Wenchuan-Yingxiu Ms8.0 earthquake occurred on the system of Longmenshan thrust, which consists of 3 NE trending faults. The reason, mechanism and processes for the pregnancy, occurrence and development of this earthquake is of great importance for the research in the earthquake prediction. Therefore, based on the fine velocity structure of the crust and upper mantle obtained from various kinds of geophysical research in this area, we attempt to reveal the deep processes, deep medium and tectonic environment and dynamic mechanism of the pregnancy and generation of the Wenchuan- Yingxiu Ms8.0.

1) Because of the India-Eurasia collision, the deep materials of the Tibet plateau move eastward and turn southeast on the west margin of the rigid Sichuan basin, which caused the accumulation of stresses around this area;

2) The thickness of the crust beneath Longmenshan fault is 15~20km thicker than that beneath Sichuan basin, which implies that there exist adjustment and exchanges of deep materials and energy around this area;

3) The 3 NE trending faults converges at depth of 15±5km, and it is a column- shaped body with radius of 5km, and this convergency fault is the source of the Wenchuan-Yingxiu Ms8.0 earthquake and its more than 70000 aftershocks;

4) There are two detachment interfaces in the crust and mantle, and deep materials between the two detachment interfaces moves upward at a steep angle along the fault plane of Longmenshan fault system;