

Use of neural networks for aerosol retrievals over ocean from multi-angle spectro-polarimetric measurements

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For aerosol retrievals from Multi-angle Polarimetric (MAP) measurements over the ocean, it is important to accurately account for the contribution of the ocean-body to the top-of-atmosphere signal, especially for wavelengths shorter than 500 nm. Performing online radiative transfer calculations in the coupled atmosphere ocean system is too time consuming for operational retrieval algorithms. Therefore, mostly lookup-table are used that store the reflection matrix from the ocean body that is being used as the lower boundary in an atmospheric radiative transfer model. For hyperspectral measurements such as those from SPEXone [1] on the PACE mission [2], also the use of lookup tables is unfeasible because they will become simply too big. In this talk we propose a new method for aerosol retrieval over ocean from MAP measurements using a neural network (NN) to model the ocean body reflection matrices. The NN approach will be applied for the synthetic retrieval with the SPEXone setup and also the real data collected by SPEX airborne [3] during the ACEPOL campaign. The aerosol optical thickness will be validated with the HSRL-2 [4] lidar data.

References

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