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## RESEARCH ARTICLE

### RECENT AND PAST FLOODS IN KASHMIR: CAUSES AND CONSEQUENCES WITH SPECIAL REFERENCE TO SRINAGAR CITY

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#### ARTICLE INFO

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#### ABSTRACT

Floods are common in Kashmir valley due to its physiographic disposition but the kind and devastation caused by them against the human life and property needs immediate attention. The present paper highlights the causes, consequences of floods and aimed to provide inventory in the identification of the priority areas which needs certain conservative and preventive measures for curbing the manace in Kashmir valley in general and Srinagar city in particular.

##### Key words:

Floods, Human loss, Devastation,  
Conservative measures.

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#### INTRODUCTION

The valley of Kashmir has a long history of natural hazards and disasters like floods, famines, fires, earthquakes, wind storms, earthquakes and lands. Flash floods are common in the Himalayas, but the kind and destruction witnessed during september 2014 was un-parallel in recent history. Houses collapsed like pack of cards and the roads and bridges swept away in the turbulent flood water. The Jhelum water that was used to be provider of life suddenly became a monstrously destructive force against the human life and the infrastructure that cohabit its backyard since millennia. Most people of Kashmir have no idea of devastating floods of 1902, when the city of Srinagar situated mainly on right bank of river Jhelum was submerged for two years, take a toll of life and property. The people and the successive Government, learnt the lessons from the major floods of 1957, 1959 and 1973 and continuously acted against the nature, be it the forest, water bodies, streams or embrankments. The 1957 floods, due to breach in the Jhelum atbatwara, flood water reached upto Sonawar where it affects the areas of Batwara, Shivpora and Sonawar. In 1959 another event occurred and reached up to the Bakshi stadium and caused death of 33 people and huge loss of infrastructure. After the floods of 1902, then Maharja of Kashmir approached British Government for advising some remedial measures in this connection an electric driven dredger was imported for which a 5 MW power house on Jhelum at Moh was constructed.

The construction measures also includes the flood channel from patshahiBagh to Wular lake for a discharge of 17,000 cuses and dredging of Jhelum at Baramulla. There are no authentic discharge figures available for the 1928 floods though some reports suggests that the discharge was almost 80,000 cuses at sangam. Until now, the floods of 1928 August was considered as being the worst one in the living memory in Kashmir. During the 1928 floods, 275 locals (including 200 amarnathyatris) died compared to about 100 during the 2014 floods. On 1959 another flood hits the Kashmir leads to collapse of large building along the sides of river Jhelum. The 2014 floods fulfill every critarian for being categorized as the extreme of the extreme flood. The high discharge levels of 2014 extreme flood were frightened making the people fear for high human loss and total destruction of Srinagar city. The another reason being the high water levels of Jhelumpersisted above the low lying areas for more than week. The fragile dike (bunds) were permeable at some places so that the water leaked through them. These dikes were found permeable in certain areas of pampore down to chattabal at Srinagar city. The highly worst hit areas were found including Kakapora, Nowgam, Lasjan and Srinagar city.

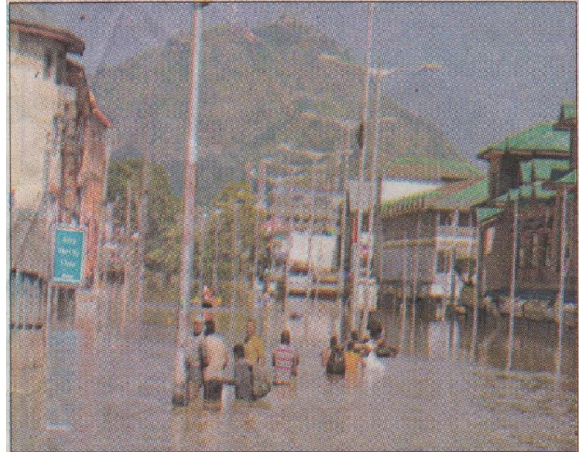
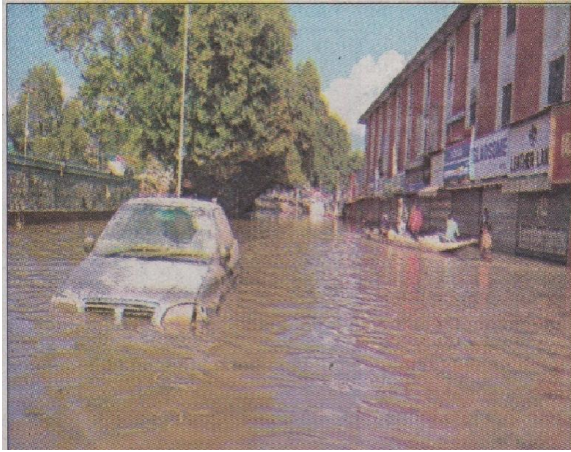
#### Cause of flash floods in Jammu and Kashmir

The main causes of flash floods in Jammu and Kashmir are briefly described as follows:

**Glacial melting:** Glacial melting due to global warming is the main cause of flash floods. The major glaciers in the high mountains are receding at an alarming rate

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Glacier in Jammu and Kashmir is receding at a faster rate compared to other glacial regions in the world. In Kolhai Glacier of Kashmir situated at Pahalgam is the main source of drinking water and irrigation in valley, during the same period this glacier has receded to about 18% in last 40 years. Climate change is likely to effect a number of sectors, particularly agriculture horticulture and hydro power capacity. Recently, Kashmir valley has witnessed drastic decrease in the snowfall. The reduction of snowfall together with fast receding Glacier has resulted in water scarcity for irrigation and hydropower generation in the last few decades.

