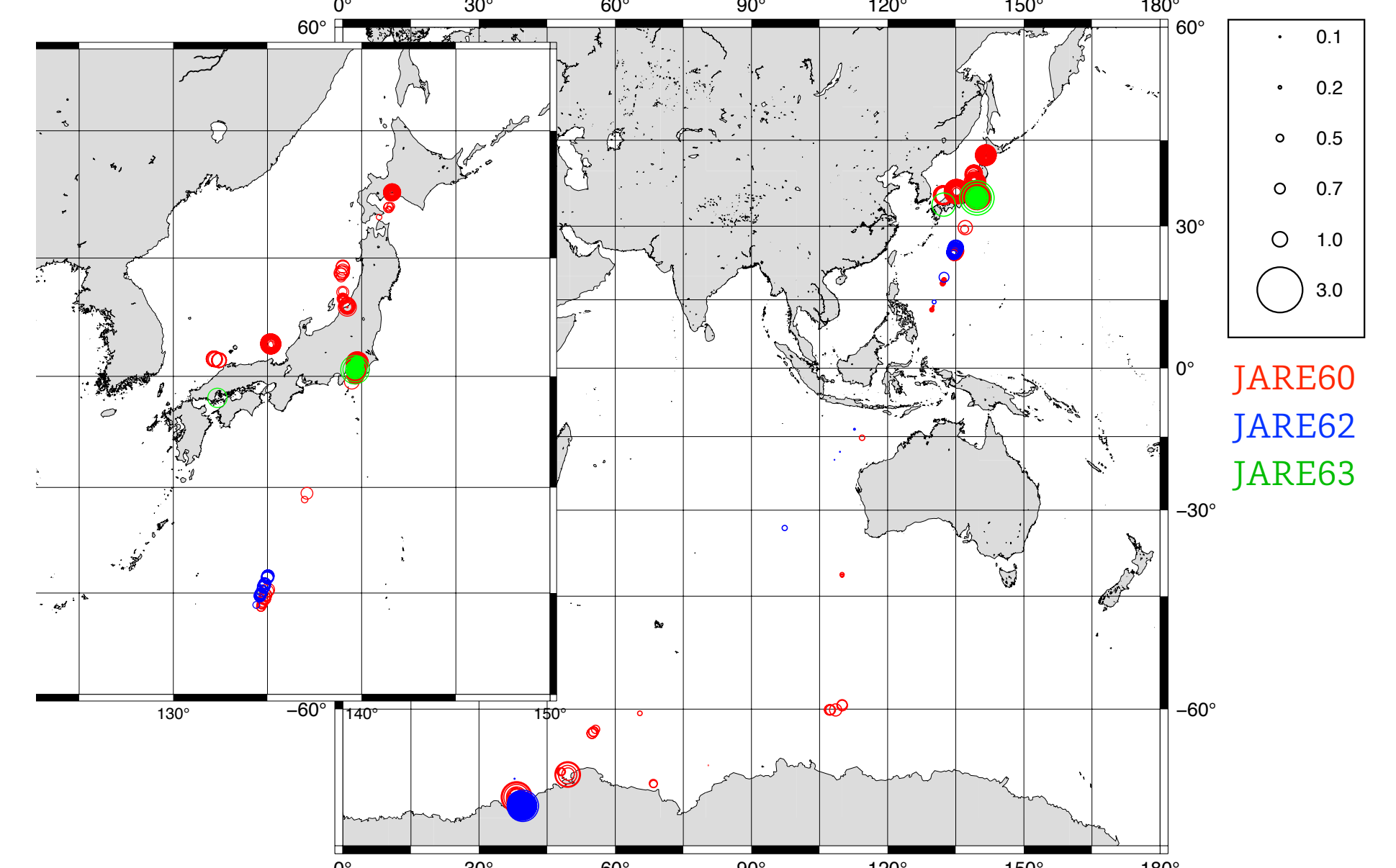
	Shirase (Japanese RV)	Araon (Korean RV)
FY2019	○	X
FY2020	X Controller failure	X
FY2021	△(outbound only) PC trouble	X



