KMI - IRM

Evaluating EUCLID's location accuracy using lightning strikes to towers

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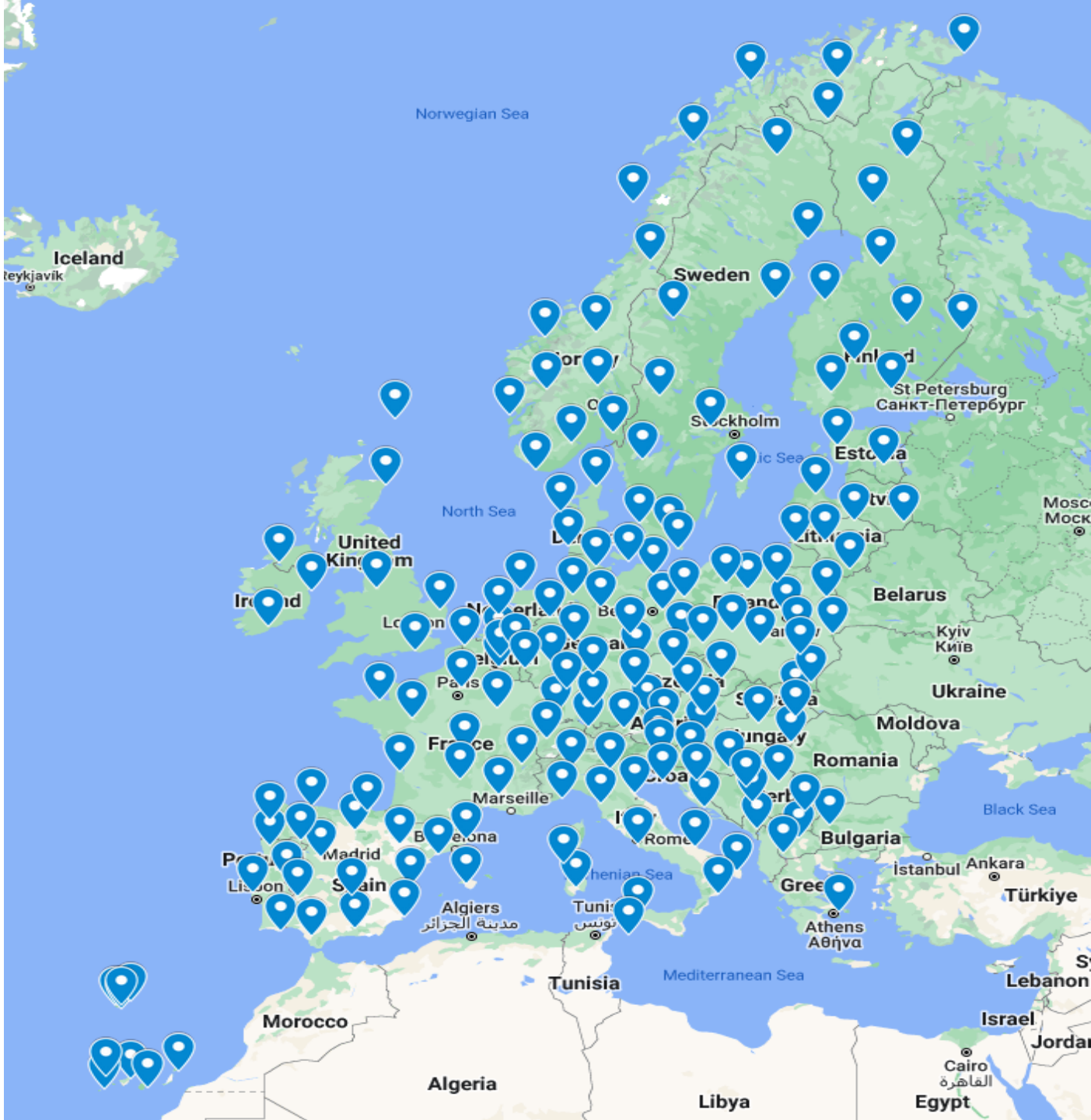
Introduction

- EUCLID operates ~170 sensors
- Network evolves, consistently upgrading from older sensor models to newer ones and optimizing sensor placement by adding or relocating sensors
- Median LA ~100m (Gaisberg)
- Stroke/flash DE of 84%/98% based on video & E-field records
- EUCLID ∝ NLDN -> CA(CG) = 92%
  -> CA(IC) = 86%



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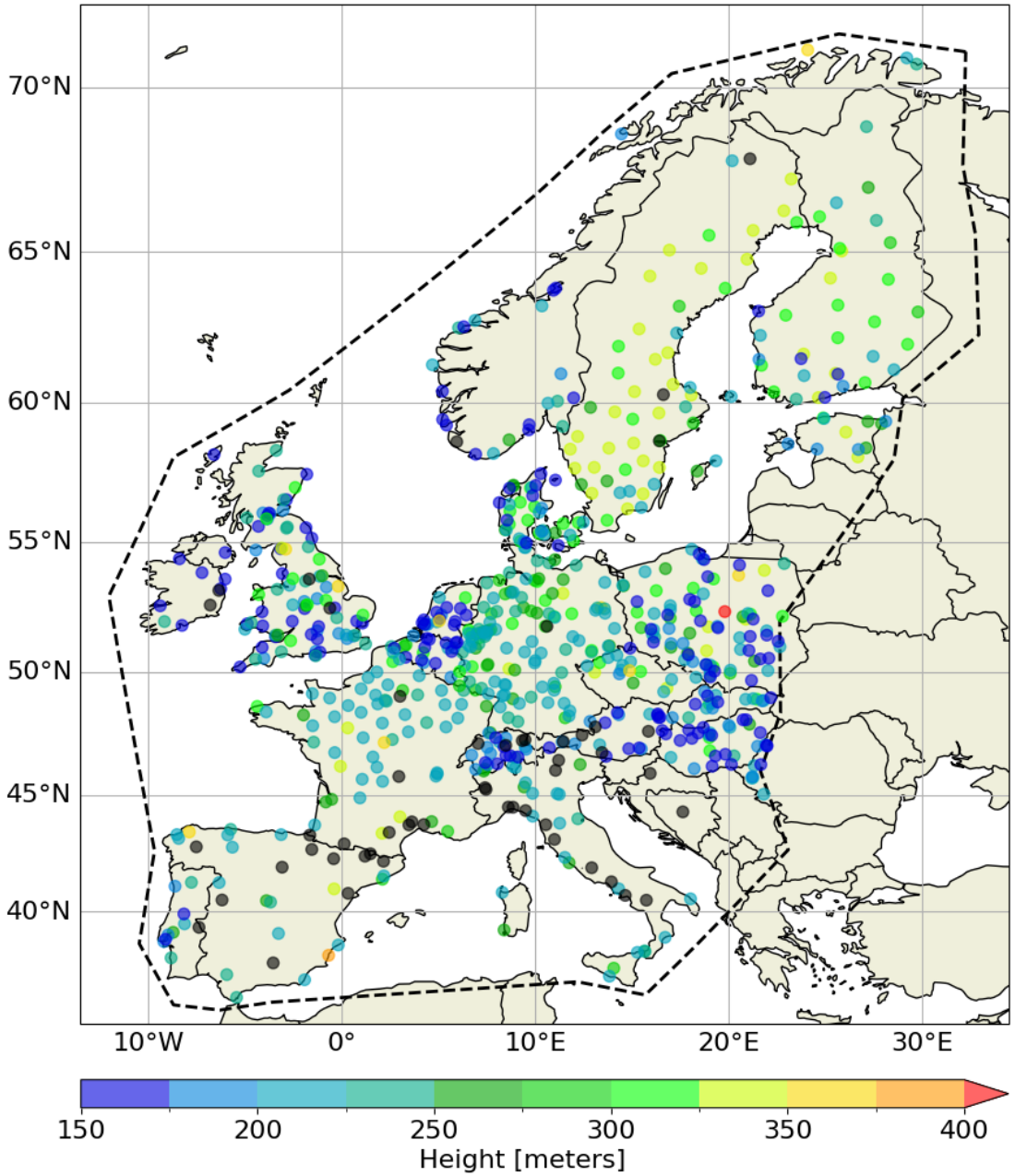
⇔ ~750 towers within EUCLID domain



