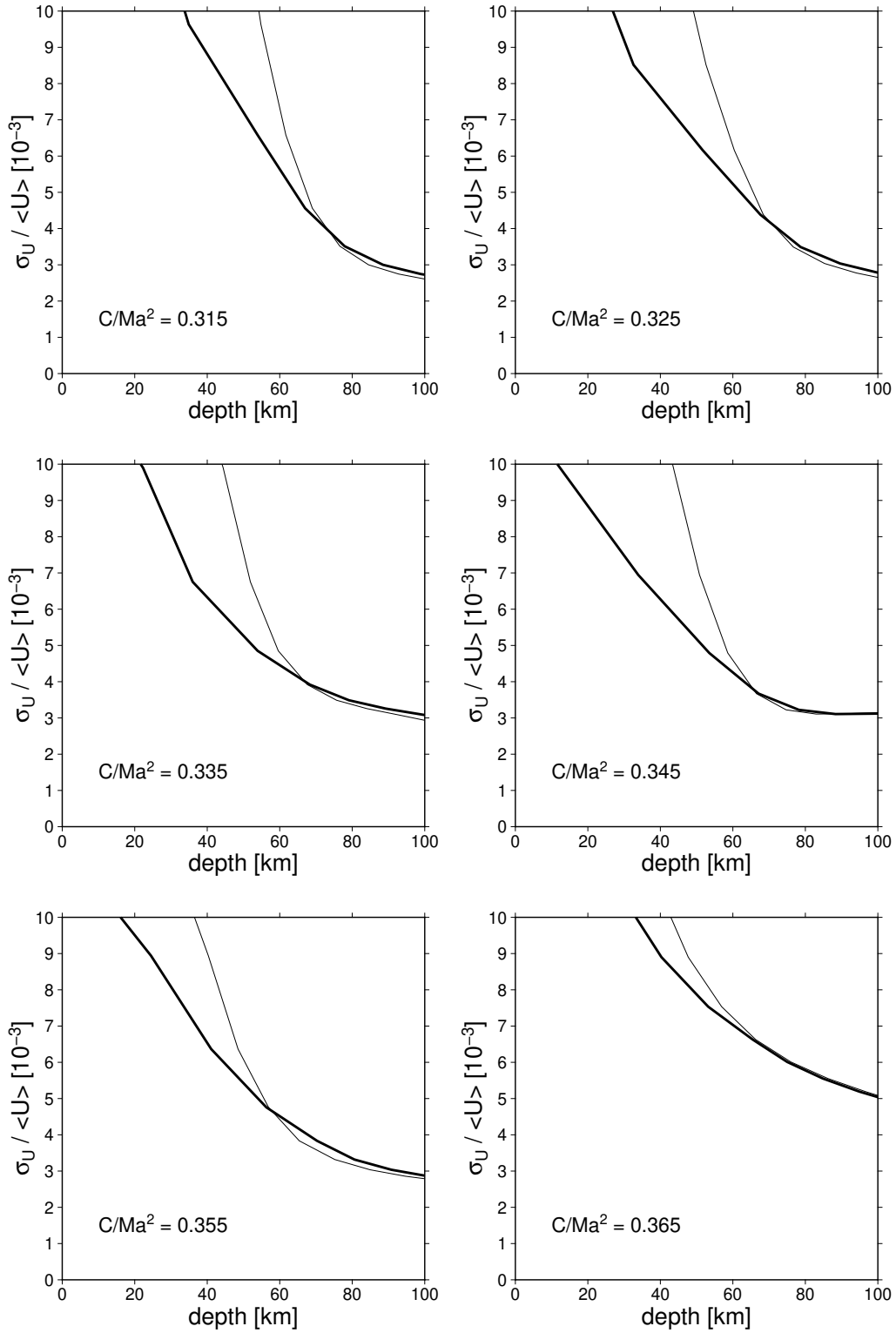


In the format provided by the authors and unedited.

