NH₃: important pollutant
• Key precursor to fine particulate matter (PMᵢ,j) [1]
• Unregulated in the U.S.
• Major source: agriculture (>80%)
  Livestock waste, fertilizers etc.
  [2]

Spatial gradients
• e.g., gradient in the central U.S.

Hotspots
• San Joaquinn Valley
  • Central and Southern High Plains Aquifer
  • Platte River Valley
  • Northwest Iowa Plains

Overall seasonality:
• Low in winter, peak in spring/summer

High variability of seasonality
Possible reason: different agricultural land use
• San Joaquin Valley
  (vegetation, dairy and cattle): July
  • Northern Texas (beef cattle): June
  • Eastern South Dakota (croplands): May
  • Southeastern Kansas (croplands and cattle): May & August

AMoN site: NC 35, NC (cropland ~ 60%, woodland ~ 25%, pasture land ~ 7%)
(35.0 °N, 78.3 °W)

Peak in spring & summer
• Similar trend with AMoN ground measurements

AMoN site: IL 11, IL (cropland ~ 95%)
(40.0528 °N, 88.3719 °W)

Peak in spring: fertilizer application
• IL most active corn harvesting date: Sep. 23
  – Nov. 5
• Crop burning: peaks in the afternoon

Overall seasonality:
• IASI: may not be able to catch a significant portion of NH₃

Weld County, CO (pastureland > 50%, cropland ~ 40%)
(40.5 °N, 104.5 °W)

Cattle and calves: rank 3rd in the U.S.; sheep, goats, wool, mohair, and milk: 1st in the U.S.
• Hot spots co-located with feedlots [13]
• Peak in summer: NH₃ emission from feedlots (livestock etc.)
• Correlated well with temperature seasonality

Conclusions & Future Work
• IASI is capable of providing high-resolution NH₃ map
• IASI NH₃ seasonality: agrees with AMoN. Influenced by different agricultural land use
• Further study: partitioning between NH₃ and NH₄⁺, what drives the seasonality; build top-down NH₃ emission inventory

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