Geophysical Research Abstracts
Vol. 21, EGU2019-17518-2, 2019
EGU General Assembly 2019

Flood Hazard Impact Forecasts in the Global Flood Awareness System (GloFAS)

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Providing impact based forecasts of natural hazards, such as floods, can help emergency responders identify which areas will be most affected. Global natural hazard forecast systems, such as the Global Flood Awareness System (GloFAS), are well established and the recent proliferation of exposure datasets at the global scale opens the possibility to create global natural hazard impact forecasts.

We present the implementation of a new impact based flood forecasting product into GloFAS. For each flood hazard location that is forecasted, the exposed population, land cover and urban areas within a flood footprint are summarised. This summary is used to shade the affected second level administration units according to a risk matrix, giving users a clear indication of the flood events which will have the greatest impact. The methodology is based upon that used in the European Flood Awareness System (EFAS), but exposure information are sourced from global open datasets. Case studies of flooding in the United States, India and Myanmar in July 2018 are used to demonstrate the flood impact product.

The new GloFAS impact product currently only considers exposure information of three variables. However it is important to consider additional exposure information such as primary road networks and the locations of vulnerable buildings such as schools and hospitals. Work is ongoing to collate these from a variety of different data sources, such as OpenStreetMap API. Accounting for more of these components of exposure will improve the quality of the flood impact forecasts.