AOT at 500nm

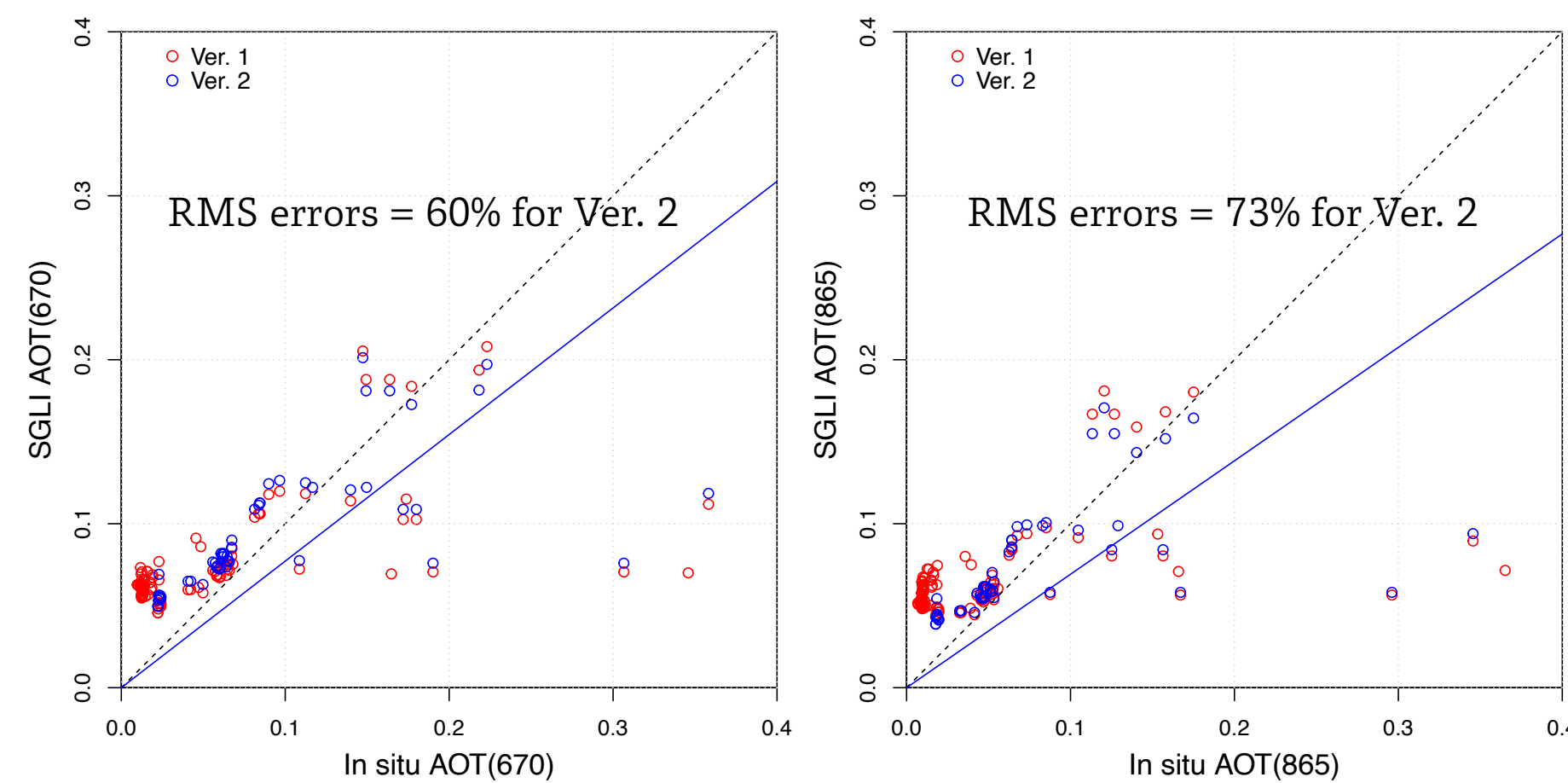


Angstrom exponent



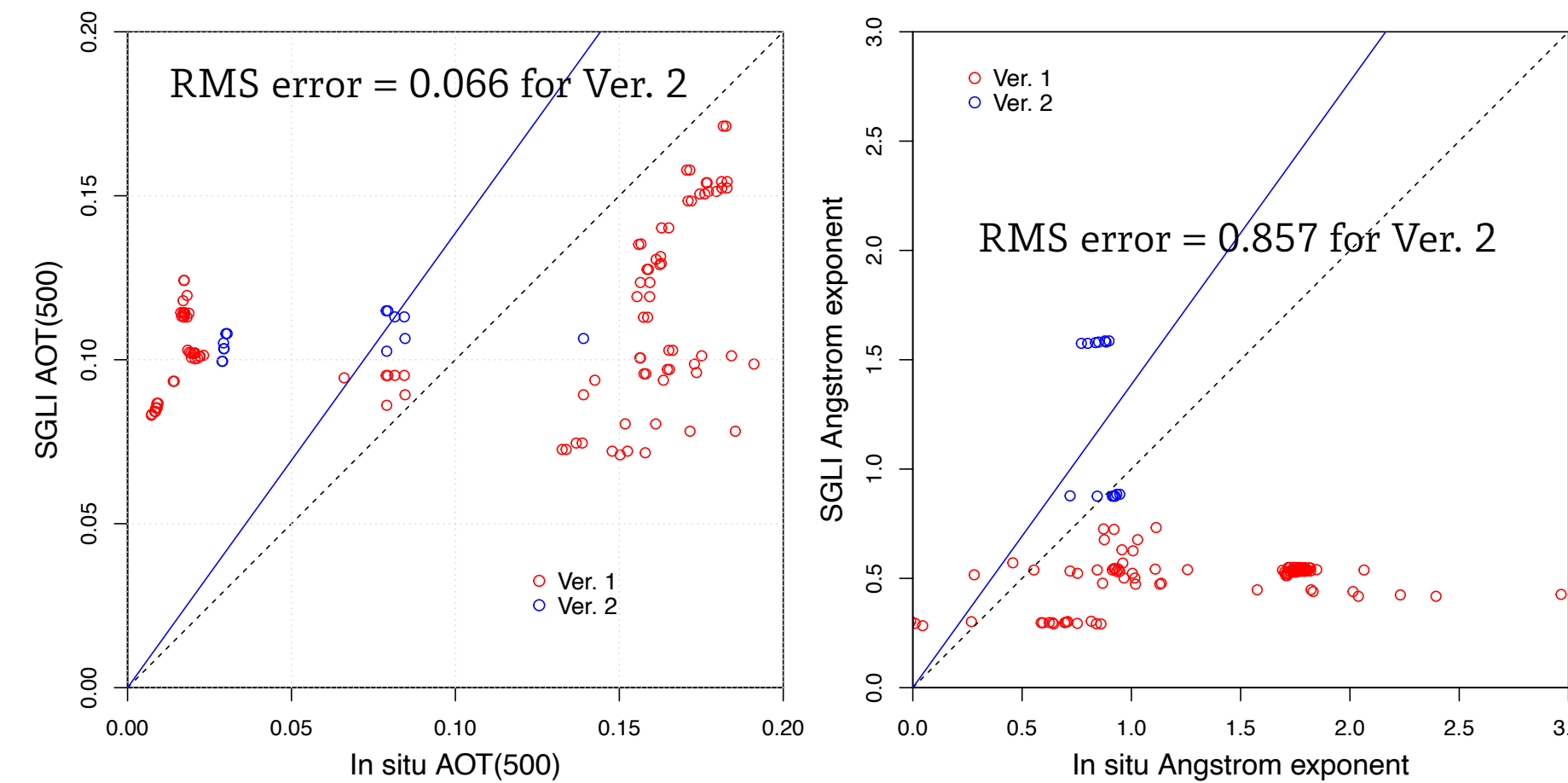
Atmospheric correction parameters

- AOT(670nm) and AOT(865nm) of Ver. 1 and 2
- Good relationship, although some data is underestimated



Non polarization oceanic aerosol

- AOT(500nm) and Angstrom exponent for Ver. 1 and 2
- The results of Ver.2 are improved, although the number of data decreased



Aerosol model

- Standard aerosol models of the atmospheric correction sometimes occur negative L_w
- Aerosol models were developed from the SAURE measurements in each waters
 - Japan, Northern and Southern West Pacific, East Indian Ocean, Antarctic Ocean

