In central Vietnam, maximum monthly precipitation occurs in October during the monsoon transition from boreal summer to winter. This work examined October precipitation in central Vietnam, focusing on the effects of the Asian summer and winter monsoons. Climatologically, two vertical circulations occur around central Vietnam in October: a large-scale circulation (LSC) related to the Asian summer monsoon (ASM) and a small-scale circulation (SSC) below 700 hPa related to orographic lifting of Asian winter monsoon (AWM) northeasterlies. Empirical orthogonal function (EOF) analysis identified these two monsoon effects in the vertical circulation around central Vietnam. The first EOF mode, corresponding to LSC, develops with the ASM through the anomalous Walker circulation in October during the developing phase of La Niña. The second EOF mode, corresponding to SSC, is enhanced by the southward expansion of the Siberian high (SH) in the lower troposphere, which controls the northeasterlies in October and is induced by barotropic anomalies in the mid- and high latitudes. The fall precipitation in central Vietnam and the two circulation systems exhibit a biennial oscillation (BO) tendency. The LSC fluctuates with the BO of the ASM remaining in October during the La Niña developing phase, while the BO in the AWM dominantly influences the SSC through the strength of the SH. The ASM and AWM differentially control the BO tendency in the fall precipitation in central Vietnam through the LSC and SSC.