

Past and modern landslides controlled by lithology and geologic structures of accretionary complexes in eastern Kii Peninsula, central Japan

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The relationship between large landslides and geologic characters of accretionary complexes were examined in the Chichibu belt on the eastern part of the Kii Peninsula, central Japan. The rocks in this area consist of Jurassic accretionary complexes composed of basalt, limestone, chert, Permian-Triassic boundary siliceous shale (PTBS), mudstone, sandstone, and mélanges with sheared shale matrices. We examined prehistoric landslides (the Karako, Sono, Kasagi, and Aso landslides), and the modern Kasugadani landslide that was triggered by the Typhoon Meari on 29-30 September 2004. Although the age of the Sono landslide was estimated at $20,440 \pm 70$ BP and $20,820 \pm 70$ BP based on AMS-¹⁴C ages of wood fragments embedded in the dammed lake sediments, the ages of other prehistoric slides are unknown. All of the landslides occurred on dip slopes. The bedding, foliation, and fault planes of the rocks in the area generally trend E-W and dip to the north, although those in the Kasugadani area dip to the south as a result of local folding. The landslides selectively slid along the planes of 1) PTBS horizons that were less strong than those of underlying chert, 2) lithologic boundaries with physical contrasts, or 3) boundary faults between mélange units. These geologic structures, including the north-dipping bedding/cleavage/fault planes, were formed during Jurassic subduction-accretion and later uplift processes. The movement directions estimated for the 269 landslides and unstable slopes in this region are also N-NNE, and their slip planes are subparallel to the general bedding/cleavage planes in this area. Thus, future slides are also likely to occur on north-facing slopes.

Keywords: landslide, geologic structure, accretionary complex