# ORIGIN OF THE EARTH: The Solar Nebular Hypothesis

**Link to:** [www.cat.cc.md.us/courses/eas101/unit1/solneb.html](www.cat.cc.md.us/courses/eas101/unit1/solneb.html)

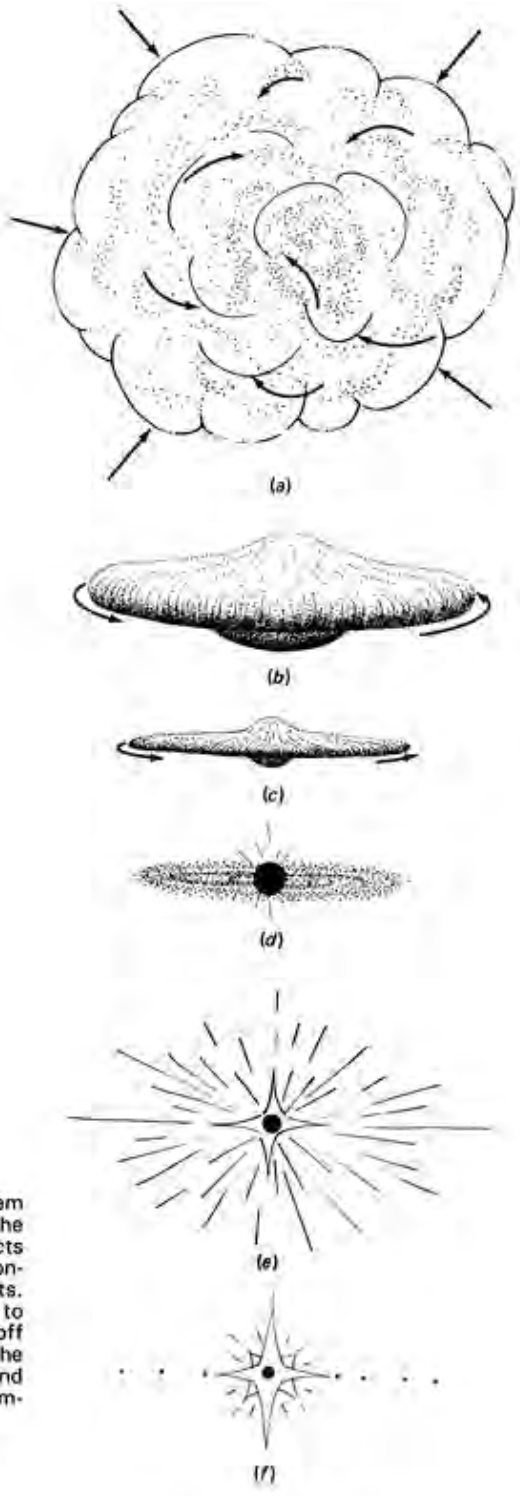


**FIG. 2-2** Evolution of the solar system from a huge dispersed nebula. In the earliest stages the nebula contracts and begins to rotate. Particles condense and accumulate into the planets. As the protosun heats up, it begins to shine. Intense solar wind drives off gases from the disc surrounding the new sun, leaving only the sun and planets where there was once an immense nebula.