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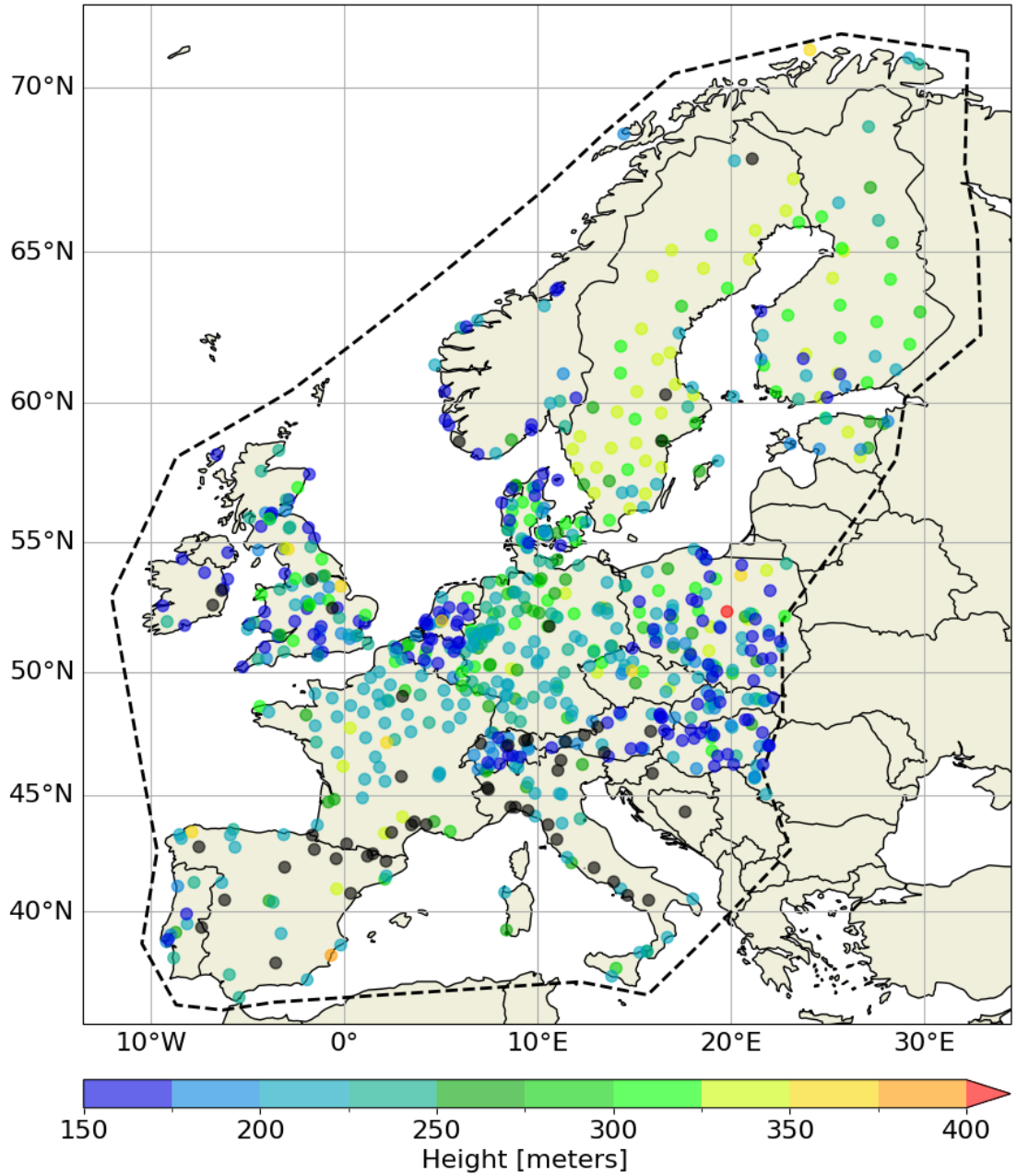
- Extract 12 years of EUCLID data from 2012/01-2023/12 within 2km from each tower



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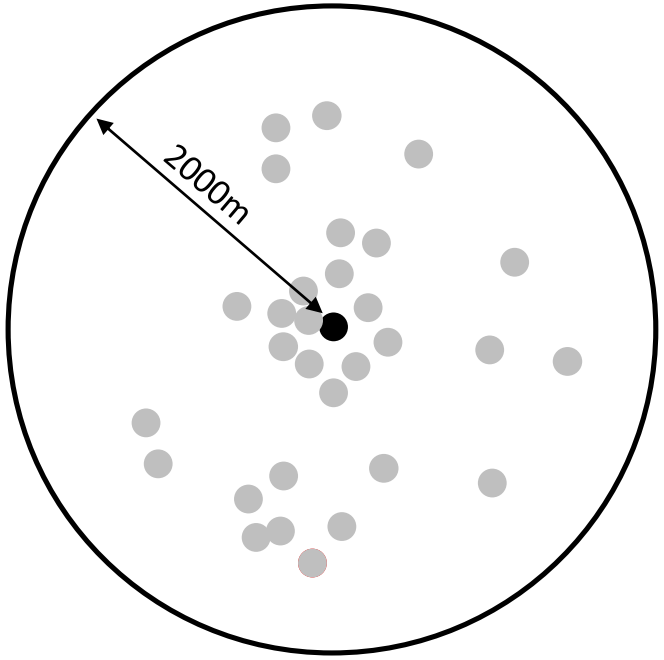

