

# **Possible Relevance of Space Weather Effects to Medicine: Influences of Altered Magnetic Fields on Biological and Clinical Phenomena**

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The main Sun-driven geoeffect is the perturbation of the Earth magnetosphere, which manifests as gradual and impulsive variations in the geomagnetic field, i.e., as an alteration of the magnetic field in the biosphere. The possibility that altered electromagnetic fields (EMF) influence biological and clinical phenomena has been debated since a long time and the scientific proof is particularly difficult due to the complexity of living organisms and their interaction with the variety of physical processes that affect the environment in a way that often makes difficult, if not impossible, to identify and separate the specific effects. This aspect is especially evident when dealing with both the animal and the human physiology. In this framework, we comment on experimental evidences derived so far from animals and humans about the biological effects of altered electromagnetic fields via clinical indicators such as the capability of stress coping, pain sensitivity and arterial blood pressure (ABP). The findings suggest that altered EMFs like Sun-driven geomagnetic perturbations can alter pain-evoked potentials and increase the ABP in humans, i.e. the stress responsivity, which determines a less efficient stress coping. Even if more extended studies are needed to better ascertain the complex interplay, the experiments seem to indicate that Space Weather effects are relevant to human physiology and medicine both on the ground and in space, where astronauts are more exposed to continuously varying physical phenomena capable to influence the way they react to inner and outer stimuli when operating in space environments like the International Space Station (ISS).