UNIVERSITY of HAWAI'I MĀNOA

Department of Atmospheric Sciences Seminar Announcement

Department of Atmospheric Sciences, S.O.E.S.T., University of Hawai'i at Mānoa
2525 Correa Road, HIG 350; Honolulu, HI 96822 ☎956-8775

SCHOOL OF OCEAN AND EARTH SCIENCE AND TECHNOLOGY

Characteristics of Yellow Sea Fog Under Varying Aerosol Conditions

Jiakun Liang
Masters Candidate
Department of Atmospheric Sciences
School of Ocean and Earth Science and Technology
University of Hawai'i at Mānoa

Date: **Wednesday, February 10, 2021**
Time: **3:30pm HST**
Zoom Meeting: **https://zoom.us/j/93583080682**
Meeting ID: 935 8308 0682
Passcode: 6daVMR

Abstract:

Sea fog usually refers to the fog that occurs under the influence of the ocean. Yellow Sea is a region where sea fog regularly occurs, there are averaged 50 fog days observed during April to July. Ship collision, stranding accidents, and other losses caused by low visibility of sea fog can be comparable to those caused by other weather such as the tornadoes, or even hurricanes. 15 sea fog cases are identified over the Yellow Sea from 1946-2020 using the NCEI (NOAA National Centers for Environmental Information) surface observation data combined with MODIS L1B Granule images. The fog type among the 15 cases is advection fog with positive SAT (Surface Air Temperature) - SST (Surface Sea Temperature). High-resolution data sets from MODIS Aqua L2 and GHRSST (Group of High Resolution Sea Surface Temperature) are used to investigate the relationships between cloud properties, aerosol (AOD, aerosol optical depth), and SST features. The specific cloud properties used are ER (Droplet Effective Radius), COT (Cloud Optical Thickness), and CTH (Cloud Top Height). There is strong correlation between COT, ER, AOD, and CTH. Analysis does not show strong correlations between individual cloud properties and aerosol or SST. Therefore, bi-variate comparison is used here to look at the variations between three variables simultaneously. The results show that larger values of COT are related to both smaller ER and higher CTH. What's more, COT is mainly related to ER while CTH is of second importance. For the cases where AOD is dominated by smoke (e.g. confirmed fire activity in the East China Plain), weak southwesterly winds transport the heavily absorbing smoke to the Yellow Sea region. Ozone observations from the OMI satellite also confirm higher pollution levels over the Yellow sea region. Varied aerosol conditions (amount and type) result in the difference of characteristics of Yellow Sea fog, though additional cases are needed.