# Evaluation of the improvements in the aerosol retrieval adding polarization information in the sky radiances.

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Advances in the characterization of atmospheric aerosols are highly relevant as they allow for reducing existing uncertainties regarding their role in the radiative balance of the Earth-atmosphere system. Using remote sensing instruments that measure aerosol interaction with radiation, it is possible to obtain these properties through inversion algorithms such as GRASP (Generalized Retrieval of Atmosphere and Surface Properties) [1].

One proposed improvement is to include measurements of the polarization state of light. Before entering the atmosphere, arriving sunlight is unpolarized, and it is after scattering processes with the various atmospheric components that it becomes polarized. Therefore, these types of measurements are supposed to contain valuable information about these components. In order to invert these measurements, it is necessary to use an appropriate radiative transfer model [2].

This work proposes simulating sky radiances for certain types of aerosols and analyzing the differences between the properties obtained when the polarization vector is inverted or not. The objective is to quantify how the addition of polarization status of Sky radiances improves the aerosol retrieval using the $GRASP_{pac}$ [3] method.

## References

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