

# **Naturally Enhanced Ion-Acoustic Lines events at high latitude ionosphere and the behavior of the electron temperature during such events**

Bashkim DALIPI<sup>(1)</sup>, Naim SYLA<sup>(2)\*</sup>, and Fisnik ALIAJ<sup>(2)</sup>

(1) University of Gjilan Kadri Zeka, Gjilan, Kosova

(2) University of Prishtina, Prishtina, Kosova

Naturally Enhanced Ion-Acoustic Lines (NEIALs) are an ionospheric plasma phenomenon. Its appearance is reported to be linked to the electron temperature fluctuations within the ionospheric plasma medium. Since the phenomenon was experimentally discovered in 1988, some researchers have reported a possible correlation between the NEIALs' appearance and the electron temperature increase under geophysical conditions when electron temperature is equal to or is three times greater than the ion temperature ( $T_e \geq 3T_i$ ). In our investigation, we have used the ESR 42 m raw data sets that were analyzable by means of the Grand Unified Incoherent Scatter Data Analysis Program, v8.6. This data presents a period of time right before an event of NEIALs and immediately after the event. Such data has been analyzed and was used to estimate the behavior of the electron temperature during the NEIALs event, by using the regression analysis. Our experiment shows that the electron temperature progressively increases before the event, and progressively decreases after the event. Analysis and the synthesis for the event gave us an estimate for the electron temperature values that exceeded 6600 Kelvin during the event.

Key words: Space plasma physics, ionosphere, plasma diagnostics, electron temperature.