

Genesis and Accumulation of River Bottom Sediments

Lia Matchavariani, G. Metreveli

E-mail: lia.matchavariani@tsu.ge

Geography Department, Faculty of Exact & Natural Sciences,
Iv. Javakishvili Tbilisi State University,
#1, I. Chavchavadze ave., Tbilisi, 0179, Georgia

The issue of mountain rivers bottom genesis, its transportation and distribution in time and space, needs detail research. This knowledge will enable effective management of river discharge, seacoast defend problems and construction industry. The river deposit geneses and its amount are the result of climate and similar to it, they are also cyclical. The main debris maker natural factors are glaciers, erosion, landslide and mudflow. Some rivers cross the rising ridges – epeirogenesis threshold and submerged valleys. The rivers sew these edges to create equilibrium bed. If the speed of rising edge is more than the speed of riverbed submergence, the depression is created. The river permanently accumulates debris in this depression to create equilibrium bed. The results of such process are Saglolo and Chreballo valley terraces at the river Rioni basin, Ushguli valley on the river Enguriand Tianeti valley on the river Iori area. The main part of the debris is used to create reservoirs' silting prism. The remaining debris is used to create an equilibrium bed in submerging valleys, delta formation, and renewal of beaches. Mountain reservoirs face three opposing issues: Hydropower development; Coastal protection; Riparian settlements and infrastructure protection from floods in distributary mouth. Therefore, when deciding on the dam location, we should take into consideration river deposit genesis, places of their accumulation and granulometry. The optimal place to build a dam is epeirogenesis threshold because the edge rises along with the dam and it can extend its exploration.

References:

- [1] Lia Matchavariani, Giorgi Metreveli, Lamzira Lagidze, Nino Paichadze. Siltation Problem of Mountainous Reservoirs and its Solution for Sustainable Hydropower. 16th International Multidisciplinary Scientific GeoConference & Expo SGEM2016. Proceedings, book 3 "Water Resources, Forest, Marine & Ocean Ecosystems", vol. 1 "Hydrology & Water Resources", ISBN: 978-619-7105-61-2; ISSN: 1314-2704; DOI: 10.5593/sgem 2016B31, Albena, Bulgaria, 08.06-07.07, 2016, 661-667
- [2] Giorgi Metreveli, Lia Matchavariani. Research Method of Silting the Mountain Reservoirs under the Current Climate Change. Journal of Water Resources and Ocean Science. Science Publishing Group, ISSN: 2328-7969 (Print); ISSN: 2328-7993 (Online), DOI: 10.11648/j.wros.20160502.11. Vol. 5, No. 2, 2016, 22-27
- [3] Lia Matchavariani, Giorgi Metreveli, Merab Alaverdashvili, Lamzira Lagidze, Davit Svanadze, Zaza Gulashvili, Giorgi Bregvadze. Results of Field Experiments of Reservoirs' Siltation for Harmonious Realization of Hydropower and Coastline Problems. Second International Conference on Science, Engineering & Environment, Osaka City, Japan, Nov.21-23, 2016, ISBN: 978-4-9905958-7-6 C3051, 639-644

Acknowledgements. This study is funded by Shota Rustaveli National Science Foundation within the scope of grant "Modern Methods of the Joint Problem Realization for Shore Protection and Hydropower" (#AR/220/9-120/14).