**Adaptive adjusted compound smoother in recovering signal from noise**

ABSTRACT

Compound smoother is a non-linear smoothing technique that has the ability to remove heavy noise from signal and at the same time is resistant to sudden changes and impulse in the data series. In this study, compound smoother of 4253HT was adjusted in the algorithm specifically to estimate the middle point of running median for even span by applying the following types of means; geometric, harmonic, quadratic and contraharmonic. Simulations were conducted by generating special functions of Doppler, Bumps, Blocks and Heavy Sine with noise that produced a few outliers and high volatility. The regression coefficients show that adaptive 4253HT to perform the best in removing long tailed and heavy noise. Results from estimated integrated mean square error show that adaptive 4253HT managed to extract signals of Doppler, Block and Bumps from 10% contaminated normal error. Adaptive 4253HT also was observed to work best in the recovery of the signal of Bumps from noise with high volatility. Practical application on the daily amount of rainfall which was conducted, asserts that if heavy rain started to occur, it continued on for another four days on average.

**Keyword:** Compound smoother; Adaptive 4253HT; Running median; Signal; Noise