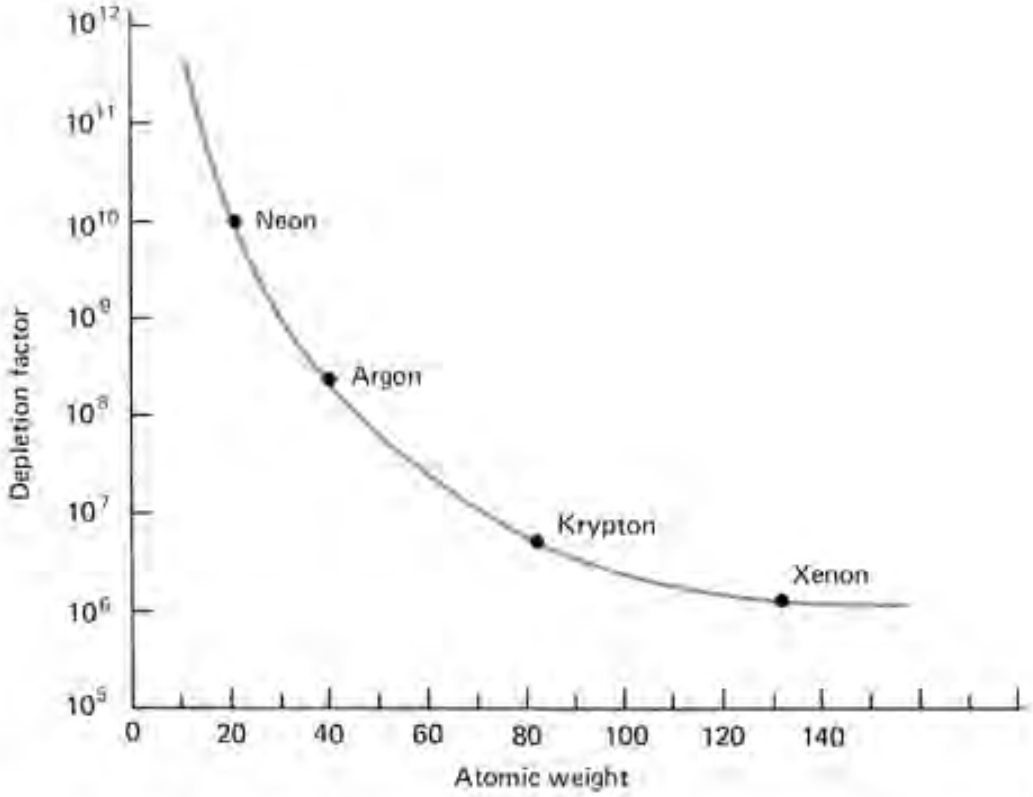


**FIG. 2-5** Inert gases in the earth's atomosphere are depleted between $10^{10}$ and $10^{5}$ times relative to their cosmic abundances, depending on their atomic weight. This is excellent evidence that the atmosphere is not inherited from the primordial nebula but was formed later.

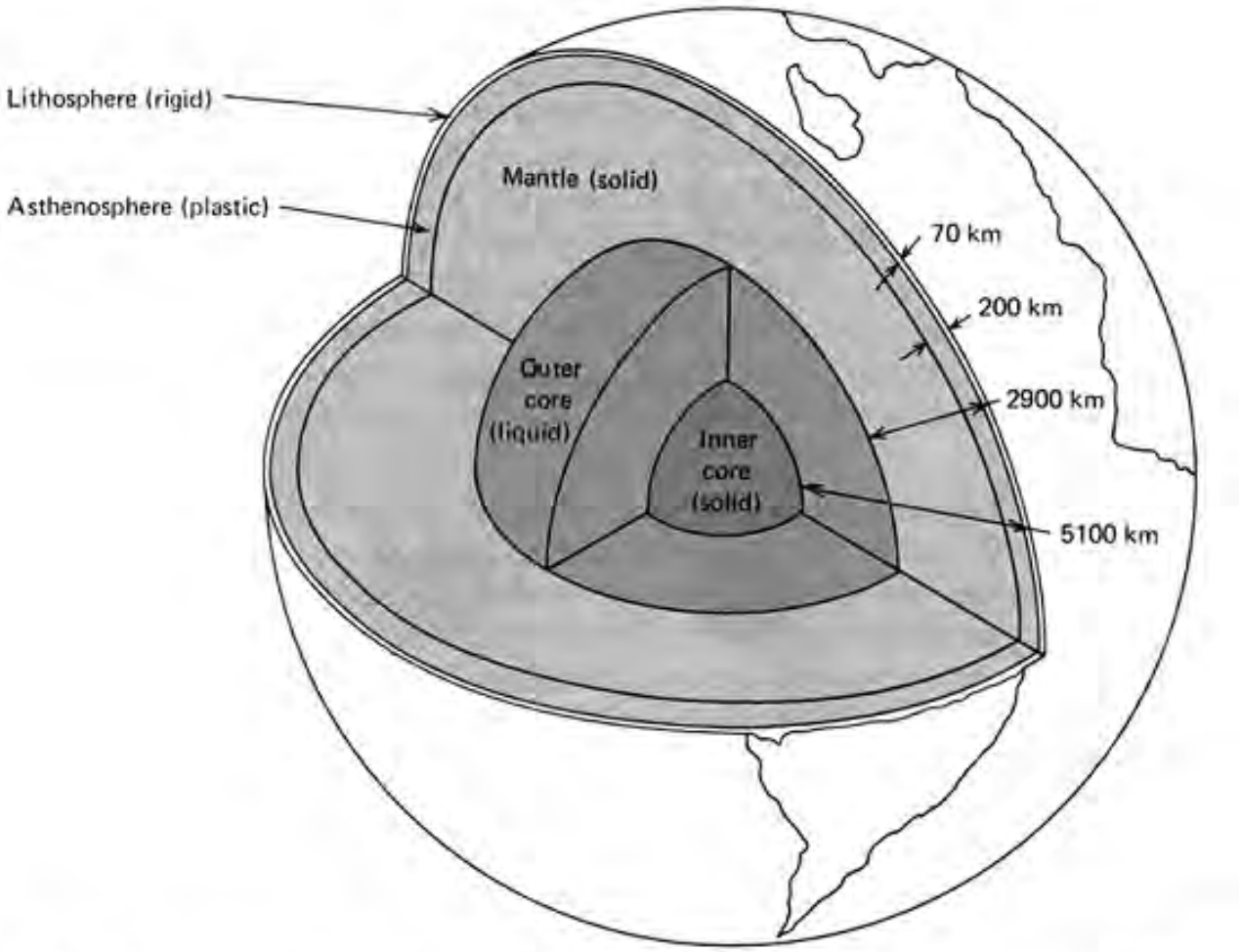


**FIG. 2-3** The earth today consists of a comparatively thin outer *crust* formed chiefly of low-density silicate minerals, a thick underlying *mantle* formed chiefly of high-density silicate minerals, and a central *core* formed chiefly of iron and nickel. The upper mantle consists of a rigid outer layer that, together with the overlying crust, forms the *lithosphere*. Below it is a weak layer, the *asthenosphere*.

*Figures from: Eicher, D.L., McAlester, A.L., and Rottman, M.L. 1984. The history of the Earth's crust. Prentice-Hall, Inc., Englewood Cliffs, New Jersey.*