



Plate 4. The charts of chaotic diffusion in the 2J:1 (left) and 3J:2 (right) MMRs. The plotted parameter is $\log_{10} |\delta\dot{\omega}|$. The color coding is such that the starting positions of trajectories characterized by slow chaotic diffusion are shown in blue, while fast-diffusing trajectories are shown in red/yellow. The high-eccentricity orbits in both resonances ($e > 0.4$) are unstable due to the overlap of the secular resonances (*Morbidelli and Moons, 1993*). The low-eccentricity orbits in the 2J:1 MMR ($e < 0.2$) are unstable due to the so-called secondary resonances, commensurabilities between the periods of σ and $\bar{\omega}$ (*Henrard and Lemaître, 1987; Henrard et al., 1995; Lecar et al., 2001*). The orbits in the central region of the size of the rectangle suffer from commensurabilities with the Great Inequality period. The inset on the top left shows how the instabilities in the central region of the 2J:1 MMR are enhanced when the period of $2\lambda_5 - 5\lambda_6$ is set to be 440 yr, a value possibly taken during the primordial phase of the planetary migration. Adapted from *Nesvorný and Ferraz-Mello (1997)*.