

# INVESTIGATION OF FINE AND COARSE ATMOSPHERIC PARTICULATE MATTER IN BEIRUT SUBURB USING PIXE TECHNIQUE



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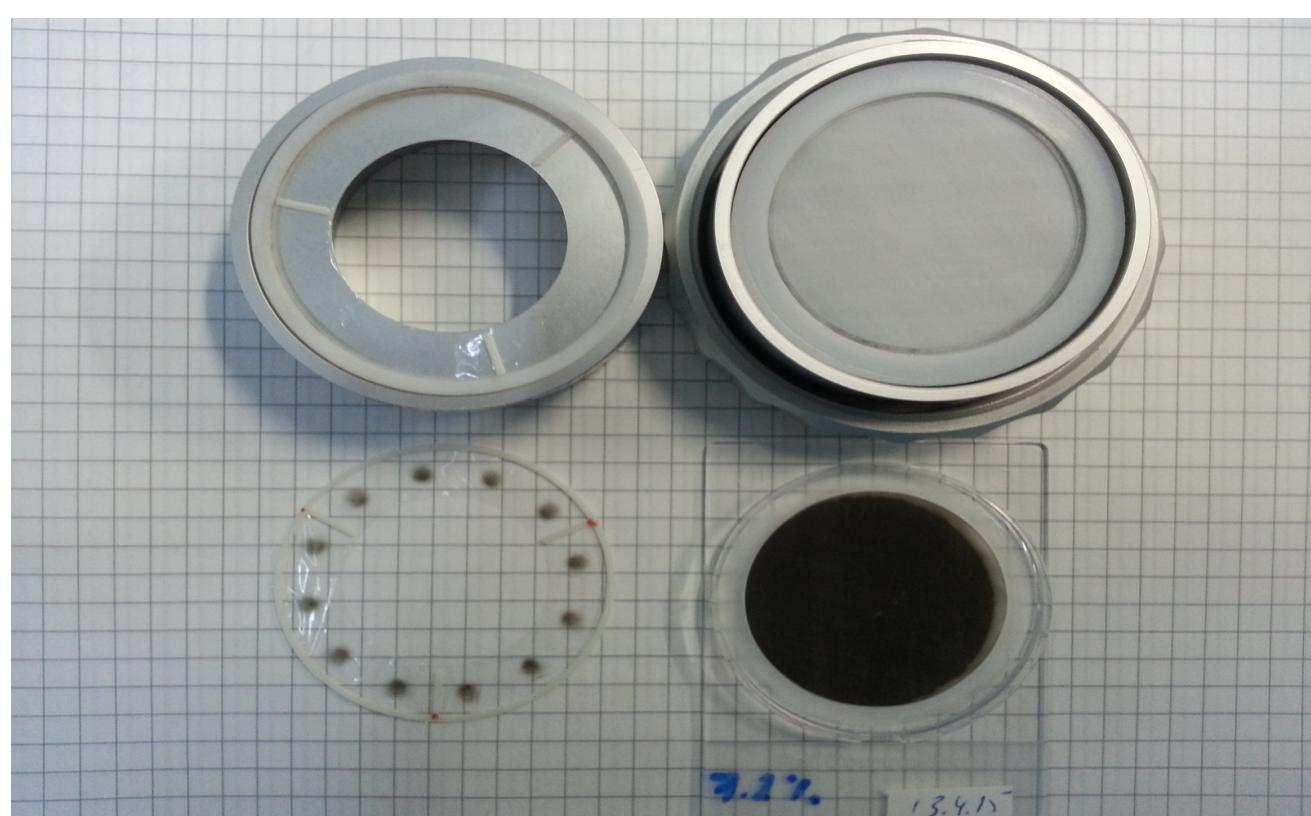


Sand Storm in September 2015 at the Ramlet Al-Bayda public beach

## SAMPLING



ISAP 1050e  
The sampling was done using Microprocessor Controlled Aerosol Sampling device with combined inlet for PM10 and PM2.5