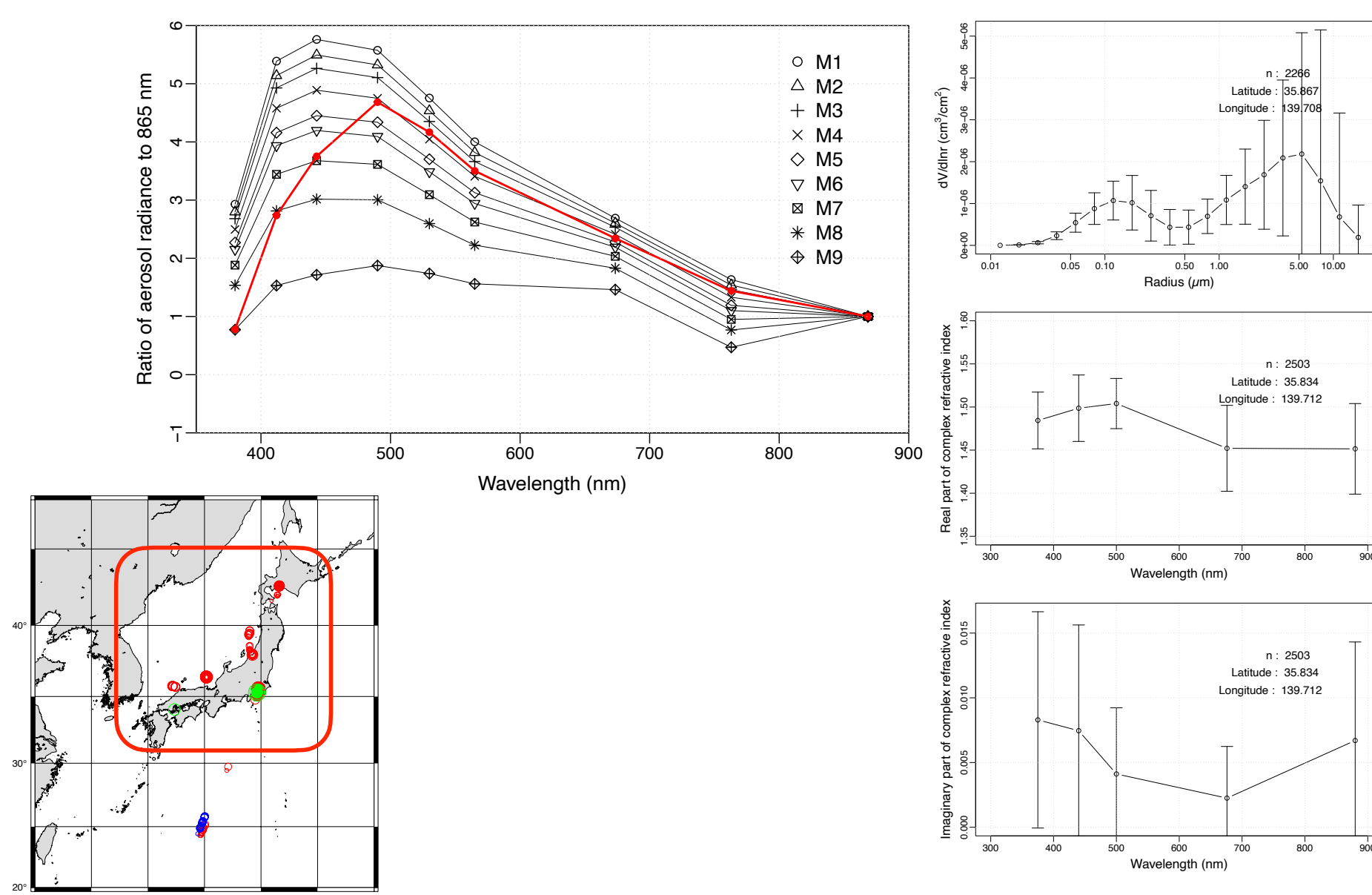


Inversion analysis
(skyrad ver.5)

