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Capacity of Airports for Aircrafts Evacuation under Large Volcanic Eruption

[Abstract]

Large volcanic eruptions have a potential impact that the considerable part of airspace and airports are covered by ash. To avoid the economic loss due to the unavailable time of affected aircraft, the evacuation of aircraft which are expected to be covered by ash is effective particularly if eruption can be predicted. However, evacuation of aircraft requires the capacity of unaffected airports for accommodating evacuating aircraft. This paper proposes a methodology to assess the 'coping capacity' of airports for aircrafts evacuation under a large volcanic eruption. As we cannot know the exact ash dispersion scenario, we identify the most hazardous scenario by generating various scenarios with the PUFF model-based simulation. The methodology is applied to the case of the Japanese domestic air transportation network affected by Mt. Sakurajima in Japan. The index named 'occupancy rate' is introduced to represent the coping capacity of airports. The result implies that the demand for emergency divert and evacuation might exceed that of spots if the affected area includes some hub airports such as Haneda airport. In addition, the capacity depends on the choice of evacuation, and on the determination of ash accumulation depth threshold for the decision of airport closure.



[Keywords]

Volcanic Hazard, Air Transportation, Impact Assessment, Crisis Management