



## **Influences of sand accumulation on crushed-rock embankment along the Qinghai-Tibet Railway, China**

Ruiping Zu, Zhilin He, Yumei Zong, Kecun Zhang, and Jianjun Qu

Cold and Arid Environmental and Engineering Research Institute, Chinese Academy of Sciences, Key Lab. of Desert and Desertification, Lanzhou, China (zurp@lzb.ac.cn)

The crushed-rock embankment, which is widely used in the Qinghai-Tibet Railway (QTR), has been proven to have active cooling effects and can effectively protect the stability of embankment in permafrost regions. However, with the increasing of desertification in Tibetan Plateau, the crushed-rock embankments along the QTR have suffered from sand filling or burial seriously, and the influences of sand accumulation on the crushed-rock embankment have not been effectively resolved so far. Therefore, this paper simulated the ground temperature variation in the case of the crushed-rock embankment filled and buried by sand through the indoor experiment. The results show that the bare crushed-rock has good cooling effect on its underlying embankment, but after filled or buried by sand, its cooling effect will significantly reduce or even disappear, and the thicker the sand layer, the higher the ground temperature of frozen soil. In the long term, the sand accumulation could be a serious and potential threat to embankment of the QTR. In order to ensure the stability of the crushed-rock embankment and safe operation of the QTR, it is necessary to set up comprehensive sand-protecting system along the railway as soon as possible.