The Relationship of Sand and Dust Storm and Land Characteristics in Mid-Latitude Region

Eunbeen Park (1), Jiwon Kim (1), Cholho Song (1), Hyun-Woo Jo (1), Woo-Kyun Lee (2)

[1] Kore Univ., 02841 145 Anam-ro, Seongbuk-gu, Seoul, 02841, Korea
Email: heyevvin@gmail.com; keinesorge2@gmail.com; cholhosong@gmail.com; endeavor4_a1@naver.com; leewk@korea.ac.kr

Abstract: Sand and Dust Storm (SDS) is natural event occurred in Mid-Latitude Region (MLR). Mostly, SDS damage and desertification affect each other, and Disaster Risk Reduction (DRR) plan are needed through relationships. The study area is including Kazakhstan to Mongolia which have forest, grass, savanna, barren, desert sector. This study aims to find the relationship of SDS frequency and Land Characteristics. First, Normalized Difference Vegetation Index (NDVI) and Aridity Index (AI) were used for Land Characteristics properties, and SYNOP data were used for frequency of SDS in 1984 – 2015. Then, NDVI, AI, SDS frequency indicators were analyzed to identified land changes and spatio-temporal distribution. In particular, potential SDS-desertification risky area could be identified by according to land cover changes. Mostly, vegetation distribution and dry climatic phenomenon is important land characteristics reducing occurrence of SDS and desertification. The high SDS frequency area, NDVI range is 0 to 0.2 and high AI trend. On the other hand, low SDS frequency area, NDVI range is -0.2 to 0.6 and middle-low AI trend. Two phenomena have an impact on each other, but they are one of the various factors changes the land cover. The potential disaster occurrence area could be founded though time-series changing patterns of factors indicates, and the results could be help to DRR.

Keywords: Sand and Dust Storm, NDVI, Aridity Index, Disaster Risk Reduction