Flash Flood in Jammu and Kashmir

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Abstract— Flash floods are severe flood events triggered by extreme cloudbursts; glacial lake outbursts; or the failure of artificial dams or dams caused by landslides, debris, ice, or snow. Flash floods can have impacts hundreds of kilometers downstream, although the warning time available is counted in minutes or, at the most, hours. Flooding can boost to flash flooding in various places where intense rainfall results in a sudden surge of rising flood waters. Flash floods are also characterized by a sudden rise in water level with high velocities, and large amounts of debris. Most factors in flash flooding are the intensity and duration of rainfall and the steepness of watershed and stream gradients. Flash flooding occurs most commonly in steeply sloping valleys in hilly areas, but can also occur along small waterways in urban environments. Dam failure, release of ice jams, and collapse of debris dams also can cause flash floods. The damages caused by flash floods can be more dangerous than ordinary floods because of the speed with which flooding occurs, the high velocity of water, and the debris load.

Key words: Flash Flood causes, Flash Flood Overview

I. INTRODUCTION

Flash floods particularly in Narrow River gorges are the cause of some of the major landslides in J&K. The vulnerability of geologically young unstable and fragile rocks of the state has increased many times in the recent past due to various unscientific developmental activities. Deforestation, unscientific road construction and terracing, encroachment on steep hill slopes are anthropogenic activities which have increased the frequency and intensity of landslides.

Flash floods, short lived extreme events, which usually occur under slowly moving or stationary thunderstorms, lasting less than 24 hours are a common disaster in the state. As a result of the high velocity of the current which can wash away all obstacles in its way, this phenomenon has resulted in enormous loss of life and property in various parts of the region.

II. CAUSES OF FLASH FLOODS IN JAMMU AND KASHMIR

Flash floods can occur under various types of conditions. Flash floods have occurred after eruptions, in areas on or near volcanoes, when glaciers have been melted due to global warming. Flash floods generally occur in the hilly areas. The main causes of flash flood in Jammu and Kashmir are as follows:-

A. Heavy Rainfall

Heavy monsoon rainfall has caused flash flooding with localized damage across Jammu and Kashmir A high rainfall event may only last for a few hours at most, but can cause petrifying and destructive floods.

B. Landslides

The second most important cause of flash flooding in Jammu and Kashmir was landslide which heavily impacted on communities and road connectivity.

C. Widespread Flooding

The third most important cause of Flash flood in Jammu and Kashmir was widespread flooding in Kashmir Valley.

III. IMPACT OF FLASH FLOOD

Flash flood water flows at high velocity and carry large amounts of debris. These debris laden waters can cause the loss of life and can sweep away critical infrastructure that is the lifeline of mountain communities. Some of the destruction which is caused by flash floods is immediately apparent while some subtly threaten existing structures and the true damage is not seen until some later time. Some of the destruction is short term while some has long term harmful effects on the environment and the socio-economic life of communities. Paddy and fruit crops have suffered huge losses and damage to vegetable and maize crops and also potential loss of seeds and tools. The supply routes and transportation networks have been adversely affected. Flooding has major impact on household level food stocks and flash floods also washed away household assets.

IV. OVERVIEW OF FLASH FLOOD

Heavy monsoon rains began on 2 September, 2014 in Jammu and Kashmir leading to heavy flooding. On 3 September a border security officer and five others were killed in landslides and flash flood triggered by heavy rain in Jammu. According to past year's flash flood analysis Jammu & Kashmir faced with the worst floods in half a century. Flash floods and landslides triggered by heavy rainfall and cloudburst has claimed more than 400 lives 2,500 villages have been affected and over 450 villages have been submerged. More than hundreds of people have been evacuated from their houses and the localities in the safe location.

The 300-km-long Jammu-Srinagar National Highway was closed for traffic due to landslides at various places in Ramban district of the state. A number of major roads and various bridges connecting to Srinagar were washed away by the flash flood. After the bridges got washed away by the flash flood, the roads leading to the famous tourist destination Gulmarg in North Kashmir was closed for the vehicular movement. Baramulla-Uri road has also been closed after the flash flood washed away the roads at many places.

Fig. 3.1.2(a): A temple is partially submerged in flood water in Jammu, India on September 6, 2014, Saturday. (Source- Indian Express .com)

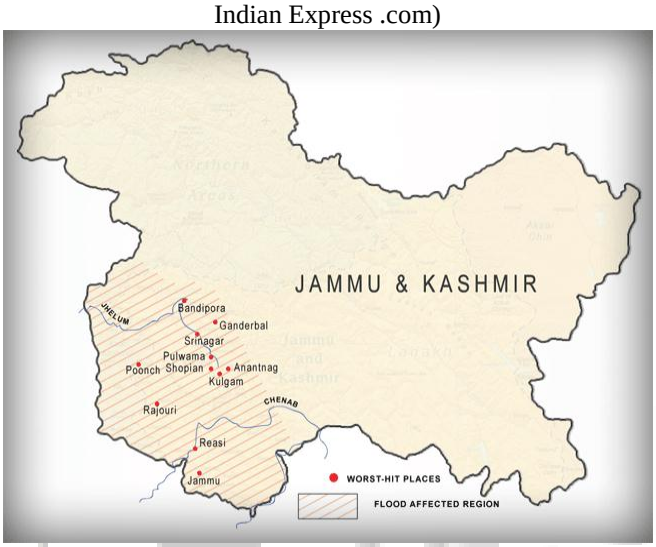

Fig. 3.1.2(b): Flood Affected Regions Of Jammu And Kashmir

V. CONCLUSIONS

After the study of several cases of flash flood in hilly areas it is obvious that the main causes of flash flood in Jammu and Kashmir was heavy monsoonal rainfall, landslides and widespread flooding in Kashmir Valley. Because of these the rivers in hilly areas overflows and the flash flood occur. It is apparent that the number of flash flood events occurred in the hilly area i.e. Jammu and Kashmir caused by heavy monsoon rainfall and landslides. In these three floods prone hilly areas rainfall remains the most suspected cause of flooding due to cloudburst and snow melting. Flooding has been shown to have various effects on the human activities on one hand and the environment on the other hand. It is essential that structural measures, particularly bioengineering works be complemented with non-structural measures. Only their joint implementation can secure the adequate use of prevention and mitigation strategies.

In addition, non-structural measures need to be effectively consolidated and implemented within a legal framework so that such strategies can be sustainable for the future.

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