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Modeling of some transitional processes in Earth's mantle

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In present, there are many works devoted to the modeling of the mantle convection, but all of them considered quasi-stationary processes (exactly, evolution processes in the steady convective structure), which take place in the constant or slowly, even in geological scale of time, changing conditions.
But, seemingly, more quick processes, connected with reorganization of mantle's convection structure, also take place. For example, this reorganization may be connected with convection structure reorganization in liquid core or the mantle's displacement relative to Earth's core. Displacements/jumps of the spreading axis, obviously, connects with such processes (for example, the jumping of spreading axis in the Atlantic Ocean from the Labrador Sea to its modern location on the Mid-Atlantic Ridge in the region "Iceland – the Jan Mayen Ridge").
Such jumps of spreading axis necessarily must be connected with quick (in geological scale of time) displacement of the upward current of mantle material and significant reorganization of the mantle's convection structure.
The simplified model considers one convective cell and presence of the punctual or dispersed source of heat, bearing the upward current of mantle substance. The motion of the material from interior of the cell to outside and the reverse one is absent; i.e. if the heat source is absent, the system is conservative. The displacement of heat source is available only along the boundary "core-mantle". Mantle is modeling by incompressible liquid.
In this work we not go beyond the description of the process in the range of one convection cell. For more perfect description of the consider process it is necessary to construct series of, at least, two cells, enclosed to each other, as we must consider displacements of the vertical boundary of convection cell (upward and downward currents).