

The thunderstorm related troposphere – ionosphere coupling mechanisms as seen by ionosonde data

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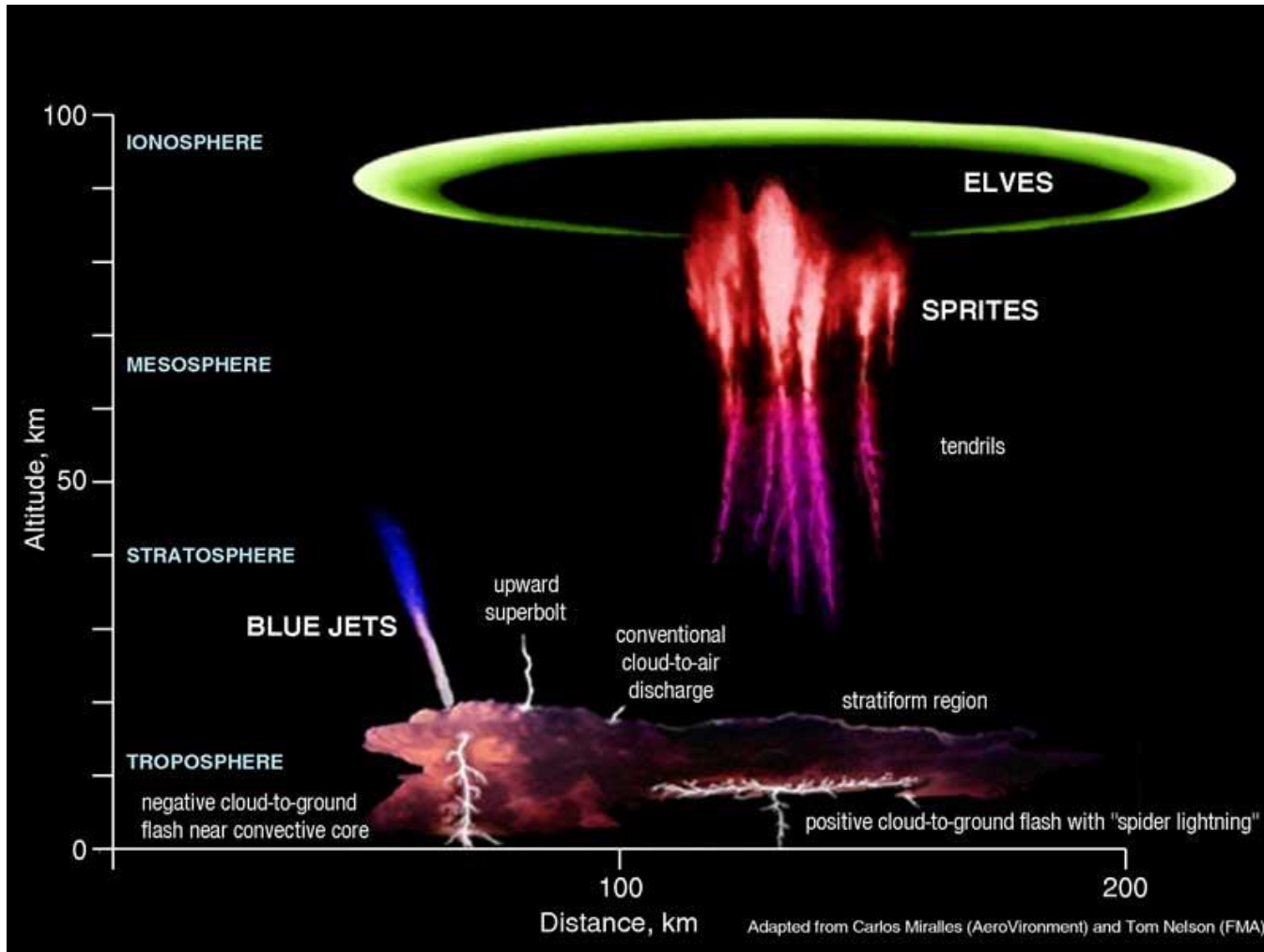
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Coupling mechanisms

