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Characteristics of fog formation during the warm season in the northern part of Osado mountain range, Sado Island

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Fog observations were performed during the warm season in 2009 (from 11 May to 16 October) at Sekigoe (780 m a.s.l.), located on the ridge of the northern part of Osado mountain range, Sado Island, using automatic shooting cameras which can take photographs at 30 minutes intervals. The results revealed 96-days of fog formation, equivalent to 60% of the observation period, while fog was not observed at all during the same period at Aikawa weather station (5.5 m a.s.l.), located on the coastline of the Sado Island. The monthly number of foggy days became greatest in July and reached 28 days. From analysis of meteorological data, including estimates of the lifting condensation level and the vertical stability of air, fogs observed in this site are believed to be upslope fog in most cases, which forms when winds blow air up slopes. Since the northern part of Osado mountain range is small in width and both sides of the mountain slope face the Sea of Japan, the upslope air flow can occur from both the Sotokaifu Coast and the Uchikaifu Coast. This may be cause the high frequency of fog in this site. The estimate of lifting condensation level shows that the mountain slopes higher than 700 m a.s.l. are almost certainly enveloped in upslope fog on foggy days. This feature of fog formation is possibly related to the fact that the virgin cedar forests are seen only in the altitude of 700 m or more in the northern part of Osado mountain range.

Keywords: fog, Osado mountain range, upslope fog, lifting condensation level