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Time of Response by Social Vulnerability Index Analysis for Floods Events

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This paper explores how to improve human response to natural disasters by evaluating the relationship between physical and social vulnerability. The costs associated with health, food security and physical environment produced by climate change is expected to be between $2 trillion to $ 4 trillion dollars by 2030. United Nations pointed out that the frequency and severity of natural disasters associated with climate change are expected to increase faster than effective risk reduction policies. Governments need to understand not only the physical dimensions of hazards but also the characteristics of the people at risk to develop efficient early warning systems. Although, demographic and socioeconomic characteristics disproportionally exacerbate vulnerability to natural disasters, research efforts tend only to focus on the physical aspects of hazards, disregarding the human factor. In this study, we will: 1) conduct surveys in areas affected by a tsunami occur in 2015 in the north of Chile to understand how human interact with imminent flood hazard. 2) We will construct an integrated model, Time of Response by Social Vulnerability Index (TRSVI), that quantify the differences in Social Vulnerability Index (SVI) versus time of response. 3) We will integrate TRSVI and physical vulnerability to quantify human casualties in a flood event and the uncertainty associated. 4) we will provide an example of an application of this methodology calculating the number of people that can be affected by a potential Glacier Lake flood event from Palcacocha Lake that could strike the city of Huaraz.