

## Space weather effects on aeronautical communication, navigation and surveillance systems

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Space weather can be defined as the conditions on the sun and in the solar wind, magnetosphere, ionosphere, and thermosphere that can influence the performance and reliability of space-borne and ground-based technological systems.

It becomes more important especially when the reliability are of relevance. Aeronautical applications are one of those which requires high level of reliability and safety. In fact, International Civil Aviation Organization (ICAO) is working on standardizing the space weather information for aeronautical operations.

The main objective of this paper is to present necessary space weather studies to which the science community are expected to contribute to enhance the performance, reliability and efficiency of aeronautical communications, navigation and surveillance (CNS) systems. Space weather phenomena which can influence the aeronautical CNS systems are presented from the operation point of view. Possible impacts of space weather phenomena on aeronautical CNS systems and necessary space weather studies to evaluate the operational impact and devise effective mitigation methodology are discussed.

Keywords: aeronautical applications, ionosphere, communications, navigation, and surveillance systems