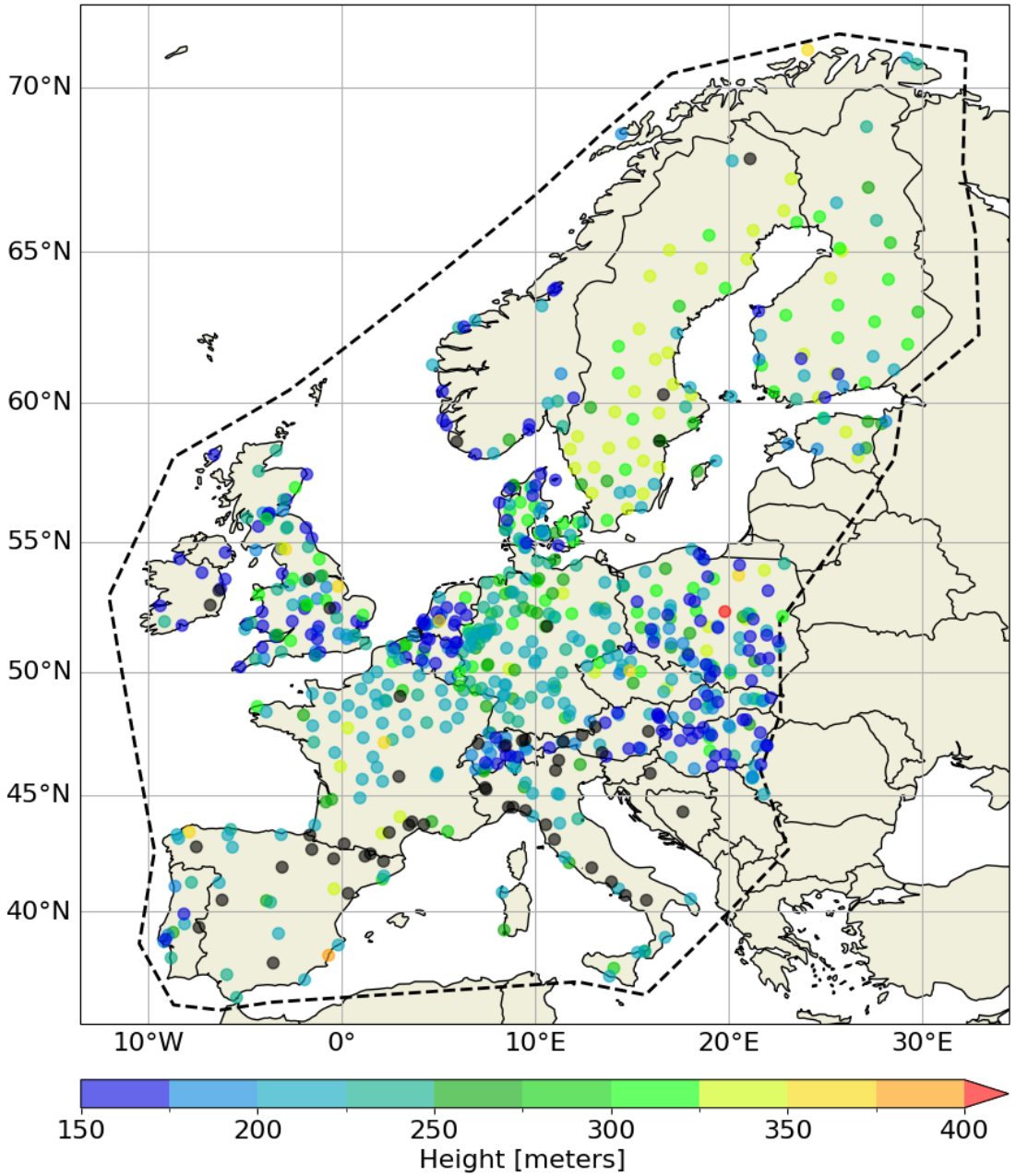

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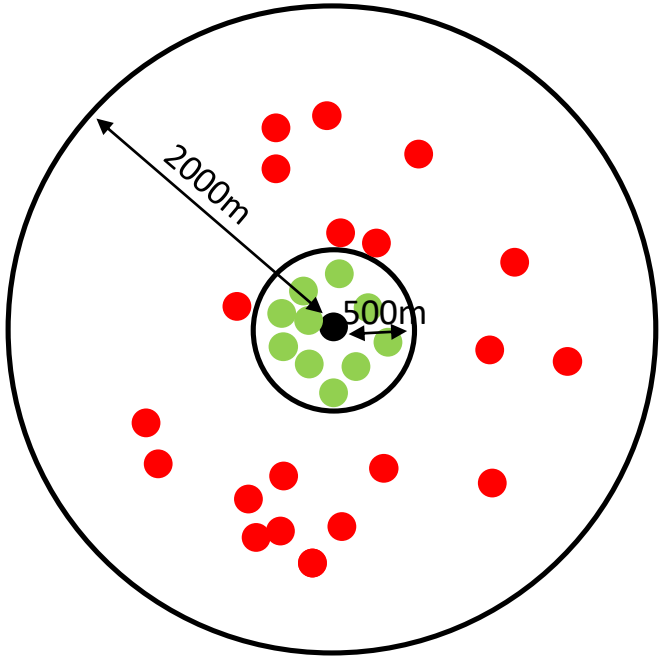

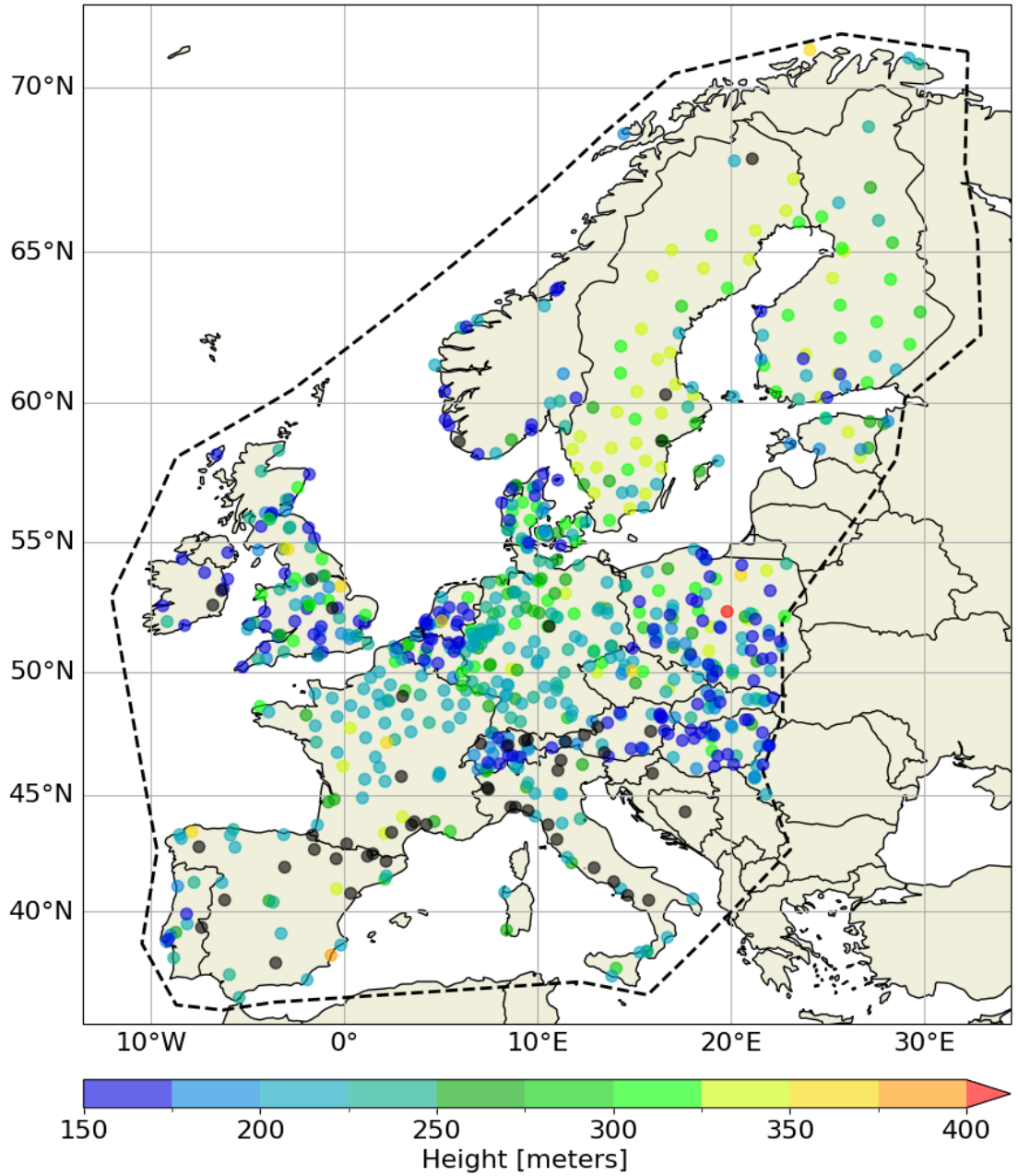

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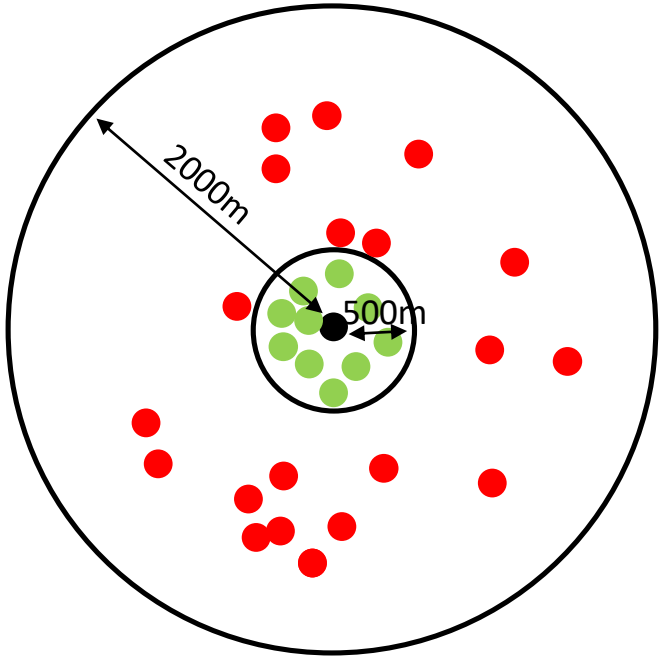