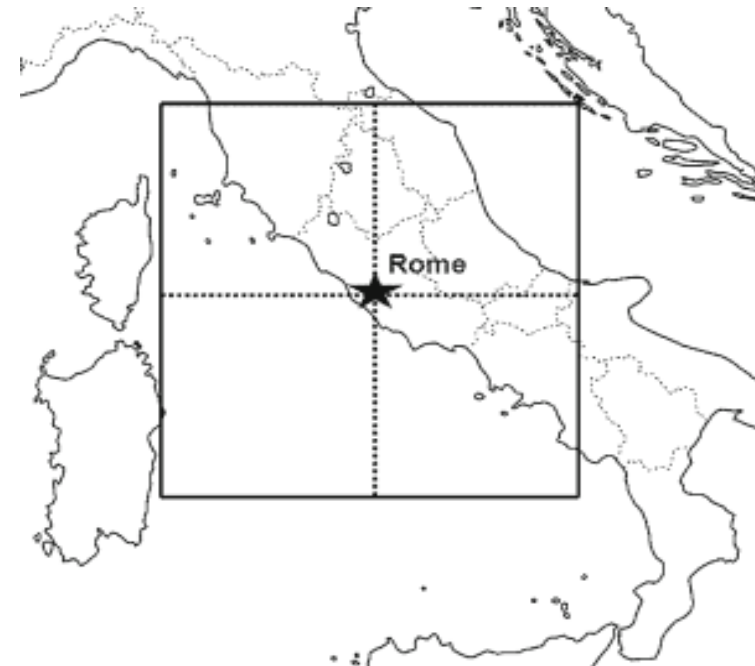
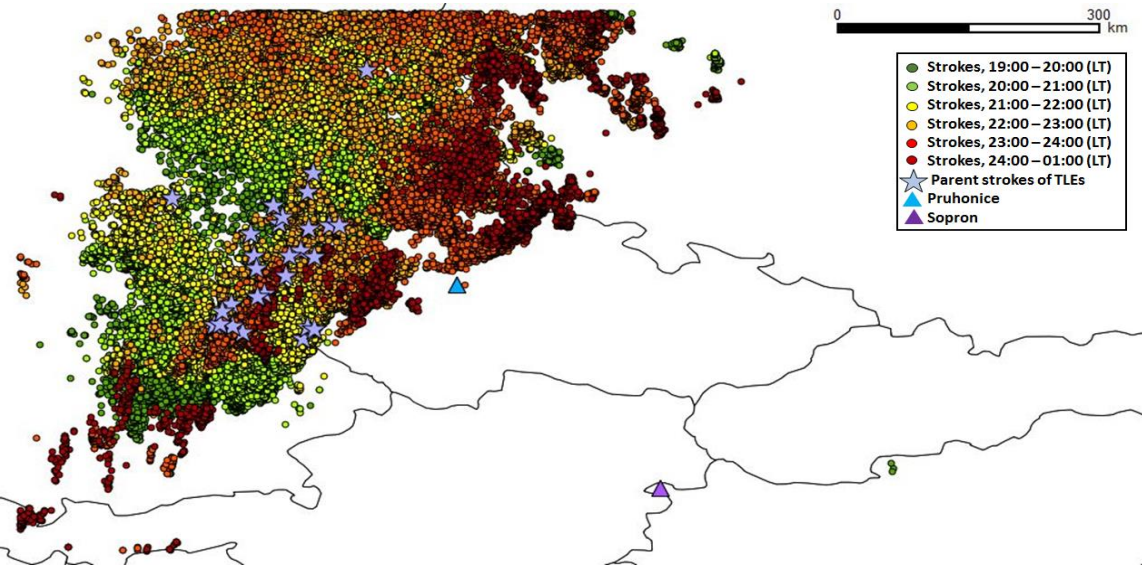


- Electrodynamical coupling → through EM fields above the TS
- Mechanical coupling → neutral waves generated by TS

