Solar Induction of Mid-Ocean Ridge Circuits: Lightning Tells The Story

Authors

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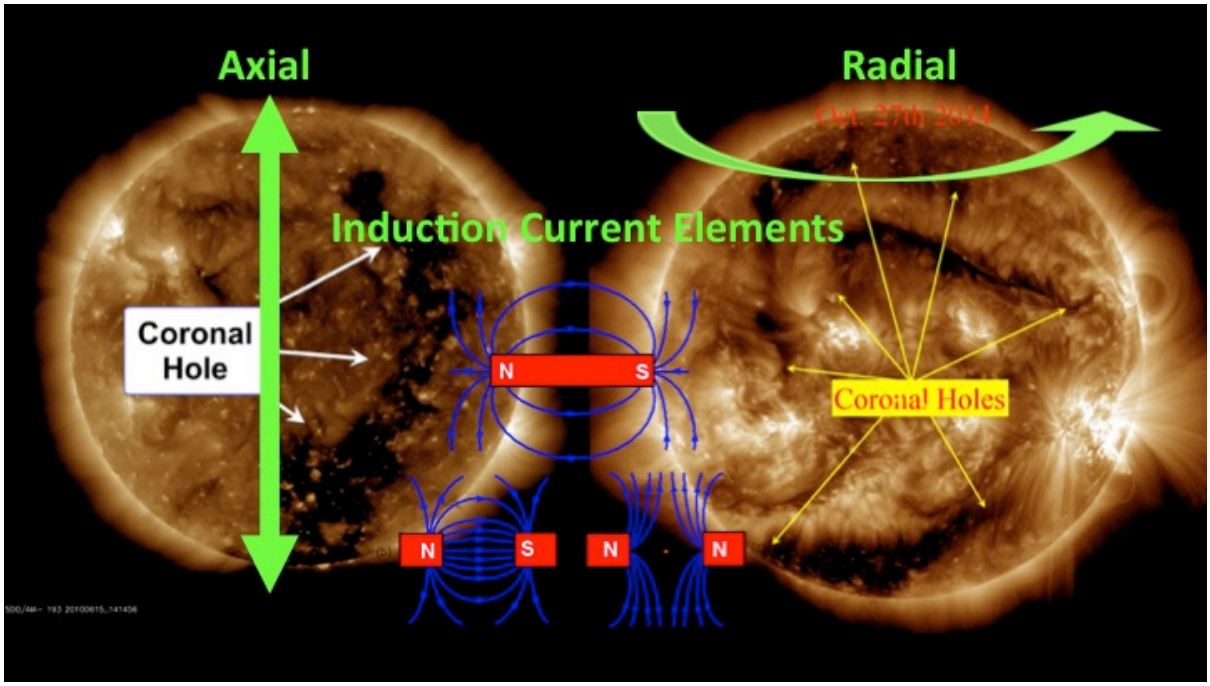
Abstract

