**Institute of Atmospheric physics, National Central University**

**Master Seminar**

Time: 2017/06/02 Location: S1-713

Speaker: Do Thi Thuy Linh

Adviser: Prof. Neng-Huei Lin

**Air Masses and Weather Types: A Useful Tool for Characterizing Precipitation Chemistry and Wet Deposition**

**Abstract**

Precipitation as a powerful mechanism to remove pollutions from the atmosphere. The importance of studying chemical composition of rainwater focus on several aspects: identify the pollutant source, provide information on the transportation and dispersion of pollution, explain some problems related to acid deposition, eutrophication, trace metal deposition, biogeochemical cycling, ecosystem health and global climate change and provide a useful tool for validating model simulations of air pollution. In this study, 344 days rainfall recorded (2002–2006) in Víznar, a background station, on of 10 EMEP stations in Spain were analysis. Method was use include: volumetric mean, enrichment factors, neutralization factor and principal components factor analysis. Backward Trajectorieshelped toidentify the chemical composition of the rainwater associated with air masses (nine categories) and weather types (26 categories). At the Víznar station, no acid rain problems were detected, with all ion highest VWM was registered in the hybrid anticyclonic. NO3– and SO42–has high correlation *(r* = 0.83) from anthropogenic sources, highest VWM with air mass come from AN, ANE and ANW. Ion Cl– and Na+ Highest VWM (>30μeq/L) in winter caused by air mass come from the marine. Ca2+ and Mg2+ with a main crustal origin associated due to incursions of Saharan dust (500, 1500). Nitrogen contribution with NO3– and NH4+ havehighest concentration 40 and 94μeq/L respectively which were found in Saharan, Continental and Local categories. Ion NH4+ increase VWM 19.69 –32.07 μeq/L over the years of study associate with soil and fertilizers uses and increase number Sahara 500 m event. Considering both meteorological and air masses studies seems to be a very useful tool for characterizing and understanding precipitation chemical composition.

**Main reference:**

Calvo, A.I et al., Air masses and weather types: a useful tool for characterizing precipitation chemistry and wet deposition. Aerosol and Air Quality Research Volume: 12, Issue: 5, Pages: 856-878. DOI: [10.4209/aaqr.2012.03.0068](https://doi.org/10.4209/aaqr.2012.03.0068), 2012.