

EINLADUNG ZUM VORTRAG  
im Rahmen des Geographischen Kolloquiums  
**am MITTWOCH, 8. JÄNNER 2014, 18 UHR c.t.**

INSTITUT FÜR GEOGRAPHIE UND REGIONALFORSCHUNG  
Universität Wien • Universitätsstr. 7/5 • 1010 Wien

HÖRSAAL 5A

Prof. emer. Dr.  
**Mike CHURCH**

Department of Geography, University of  
British Columbia, Vancouver, Kanada



## THE LEGACY OF 19TH CENTURY GOLD MINING IN FRASER RIVER

The geomorphic impact of 19th century placer mining along Fraser River is studied by estimating the volume and grain size distribution of excavated sediment, evaluating the transport potential for the sediment in Fraser River, and discussing the relation between placer waste sediment and observed morphodynamics of the lower river. The location and area of 456 mine excavations along 500 km of the river were mapped and a subset of these mines surveyed to create volume-by-area regression relations which were applied to all mapped mines along the river. On this basis, the total volume of material excavated at mine sites and lost to the river is estimated to be about  $58 \times 10^6$  m<sup>3</sup> (bulk volume). Bulk sampling of mine scarp sediment and observation of mine lag sediment indicate that the discharged tailings consisted of 14±7% small cobbles, 32±9% gravel, 41±4% granules and sand, and 13±4% silt and clay. Sand and silt have washed into the river's delta. Gravel and cobbles are still interacting with the river. The rate of downstream movement of the placer-waste slug is estimated by applying established relations between channel width and sediment virtual velocity. The predicted rates of migration indicate that peak delivery of placer waste sediment to the distal gravel fan of the river may have occurred early in the 20th century, in good agreement with observed aggradation of 171,000 to 229,000 m<sup>3</sup>a<sup>-1</sup> gravel (bulk measure) between 1952 and 1999 in the lower river.

Michael Church is Professor emeritus in the University of British Columbia, where he taught geomorphology, hydrology and studies in resources and environment for 38 years. He researches river morphodynamics, with a major interest in sediment transport and sedimentation. He has focused much work on the large Fraser and Peace rivers in western Canada, the former an important salmon stream, the latter a regulated boreal river. Professor Church is a fellow of the Royal Society of Canada and the American Association for the Advancement of Science.

Organisiert von  
Arbeitsgruppe *Geomorphologische Systeme und Risikoforschung*  
Institut für Geographie und Regionalforschung  
Universität Wien