Plinius Conference Abstracts,
Vol. 11, Plinius11-165, 2009
11th Plinius Conference on Mediterranean Storms

A Copula Function Approach to Flood Scenario Analysis

T. Ghizzoni (1), G. Roth (2), and R. Rudari (3)

(1) MunichRe, München, Germany, (2) University of Genoa, Italy, (3) CIMA Research Foundation, Italy

In hydrology and meteorology, but also in insurance practice, it has early been recognized that classical statistical theory distributions (e.g., the normal and gamma families) are of restricted use for modelling multivariate data at hand. In this context, copulas can be viewed as alternative tools for dealing with multivariate simulations. In other words, they are an alternative way to formalize the dependence structures of random vectors. Copulas have been recently applied to hydrological modelling (e.g., to model the dependence between intensity and duration of rainfall events or to carry out a trivariate flood frequency analysis of peak, volume and duration of flood events). Few works exist that use copula theory to determine the severity of a flood scenario which is extended in space and present therefore multivariate nature. A first application of copula function for flood scenario analysis is here presented for the Tanaro Basin (NW Italy).