Numerical Investigation of the Onset of Collision in Iran

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Despite a wealth of subduction and/or collision modeling performed over the last 15 years, very little is known about the dynamics and thermal evolution during ocean closure and onset of collision. In the current study focus on the impact of changing kinematic boundary conditions. In order to simulate the onset of Zagros orogeny in 2D and account for changes in convergence velocities that are known to have happened in the geological record, we designed a simple model setup and study systematic changes in kinematic velocities. Models are run for constant velocities, acceleration and deceleration, modulating the timing of velocity change. The impact of changing boundary conditions on the upper plate mechanical behavior and/or associated melting is of particular interest here. We use the pTatin2d code (May et al., 2015) with newly implemented mesh refinement and effective parallel numerical implementation pTatin2d.

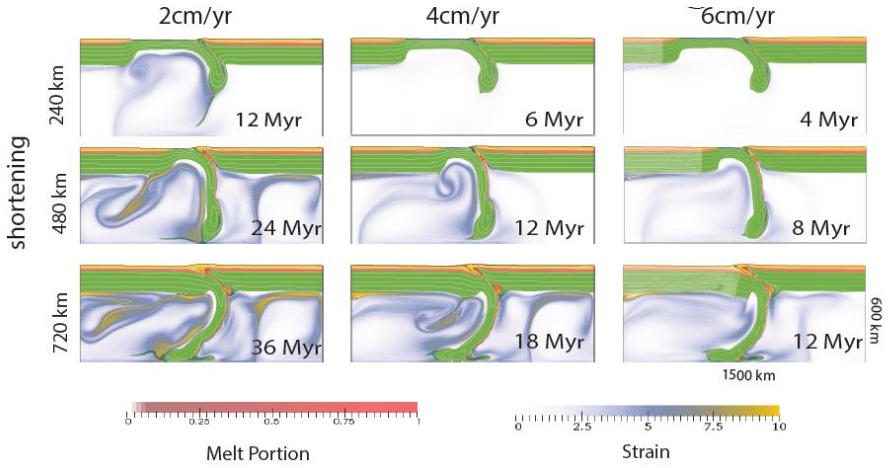

Figure 1. Effect of subduction velocity on the style of subduction and collision zone.