ID: Type: **Oral**

and Xenon Time Series Analysis: A New Methodological Approach for Atmospheric Transport Modelling at Small, Synoptic and Global Scales

A new methodological approach based on time series analysis for event screening categorization of beryllium and xenon background and outliers was tested. After the time series was detrended, the Lomb-Scargle spectrum can be computed for frequency domain analysis. Then, all frequencies were characterized in by a notch filter for P(ω) higher than a threshold, and reducing the time series to noise residuals. The autocorrelation of the residuals was first computed, in order to test if they can be considered random or not. The Detrended Fluctuations Analysis was applied to noise residuals, and then for characterizing the statistical distributions, two goodness of fit tests were considered: Kolmogorov-Smirnov and Anderson-Darling. The mean and variance of noise residuals were computed for the normalisation and outliers detection. Finally, was performed a noise analysis for testing that such outliers were not likely due to the particular noise configuration (white, pink, red). This new methodological approach was tested on beryllium, xenon, and meteorological data of CTBTO, and for a period longer than 11-year solar cycle. Finally, was possible to characterize by ATM the source-receptor relationship, and for beryllium to define the patterns at small, synoptic and global scales for testing the possible associated tropopause folding.

Primary author: PLASTINO, Wolfango (Roma Tre University)

Presenter: PLASTINO, Wolfango (Roma Tre University)

Track Classification: 3. Advances in sensors, networks and processing