For years, African Congo was known as the lighting Capital of the World, but in 2016 with the new lighting analysis Catatumbo became the new lighting Capital of the World. What made the global lighting distribution shift from Africa to South America? Review of sixteen years of NASA lighting climatology, by Albrecht, et.al. (2016), revealed, "*Where are the Lightning hotspots on Earth?*" For years Tampa Bay, Florida was unofficially known as the "Lightning Capital of the United States," but in 2016 with the new lighting analysis the lighting hotspot location moved about 30 miles southeast of Fort Myers Florida. Why was there a corresponding shift in Florida from Tampa Bay to Ft. Meyers, with the global shift from Congo to Catatumba? Closer inspection reveals a noon/midnight induction effect when magnetic moments of North-South aligned mid-ocean ridge structures (circuits) align with the solar axis. Especially along the East Pacific Rise (EPR) and the northern component of the Southeast Indian Ridge (SEIR), which sit 180 degrees antipodal to one another. The largest peaks of lighting activity in Catatumbo at Lake Maracaibo, on the coast of Venezuela activate when the EPR aligns at midnight. The largest peaks of lighting activity in Mitumba Mountains of Congo activate when the SEIR aligns at midnight, with lesser lighting peaks at noon alignments. Lake Maracaibo locally known as the "Lighthouse of Catatumbo" has most lighting from "nocturnal" thunderstorms "at night". Daytime lighting occurs near the coast and is driven by a sea-breeze circulation observed only over a small area of the lake during the late afternoon when the East Pacific Rise is aligned for maximum induction at noon. This strong diurnal cycle of lighting frequency reveals little lighting during the day and a nocturnal maximum from 0000 to 0500 LST (Local Standard Time) abruptly peaking at 0300 LST. This is the same time that the EPR is directly aligned with midnight! Lighting hotspots over the Mitumba Mountains exhibit higher mean diurnal cycle flash rates during the afternoon from 1500 to 1700 LST than in the central Congo at 1500 LST, with some activity during the night. The 1500 afternoon local time 3 hour offset from noon suggests Induction from Northward component of the SEIR in the Indian Ocean along the Rodriguez Triple Junction just 3 time zones to the East of the African continental rift! This north-south trend of the SEIR also directly aligns with the Pakistan lighting area at the head of the Indus River. Data show Lake Victoria as well as other lakes along the East African Rift Valley, exhibit deep nocturnal convective activity from a direct induction affect from African Rift alignment at midnight. Thus we see a daily (diurnal) ridge induction affect drawing lightning into the South American and African rift lakes systems especially at midnight with a smaller affect at noon. Thus solar induction effects, along these global ridge systems or circuits, govern a large portion of daily lighting and convection.

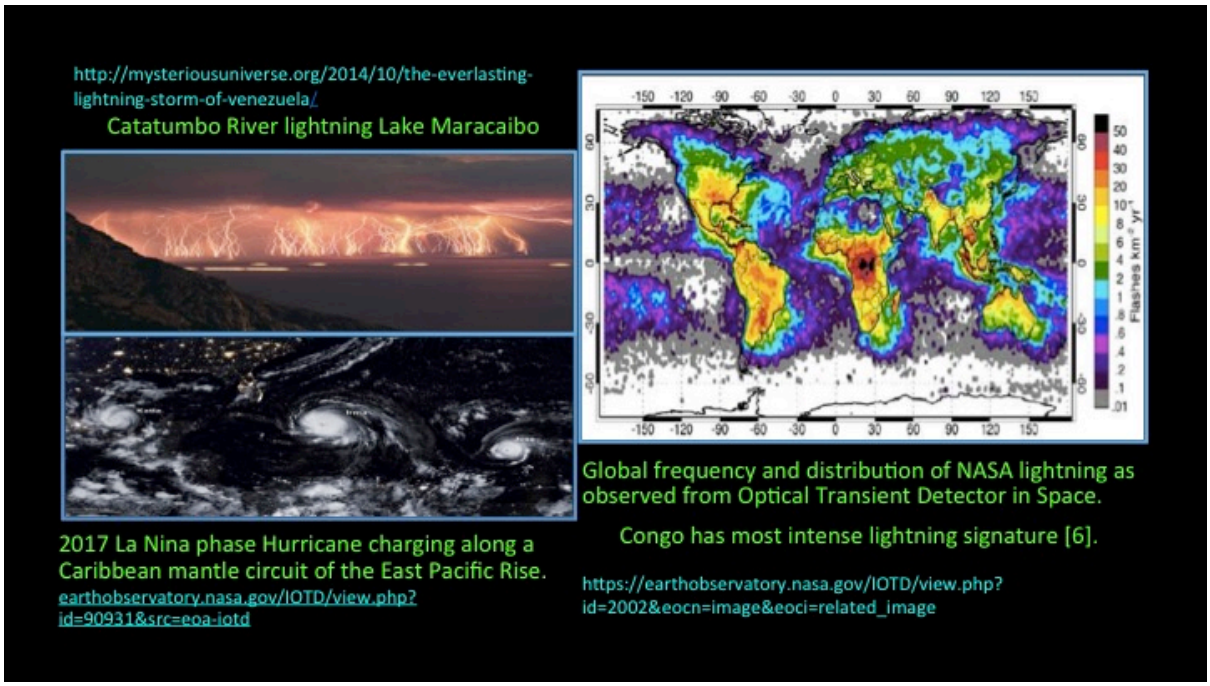
Keywords: Lightning Hotspot, Mid-Ocean Ridge, East Pacific Rise (EPR), Southeast Indian Ridge (SEIR), Catatumba at Lake Maracaibo, Mitumba Mountain near Congo, Diurnal, Solar Induction