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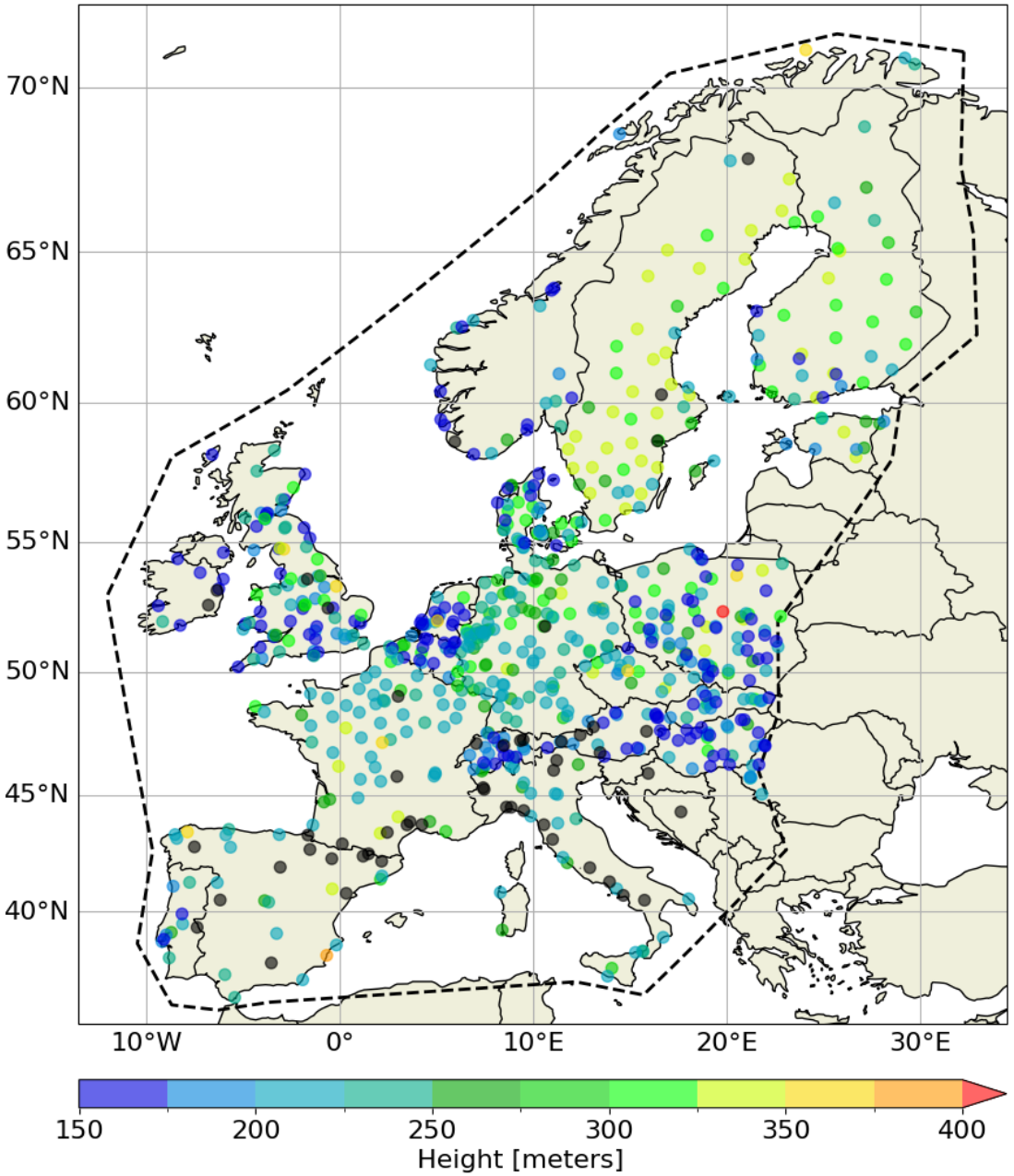

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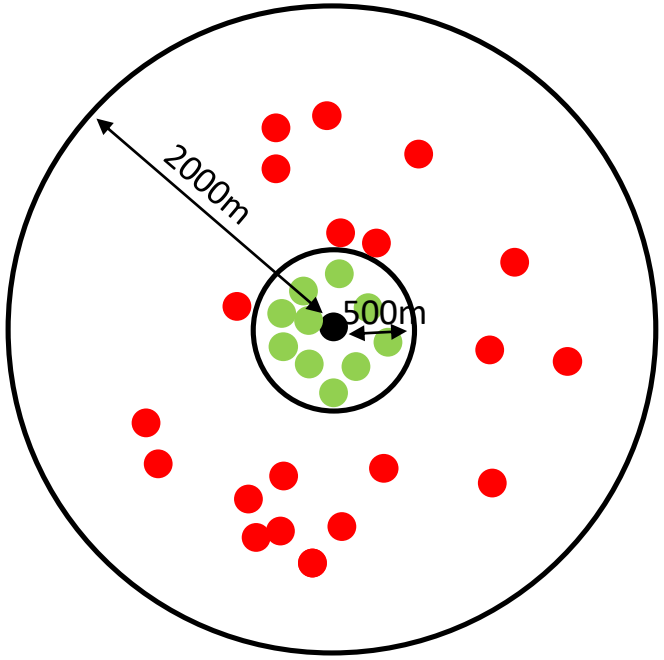

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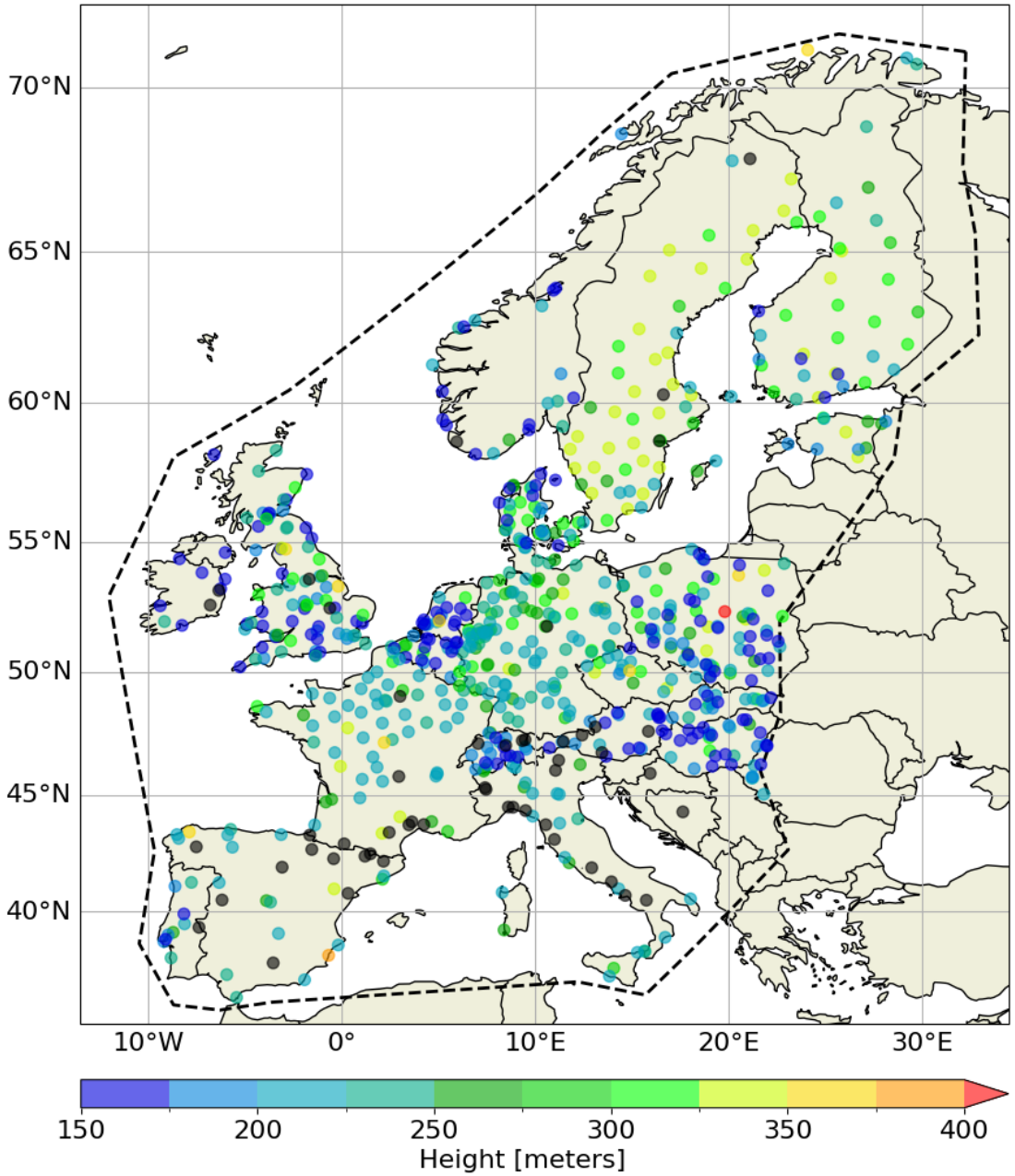

