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WHY DO SOME PLANETS AND SATELLITES EXHIBIT THEIR OWN MAGNETISM AND OTHERS DO NOT?

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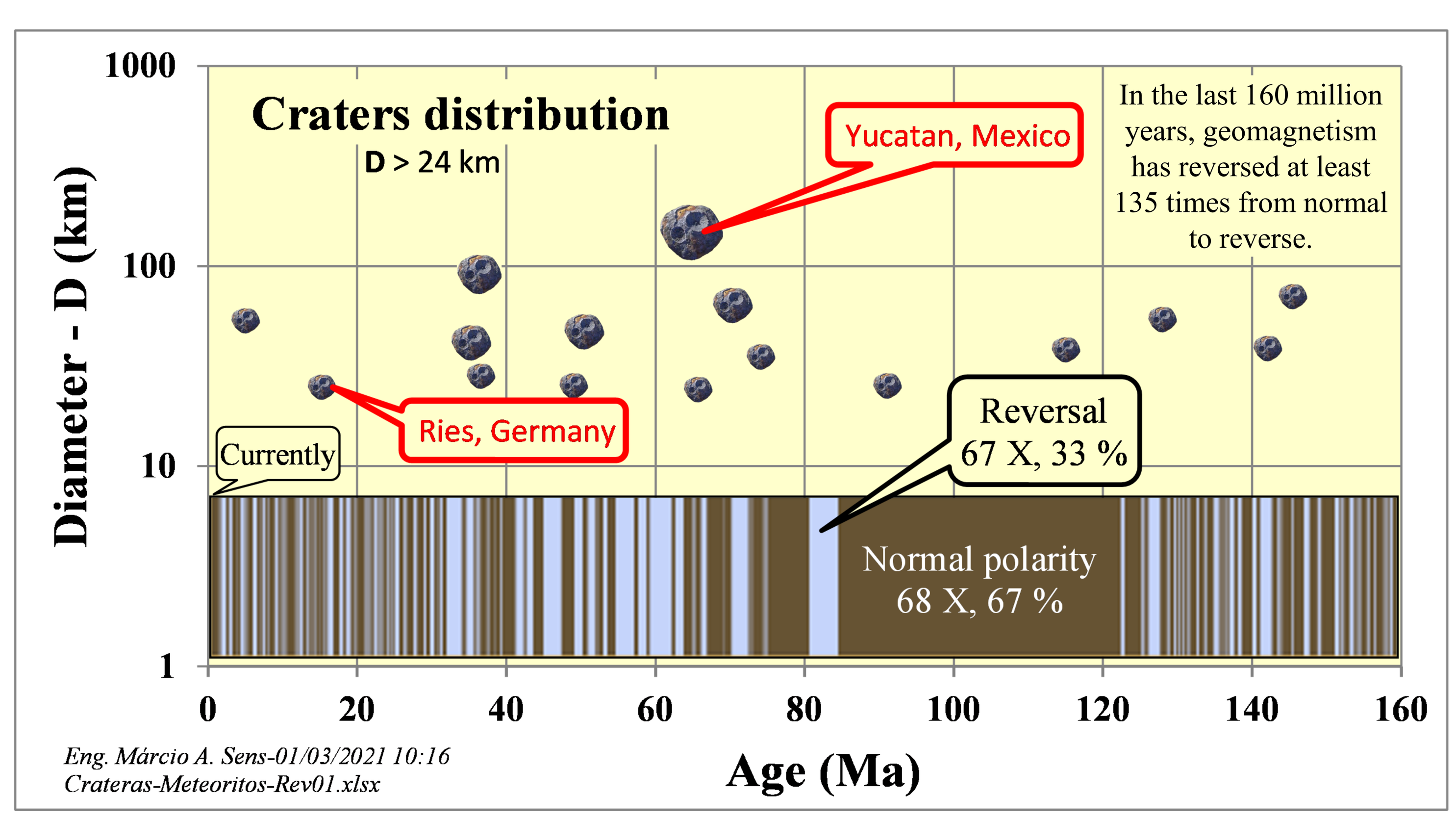
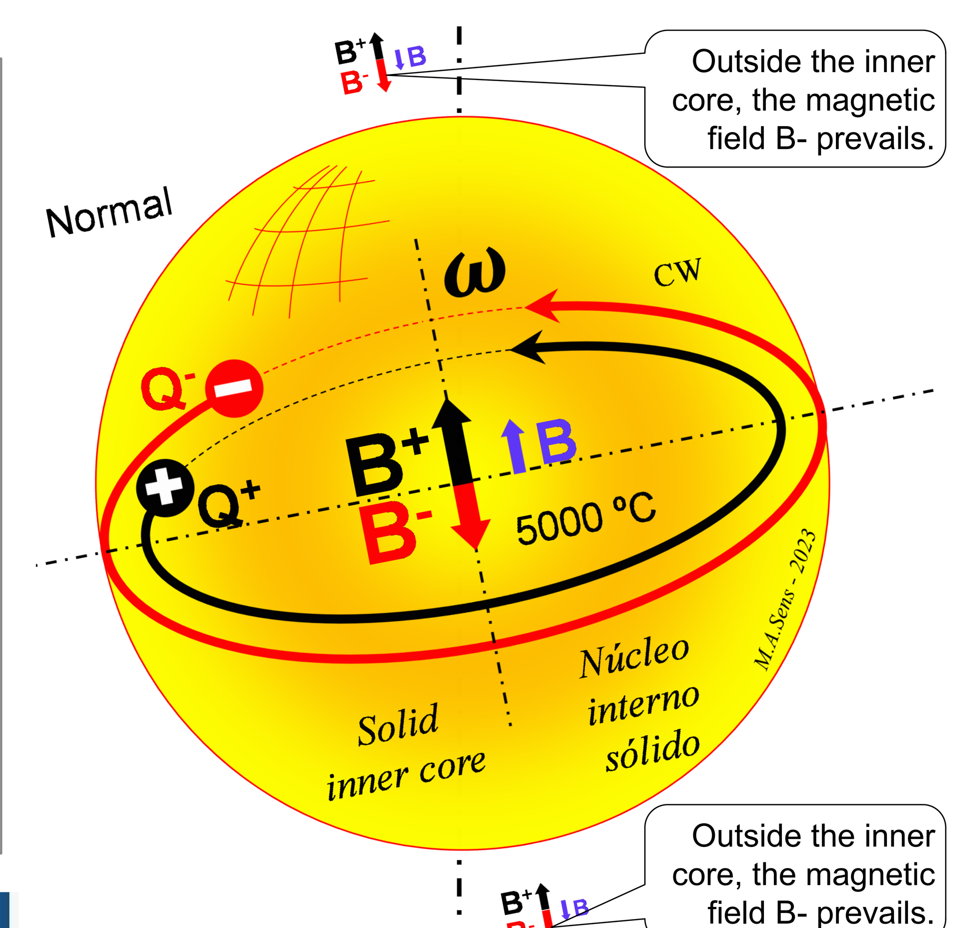
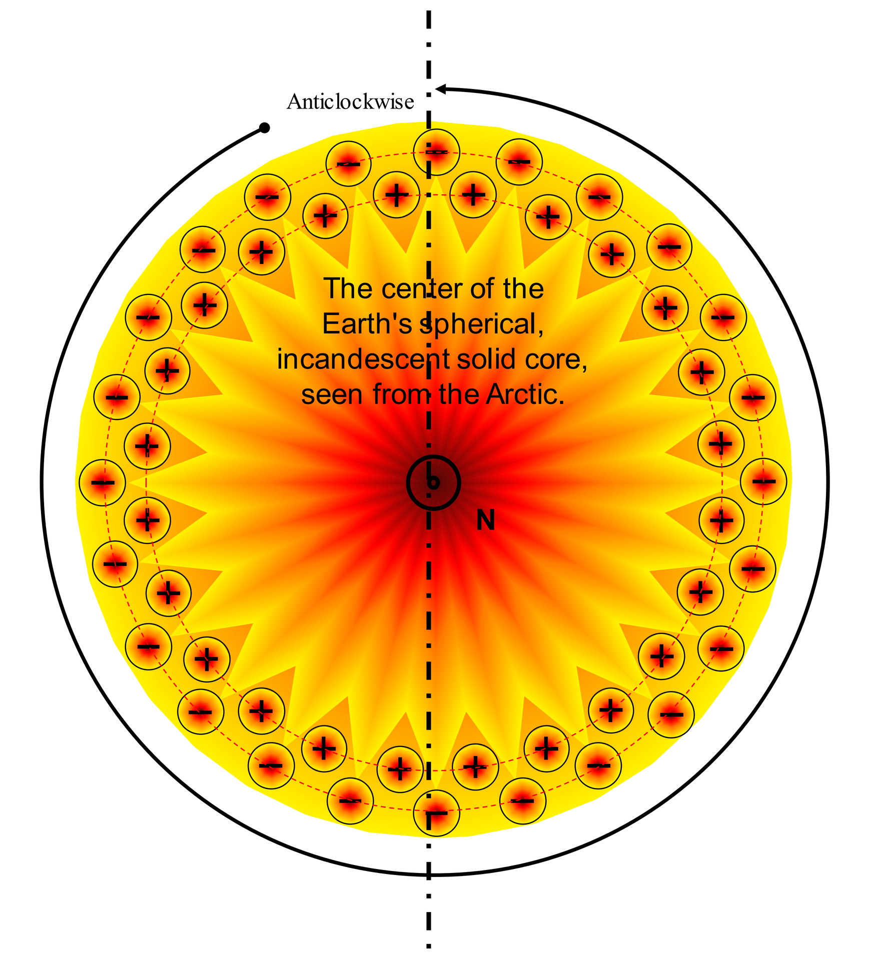
Animation

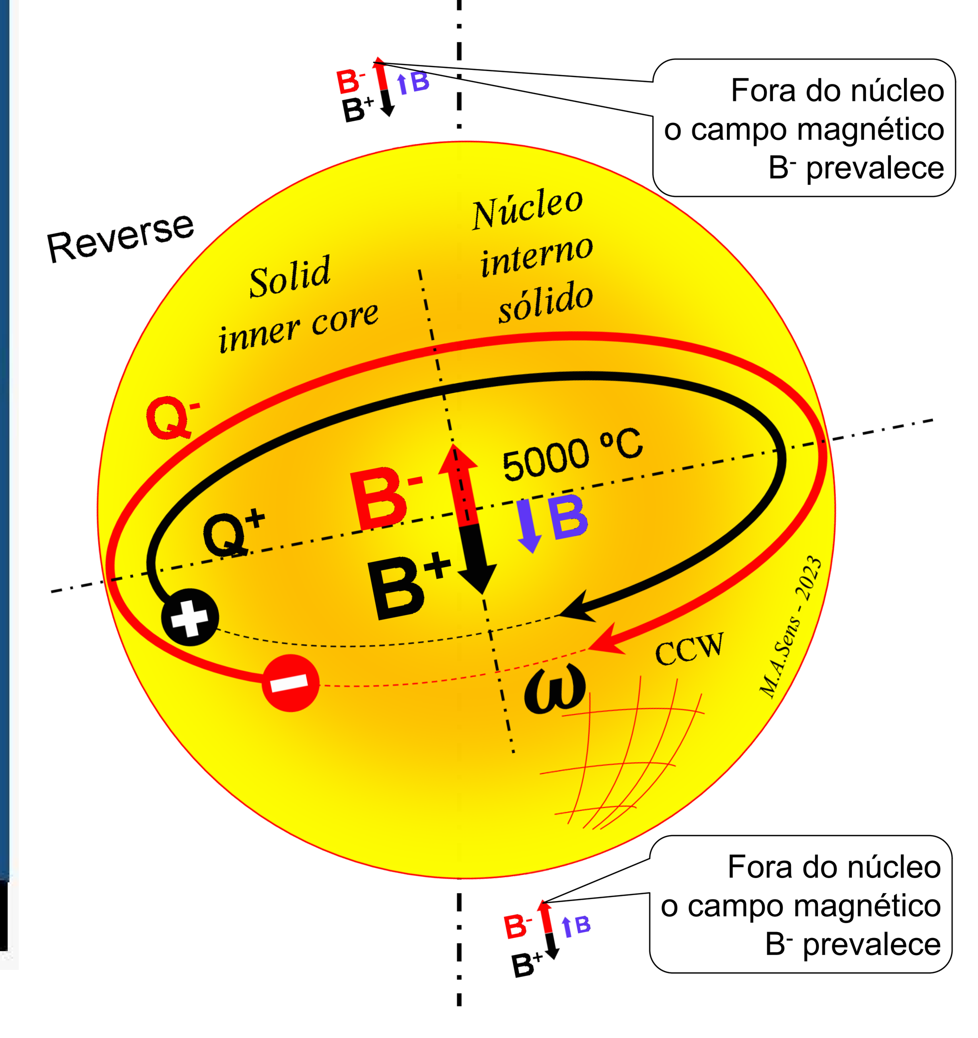
Abstract: The very well-known self-excited geodynamo conjecture, intended to justify geomagnetism, has been dissected. Electromagnetic fields can be generated not only by electric currents, but also by the movement of electrical charges. Geomagnetism