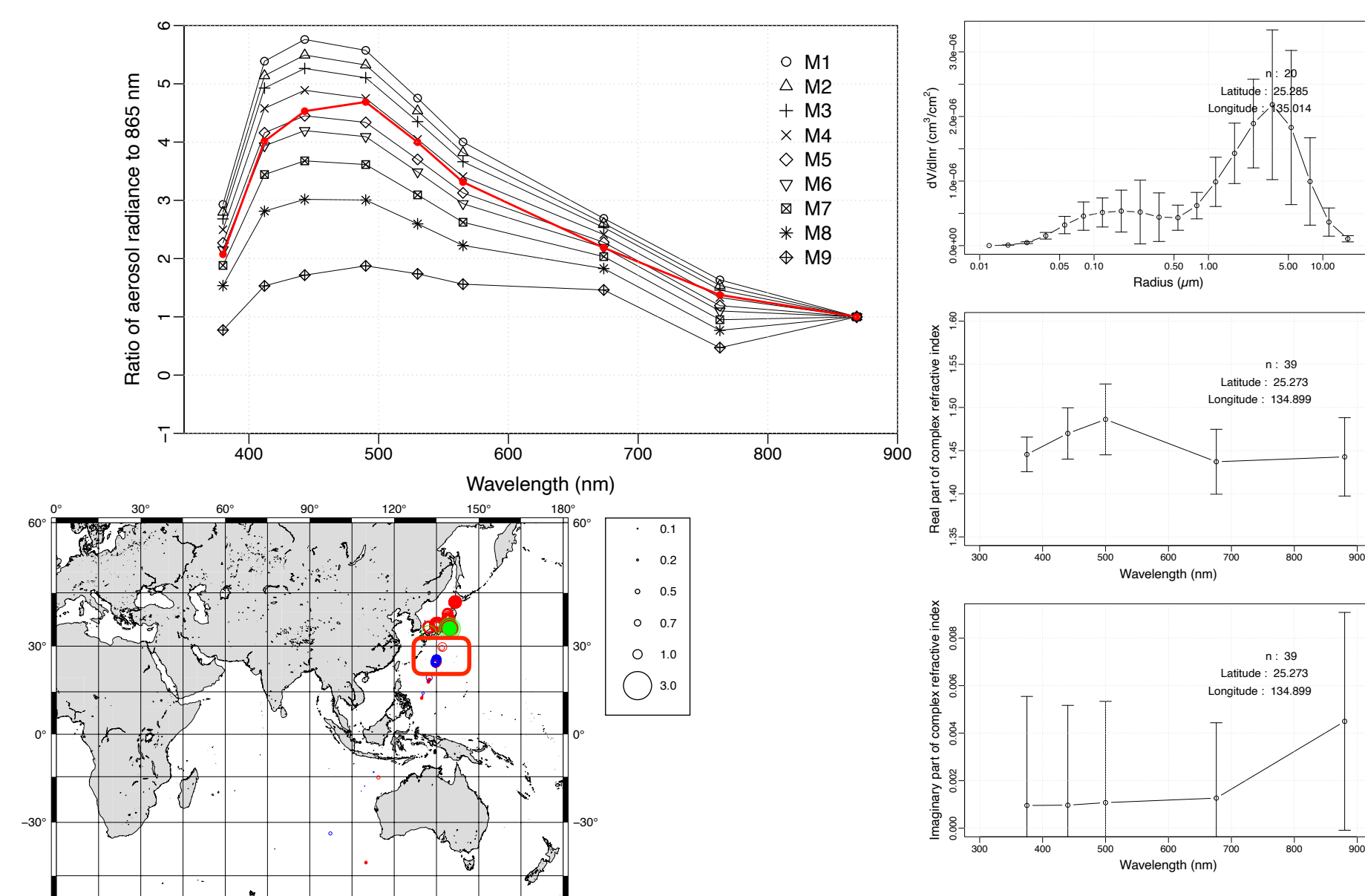
- Size distribution
- Real and Imaginary parts of complex refractive index

- To evaluate the aerosol absorptency, a simple radiative transfer simulation was carried out
- Aerosol radiance spectra normalized to 865 nm were calculated
 - $L_a = L_t - L_{\text{rayleigh}}$
 - Ground albedo = 0, $\theta_{\text{sun}} = 30^\circ$, $\theta_{\text{sensor}} = 120^\circ$, $\phi = 90^\circ$