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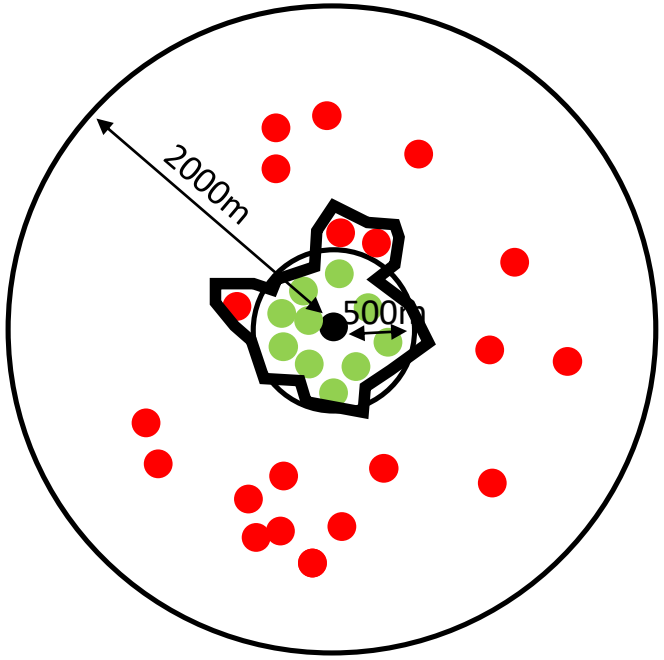

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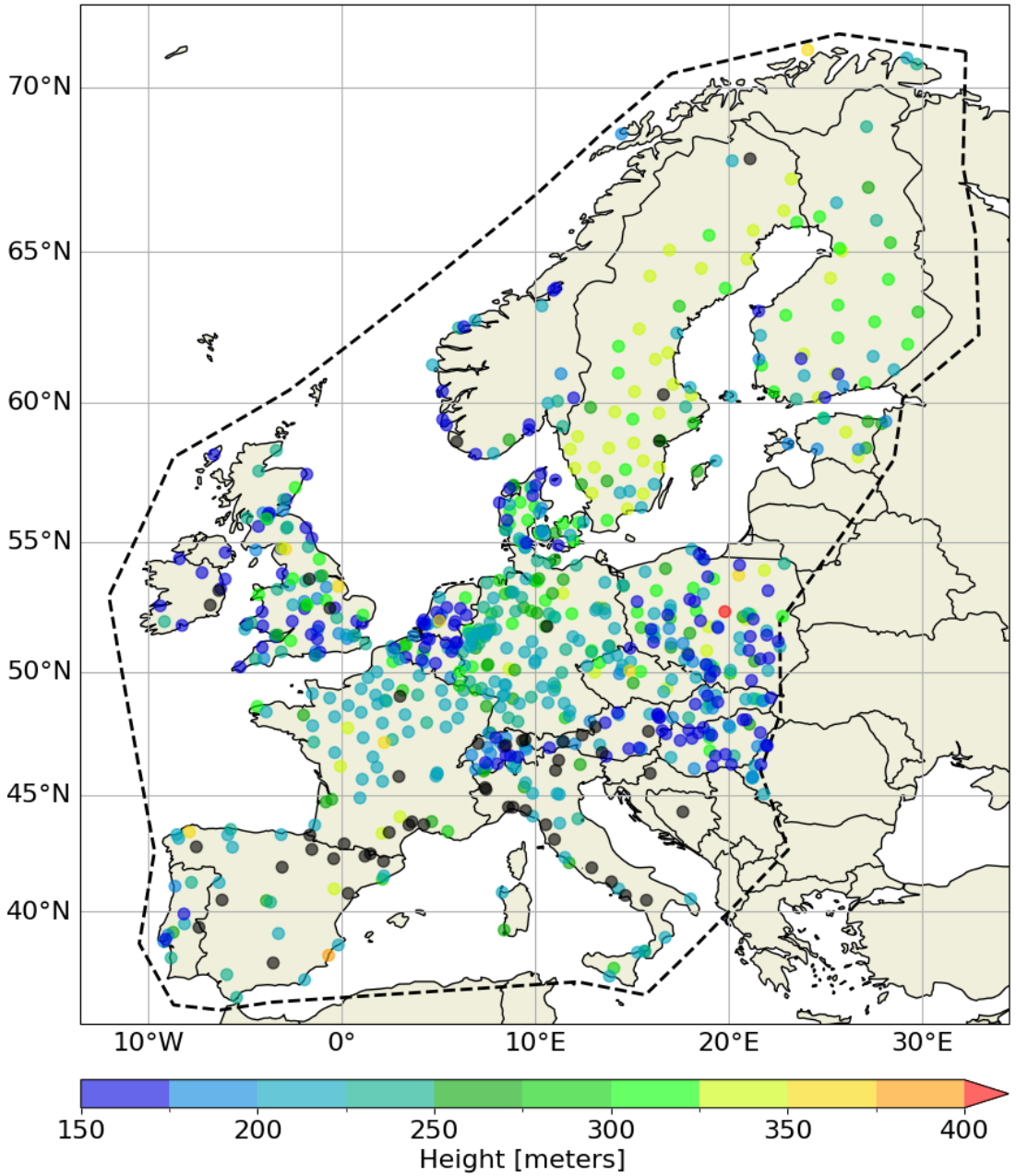
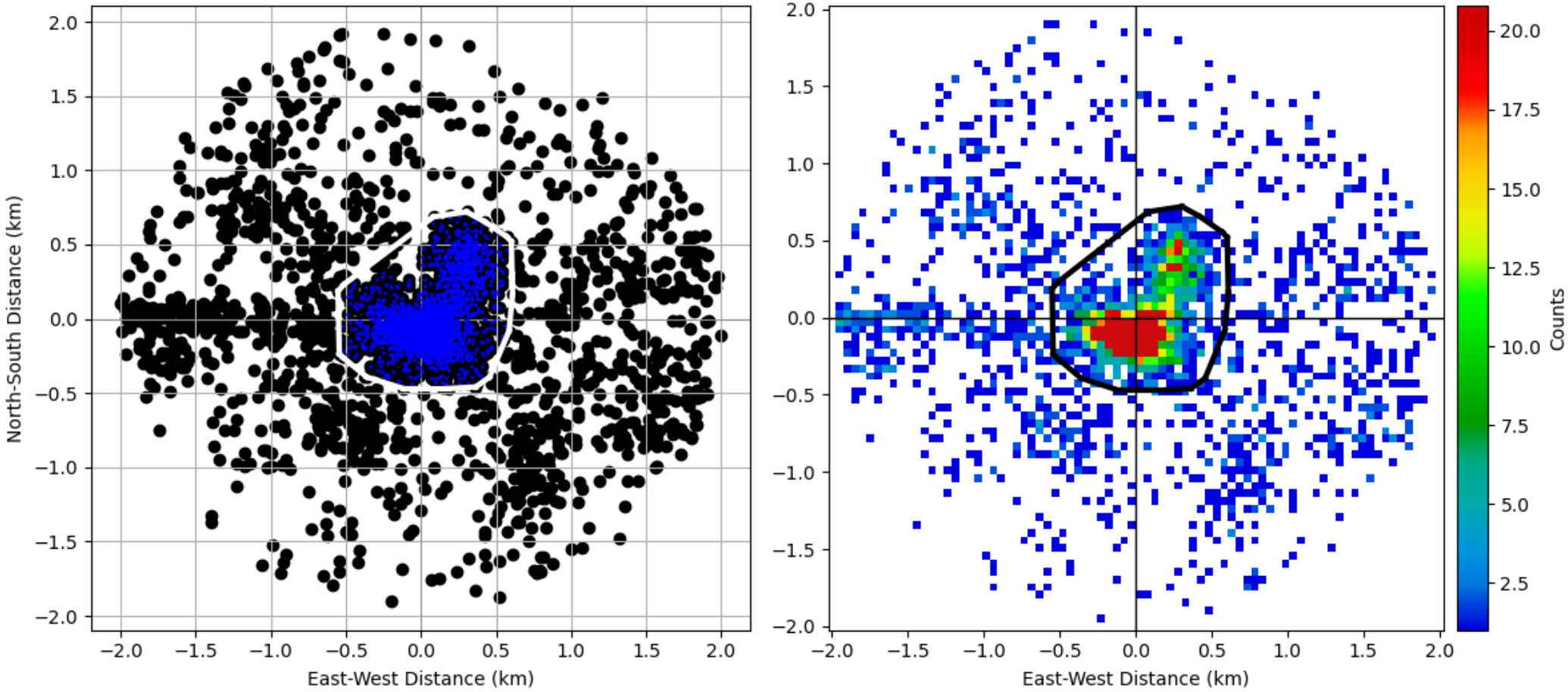
  - Apply DBSCAN to extract most probable cluster of strokes that hit the tower
  - Calculate median LA



