

Travelling Ionospheric Disturbances

FORecasting System

T-FORS

Did you know that modern communication and navigation systems like Galileo or GPS can be distorted ?

This is because these systems operate in a variable environment called the ionosphere. Waves in the ionosphere can distort and reduce the quality of the signal received.

How can we mitigate the impact of the ionosphere on modern technology?

Researchers working in the T-FORS project concentrate on the so-called travelling ionospheric disturbances (TIDs) and their goal is to predict the state of the ionosphere using observation of the Sun, solar wind, Earth's magnetosphere, and atmosphere.



Consortium



Find more about Space Weather:

https://www.esa.int/kids/en/learn/Our_Universe/The_Sun/Space_Weather_Week

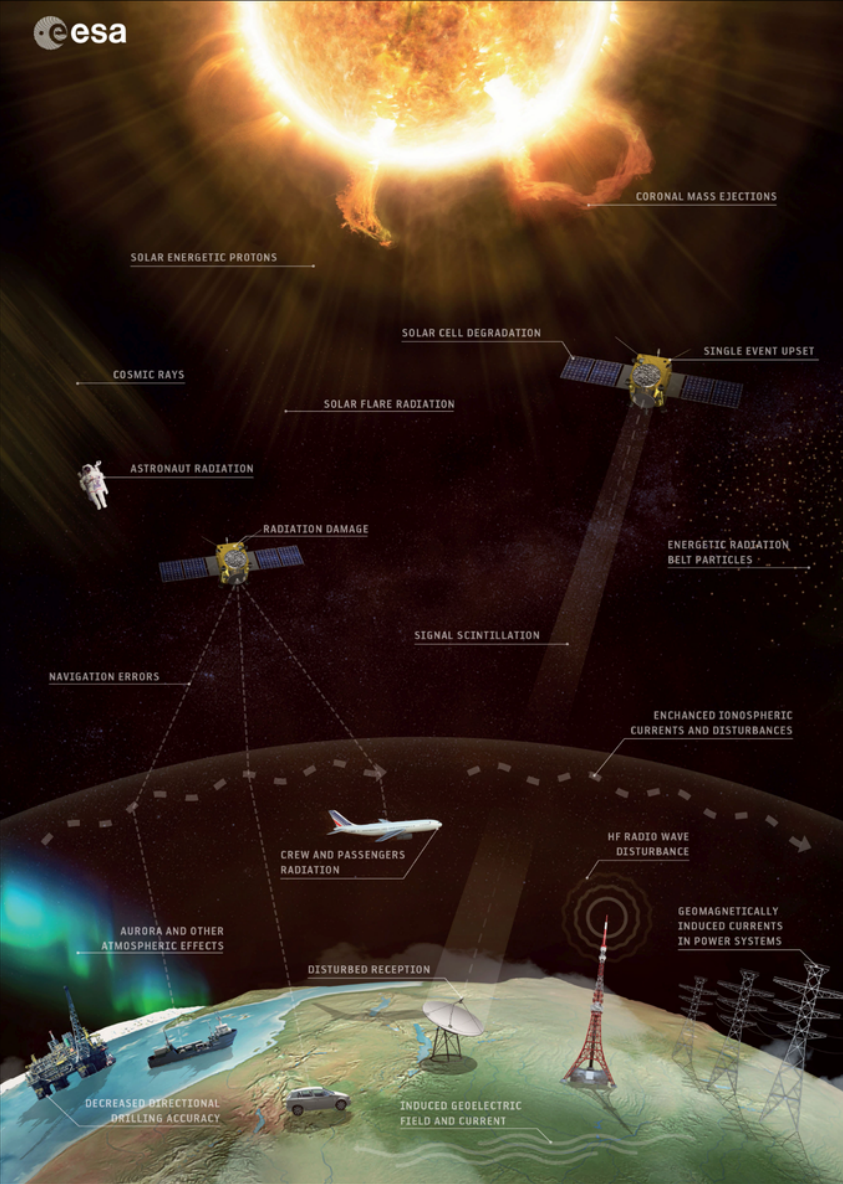
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What is the Ionosphere and TIDs?

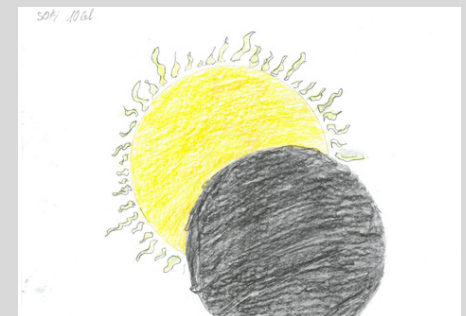
The ionosphere is one of the upper layers of the Earth's atmosphere, which is formed up of incident solar radiation (at altitudes of approximately 60-2000 km). The ionosphere plays a very important role in our daily lives, as it serves as a medium for modern communication and navigation systems. Travelling ionospheric disturbances (TIDs) are waves propagating in the ionosphere associated with various sources (e.g. earthquakes or storms). However, the most important source of TIDs are solar storms (space weather events).

How dangerous are TIDs?

Once emitted from the source, the waves propagate through the ionosphere and affect its regular state, which in turn can significantly affect radio signals propagating through the ionosphere. TIDs thus have a multiple impact on the operation of space and ground-based technological infrastructures based on radio wave propagation. TID has been described as the "silent accuracy killer" of high-precision navigation systems and the generator of "short-range catastrophe" for radio communication systems. The study of TID is of fundamental importance.

What is T-FORS?

T-FORS is a European project bringing together scientists from different countries to monitor, analyse and improve our knowledge of TID and ionospheric variability in general. We want to better understand what is happening in the ionosphere. The aim is to provide a forecast of the TID for several hours in advance and thus improve the performance of various technological systems.



The pictures of our near space and solar storms were created by children in Czech primary schools.