#### **B. Heavy Rainfall.**

- The heavy rainfall has caused flash flooding with localized damage across Jammu and Kashmir.

This has mainly cause the excessive snow melt in the upper regions of the valley. The average annual rainfall is around 1,000 mm but some areas are excepted to receive more than 2350 mm rain in just four days.

- Normally September is not a rainy season in Kashmir. But during year 2014 heavy rains were received because of interaction between the western disturbances and monsoon currents and its effects seen in all three regions of Kashmir. The weather in Kashmir valley is mainly influenced by the western disturbances originated from the Caspian sea.

#### **A. Shrinkage of wet lands**

The flood vulnerability scenario in the Jehlum basin has worsened during the last few decades as most of the wetland

that used to act as sponge during flooding have been urbanized and converted into concrete landscape in the entire Kashmir valley. Most of the wetlands and water bodies are fighting a losing battle for their survival. The functionality of wetlands have strong linkage with the hydrological cycle has got adversely effected due to their encroachments and seasonal changes in the precipitation and run off attributed to the climate change. In and around Srinagar only 20 wetlands have lost due to urban colonies during the last few decades, particularly in the south of the Srinagar city. Shrinkage of wetlands in Kashmir valley due to urbanization on flood plains and siltation of water courses has degraded the ability of our environment to absorb excessive rain water and this increased the vulnerability of river Jehlum basin to flooding which is manifested in the frequent flash floods and water logging observed in the flood plains of the Jehlum.

### B. Landslides

The Himalayas are well known for the occurrence of snow avalanches particularly western Himalayas i.e: the snowy regions of Jammu And Kashmir, Himachal Pradesh and western U.P. In Jammu And Kashmir high reaches of Gurez valley, Kagril and Ladakh and some of the major roads are highly vulnerable to the landslides.

### Srinagercity: (Floods 2014)

There was a record rainfall of 400mm, 225 mm on a single day combined with cloud bursts in the catchments in the south Kashmir which raised the flood level of Jhelum at sangam to 37 ft ( danger level 21 ) breaking all the previous records. This resulted in the abrupt increase in the flood level at Ram Munshi Bagh which touched 29 ft (danger level 18), resulting in the out flanking of the wall at the gate. The first casualty was Barzalla when a breach occurred in Doodganganallah near bone an d joint hospital on 4<sup>th</sup> September as the bank reportedly had been tempered with. This was followed by a series of breaches in Jehlum at sempora, army convey ground Pandrathan, Sonawar, Rajbagh and in supplementary flood channel at Rambagh – all of them due to tempering of embankments. River started overflowing near Danjibhai building, JK bank, poloview and abiguzar. Due to the out – flanking of a wall at the Ram Munshibagh gate, the Jehlum started overflowing into the dal lake. This was compounded by the cloud bursts in sindh basin and a heavy discharge in sindhnallah which joins theJehlum at Shadipora causing an afflux and restricting the free flow into the Wullar lake which had the requisite detention capacity at that point of time. The flood inflow was more than the combined carrying capacity of Jehlum and flood channel despite the breach at Kandizal.

- Tempering and encroachment of Jehlum and flood channel embankments both by the government and the inhabitants.

- Railway track where precipitation got stored on the upstream and its subsequent exit through the openings which may not have adequate water ways.
- Floating logs of a band saw installed in the bed of ZontiKhul which blocked the flow resulting in the overflowing of its banks and submergence of Bishamber Nagar and adjacent areas.
- Beautification of river banks in the city which may have caused encroachment in its section, thus reducing its carrying capacity.

Overflowing of the right bank of ZontiKhul results in the submergence of Bishambarnag and adjancet areas. By 7<sup>th</sup> of September the whole city was submerged, having taketheaviest toll of life and property in the history of Kashmir.

### Flood precautionary, relief and rehabilitation measures

There is a set procedure laid down both for engineering staff and civil administration to set up control rooms at Srinagar, district / zonal headquarters and flood beats as soon as flood committee. In the past, rehearsals would be conducted before the onset of flood season and deficiencies, if any rectified. The flood beats are the fighting force and have to be fully equipped with empty bags, shovels, gas lamps/lanterns/torches etc. for plugging of any leakages in the bunds neither the labour nor the support of the stakeholders is available in the Srinagar city. On the other hand in the villages the people voluntarily come out to protect the bunds and hence their property. The relief and rehabilitation committees have also to be fully equipped with boats, medicines, blankets and tents.

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