ÇEVRE MÜHENDİSLİĞİ SEMİNERLERİ – 2012/2

Source/Receptor Reconciliation of Ambient Fine Particulate Matter in Rural Site and Urban Site of Palm Beach County, Florida

Dr. Orhan Sevimoğlu

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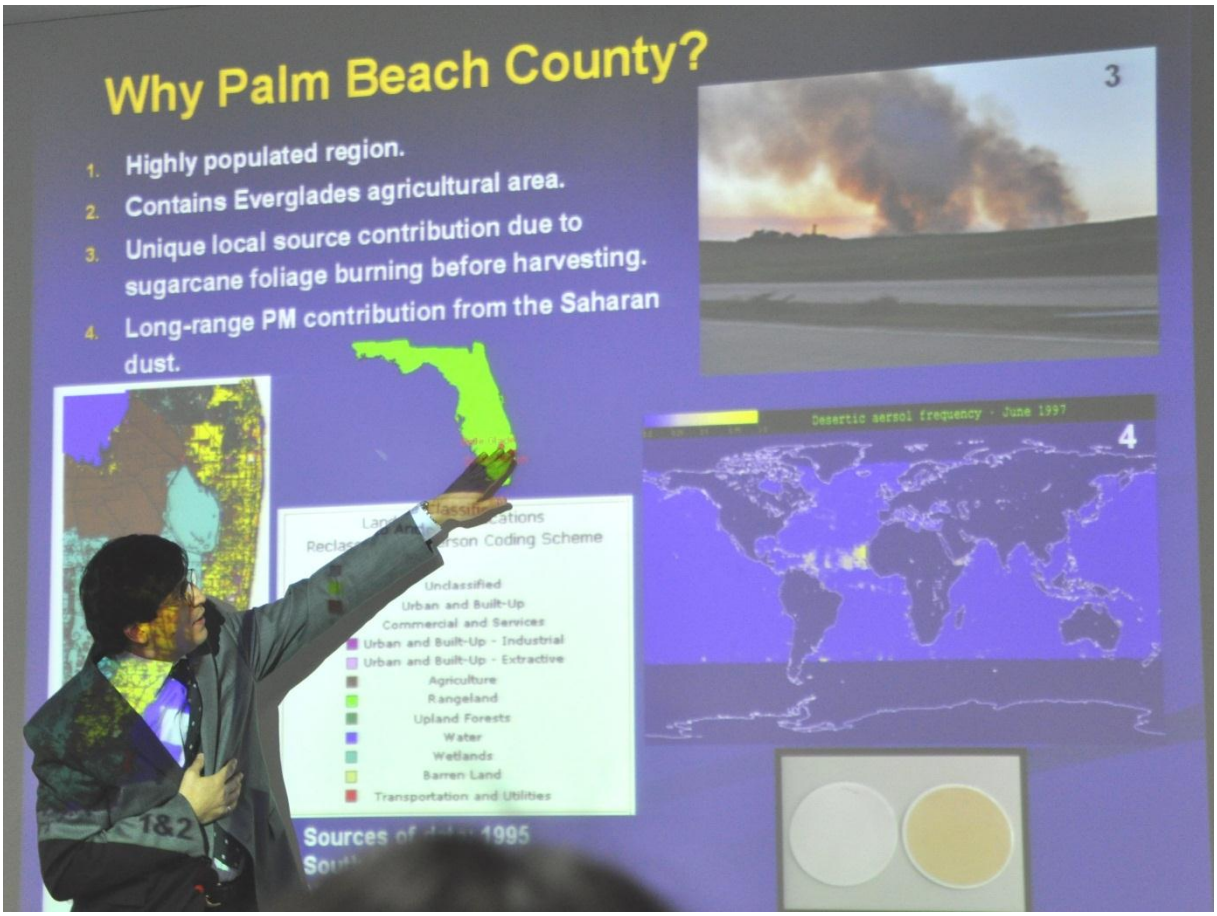
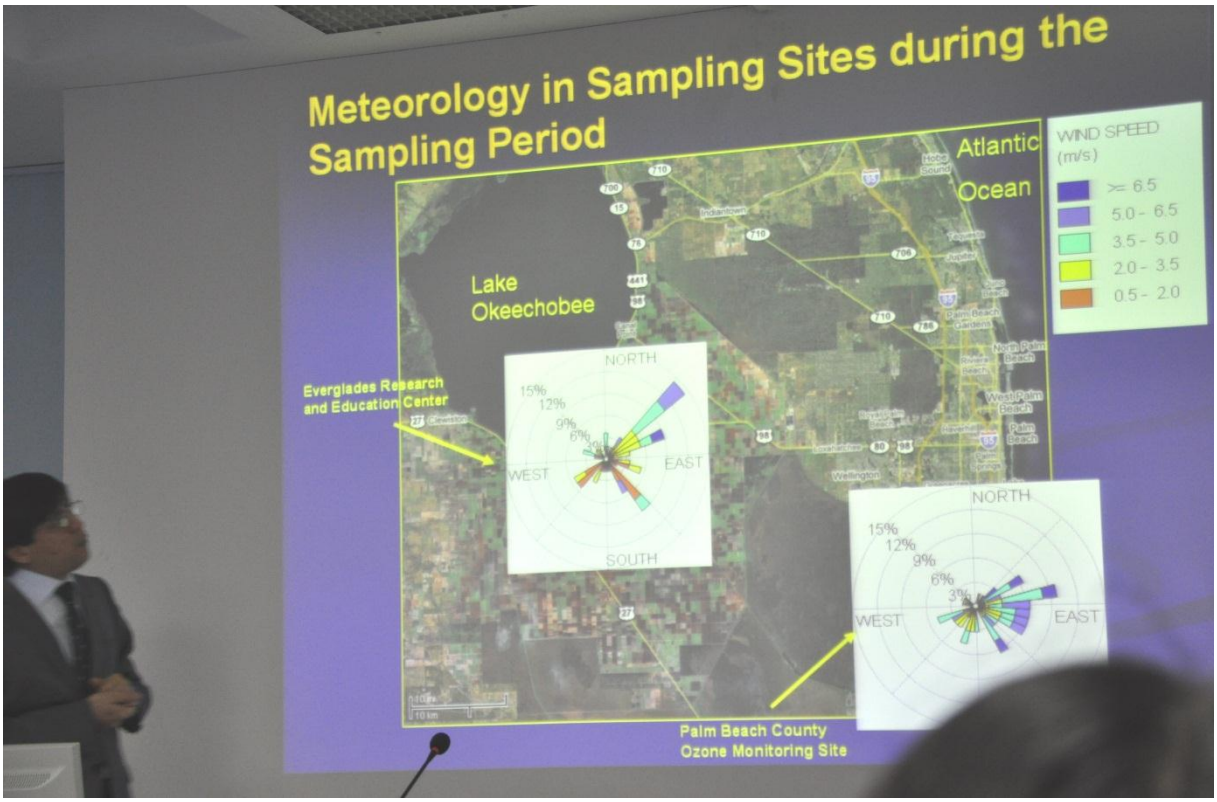
Airborne particulate matter (PM) is of environmental concern not only in urban but also rural areas that are easily inhalable and have been considered responsible, together with gaseous pollutants, for possible health effects. The objectives of this research study is to generate an extensive data set for ambient PM collected at Belle Glade (rural) and Delray Beach (urban), Palm Beach County, Florida that ultimately was used together with published source profiles to predict the contributions of major sources to the overall airborne particle burden in Belle Glade and Delray Beach. The size segregated particle sampling was conducted for one entire year. The samples collected during the months of January and May were further subjected to chemical analysis for organic compounds by Gas Chromatography-Mass Spectrometry. Additional, PM10 sampling was conducted simultaneously with size segregated particle sampling during January and May to analyze for trace elements using Instrumental Neutron Activation Analysis technique. Elements and