Preliminary results

Tower 04 Dobratsch: median LA =148m, median LA N-S =-81m, median LA E-W =29m
Amount CG events in convex hull = 5503



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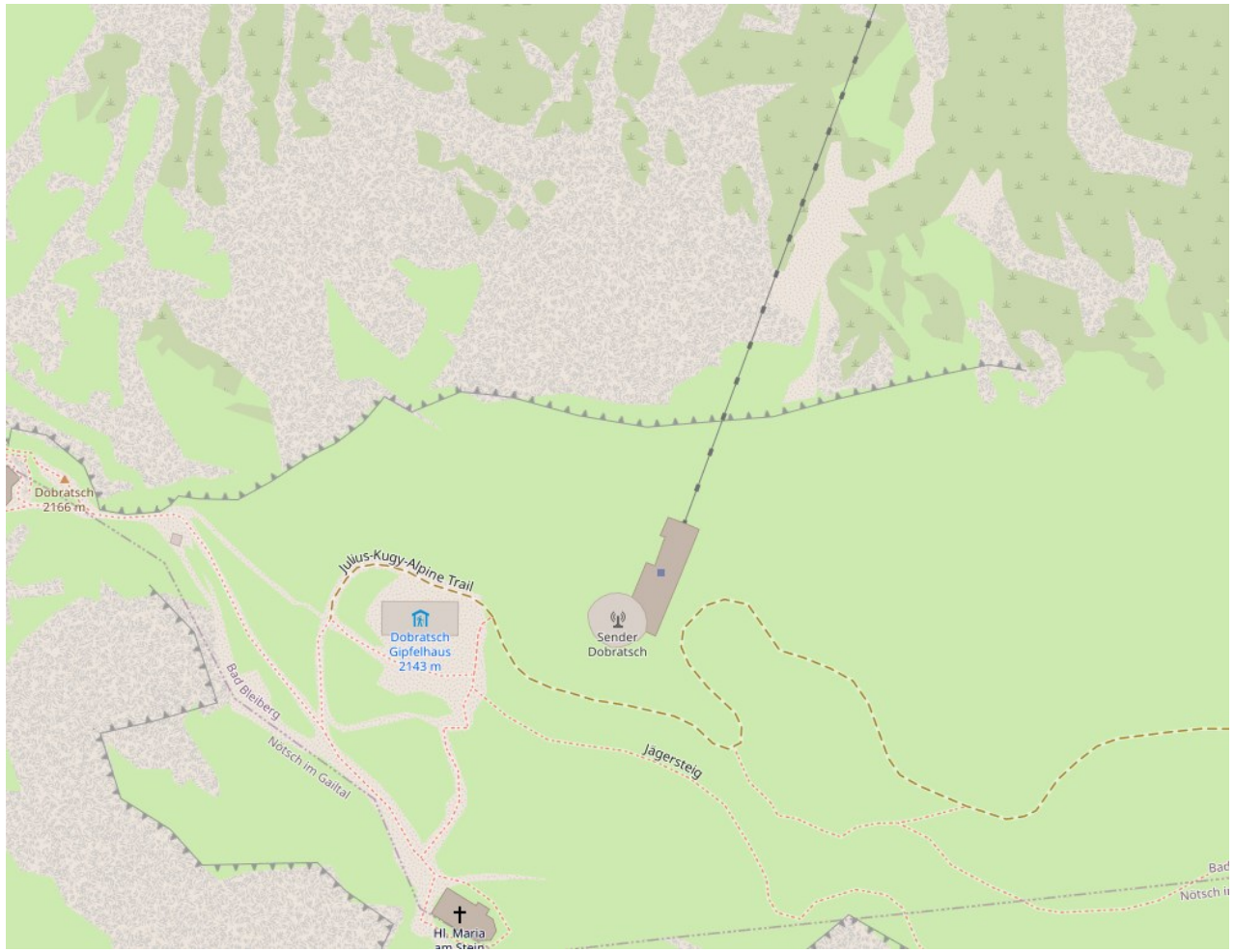