Aim of the project, data

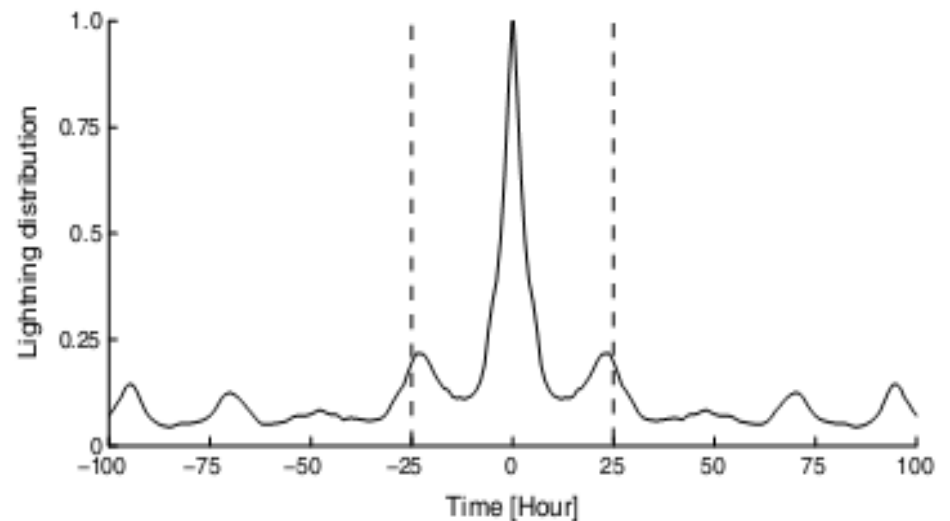
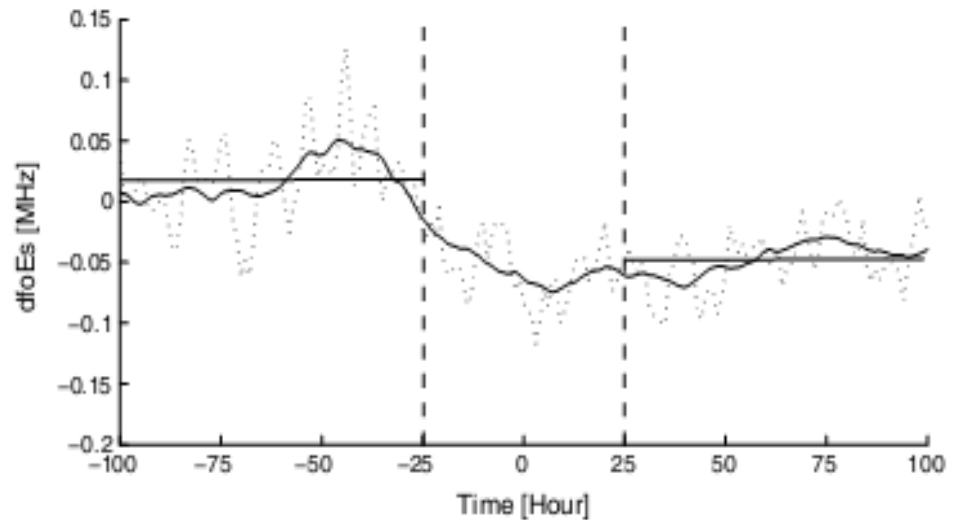
Thunderstorm – ionosphere coupling have been studied

- using statistical analyses and event studies
- at 90-120 km height range, especially variation of Sporadic E layer
- different lightning detection systems (WWLLN, LINET),
- more ionosonde stations (Rome, Pruhonice, Nagycenk),
- sprite events observed from Sopron and Nydek
- data of a five-point continuous Doppler sounding system were used in this complex study.

