Warning and Mitigation Technologies for Travelling Ionospheric Disturbances Effects

TechTIDE

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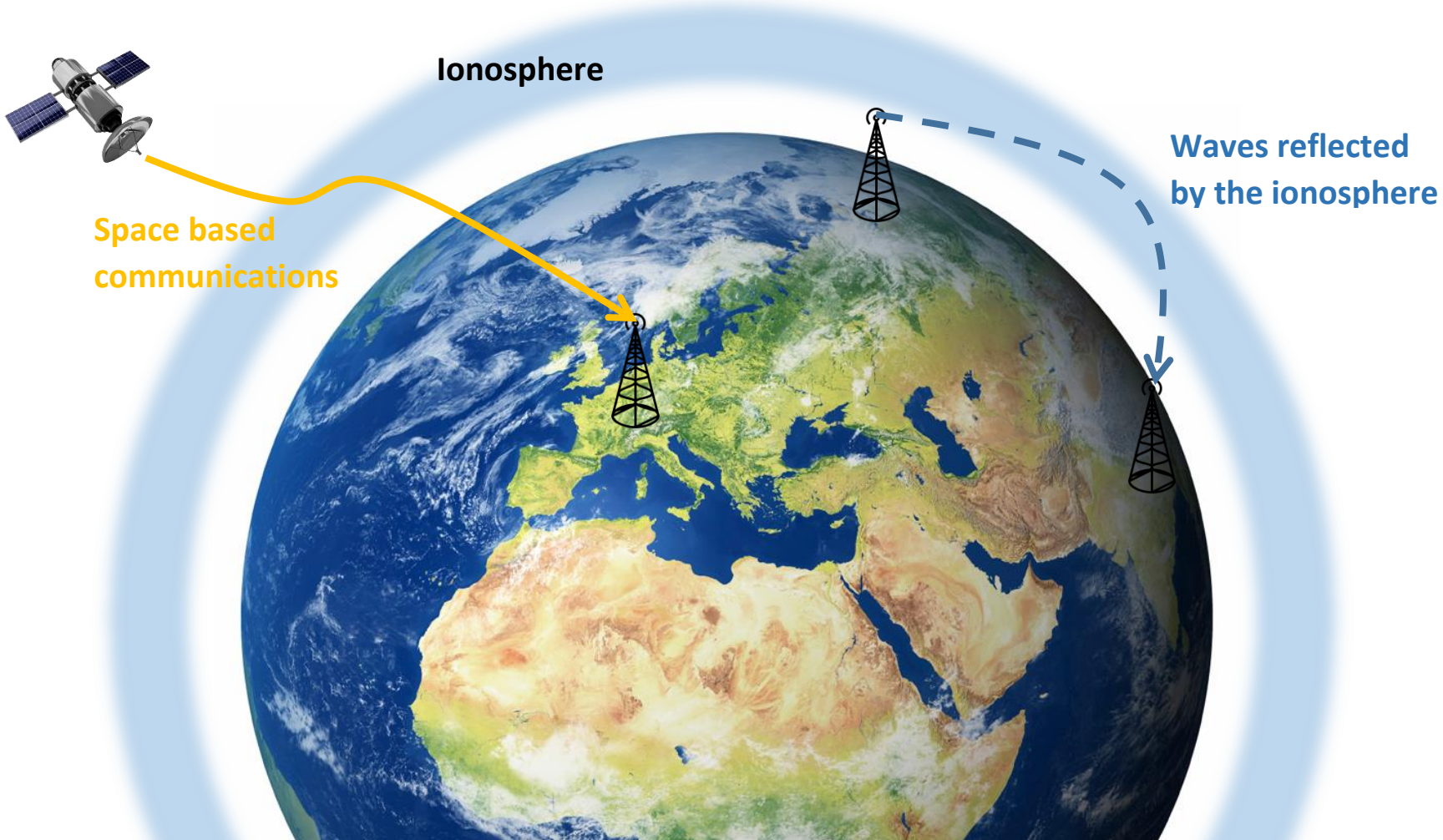
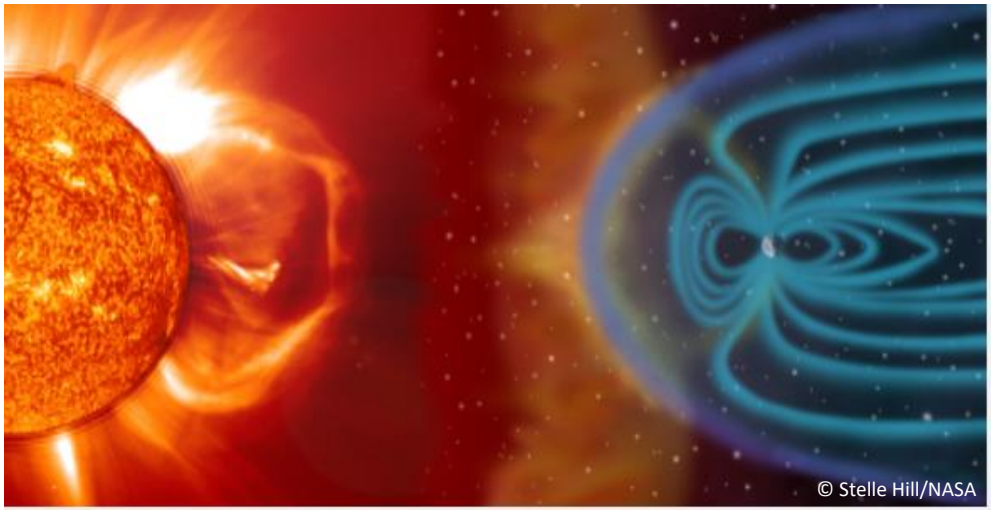
THE IONOSPHERE

The **ionosphere** is defined as the ionized part of the upper atmosphere (60-2000 km approximately). As it contains a significant number of free electrons it has an important influence on the propagation of radio-electric signals. The ionosphere is a tool for ground-based radio-communication systems but it is a noise for space-ground radio-communication systems.