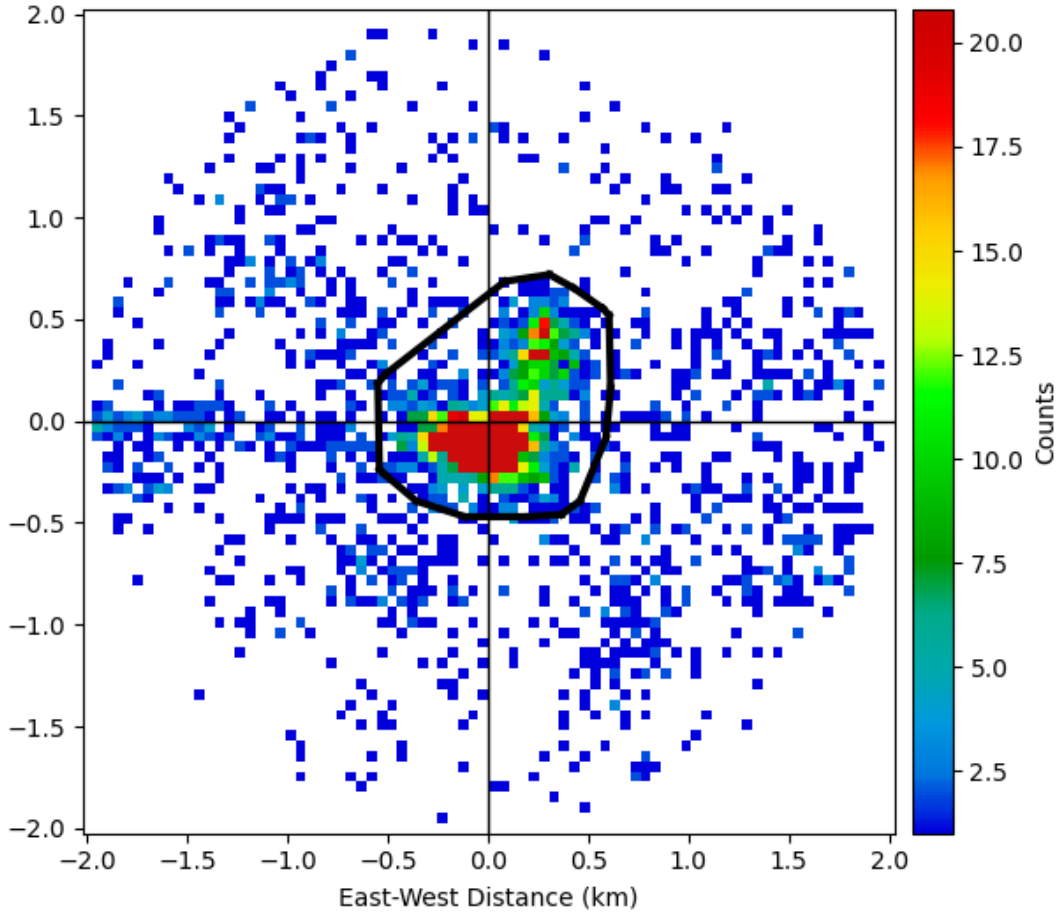

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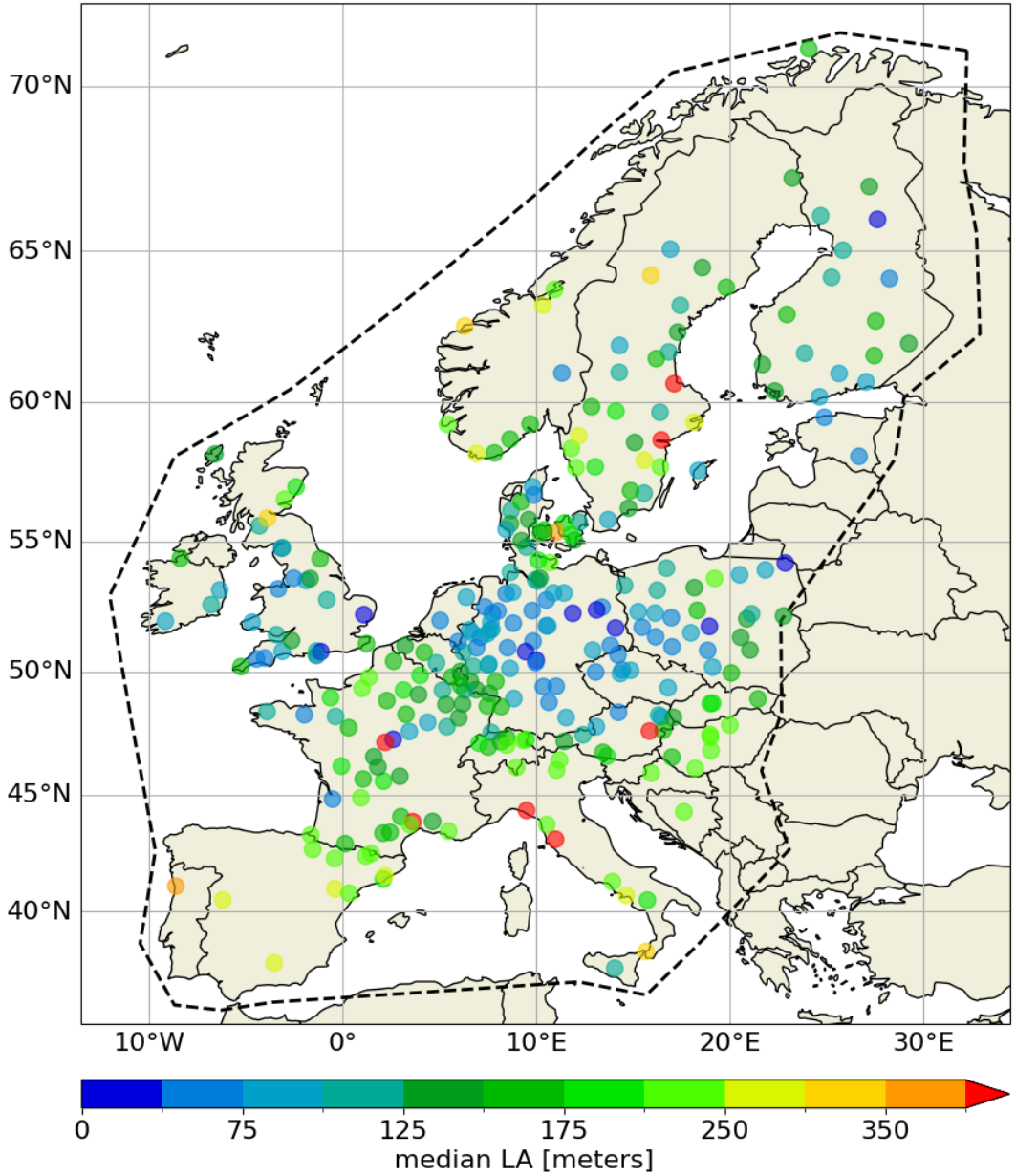

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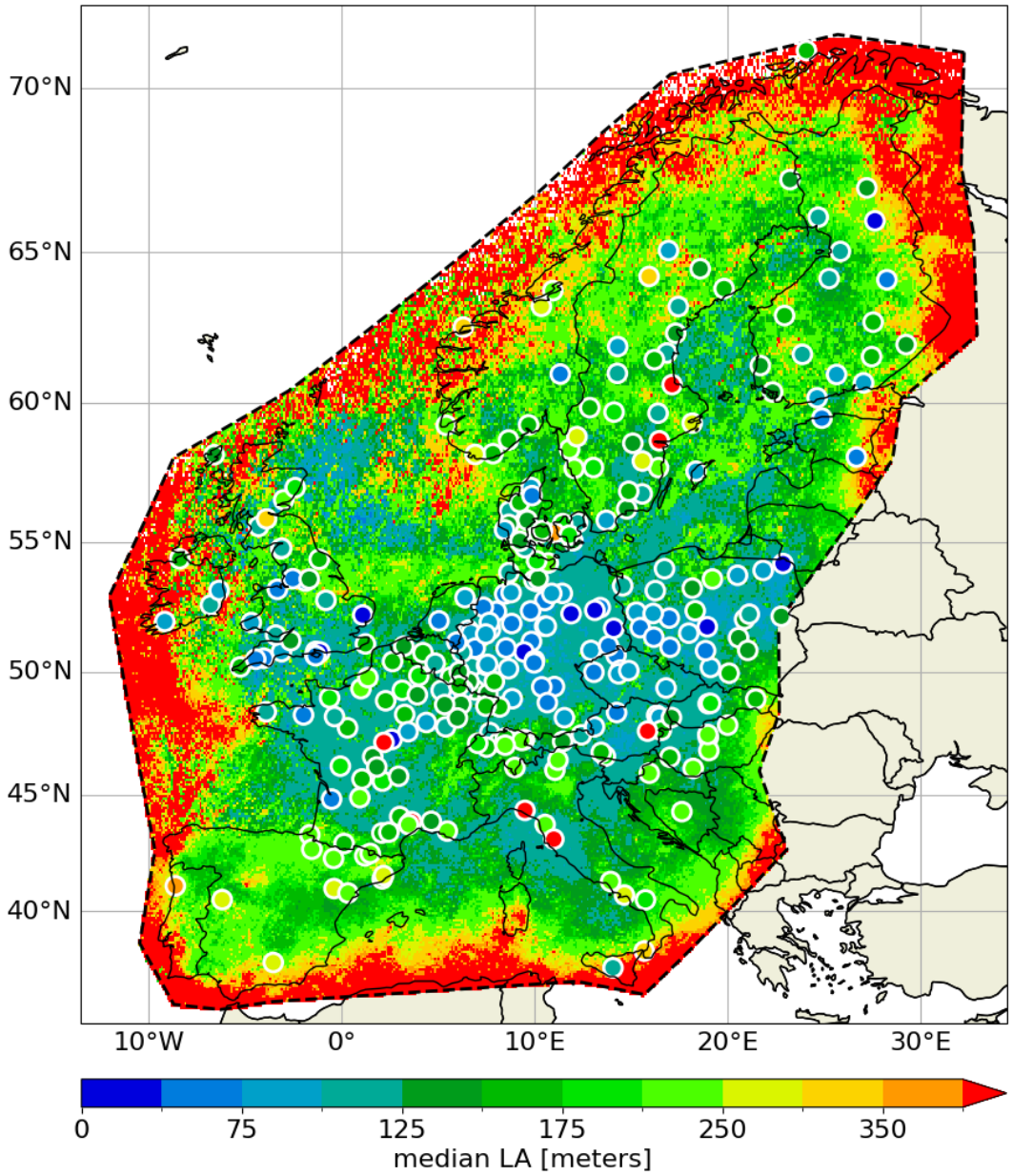

