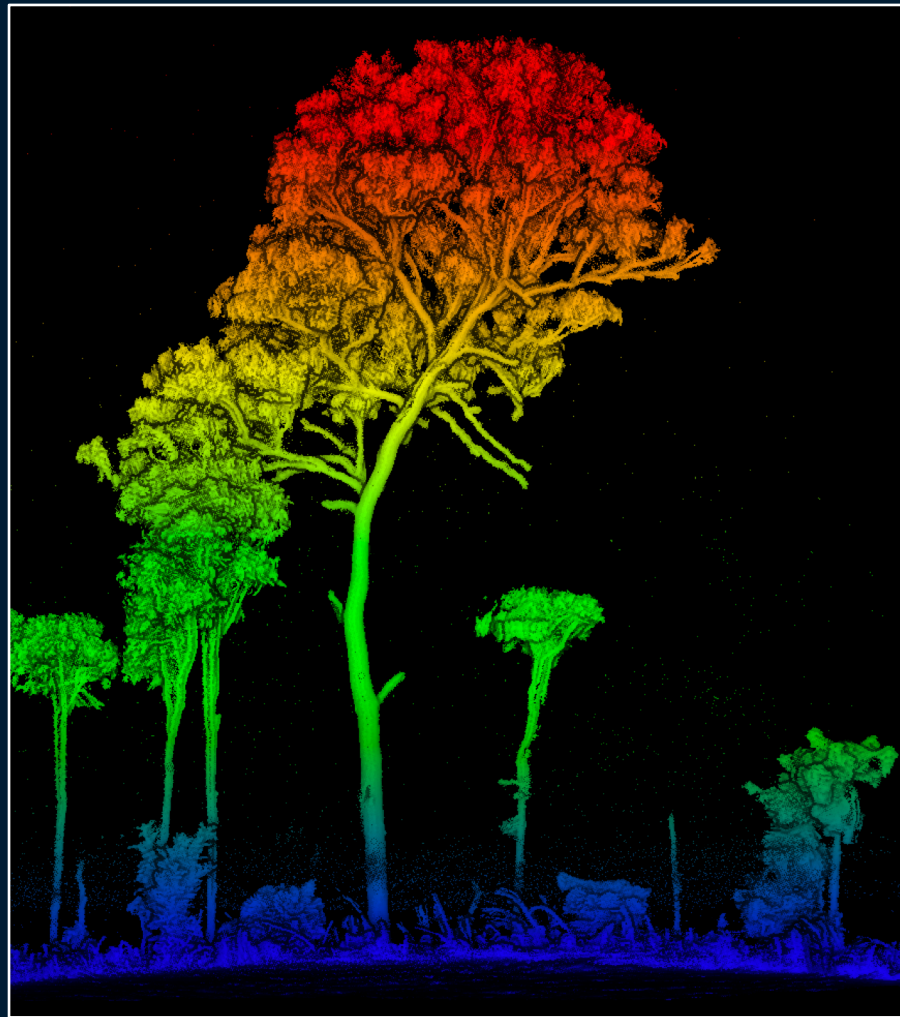




Litchfield Super Site: Tropical savanna structure and dynamics

