Parallel Computation of 3-D Mantle Convection in a Spherical Shell

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The high resolution calculation is expected to simulate the complicated and/or local phenomena in the Earth's or planet's mantle. Thus, it is important to develop a program, which works on the parallel computers with the plural processors, by improving the existing code of mantle convection in a 3-D spherical shell. The region within the spherical shell is divided into the small regions for radial direction by means of the 'area division method'. We solve the algebraic equations derived from the control volume method by communicating the data on each processor among the adjacent small regions. Our calculation using the improved code shows a good performance with the increase of processors, even if we take it account the time loss of communications.