The 2008 Wenchuan, China, earthquake occurred on the eastern boundary of the BayanHar block that is one of the southeast-ward extruding active tectonic blocks on the eastern Tibetan plateau. Based on analyzing on data of active tectonics, focal mechanisms, GPS surveys, earthquake ruptures and historical major earthquakes, our study shows that a sequence of at least 8 major earthquakes has occurred on the northern boundary of the BayanHar block since the late 19th century, in which the time intervals between events has become shorter, suggesting that it has been an accelerating occurrence sequence. This accelerating occurrence sequence of major earthquakes on the northern boundary suggests that the BayanHar block could have speeded up its SE-ward motion at least since the late 19th century. It is also find that, on the eastern boundary of the block, 5 major events have occurred since the early 18th century, with constant-rate cumulated strain release for the first 2 events but gradually accelerative release for the last 3 events. The acceleration on the eastern boundary seems to have started several decades later from that acceleration on the northern boundary of the block. Therefore, the accelerating occurrence sequence of major earthquakes on the eastern boundary of the BayanHar block is actually in the response of that accelerating occurrence sequence on the northern boundary of the same block. The 2008 Wenchuan earthquake is the most recent great event in the accelerating occurrence sequence of major earthquakes on the eastern boundary of the block.