Assessing impact of climate-driven increase in wildfire emissions on air quality and health of urban and indigenous populations in Alaska

PI

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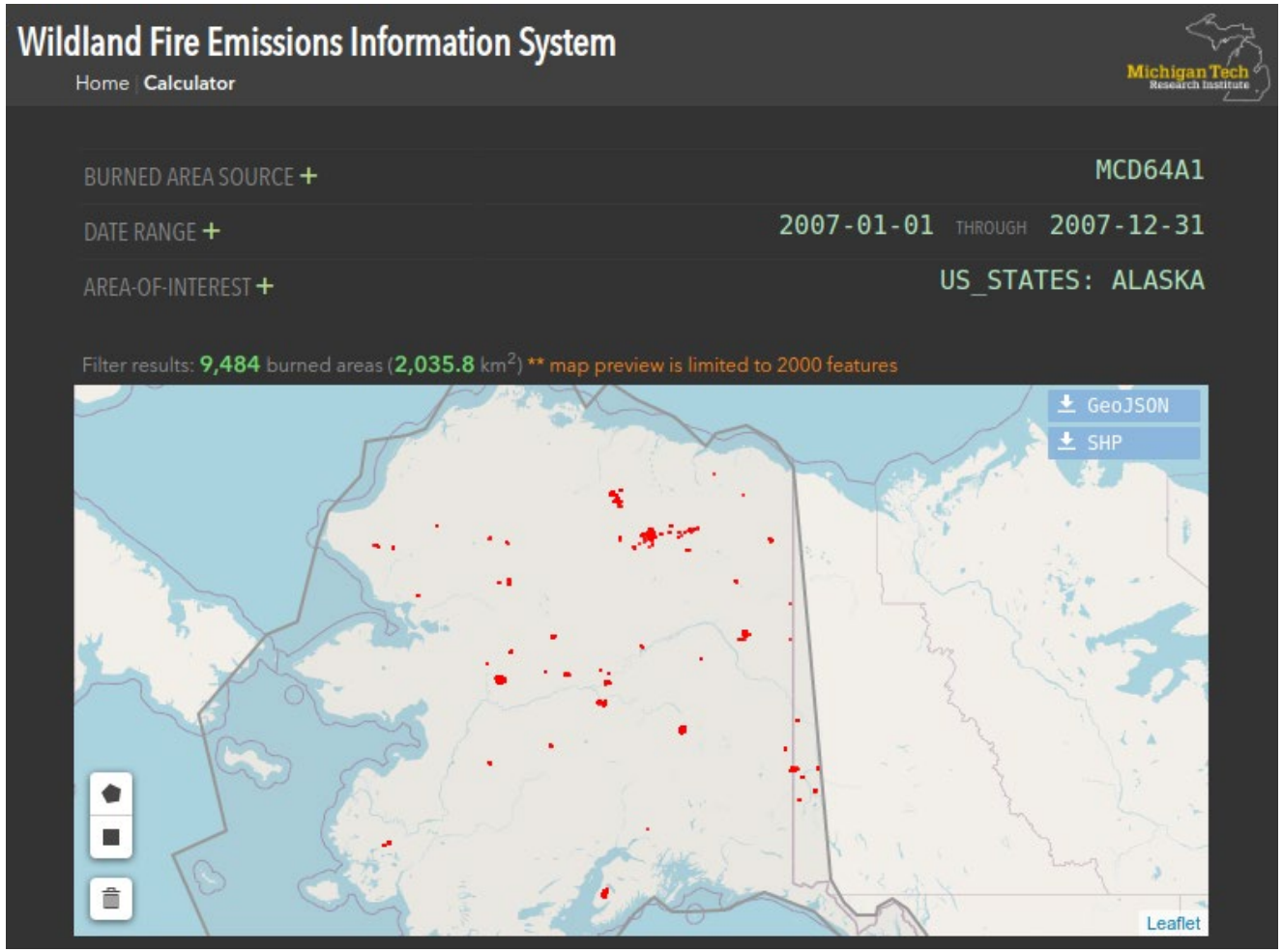
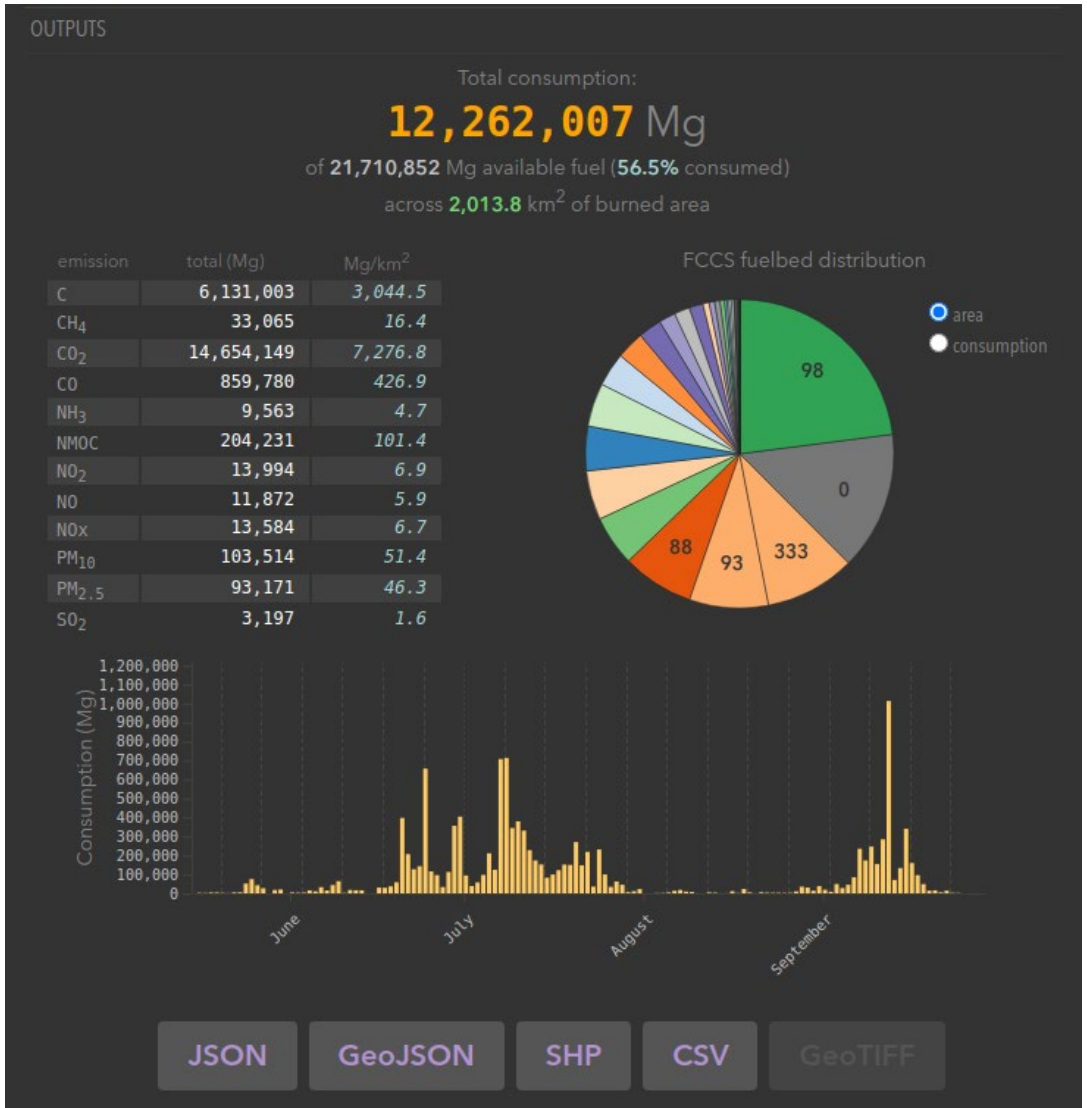
Science updates: WFEIS boost (MichTech)

