Atmos. Chem. Phys. Discuss., 11, C14255–C14256, 2012
www.atmos-chem-phys-discuss.net/11/C14255/2012/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Evidence for ships emissions in the Central Mediterranean Sea from aerosol chemical analyses at the island of Lampedusa" *by* S. Becagli et al.

Anonymous Referee #2

Received and published: 15 January 2012

The manuscript reports on chemical composition data of aerosols collected at the italian island of Lampedusa, in the central Mediterranean. The island is influenced by marine air masses, dust aerosols, and ship emissions but also by biomass burning and industrial/urban emissions from northern African and Europe. I will not be long on my review as I substantially agree with Referee 1. The data analysis in the paper is meant to demonstrate the evidence and the importance of ship emissions based on correlation between V, Ni, and Si and their soluble parts, and SO4. However, these elements are not unique to ship emissions, beside, the evidence is not made that the enhanced ratios of V and Ni to Si should be attributed to ship emissions, and not, for example, to fuel emissions in Tunisia in the coastal region of the Gulf of Gabes, which,

in springtime, should be mixed with low-level mineral dust during its northward transport to Europe. Incidentally, Si is considered as unique tracer of mineral dust but it is not, being also present in fly ash from high-temperature combustion. This is implicitly acknowledged by the authors which use Si for the studies of the bulk composition but Al and Fe when studying the size-segregated aerosol composition. The seasonal evolution paragraph is largely based on hypothesis without proof. It would be good if the authors could provide with statistics on ship traffic frequency, its seasonality, and the distance of the ship route to Lampedusa. It must be said that the authors have not given themselves an easy tasks owing to the complexity of the aerosol population in that part of the Mediterranean. I recommend the authors to strengthen their point by adding the forward trajectory analysis from the ship track points to identify episodes of advection to Lampedusa, and also use the full dataset to discriminate evidence of mixed and pure dust events.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 29915, 2011.