



## **Study of the microphysical properties in stratus clouds on the Romanian Black Sea coast**

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Stratocumulus clouds play a critical role in the Earth's climate system due to their spatial and temporal large extent. For this reason, this study aims to highlight the significant differences of microphysical properties of maritime and continental stratus clouds and By using the ATMOSLAB research aircraft were examined aerosol and microphysical properties, as well as the thermodynamics of the marine boundary layer in and around the Black Sea (between Mangalia, N: 43° 48' 34,6", E: 28° 35' 25,12" and Navodari City N: 44° 19' 02", E: 28° 36' 55,24"). More than 10 h measurements obtained by a Cloud Aerosol and Precipitation Spectrometer and the HAWKEYE included aerosol, CCN, cloud droplet and drizzle drop concentrations, air temperatures, liquid water content, real time cloud droplet and ice crystals images and marine aerosol measurements above the sea surface. The over 15 flight legs in clouds (minimum altitude 250 m and maximum altitude 4000 m) and the 4 flight legs performed directly above the sea surface (altitude 120 m) from the three flight 30 October 2015 and 23 November 2015 conducted to results that provide evidence of indirect aerosol effects associated with natural variability in the cloud and aerosol characteristics. For a complete understanding of the large-scale context processes maintaining and dissipating the continental and marine stratocumulus clouds information from a Sun Photometer (Eforie, N: 44° 04' 30", E: 28° 37' 55", altitude 40 m) and satellite data were used. The interpretation performed on the in situ (into cloud and below cloud) measured data have shown, as it was expected, differences between microphysical parameters for maritime and continental clouds and their dependence on aerosol concentrations. These presented results of in situ measurements of clouds above the Romanian Black Sea Coast are the first reported, so that more data is needed for an enhanced understanding of the maritime/continental microphysical contrasts in stratus clouds.