Estimating the closed skew-normal distributions parameters using weighted moments

by C. Flecher[1,2], P. Naveau[1] and D.Allard[2]
[1] Laboratoire des Sciences du Climat et de l'Environnement, IPSL-CNRS, France
[2] INRA, Avignon, France

September 5, 2008

Abstract : Skewness is often present in a wide range of applied problems. One promising approach to take into account this skewness is based on the flexibility of skew normal distributions. This class of distributions has generated a recent interest in the statistical community. However, to apply the skew normal distribution to real case studies, the practitioner needs to be able to easily implement an estimation method that provides accurate estimators of the parameters. We propose and study a novel Method-Of-Moments based estimators using weighted moment for the closed multivariate skew-normal distribution parameters. We derive the theoretical properties of our estimators in some specific situations, and illustrate our results with simulated data.

Keywords : Multivariate Closed Skew Normal distribution, Method-of-Moment, Weighted Moments