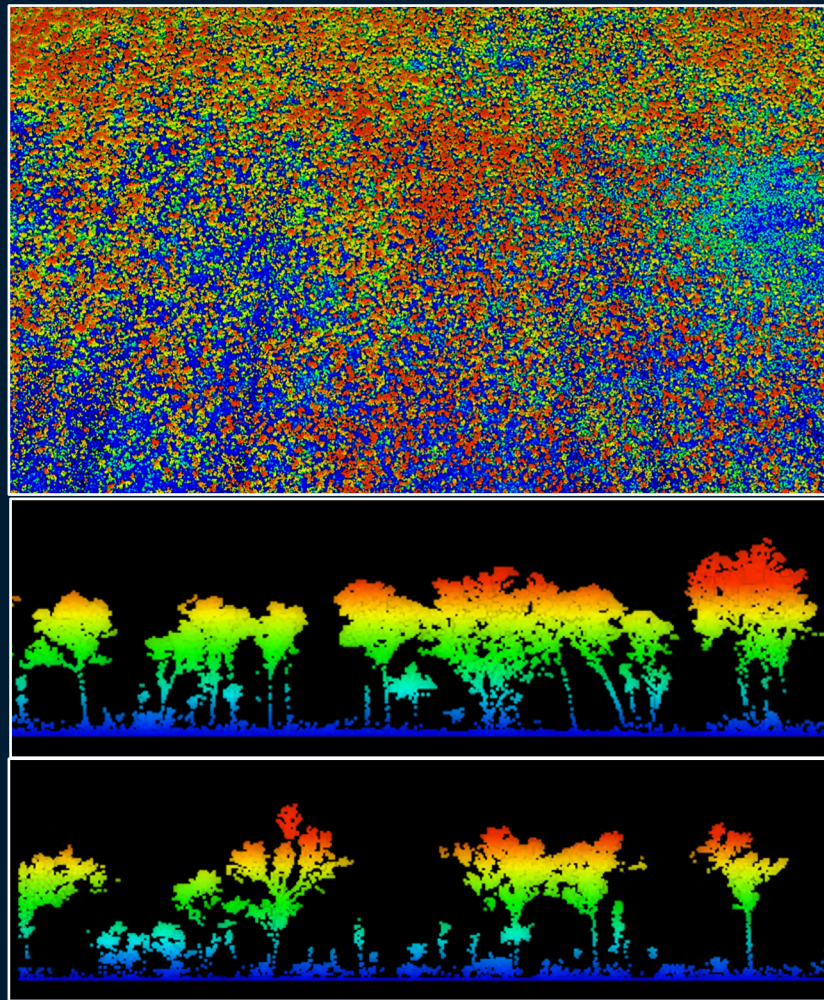
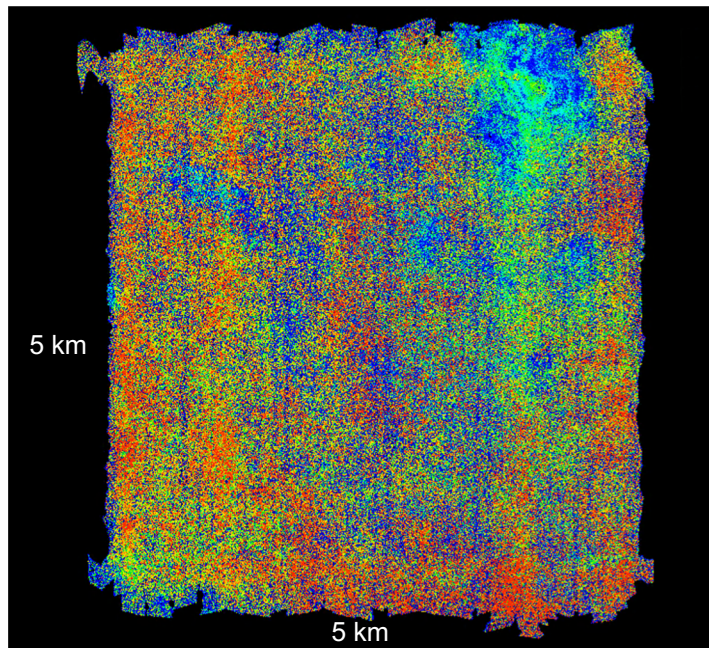


