

# Assessing the impacts of armed conflict and natural disasters on vulnerability: a Machine Learning approach

## Abstract

Armed conflicts have been associated with a variety of detrimental impacts on human security and development, and represent a crucial vector of societal vulnerability to subsequent climate hazards. The burgeoning literature on climate security has highlighted that climate variability and natural disasters may indirectly increase conflict risk in vulnerable locations. However, solid knowledge of the impacts of armed conflicts on socio-economic vulnerability remains sparse, and more research is needed to understand the complex linkages between natural disasters, armed conflict, and societal vulnerability. This study fills the gap by empirically investigating the impacts of armed conflicts and natural disasters on subsequent levels of societal vulnerability to climate hazards. The paper uses global, time-varying data for 189 countries between 1995 and 2019, combining information on natural disasters, armed conflict, and vulnerability. We apply a leave-the-future-out cross validation and a random forest algorithm to test the out-of-sample performance of a conflict, natural disasters, and compound model, to predict vulnerability. This machine learning approach enables us to overcome some of the empirical challenges that traditional statistical methods relying on reduced form regressions fail to solve.