Characteristics of drainage basins with alluvial fans in Japan

*Tsuyoshi Ueda[1], Takashi Oguchi[2]

1. Department of Earth and Planetary Science, The University of Tokyo, 2. Center for Spatial Information Science, The University of Tokyo

Alluvial fans are landforms composed of semi-conically deposited gravel and sand supplied from rivers, and their characteristics are affected by those of source drainage basins. We investigate 490 major alluvial fans and their source areas in Japan identified by previous studies in the 1980s, using the latest geospatial data such as high-resolution digital elevation models (DEMs) and geospatial analytical tools such as the ArcGIS Pro software from ESRI. The selection of such drainage basins is intended to focus on fluvial systems with large clastic sediment yields. The analysis indicates that drainage basins in Hokkaido, Tohoku, Kanto, and Chubu are relatively larger than those in western Japan. Chubu and Kanto have especially large systems including steep mountainous areas such as the Japanese Alps. In Hokkaido and Tohoku, drainage basins on the side of the Sea of Japan tend to be larger than those on the Pacific side, which also indicate steeper areas tend to have larger drainage basins. We also examined relationships between the fan area and the drainage basin area. Their relation for small fluvial systems tends to be common over Japan; whereas, that for large systems tends to vary according to regions. For example, for similar drainage areas, Hokkaido and Kanto tend to have larger alluvial fans but Kyushu has smaller ones.

Keywords: drainage basin, alluvial fan, dimension, Japan

