A Case Study of Disasters due to Volcanic Activities and Countermeasures against Them in Railway of Japan

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Over 100 active volcanoes exist in Japan, and some of them are active even now. To prepare for volcanic activities, we must learn how they affected railway systems in past volcanic events, and how railway companies applied countermeasures against them. The authors conducted the literature review of 10 volcanic events, which affected railway systems in Japan in last 100 years. As a result, the authors revealed that a volcanic activity involved ground displacement, seism, ash fall and lahar (volcanic mud flow), and these accompanying phenomenon affected many aspects of the railway systems: vehicles, structures, power supply systems, tracks, signal and train control systems, and train operation. This result is useful to prepare a countermeasure plan or a research and development plan against volcanic activities.