



## **GRISO: Spatial Interpolation Generator from Rainfall Observations**

Nicola Rebora (1), Flavio Pignone (1,2), and Francesco Silvestro (1)

(1) CIMA Research Foundation, Savona, Italy - (nicola.rebora@cimafoundation.org) -, (2) University of Genoa, Genoa, Italy

The estimation of rainfall fields, especially its spatial distribution and position is a crucial task both for rainfall nowcasting and for modeling catchment response to rainfall. In the past years several studies on the spatialization of rainfall from raingauge were made and many mathematical methods to cope with this problem were developed. The most known is the Kriging (Matheron, 1967). A new geostatistical algorithm called GRISO (Spatial Interpolation Generator from Rainfall Observations) was implemented.

The GRISO method, similar to Kriging, was developed in order that the output map maintains the observed “real” rainfall value on the raingauges position but is conditioned to reach the mean of the field far from the gauges. The main innovation is the improved computational time, the associated map of variance and above all the possibility of using more than one semivariogram for spatialize the information.

The GRISO algorithm has been applied in Italy, where is available a dense network of raingauges (about 3000 stations). A validation of the GRISO method was done on a large number of Italian past events. Several statistical scores have been applied to compare it with Kriging. The new algorithm is operationally used by the Italian Civil Protection Department.