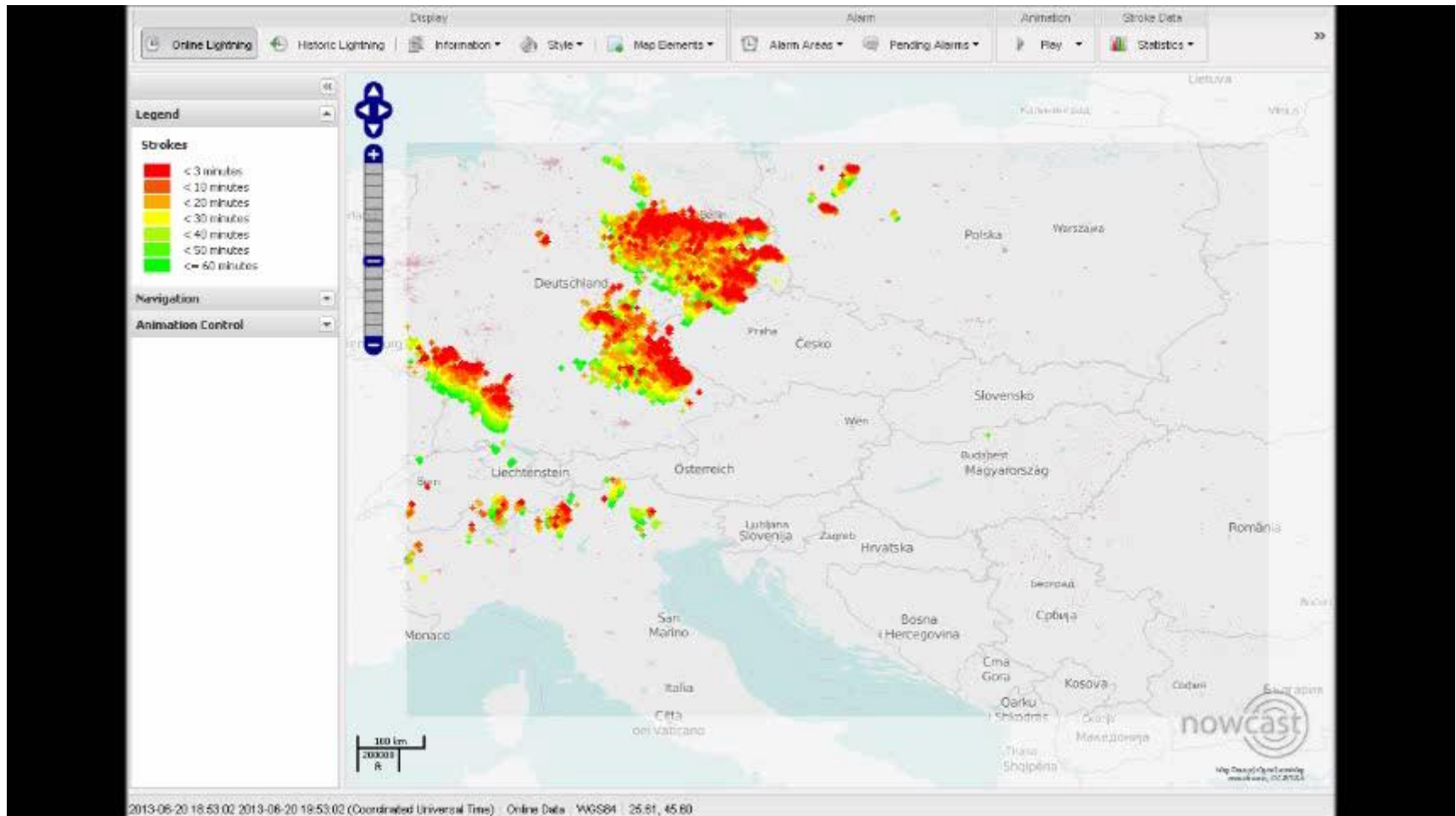


Superposed Epoch Analysis

- The results show a statistically significant decrease in the foEs parameter after the time of the lightnings.
- This indicates a decrease in the electron density of the sporadic E layer associated with lightnings.

