

Flood 2018- Below furnished is the abstract and graphical analysis of Case study, conducted by IIT Chennai on Role of dams on the floods of August 2018. Study was conducted in Periyar River Basin, Kerala. Report has been accepted for publishing in the journal of Current Science .Like CWC, the study reveals that the contribution to flood by dam release was less.

Sudheer, K P^{1,2,}, S. Murty Bhallamudi^{1,3}, Balaji Narasimhan^{1,3}, Jobin Thomas¹, Bindhu, V M¹, Vamsikrishna Vema^{1,2}, Cicily Kurian¹*

¹Department of civil Engineering, Indian Institute of Technology Madras, Chennai – 600036

²Department of Agricultural and Biological Engineering, Purdue University, West Lafayette, IN, USA.

³Indo German Centre for Sustainability, Indian Institute of Technology Madras, Chennai – 600036

*Corresponding Author: sudheer@iitm.ac.in

Abstract

The Kerala State (India) has experienced a devastating flood event during the month of August 2018. While an extreme rainfall event (ERE) was the primary reason for this flood, there were criticism at various levels that the authorities failed to manage the flood effectively through reservoir operations. One of the worst affected basins, Periyar River Basin (PRB), received a 145 year return period rainfall. This study reports the results and analysis of a modelling exercise using HEC-HMS to simulate and analyse the role of dams, as well as reservoir operations, on the flood of August 2018. **The results indicated that the role of releases from the major reservoirs in the PRB resulting in the flood havoc was less.** The analysis suggested that reservoir operations could not have helped in avoiding the flood situation as only 16-21% peak attenuation was possible by emptying the reservoir in advance, as the bulk of runoff to the flooding was also contributed by the intermediate catchments without any reservoirs to control. Further, **the attenuated flood peak due to advance emptying of the reservoir would still be almost double the safe carrying capacity of the river** section at Neeleswaram. In addition, the reliability of the rainfall forecast at higher lead times is also a concern for the reservoir operation. It is noted that the probability of EREs of this kind in the month of August in PRB is very small (0.6%), and therefore any planned operation could not have helped in mitigating floods of such magnitude without a reliable EREs forecast coupled with reservoir inflow forecasting system and optimized set of reservoir operational policies.

