Seasonal Variations in Fire Conditions Drive Aerosol Optical Properties over the Southeast Atlantic

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- Burning condition drive the seasonal variation of aerosol optical properties in the marine boundary layer.

- Clouds affect the physical, chemical and optical properties of BB aerosols during their westward transport.
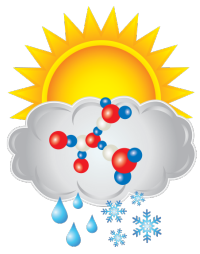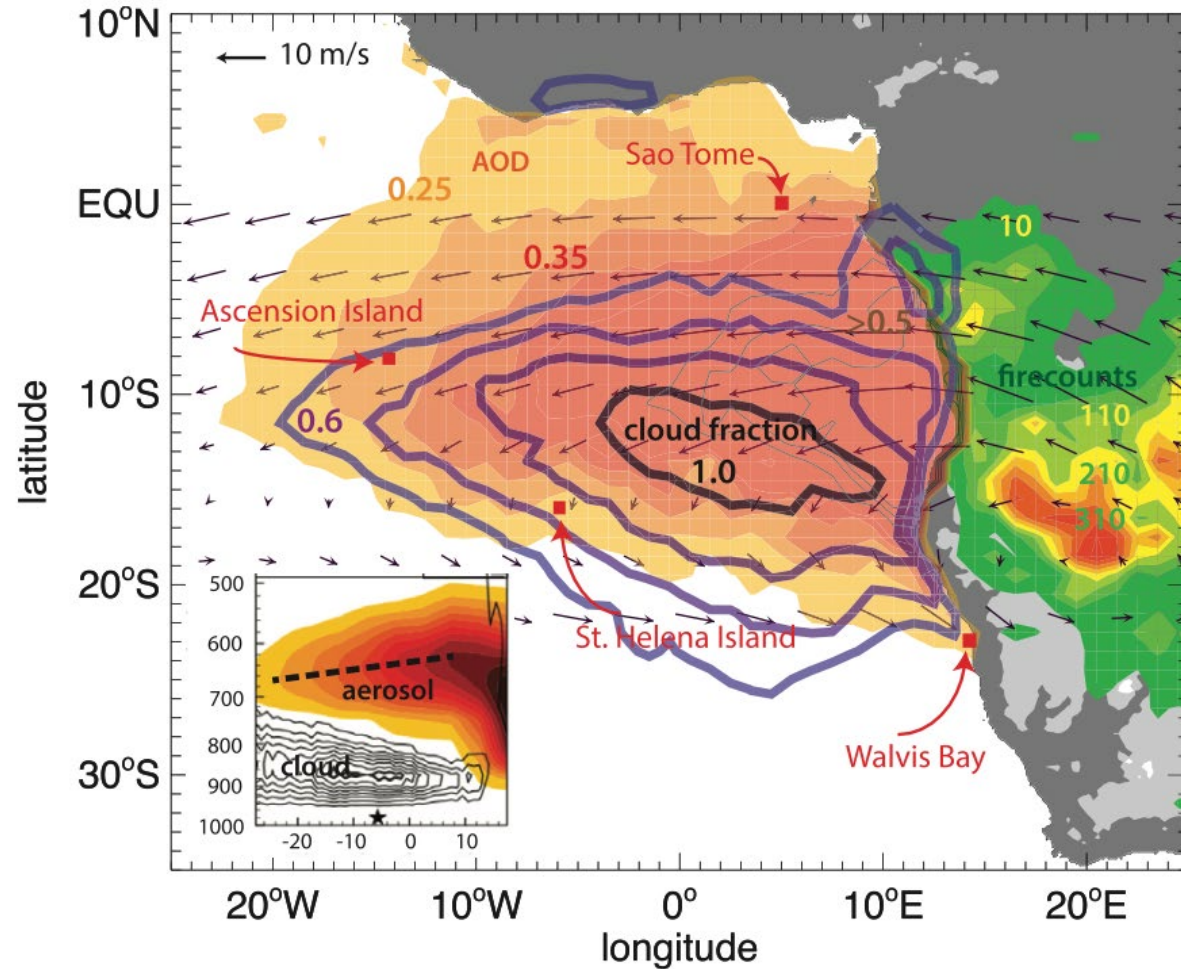
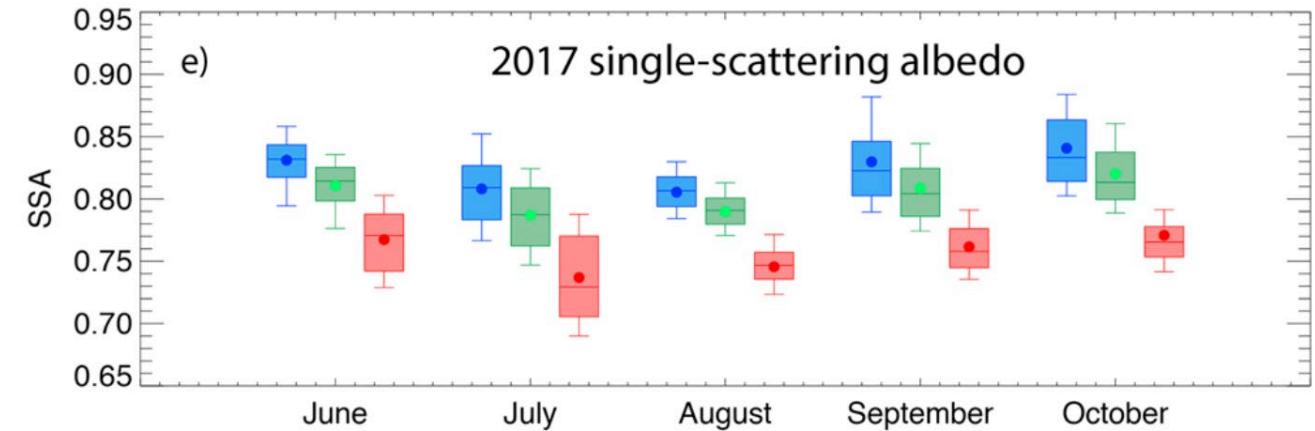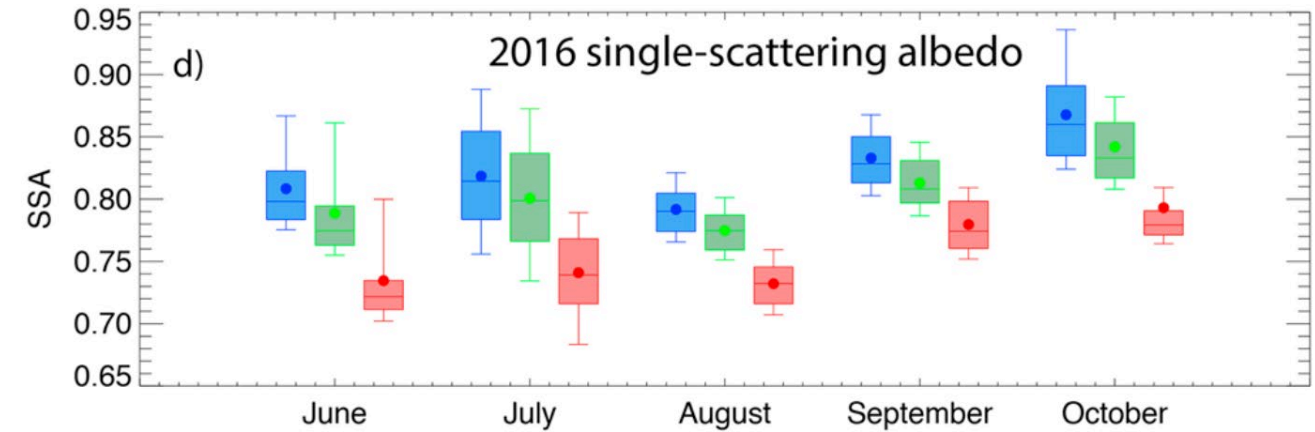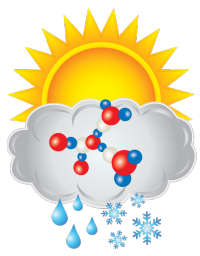**ASR** Atmospheric System Research