originates from the movement of the solid inner core, not the turbulent liquid core. This hypothesis was mathematically confirmed by the foundations of electromagnetism and thermionic emission[1]. It is important to highlight that electric current is formed by the movement of electrons or ions between different atoms. Electrons can move around or with their atoms. Whenever electric charges move, magnetic fields arise. What about magnetic reversals, and why do they happen? Reversals occur due to large asteroid impacts on our planet, causing the solid inner core of our planet to tip over. At the equator, the magnetic field of Jupiter is equivalent to 1380 % of Earths. Jupiter's high rotation, almost 240 % of the Earth's rotation, and the size of its core, about 1500 % larger than the Earth's core, justify this high magnetic field. Mathematical simulations, based on the hypothesis raised here, demonstrate that if Jupiter has an incandescent core in the proportions indicated in the literature and at the same temperature as the Earth's core, it should have a magnetic field in the Arctic of 5.59 mT. For this magnetic induction to occur at Jupiter's arctic pole, the temperature of the solid core would have to be lower than that of the Earth's core, 4275 °C. Otherwise, it is imperative that the diameter of the Jovian nucleus be less than the one indicated in the presently available literature. Io, Jupiter's moon, which is approximately the same size as Earth's Moon, has no magnetic field, although it has incandescent materials, because it has a very low rotation around its axis - 1769 Earth days. Jupiter's largest moon, Ganymede, has a radius of 2,631 km and is the largest moon in our solar system. Its rotational period is 7.155 Earth days, and it has an incandescent metallic core, been the only moon known to have its own magnetic field.

