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The energetic electron instrument (IDEE) onboard the TARANIS spacecraft to search lightning-connected energetic electron populations

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TARANIS (Tool for the Analysis of RAdiations from lightNings and Sprites) is a French CNES microsatellite dedicated to the study of the impulsive energy transfer between the Earth's atmosphere and the space environment as widely observed above the active thunderstorm regions. After years of development and testing, the satellite is approaching to its launch (expected in June 2020). The comprehensive satellite scientific payload incorporates optical, field, and particle sensors including the energetic electron instrument (IDEE) with very high sensitivity and time resolution. Its main scientific tasks are: to measure high resolution energetic electron spectra (70 keV to 4MeV) and pitch angle distributions, to separate upward accelerated electrons and downward precipitated electrons, to detect burst of electrons associated with Terrestrial Gamma ray Flashes, to identify Lightning-induced Electron Precipitation (LEP), and to provide alert signals about high-energy electron bursts to other TARANIS experiments. The aim of this contribution is to describe the final design and expected performance of the IDEE experiment, including the data products. We also want to show how we are going to enhance the today's scientific knowledge of the thunderstorm related phenomena in synergy with other ground-based and space-born experiments.