Contribution ID: **17**   Type: **Poster presentation**

Rainfall estimation based on multispectral satellite data using Machine Learning

Abstract

This study aimed at developing rainfall estimation schemes based on the high spectral resolution of Meteosat Second Generation (MSG) Spinning Enhanced Visible and InfraRed Imager (SEVIRI).

The potential of developing machine learning techniques that use ensembles of classifications and regressions was investigated, to improve rainfall rate assignment based on spectral cloud parameters derived from MSG satellite data. Two multispectral rainfall estimation approaches were proposed that incorporate spectral cloud parameters. The first is an Artificial Neural Network (ANN) algorithm and the second is a Random Forest (RF) algorithm, both relying on the correlation of spectral cloud parameters and rainfall information recorded from rain stations. Both rainfall retrieval schemes were calibrated using as a reference spatially and temporary collocated rainfall rates recorded from rain stations for several rain events.

During the training phase, the RF algorithm exhibited the better performance of the two compared techniques. And also when evaluating the models'performance against the independent rain gauge dataset, the RF algorithm of rainfall estimation proved superior.

Which session would you like to present in?

1. Remote sensing, hydrological modelling and data assimilation

Primary authors: Dr GIANNAKOS, Apostolos (Zentralanstalt für Meteorologie und Geodynamik (ZAMG), Vienna, Austria); Dr JANN, Alexander (Zentralanstalt für Meteorologie und Geodynamik (ZAMG), Vienna, Austria)

Presenter: Dr GIANNAKOS, Apostolos (Zentralanstalt für Meteorologie und Geodynamik (ZAMG), Vienna, Austria)

Track Classification: H SAF and HEPEX joint workshop on "Satellite inspired hydrology for an uncertain future"