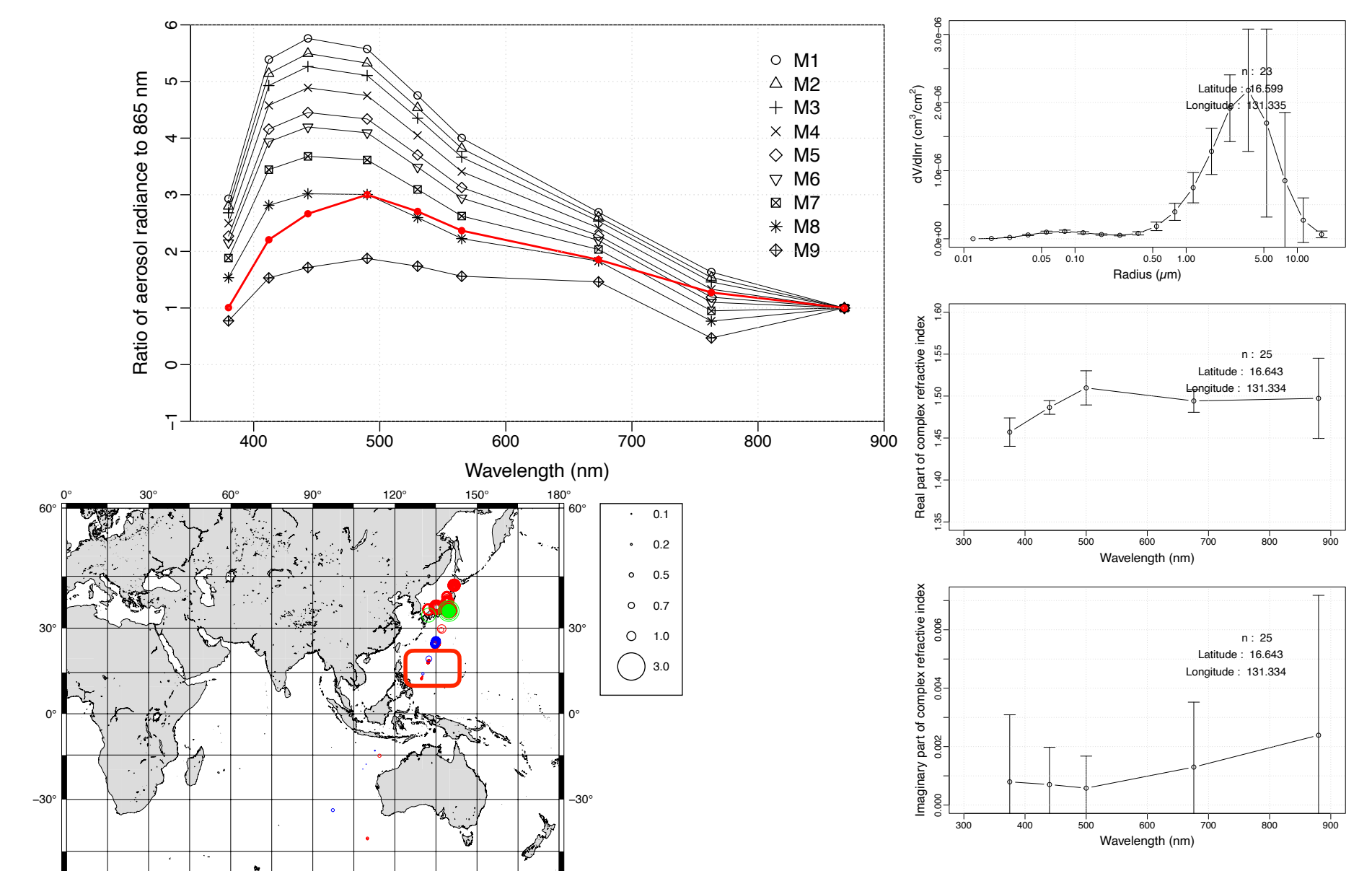
Around Japan



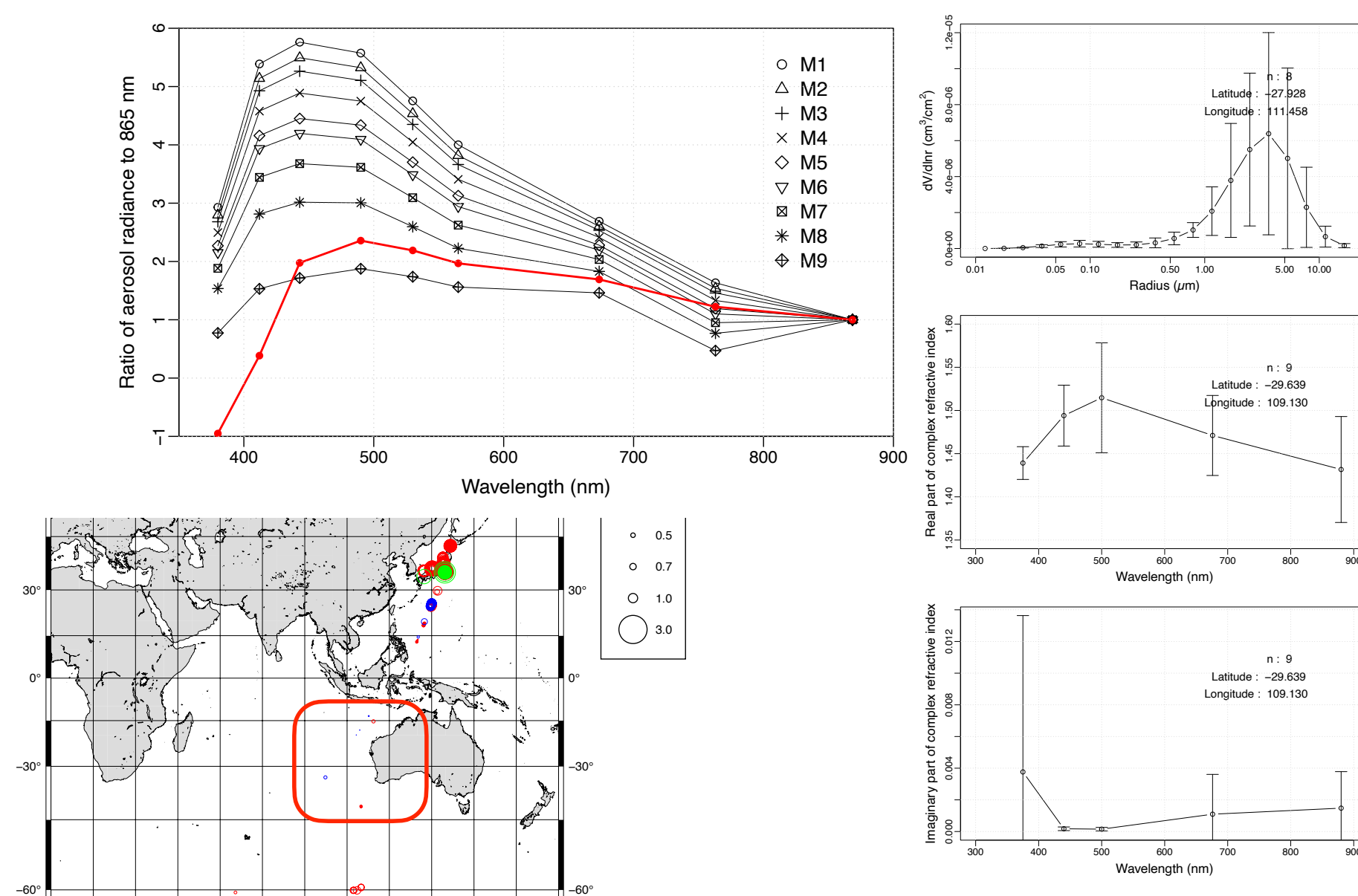
Northern Pacific Ocean



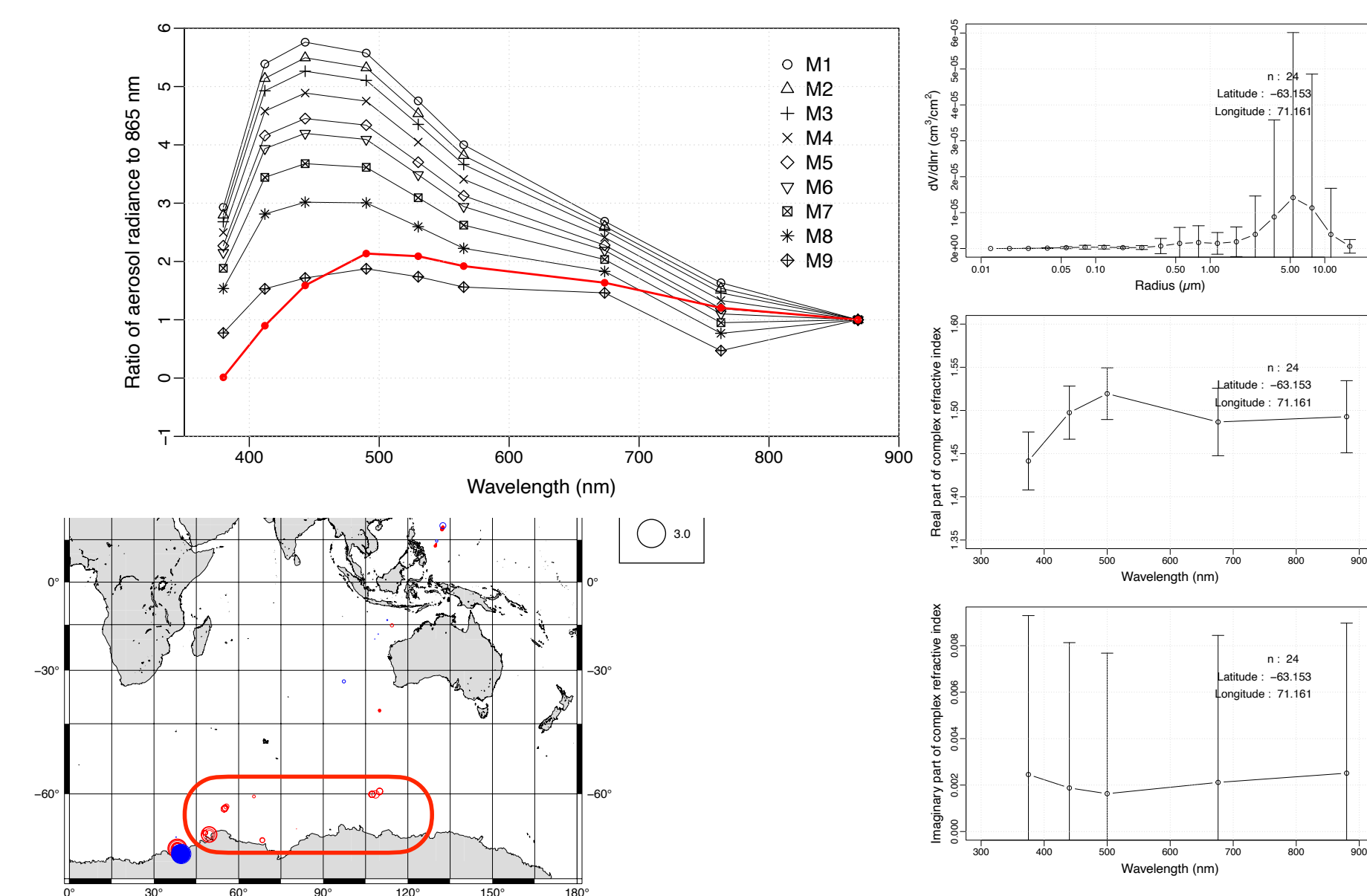
Southern Pacific Ocean



East Indian Ocean



Antarctic Ocean



Future plan

- SAURE observations
 - Shirase
 - will return to Japan in March
 - Araon
 - I plan to join next cruise if I have the chance
- Check or improvement of inversion analysis
 - Convergence results are not good
- Aerosol optical model for the atmospheric correction
 - Even in the open ocean, almost aerosols are absorptive in the short wavelength region
 - Integrate them into the atmospheric correction algorithm and evaluate the improvement performance

Acknowledgment

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