PM10 and PM2.5 before and after sampling

Environmental and human health issues related to atmospheric aerosols are of concern worldwide, in particular in urban areas

The Mediterranean basin is considered one of the most controversial regions for aerosol transportation due to its location at the intersection of air masses circulating among the three continents

Eastern Mediterranean region shows higher levels of air particulate matter than in other regions, even when compared to the Western Mediterranean

Air quality in Beirut city: high density population, geographic location, traffic, structural layout, lack of rules and regulations

## INTRODUCTION

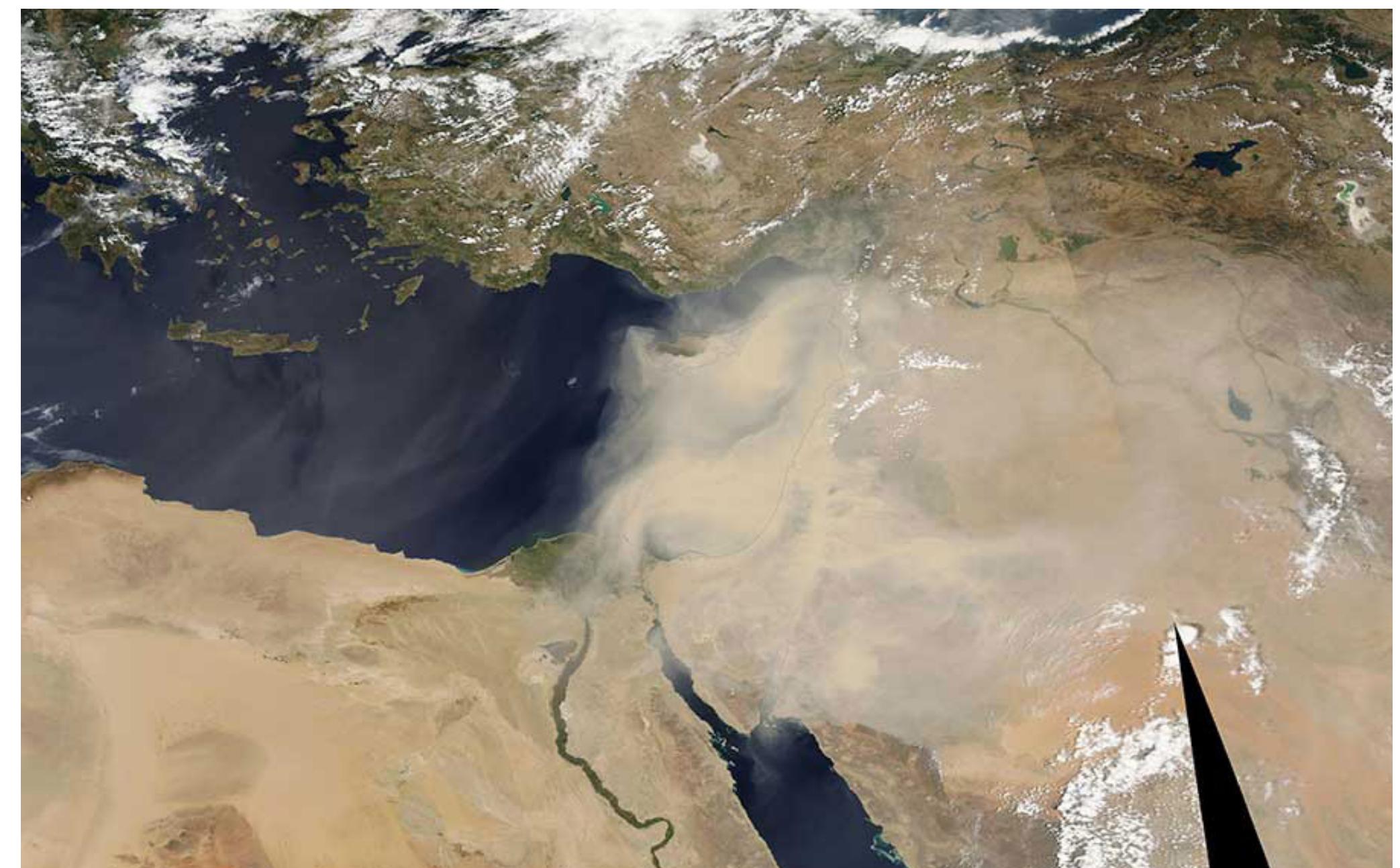
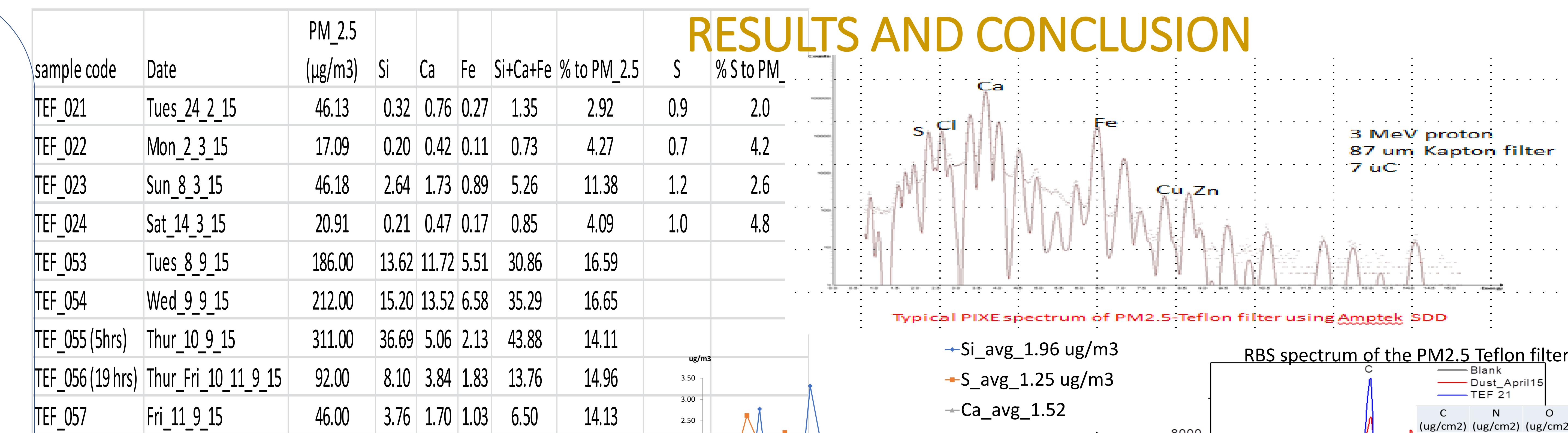


Image of a dust storm in the Middle East captured by the Moderate Resolution Imaging Spectroradiometer (MODIS) instrument on board the Aqua satellite on 8 September 2015. © NASA

## RESULTS AND CONCLUSION



- Comparing to WHO standards, there are high values of PM2.5 and PM10 total masses
- Contribute to a regional and national databases of elemental composition of APM using PIXE technique
- Instead of the absence inelastic cross section, the use of simultaneous RBS and PIGE measurements in combination with PIXE is promising
- Crustal elements are increased significantly with dust storm

## EXPERIMENTAL



5SDH pelletron tandem accelerator of 1.7 MV

- Protons: 0.2- 3.4 MeV, 1-300 nA,
- Alpha-particles: 0.5-5.1 MeV, 1-100 nA
- IBA techniques: PIXE, RBS, PIGE
- Na, Mg, Al, Si, P, S, Cl, K, Ca, Cr, Mn, Fe
- Ni, Cu, Zn, Sr, Pb