How do people behave during flash floods and why? Lessons for the prediction of the human vulnerability dynamics in short-fuse weather events

Javed Ali, Isabelle Ruin

► To cite this version:

Javed Ali, Isabelle Ruin. How do people behave during flash floods and why? Lessons for the prediction of the human vulnerability dynamics in short-fuse weather events. EGU General Assembly 2019, Apr 2019, Vienna, Austria. hal-02123257

HAL Id: hal-02123257

<https://hal.science/hal-02123257>

Submitted on 7 May 2019

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Introduction

- Understanding how people actually detect potentially dangerous circumstances and manage to timely adapt their routine to cope with the speed of the hazard evolution remains a challenge.

- Based on insights from post event interviews, online surveys were used to quantitatively document behavioural responses associated with 3 catastrophic flash flood events that happened in southern France in 2014 and 2015.
- A multivariate statistical analysis among different variables that define the social structure, and different subcategories that characterize people's behavior was carried out in order to investigate the linkage between these two concepts.

Methodology

1. Data Collection

Victims of two flash floods in 2014 and 2015 were selected in this study: one near Montpellier (Hérault department) on 30th September 2014 and another one near Nîmes (Gard department) on 10th October 2015. Online questionnaire surveys were used to collect the data about flash floods and social behaviors. 250 people answered the online questionnaire. The rainfall data associated to questionnaire responses were obtained from reanalysis data that combine radar and rain gauges observations data. The rainfall data was calculated at the location where the respondents were at the time of the event.

	Montpellier-Nice-2014		Cannes-Nice-2015
Event			
Place	Hérault department (Montpellier)	Gard department (Nîmes)	Var + Alpes-Maritimes departments (between Cannes and Nice)
Date	Monday 29/9 15-18h Weekday, afternoon and evening	Friday 10/10 1h-10h Weekday, night and morning	Saturday 3 October, 19-22h Weekend, evening
Max cumulated rain1h (mm)	129	92	146
Max cumulated rain 24h (mm)	352	426	215
Météo-France warning	Red	Red	Orange
Impact	No death	No death	20 deaths
Number of valid answers	100		180
Link broadcast	Meteorological websites		Professional networks + Meteorological websites
Main characteristics of the sample	Age 20-30 years (average: 33) Mostly men		Age 30-45 years (average: 40), Couple, children high socio-professional groups, public sector

CONTEXT

SURVEY

Link broadcast

Main characteristics of the sample

Number of valid answers

Impact

Météo-France warning

Max cumulated rain 24h (mm)

Max cumulated rain1h (mm)

Date

Place

Event

CONTEXT

SURVEY

Link broadcast

Main characteristics of the sample

Number of valid answers

Impact

Météo-France warning

Max cumulated rain 24h (mm)

Max cumulated rain1h (mm)

Date

Place

Event

CONTEXT

SURVEY

Link broadcast

Main characteristics of the sample

Number of valid answers

Impact

Météo-France warning

Max cumulated rain 24h (mm)

Max cumulated rain1h (mm)

Date

Place

Event

CONTEXT

SURVEY

Link broadcast

Main characteristics of the sample

Number of valid answers

Impact

Météo-France warning

Max cumulated rain 24h (mm)

Max cumulated rain1h (mm)

Date

Place

Event

CONTEXT

SURVEY

Link broadcast

Main characteristics of the sample

Number of valid answers

Impact

Météo-France warning

Max cumulated rain 24h (mm)

Max cumulated rain1h (mm)

Date

Place

Event

CONTEXT

SURVEY

Link broadcast

Main characteristics of the sample

Number of valid answers

Impact

Météo-France warning

Max cumulated rain 24h (mm)

Max cumulated rain1h (mm)

Date

Place

Event

CONTEXT

SURVEY

Link broadcast

Main characteristics of the sample

Number of valid answers

Impact

Météo-France warning

Max cumulated rain 24h (mm)

Max cumulated rain1h (mm)

Date

Place

Event

CONTEXT

SURVEY

Link broadcast

Main characteristics of the sample

Number of valid answers

Impact

Météo-France warning

Max cumulated rain 24h (mm)

Max cumulated rain1h (mm)

Date

Place

Event

CONTEXT

SURVEY

Link broadcast

Main characteristics of the sample

Number of valid answers

Impact

Météo-France warning

Max cumulated rain 24h (mm)

Max cumulated rain1h (mm)

Date

Place

Event

CONTEXT

SURVEY

Link broadcast

Main characteristics of the sample

Number of valid answers

Impact

Météo-France warning

Max cumulated rain 24h (mm)

Max cumulated rain1h (mm)

Date

Place

Event

CONTEXT

SURVEY

Link broadcast

Main characteristics of the sample

Number of valid answers

Impact

Météo-France warning

Max cumulated rain 24h (mm)

Max cumulated rain1h (mm)

Date

Place

Event

CONTEXT

SURVEY

Link broadcast

Main characteristics of the sample

Number of valid answers

Impact

Météo-France warning

Max cumulated rain 24h (mm)

Max cumulated rain1h (mm)

Date

Place

Event

CONTEXT

SURVEY

Link broadcast

Main characteristics of the sample

Number of valid answers

Impact

Météo-France warning

Max cumulated rain 24h (mm)

Max cumulated rain1h (mm)

Date

Place

Event

CONTEXT

SURVEY

Link broadcast

Main characteristics of the sample

Number of valid answers

Impact

Météo-France warning

Max cumulated rain 24h (mm)

Max cumulated rain1h (mm)

Date

Place

Event

CONTEXT

SURVEY

Link broadcast

Main characteristics of the sample

Number of valid answers

Impact

Météo-France warning

Max cumulated rain 24h (mm)

Max cumulated rain1h (mm)

Date

Place

Event

CONTEXT

SURVEY

Link broadcast

Main characteristics of the sample

Number of valid answers

Impact

Météo-France warning

Max cumulated rain 24h (mm)

Max cumulated rain1h (mm)

Date

Place

Event

CONTEXT

SURVEY

Link broadcast

Main characteristics of the sample

Number of valid answers

Impact

Météo-France warning

Max cumulated rain 24h (mm)

Max cumulated rain1h (mm)

Date

Place

Event

CONTEXT

SURVEY

Link broadcast

Main characteristics of the sample

Number of valid answers

Impact

Météo-France warning

Max cumulated rain 24h (mm)

Max cumulated rain1h (mm)

Date

Place

Event

CONTEXT

SURVEY

Link broadcast

Main characteristics of the sample

Number of valid answers

Impact

Météo-France warning

Max cumulated rain 24h (mm)

Max cumulated rain1h (mm)

Date

Place

Event

CONTEXT

SURVEY

Link broadcast

Main characteristics of the sample

Number of valid answers

Impact

Météo-France warning

Max cumulated rain 24h (mm)

Max cumulated rain1h (mm)

Date

Place

Event

CONTEXT

SURVEY

Link broadcast

Main characteristics of the sample

Number of valid answers

Impact

Météo-France warning

Max cumulated rain 24h (mm)

Max cumulated rain1h (mm)

Date

Place

Event

CONTEXT

SURVEY

Link broadcast

Main characteristics of the sample

Number of valid answers

Impact

Météo-France warning

Max cumulated rain 24h (mm)

Max cumulated rain1h (mm)