TRAVELLING IONOSPHERIC DISTURBANCES

Travelling Ionospheric Disturbances (TIDs) are ionospheric disturbances that propagate as waves through the ionosphere disrupting the regular propagation of radio-electric signals. TIDs can have different sources: from the Sun, from meteorological phenomena, from earthquakes, from big explosions.



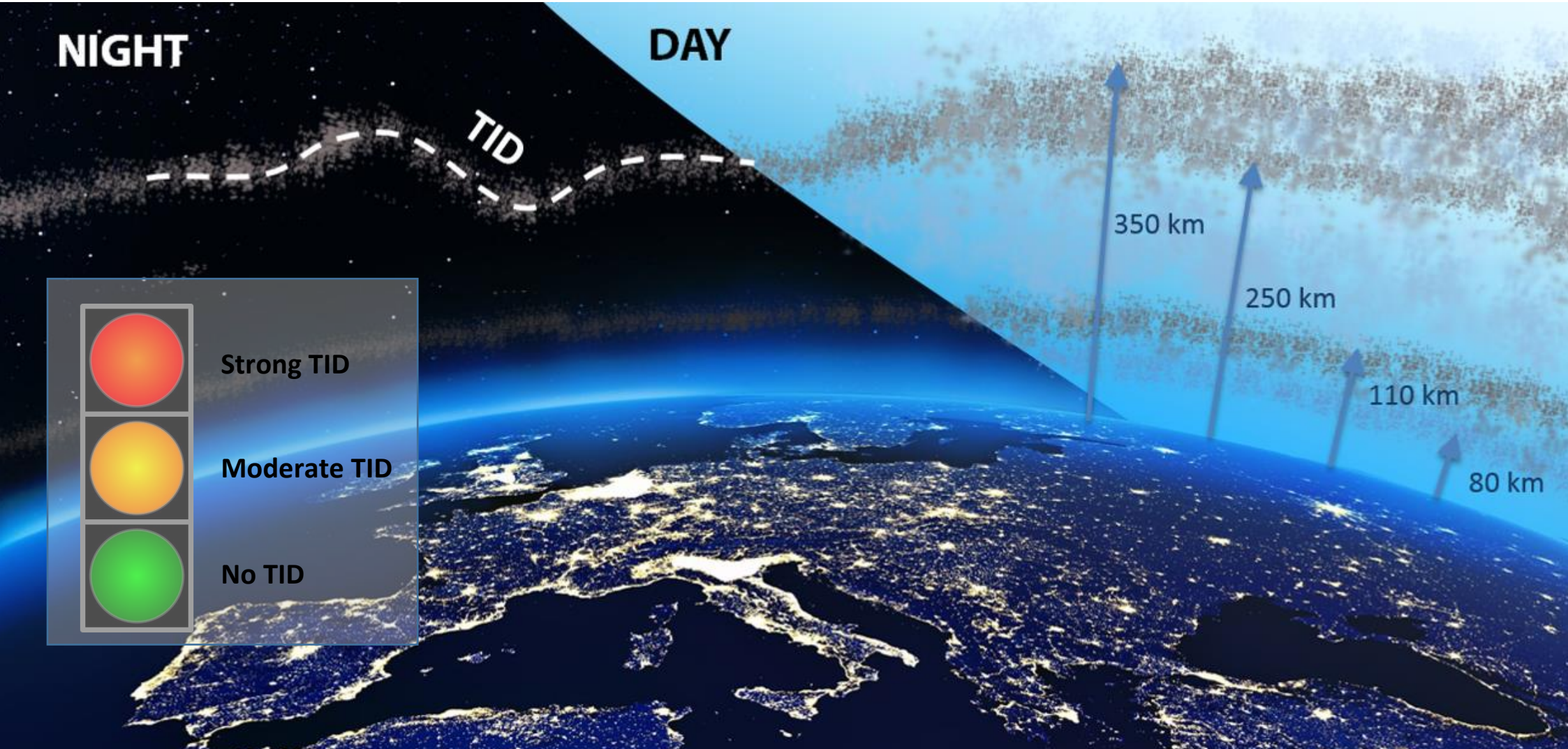
TIDs IMPACTS

TIDs can have multiple effects in the operation of aerospatial and ground-based infrastructures, especially in the geolocation, navigation and communication services based on radio-electric signals. The main concern of the users, is to have direct and timely information of ionospheric perturbations due to TIDs and hence being able to mitigate the effects in their operations.



OBJECTIVES

Since many operational systems are affected TIDs, it is essential to detect with high accuracy what is the state of the ionosphere. In this sense, the main objectives of TechTIDE project are: to develop a real time TID warning system; to improve the understanding of TID impact; to support mitigation technologies for those impacts, and to specify the physical drivers.



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