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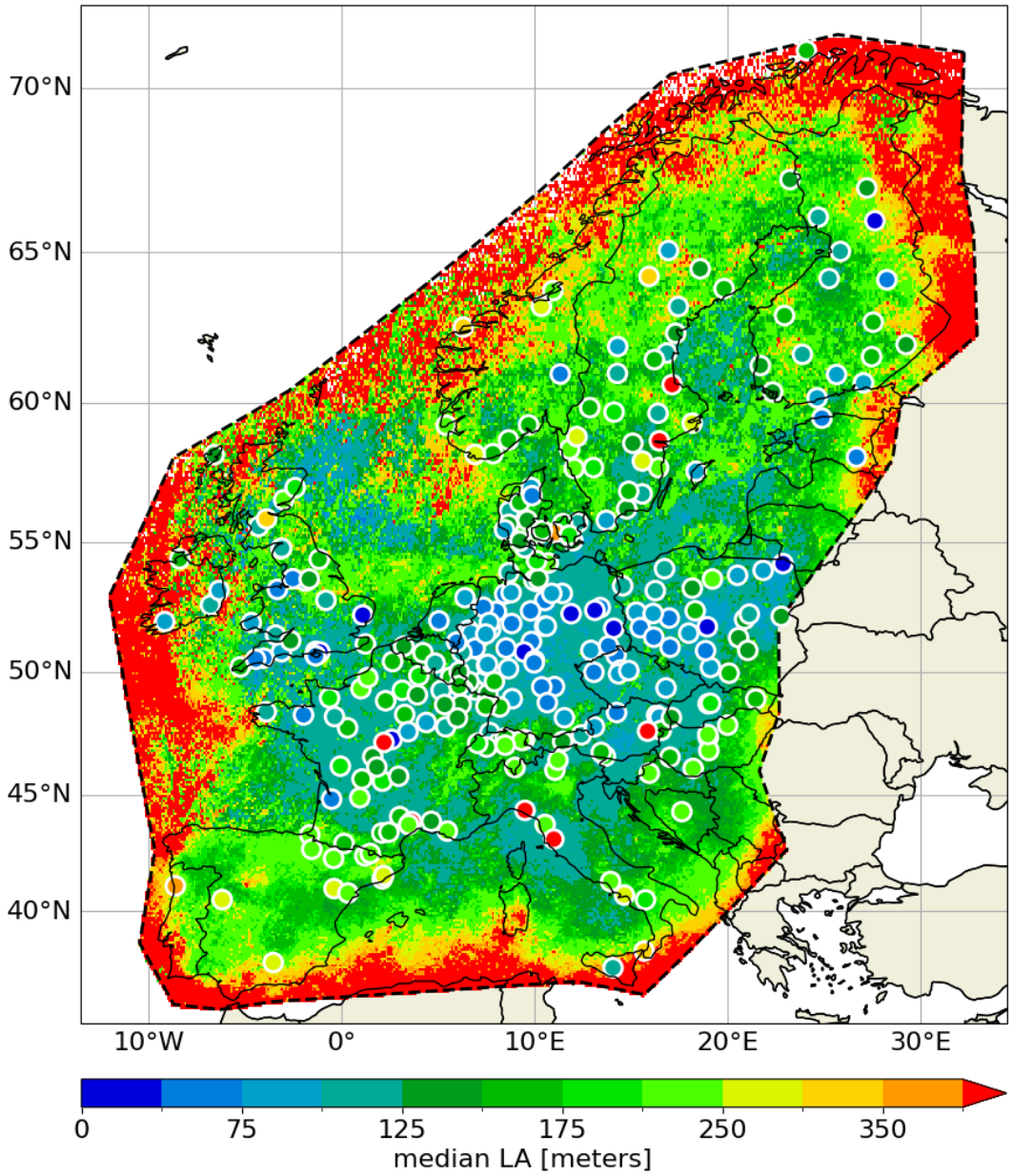

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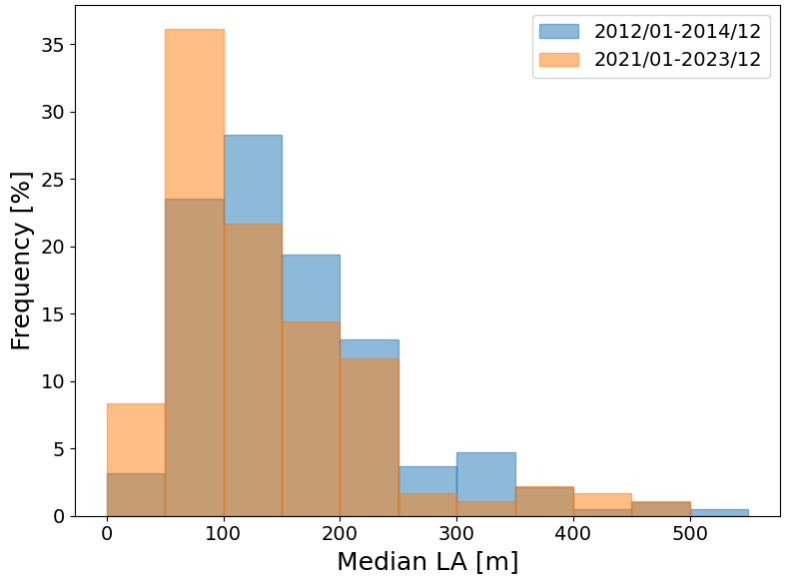

	2012/01-2014/12	2021/01-2023/12
Mean LA [m]	160	136
Median LA [m]	141	109

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Moving median LA

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● = within]500m,2km]

● $[t_i, t_j]$ = 150

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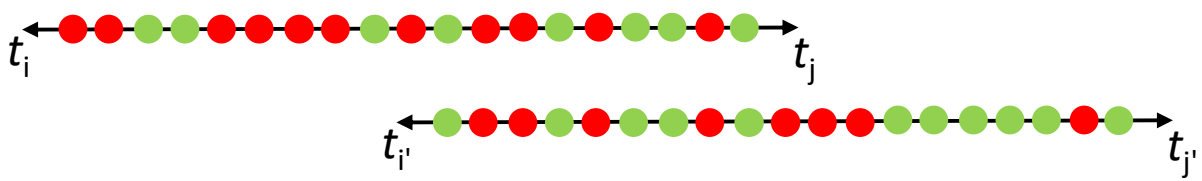

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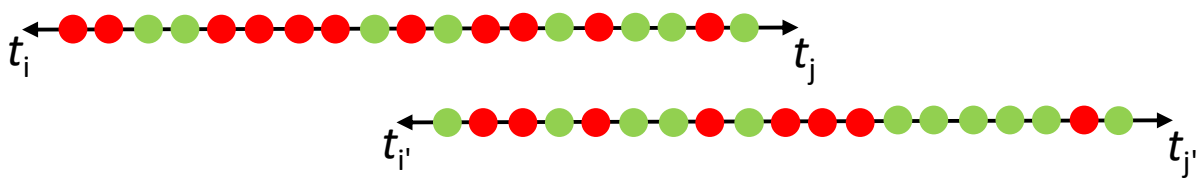

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