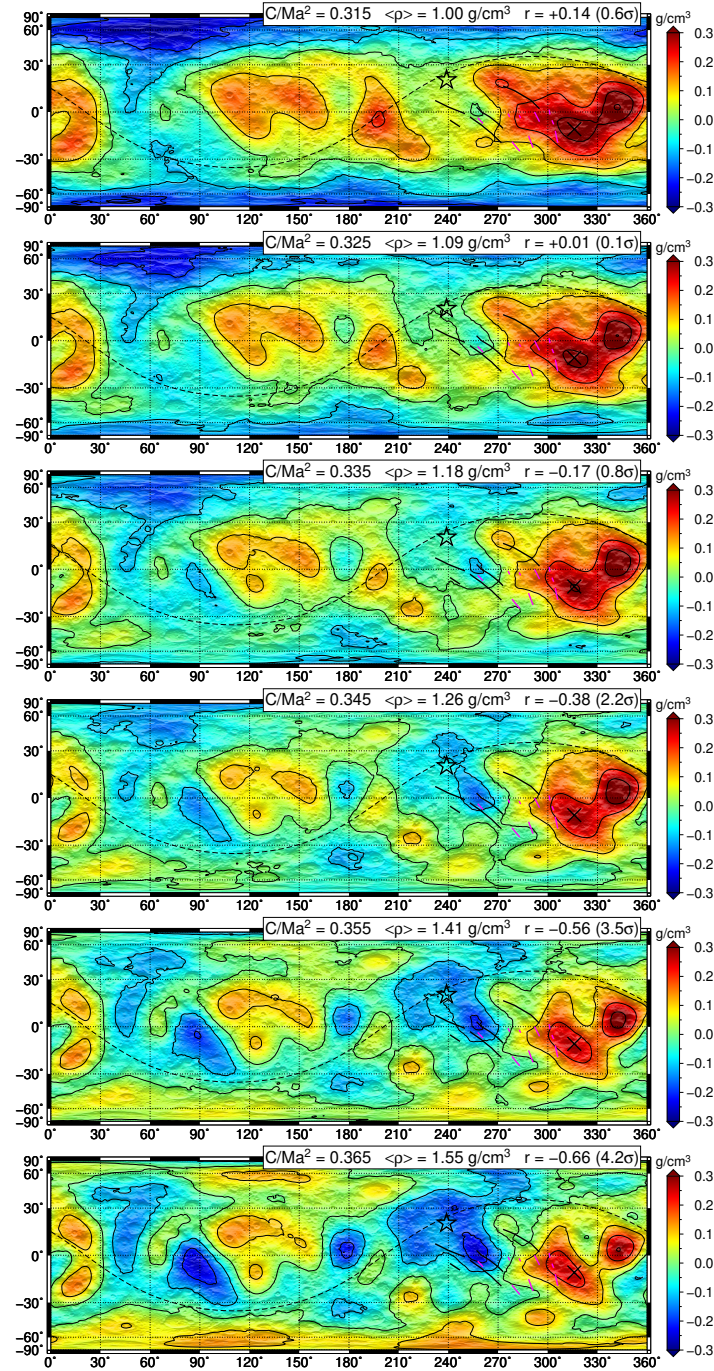
True polar wander of Ceres due to heterogeneous crustal density

P. Tricarico 

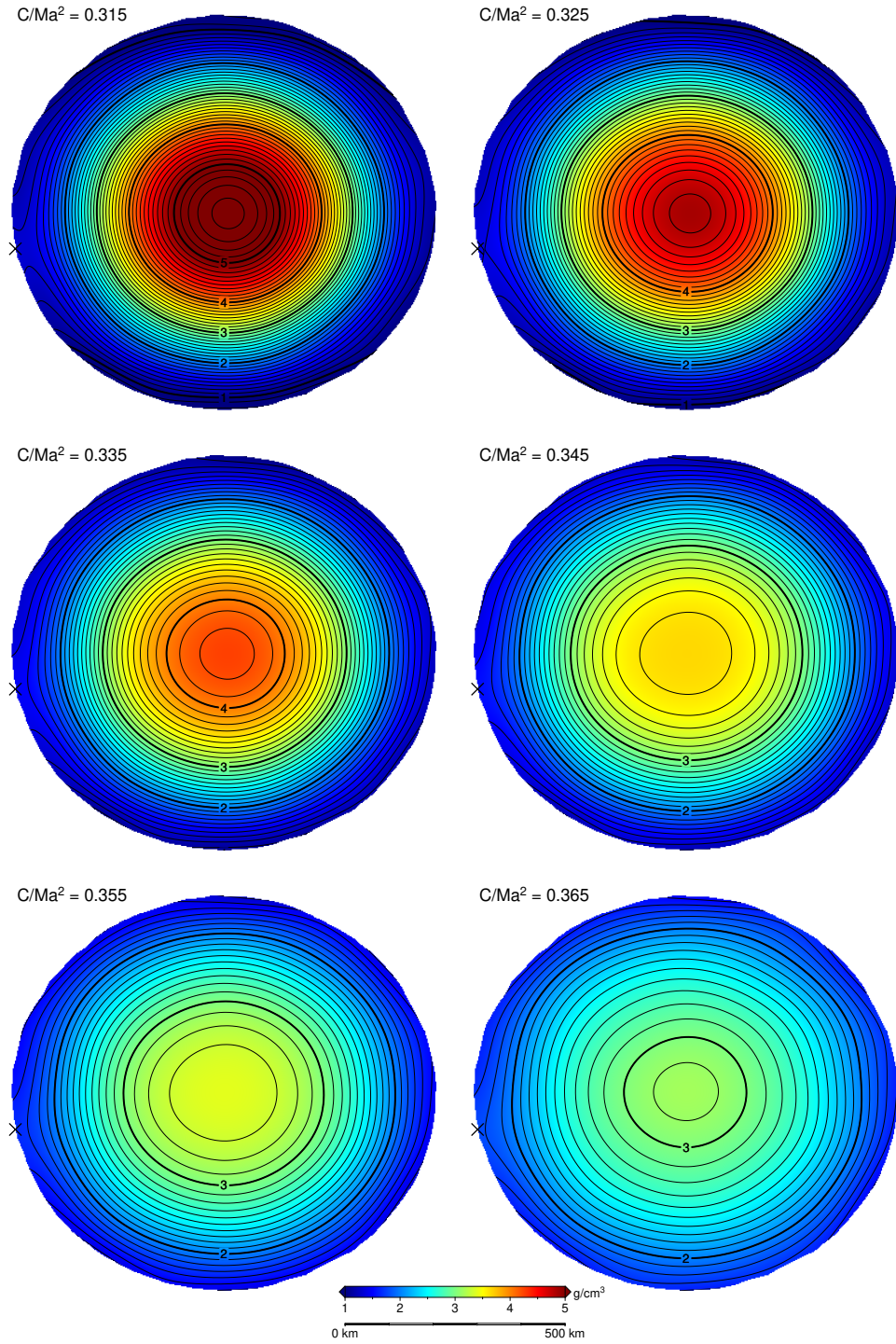
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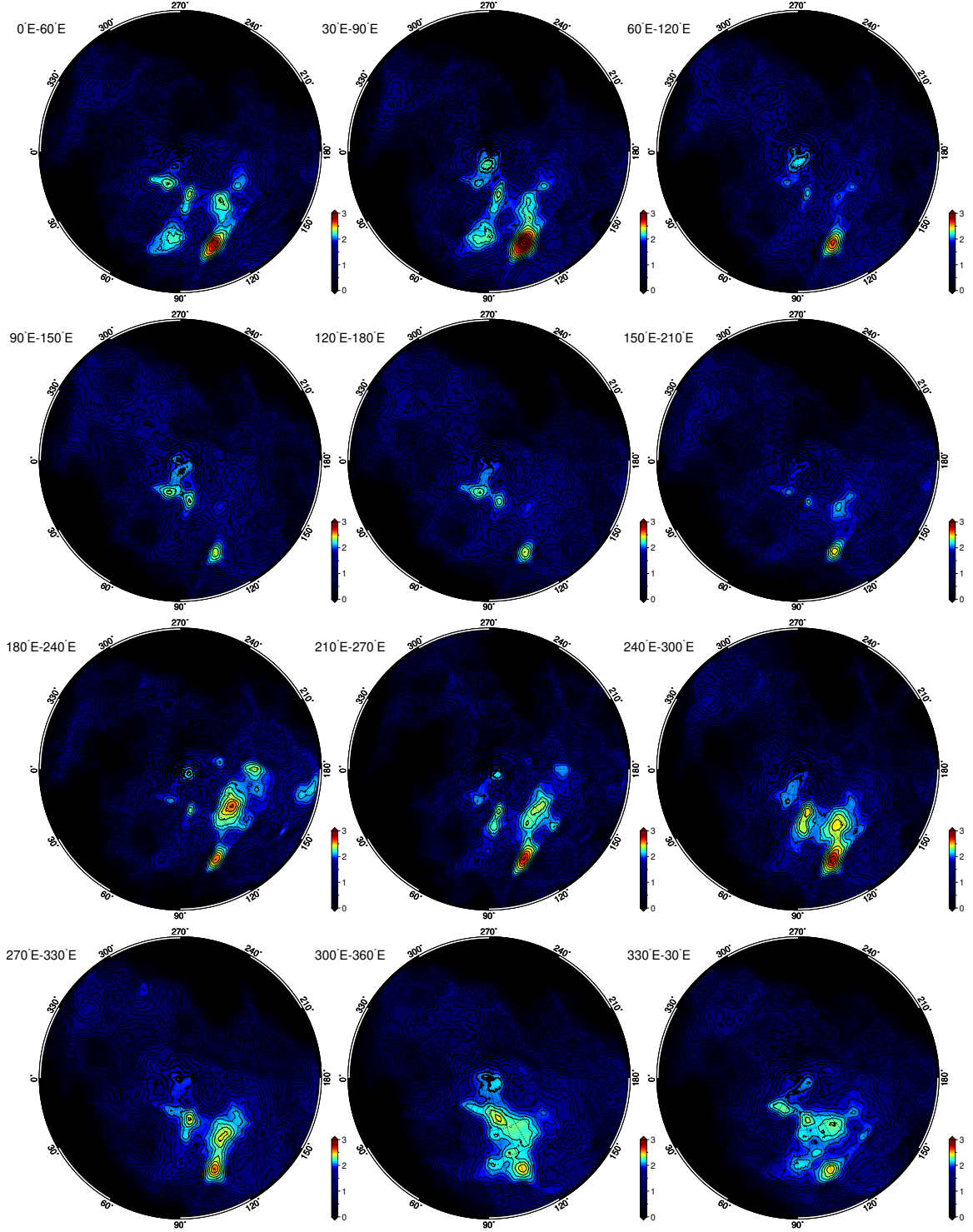
Supplementary Figure 1: Deviation from hydrostatic equilibrium and compensation depth. Each panel shows the deviation from hydrostatic equilibrium $\sigma_U / \langle U \rangle$ at a given depth, at polar (thin line) and equatorial (thick line) latitudes, for different solutions. This deviation is typically small at depth, and increases as we approach the surface, and at depths of 60–70 km it increases