Attachments

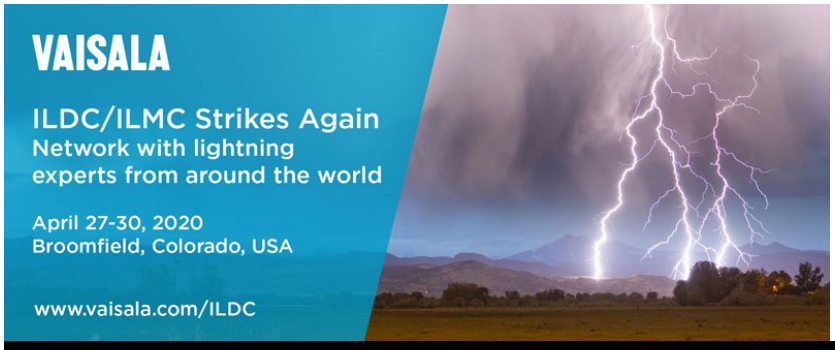
CoronalHoles.jpg

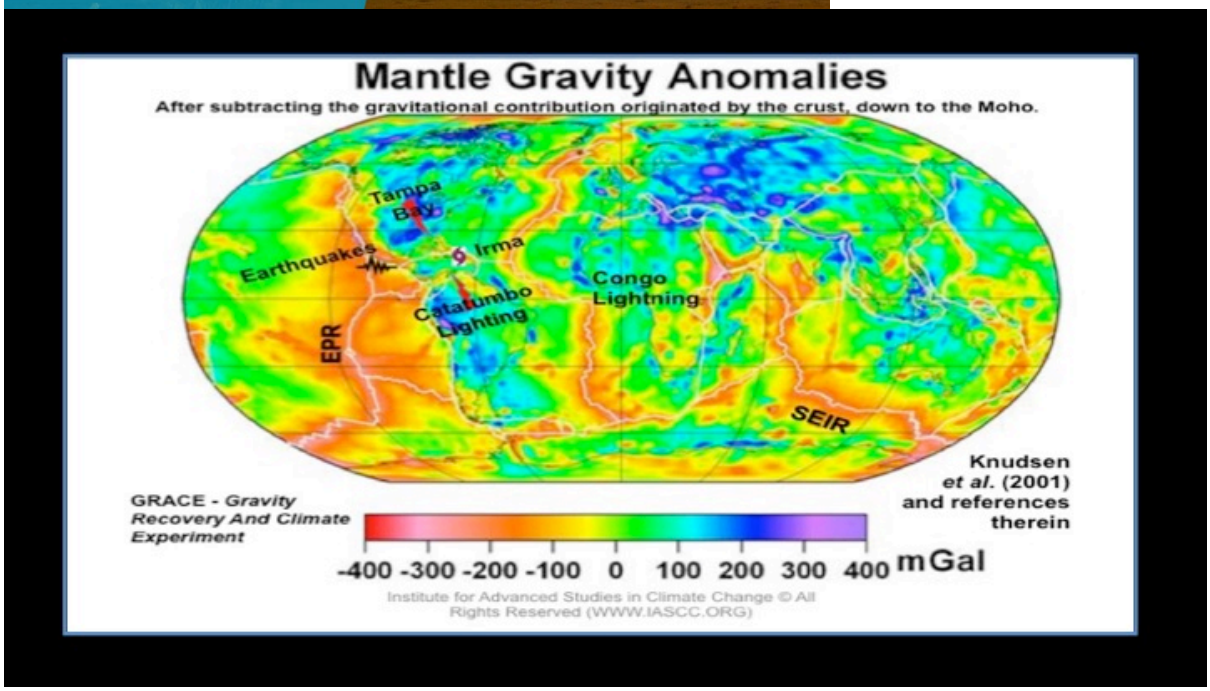


Lightning.jpg



MantleAnomaly.jpg





Topic Areas

Lightning Detection from Space: Performance, Research and Applications, Lightning Climatology

Submission Format

Oral