Thunderstorm climatology of Northern Europe in 2002-2013 based on the NORDLIS lightning location system

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  Annual variation
  Monthly variation
  Daily variation
  Cloud-to-ground flash density
  Thunderstorm days
  Thunderstorm intensity
  Cold season thunderstorms
NORDLIS network

- NORDLIS is a cooperative lightning location network between Norway, Sweden, Finland, and Estonia
- Full operation since 2002
- About 30 sensors; sensor reports are shared between the countries
- Countries process the data independently (except Estonia who gets the data from Finland)
NORDLIS network performance

- The detection efficiency is estimated to be above 90% (even 95%?)
- Median location accuracy is \(~500\) m in the network centre, larger in the perimeter
- Peak current information also available
Annual variation

- The average of the period is 390 000 cloud-to-ground flashes (CGs) per year
- Large variation
- Peak year 2003
Average monthly variation

- July, August, June
- Large jump and drop from June to July and from August to September
Average daily variation
Average CG flash density
Average number of thunderstorm days
Maximum annual CG flash density
Maximum daily CG flash density
CG flashes per thunderstorm day
Avg. cold season (Oct-Apr) CG flash density
Avg. cold season (Oct-Apr) thunderstorm days
Conclusions

- NORDLIS network has now a data set of more than ten years → we can draw some conclusions of the Scandinavian thunderstorm climate

- Annual variation is large (as is the case for many other meteorological parameters)

- Although on average the Scandinavian thunderstorm climate is “modest”, individual thunderstorms and thunderstorm days may be violent

- Questions:
  - The anticipated changes in the thunderstorm occurrence in Scandinavia in the future?
  - How will the NORDLIS network evolve in the future?
Further reading

- A recent paper available (for the period 2002-2011)
- Poster in this conference!