

## Ionospheric medium-term trends over Concepción, Chile, and its possible association with ENSO

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Recent studies have highlighted the existence of a strong coupling between the lithosphere, lower atmosphere and the ionosphere. While the impacts of short-term events like earthquakes, tsunamis, volcanic eruptions, and thunderstorms on the local ionosphere have been well-documented, the association between a medium-term phenomena such as the El Niño Southern Oscillation (ENSO) and the ionosphere remains relatively unexplored, likely due to the complex nature of the system. This study aims to investigate the potential association between the ENSO phenomenon and the ionosphere, focusing specifically on the impact on the critical frequency of the F2 layer (foF2) during both daytime and nighttime. foF2 represents the maximum frequency at which radio waves can be reflected by the ionosphere, and variations in this parameter can have significant implications for radio communications and navigation systems. To achieve this objective, an extensive dataset comprising measured ionospheric parameters over Concepción (36.8°W, 73.0°W), Chile, and ENSO indices will be analyzed. In order to corroborate this analysis, other ionospheric stations and other instruments will also be used. Understanding the influence of ENSO on the local ionosphere will contribute to improved predictions and modeling of ionospheric behavior, benefiting various applications that rely on ionospheric conditions, such as radio communications, satellite navigation, and space weather forecasting.