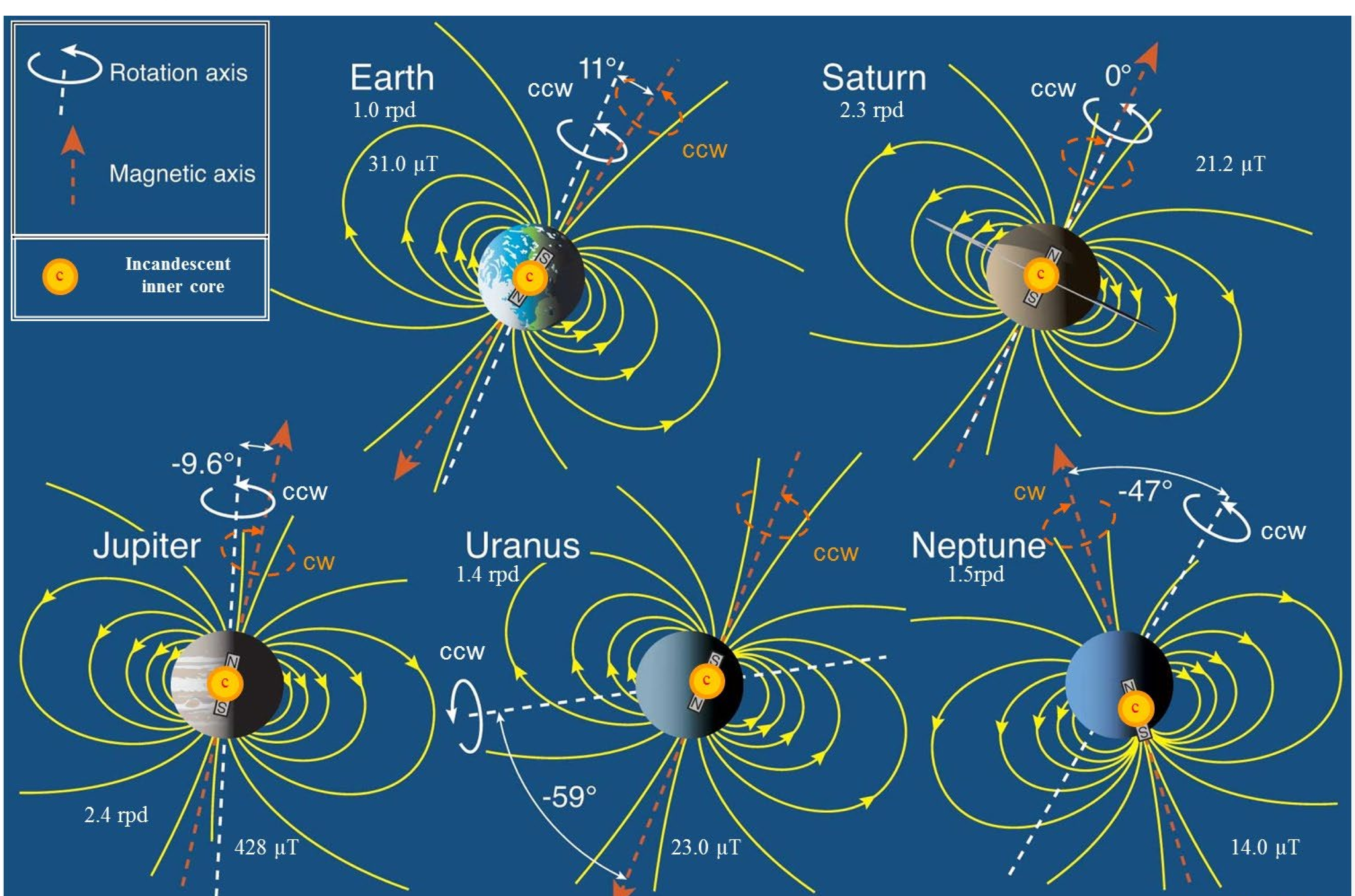
Now the magnetic reversals that occurred on Earth and other Planets make sense. Accepting the hypothesis [1] that magnetism is generated by the rotational movement of the incandescent core, impacts of large magnitudes of asteroids with the planets would cause reversals of their rotation axis and, consequently, of the magnetic axis. For the inversion of the magnetic axis, neither stops in the rotations of the inner core nor reversals of rotation were necessary, but only reversals in the rotation axes, or 180-degree tilts. It is also justified that some planets currently have a completely decentralized distribution of magnetism because their cores have been displaced by impacts of great magnitude, as shown in the figure below.











https://lasp.colorado.edu/mop/files/2012/04/4Tilts.jpg, 18/03/2024 | Core position, cw or ccw core rotation by M. A. Sens | Credit: Fran Bagenal & Steve Bartlett

Reference: [1] – Sens, M. A., "A New Hypothesis to Fully Justify the Generation, Maintenance, and Behavior Of Geomagnetism"; 2023, Journal of Engineering Research, v.3/n.38 (ISSN 2764-1317).