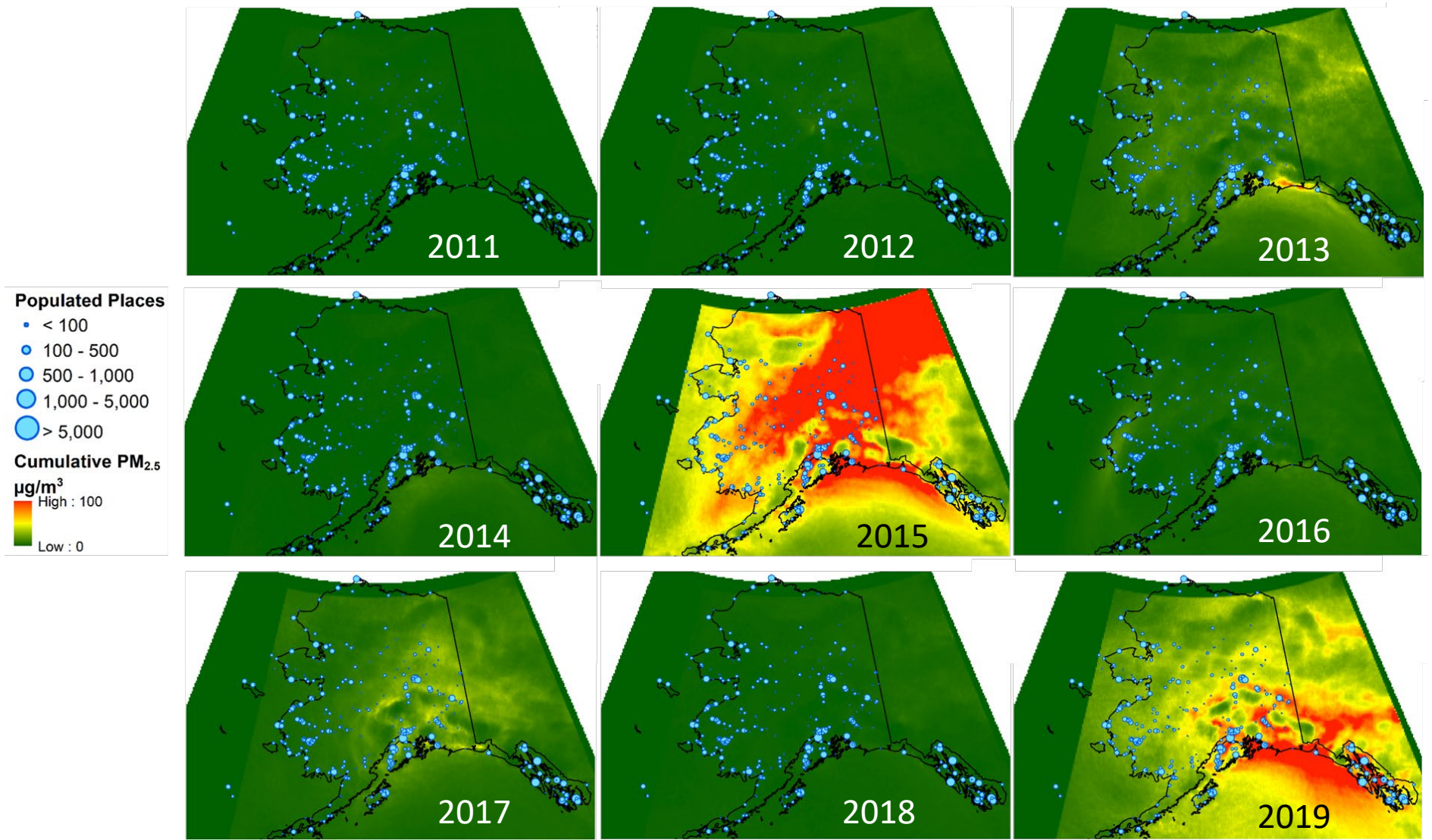




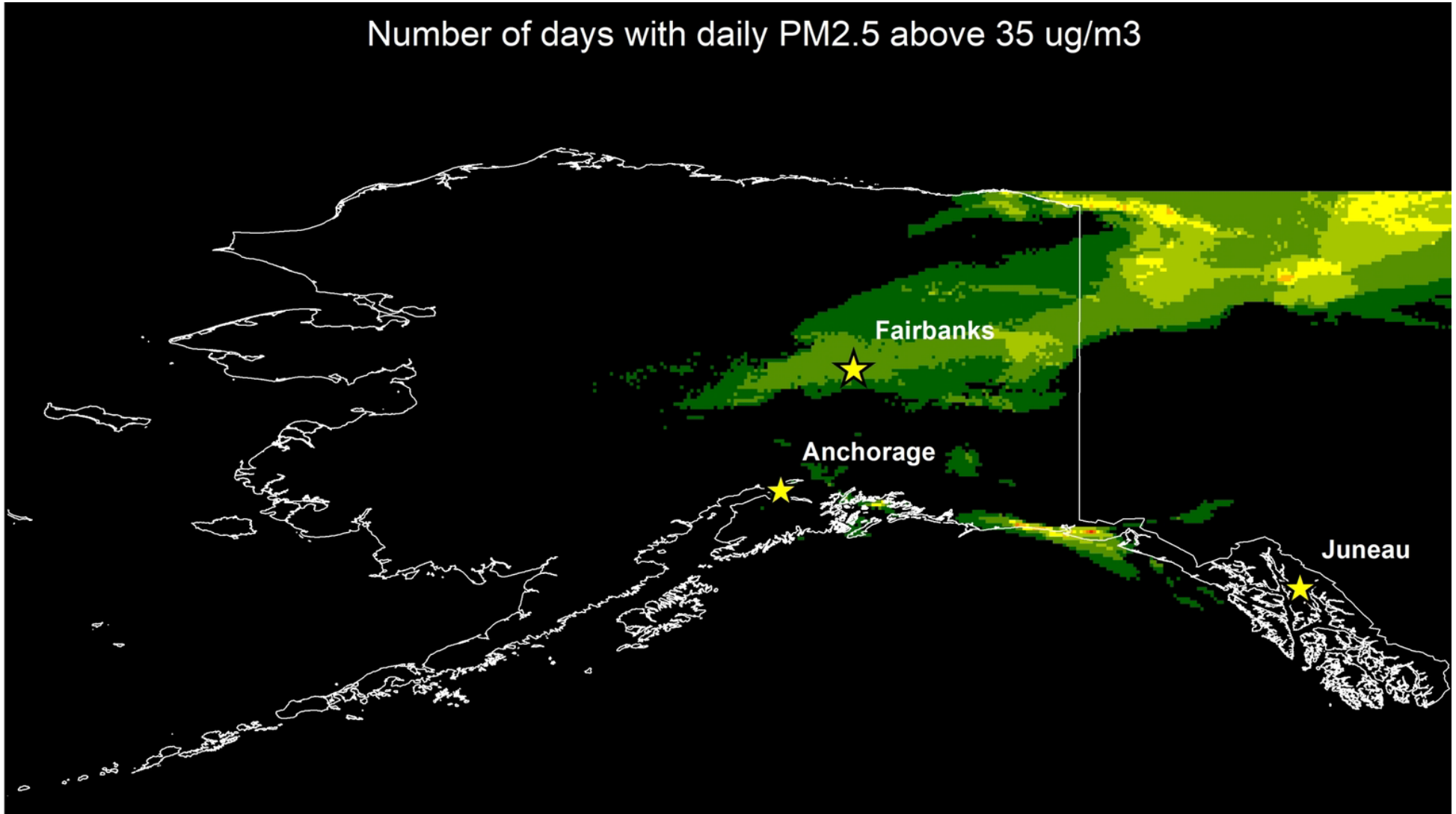
Science updates: Geeking out with HYSPLIT

- Simulation period: May-September in every year between 2011 and 2019
- Total model count: 28,940
  - i.e. 28,940 individual emission sources were included and their emissions were simulated between May and September
- A total of 135 cores on the HPC were simultaneously used.
- The total run time: 3 days