more rapidly and becomes latitude-dependent. This indicates an isostatic compensation depth of 60–70 km.



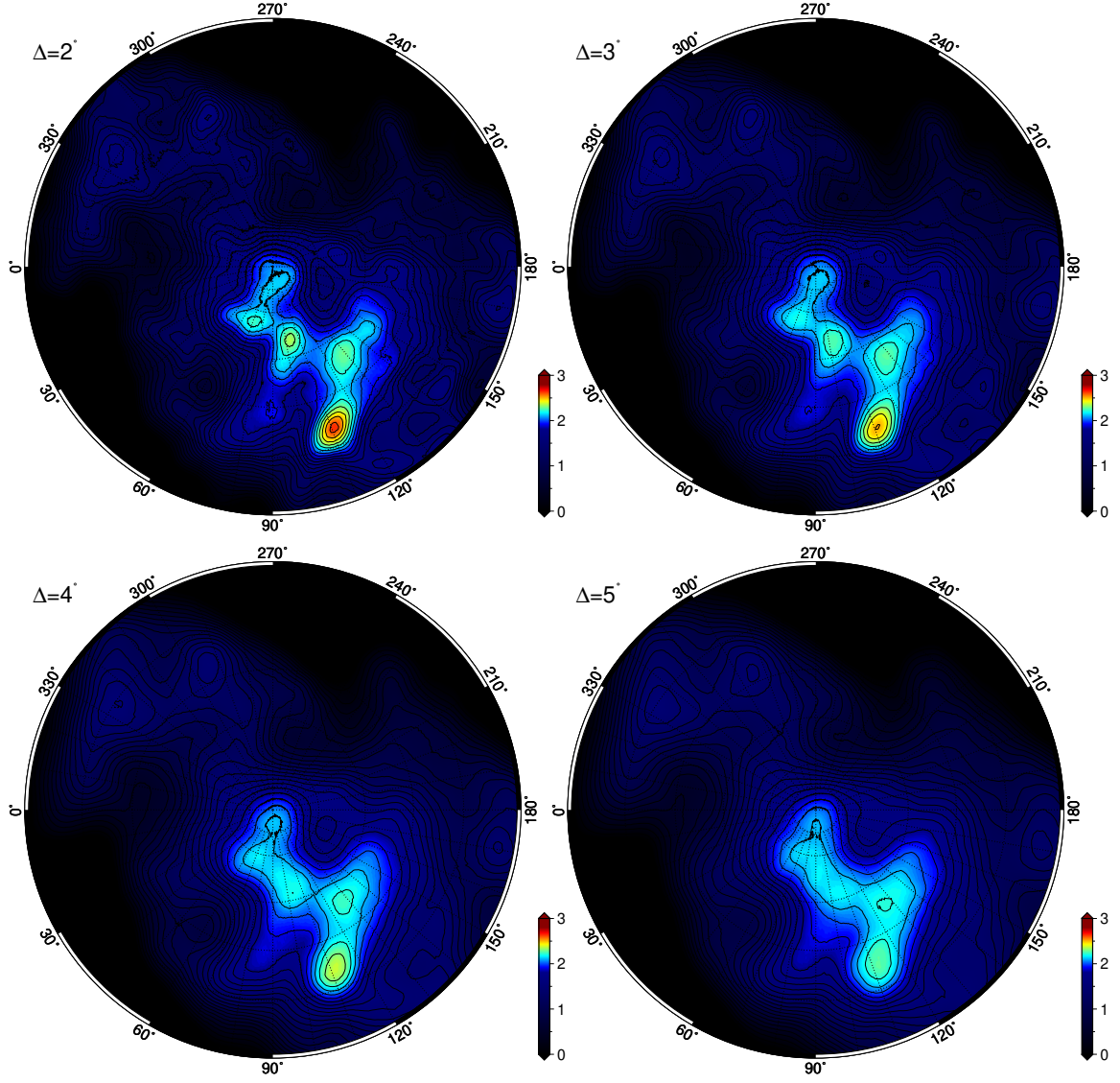
Supplementary Figure 2: Surface density of Ceres. Each panel shows the surface density corresponding to a different solution, where we have subtracted the average surface density $\langle \rho \rangle$ for a more direct comparison between solutions. The label on each plot indicates the normalized principal moment of inertia C/Ma^2 , the average surface density, and the correlation r between surface density and topography relative to the average geoid. The dashed line is the position of the paleo-equator, while the star and cross symbols mark respectively the Occator crater and Ahuna Mons. The black and magenta segments mark respectively the location of Samhain Catenae and Uhola Catenae. Maps use the Lambert cylindrical equal-area projection⁴³.



Supplementary Figure 3: Section of Ceres. Each panel shows the interior density corresponding to a different solution, from the north pole (top) to the south pole (bottom), the right side is along longitude 135°E and the left side is along longitude 315°E, with Ahuna Mons at the cross symbol. The density follows the color scale, with constant density contour lines plotted at increments of 0.1 g/cm³.



Supplementary Figure 4: Paleo-pole of Ceres with longitude gaps. Similar distribution of paleo-pole significance as in Figure 3 of the main text, but sequentially excluding from the computation of $\langle h \rangle$ a range of 60° in longitude as indicated next to each plot. The paleo-pole located at $(54^\circ\text{N}, 111^\circ\text{E})$ is easily detected in each case.



Supplementary Figure 5: Paleo-pole of Ceres over larger angular width. Similar distribution of paleo-pole significance as in Figure 3 of the main text, but with $\langle h \rangle$ calculated for points within an angular distance Δ from the equator as indicated next to each plot.