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Westward transport of BBA.
Zuidema et al., 2016 (BAMS)

Seasonal variation of aerosol properties in the marine boundary layer, from LASIC campaign.
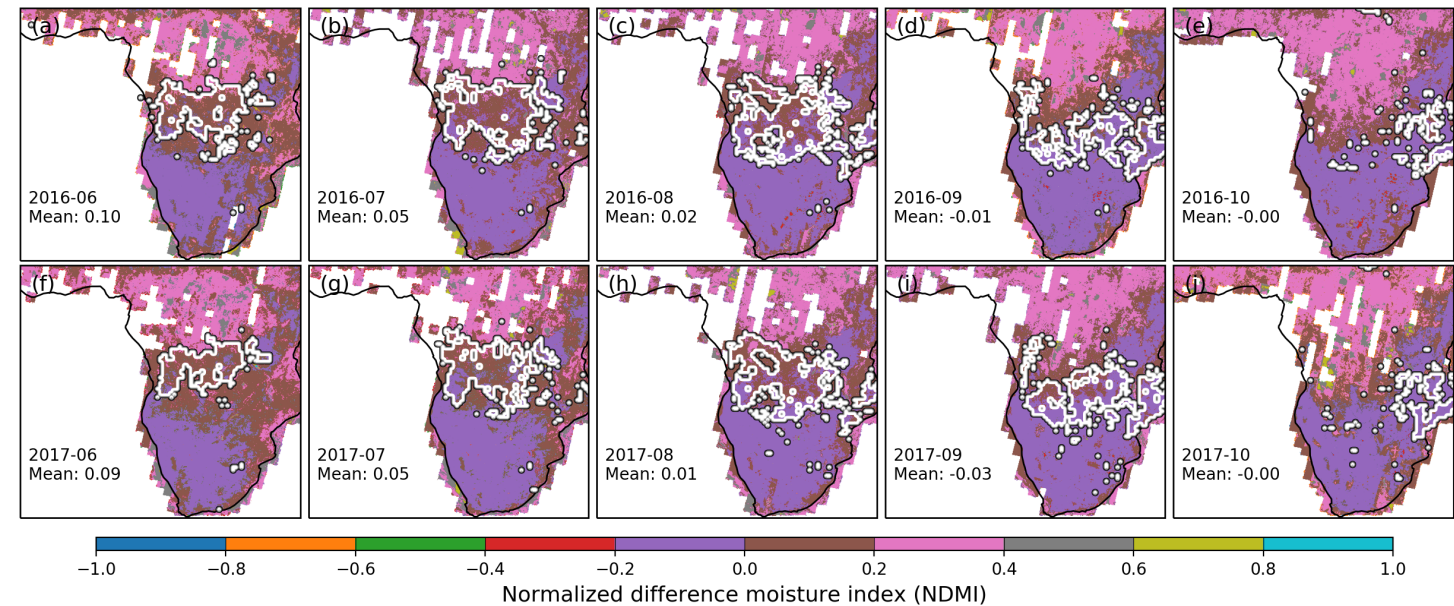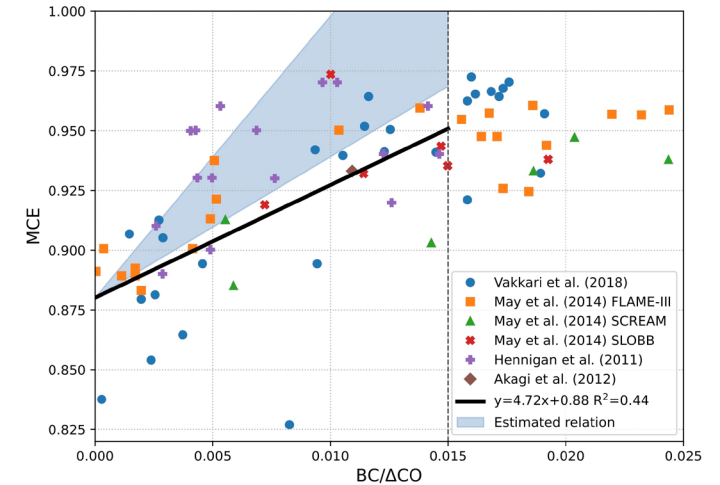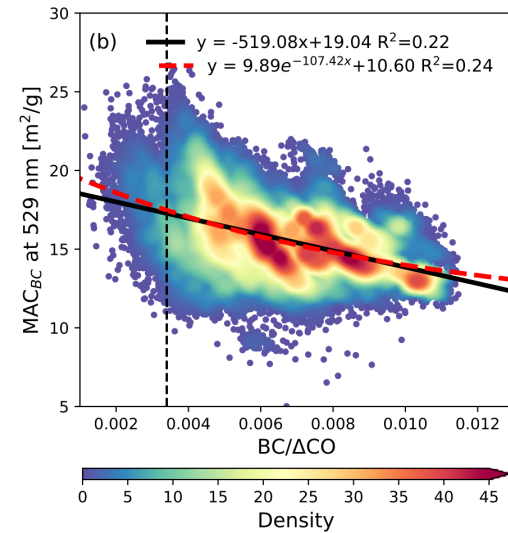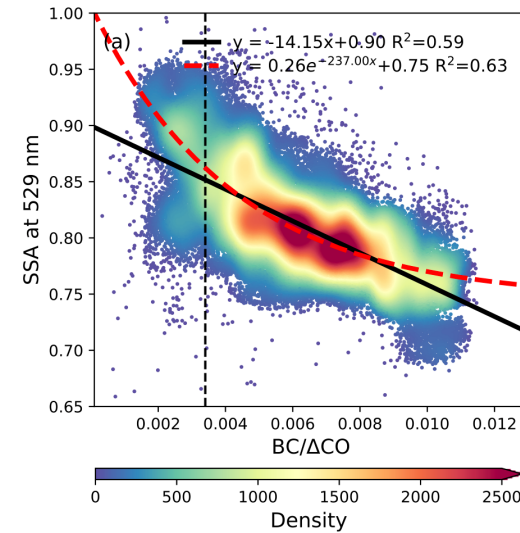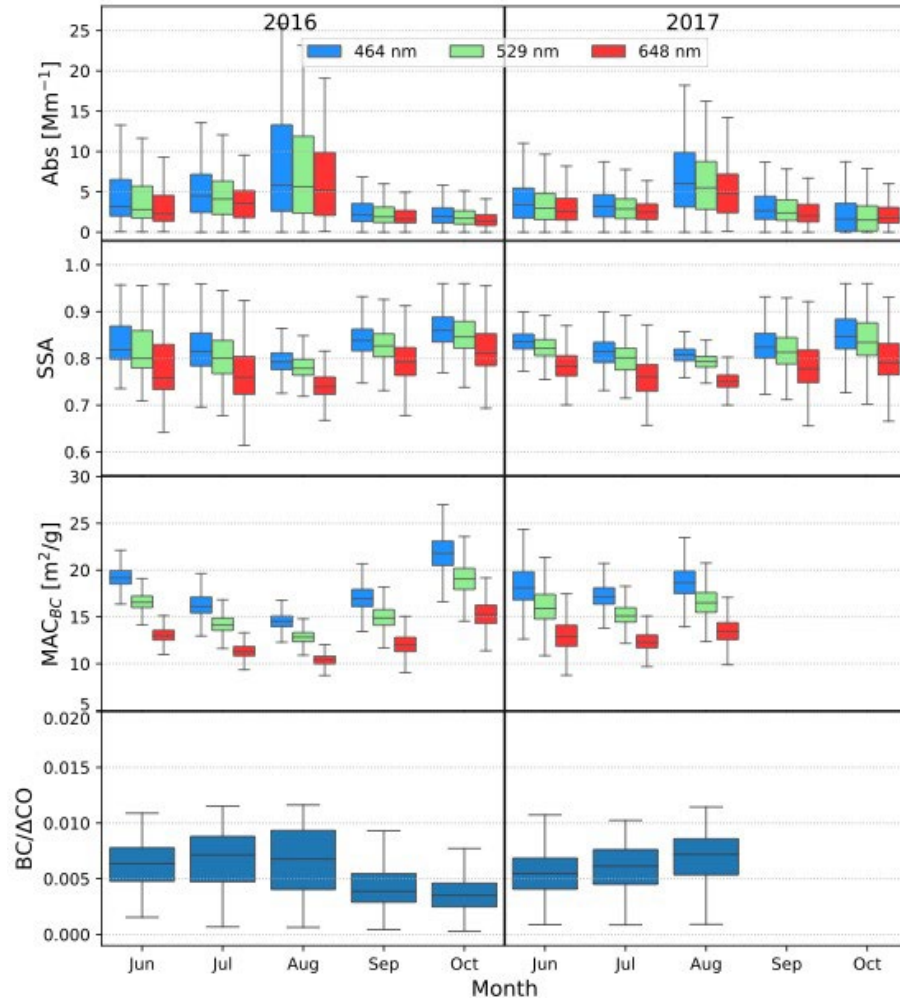
Zuidema et al., 2018 (GRL)