Science updates: 2011-2019 PM2.5 concentrations



Science updates: 2011-2019 unhealthy days



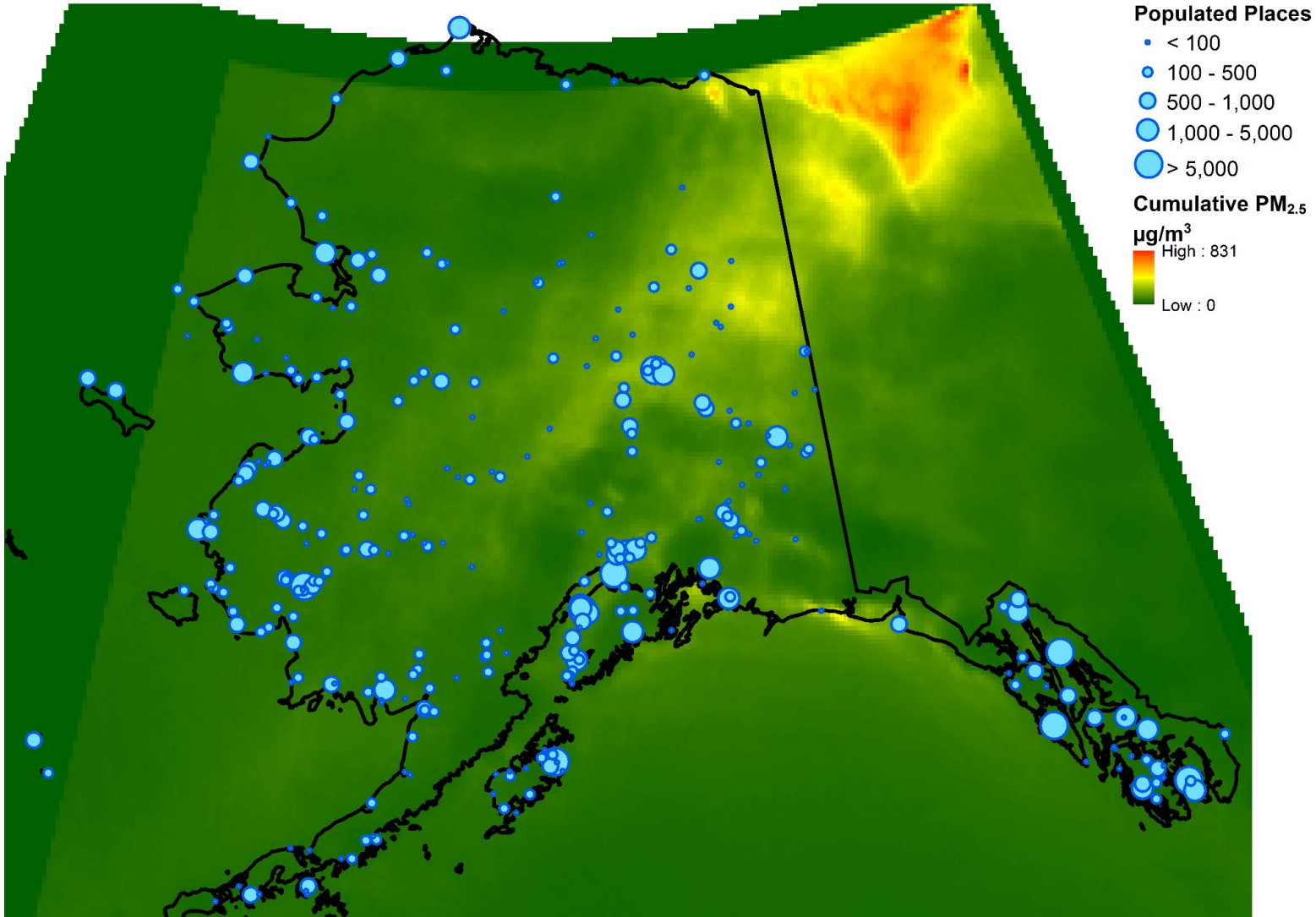
Number of days

High : 7

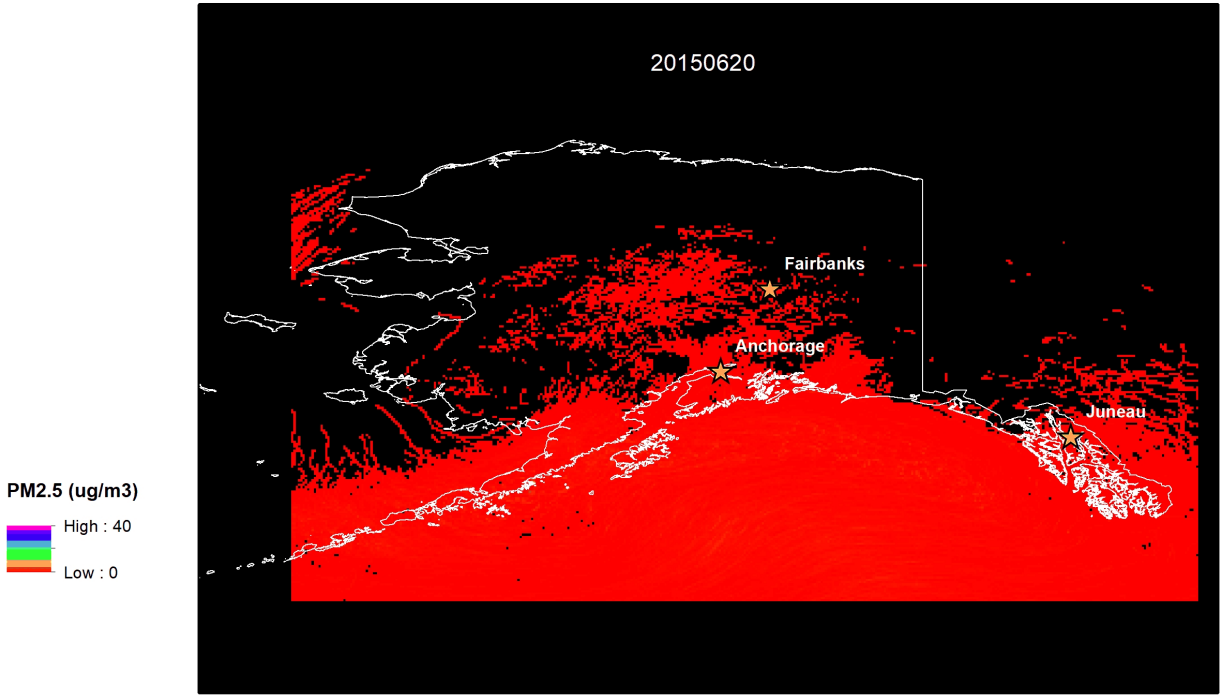
Low : 1

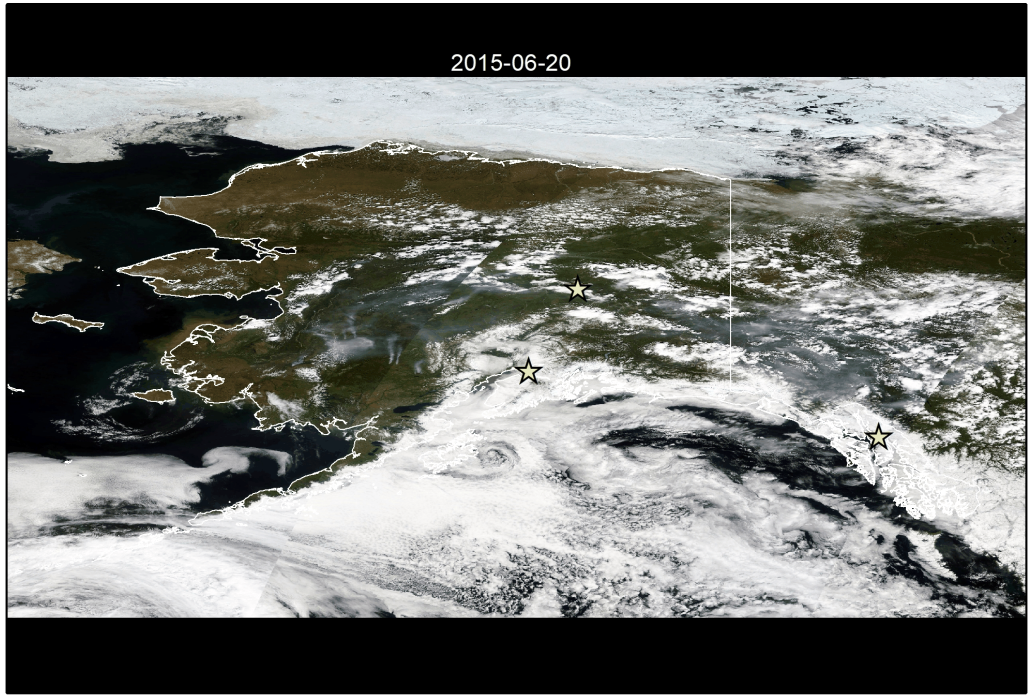
Science updates: zoom to 2015 PM2.5 concentrations

Total cumulative $PM_{2.5}$ loading between May 1 and September 30, 2015



Science updates: zoom to 2015 PM2.5 concentrations





Engagement with stakeholders

- Alaska CDC:
  - Preparing our first PM2.5 concentrations estimates for transfer to Alaska CDC for epidemiological modeling
  - Preparing analytical code to be run at the CDC facility

Future Directions

- Fuels map improvements (Mich Tech):
  - NAWFD 30m stochastic for estimating uncertainty w/r/t fuel loading
  - Annual dynamic adjustments based on previous fire consumption
- Big focus on modeling assessment and intercomparions (UMD)
  - Bringing in citizen science through Purple Air observations (poster)
  - Alternative modeling approach from stations/AOD+ for intercomparison
- Building epidemiological models for estimating health outcomes (UMD)
  - Alaska CDC
  - Alaska Department of Public Health