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Intercomparison of satellite retrieved aerosol optical depth over ocean during the period September 1997 to December 2000

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Abstract. Monthly mean aerosol optical depth (AOD) over ocean is compared from a total of 9 aerosol retrievals during a 40 months period. Comparisons of AOD have been made both for the entire period and sub periods. We identify regions where there is large disagreement and good agreement between the aerosol satellite retrievals. Significant differences in AOD have been identified in most of the oceanic regions. Several analyses are performed including spatial correlation between the retrievals as well as comparison with AERONET data. During the 40 months period studied there have been several major aerosol field campaigns as well as events of high aerosol content. It is studied how the aerosol retrievals compare during such circumstances. The differences found in this study are larger than found in a previous study where 5 aerosol retrievals over an 8 months period were compared. Part of the differences can be explained by limitations and deficiencies in some of the aerosol retrievals. In particular, results in coastal regions are promising especially for aerosol retrievals from satellite instruments particularly suited for aerosol research. In depth analyses explaining the differences between AOD obtained in different retrievals are clearly needed. We limit this study to identifying differences

and similarities and indicating possible sources that affect the quality of the retrievals. This is a necessary first step towards understanding the differences and improving the retrievals.

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