Aerosol optical properties and BC/△CO

- Clear monthly variation of aerosol optical properties, corresponding well with BC/△CO.
- The increase in BC/△CO from June to August is likely caused by burning becoming more flaming, which may corresponding to reduction in the water content of fuels.
- The decrease in BC/△CO in September and October may be caused by the lower proportion of flaming conditions, and the increase in precipitation in the BB transport pathway.
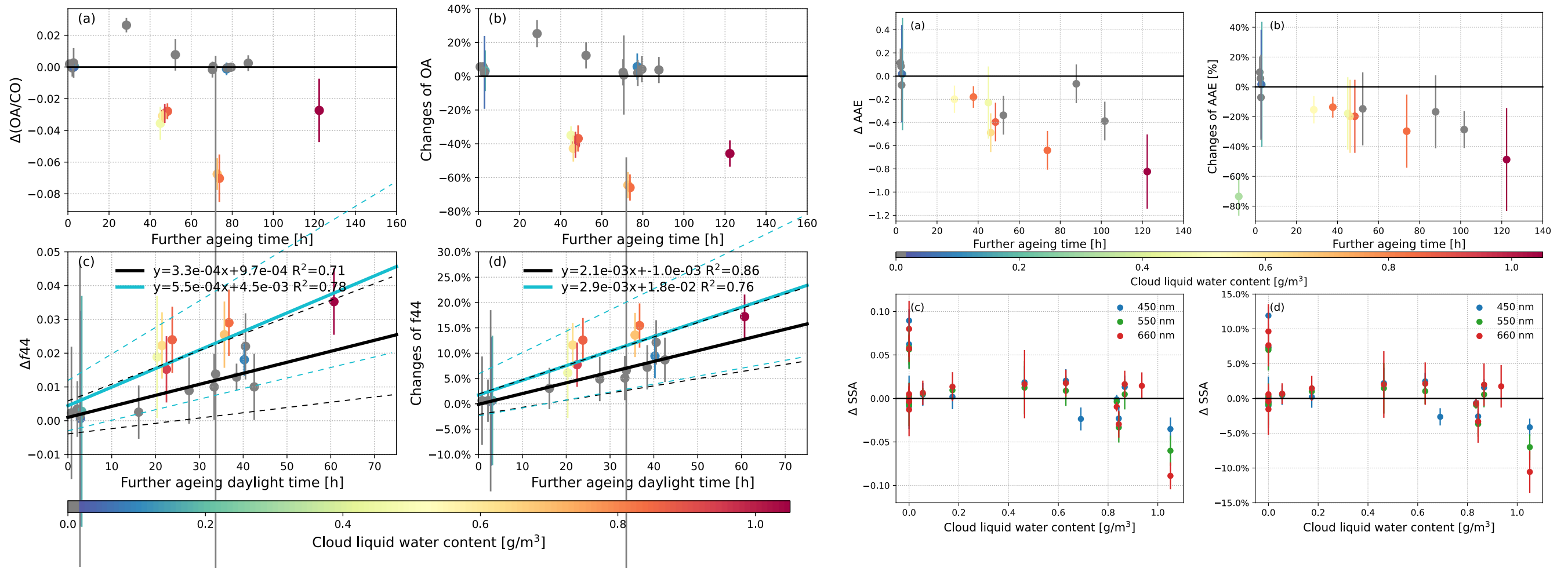
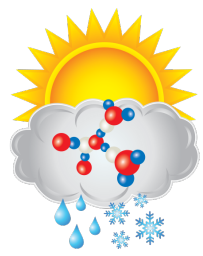# Transport and aging of BB aerosols

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- Cloud processing contributes to the decrease in OA.
- Stronger aqueous-phase oxidation of OA.
- Reduction of absorption Ångström exponent (AAE) with aging.
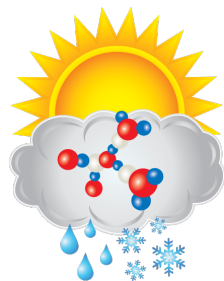- Decrease in Single Scattering Albedo (SSA) with cloud processing.

Acknowledgements

Thank you!