Bioaerosols are mainly comprised of bacteria, viruses, pollens, and fungal spores. Bioaerosols can be very efficient ice nuclei. We have employed, for the first time on the DC-8 aircraft, a fluorescence technique to quantify the concentration and spectral characteristics of bioaerosols.

Using a land-use model (right), we have attributed the highest bioaerosol concentrations ($0.37 \text{ cm}^{-3}$) to agricultural croplands and lowest levels to evergreen forests ($0.24 \text{ cm}^{-3}$).

These sources can be quantitatively separated at low flight-altitude using observed spectral fluorescence characteristics, an example is shown (right).

The Southeast-US region is a significant source of bioaerosols that make up 2-30% of coarse-mode particles (left), compared to < 1% attribution in the marine boundary layer and from a Saharan dust intrusion.