organic marker compounds were used in Chemical Mass Balance modeling to determine the major source contribution to the ambient fine particle matter burden. Size segregated particle distribution results show bimodal in both sampling sites. Sugarcane pre-harvest burning in the rural site elevated PM10 concentration by about 30% during the sugarcane harvest season compared to sugarcane growing season. In conclusion, major particle sources were determined by the CMB8.2 software.


Source/Receptor
Reconciliation of Ambient
Particulate Matter in Pa
Beach County, Florida, U
by
Orhan Sevimoğlu
İstanbul


Why Palm Beach County?
1. Highly populated region.
2. Contains Everglades agricultural area.
3. Unique local source contribution due to sugarcane foliage burning before harvesting.
4. Long-range PM contribution from the Saharan dust.
3
Desertic aersol frequency - June 1997
4
Unclassified
Urban and Built-Up
Commercial and Services
Urban and Built-Up - Industrial
Urban and Built-Up - Extractive
Agriculture
Rangeland
Upland Forests
Water
Wetlands
Barren Land
Transportation and Utilities
1&2


Meteorology in Sampling Sites during the Sampling Period
Atlantic Ocean
Lake Okeechobee
Everglades Research and Education Center
Palm Beach County Ozone Monitoring Site
WIND SPEED (m/s)
>= 6.5
5.0 - 6.5
3.5 - 5.0
2.0 - 3.5
0.5 - 2.0
NORTH
SOUTH
WEST
EAST
15%
12%
9%
6%
3%