

## **Debris flow detection by weather radar. The catastrophic event of August 21th 2017 in the north of Venezuela**

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Debris flow and flash floods are among the deadliest natural disasters. The north coast of Venezuela was the location of the largest historical debris flow documented worldwide (Vargas tragedy, 1999). However, this was not an isolated disaster, this region has complex geological characteristics and severe rainfall rates which can frequently produce such events. Therefore, the detection of hydro-meteorological events that can trigger landslides is a requirement to establish an early warning system and save lives. This work aims to answer the question of how events triggering debris flows could be detected using weather radars. A Debris Flow Index (DFI) is proposed which is a regional empirical model based on 60 years of raingauge records. The DFI correctly detected the occurrence of landslides for the catastrophic event of August 21th 2017 using the Jeremba S-band radar. The results of this study represent the first step on the development of a debris flow detection radar product for the hydro-meteorological authority of Venezuela.