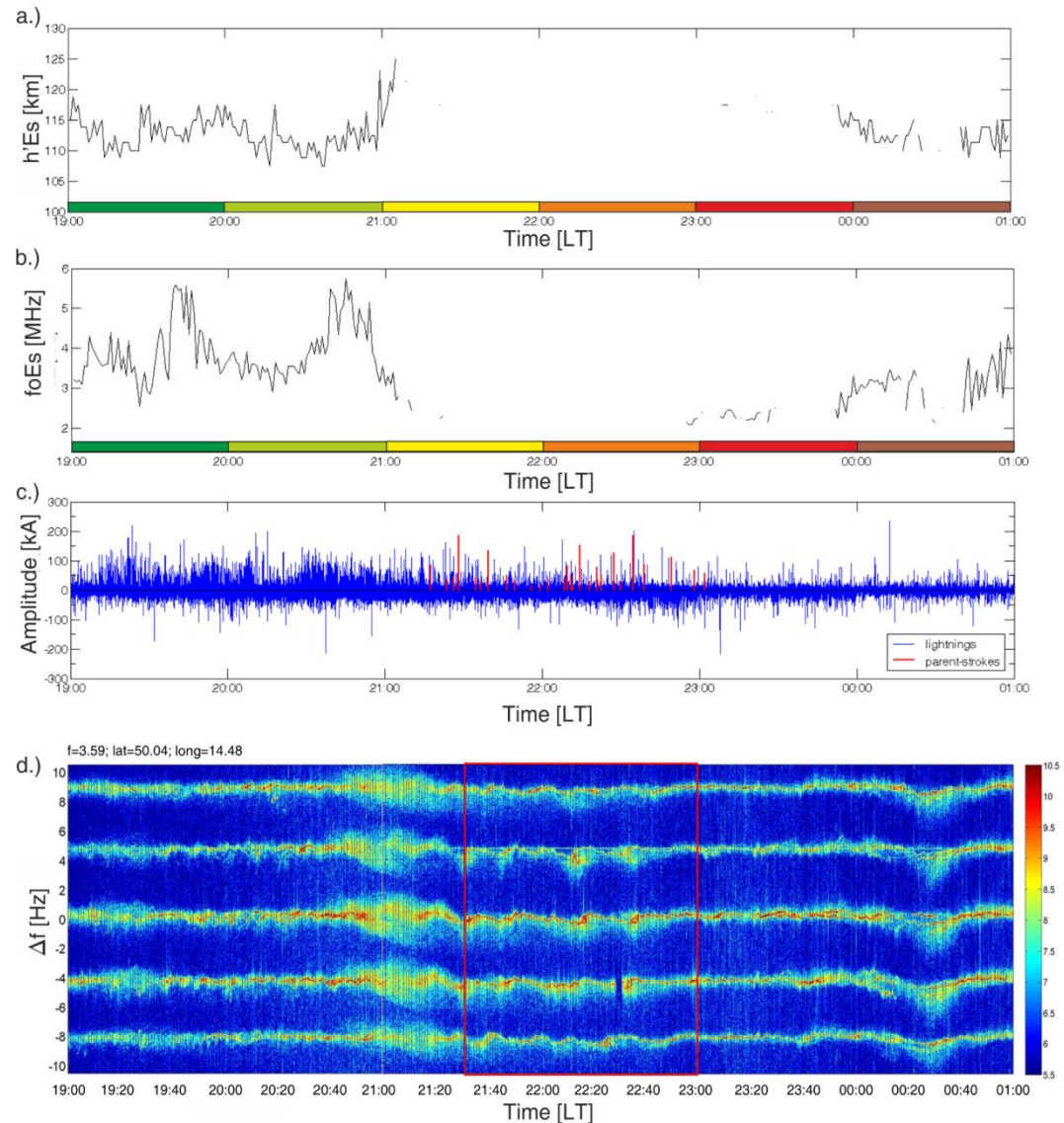


Event study I., Pruhonice, 2013-06-20 (19:00 – 01:00 LT)



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- The lack of the sporadic E layer (Es) was observed for a couple of hours during the thunderstorm.
- According to further studies this reduction can be attributable to the thunderstorm activity



Thank You!