Above ground woody biomass

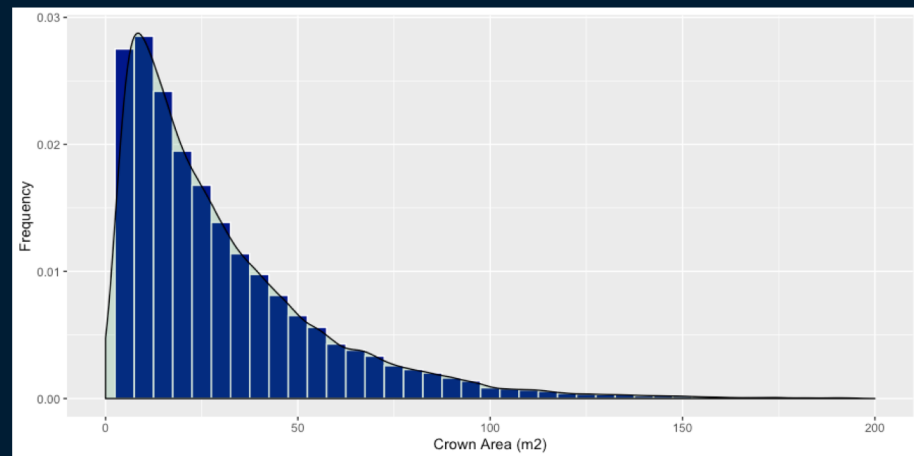
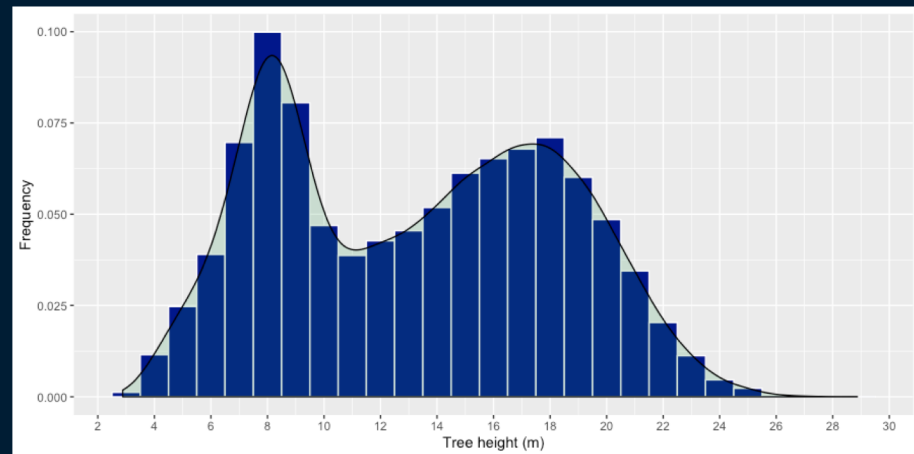
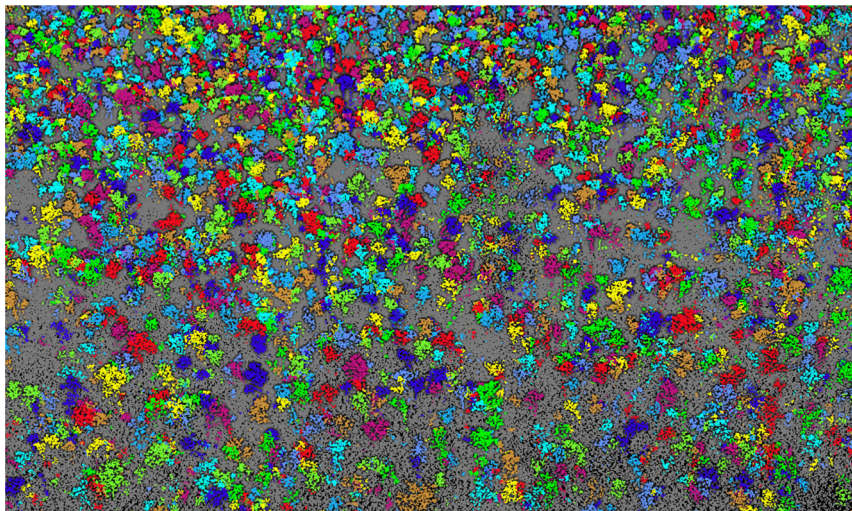
- Field measurements
 - 2 x 1 ha inventory plots
- Hierarchical remote sensing
 - LiDAR: TLS < MLS < ULS < ALS
 - RADAR: C-, S- and L-band
- Spatial and temporal variability
- Uncertainty propagation



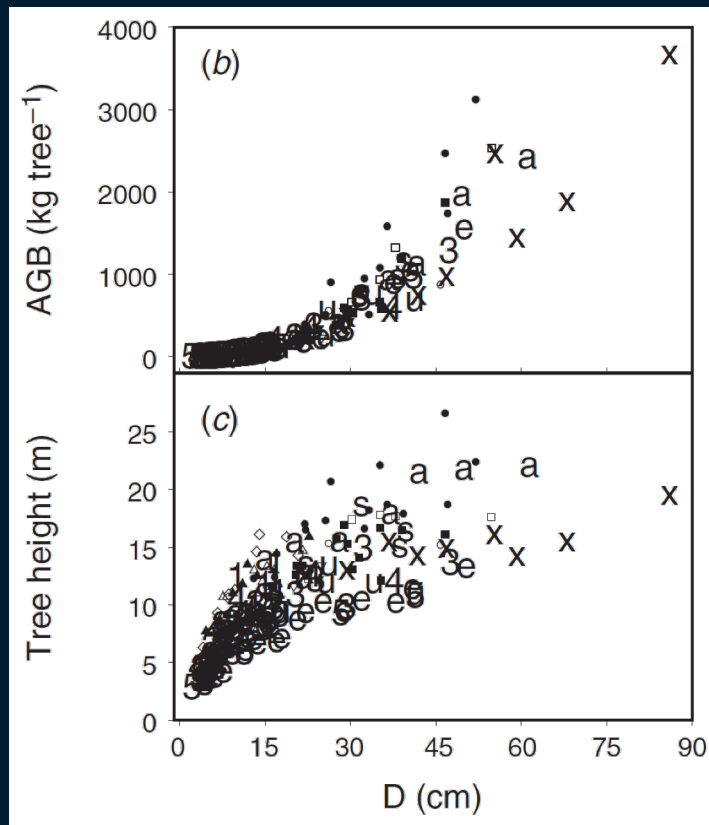
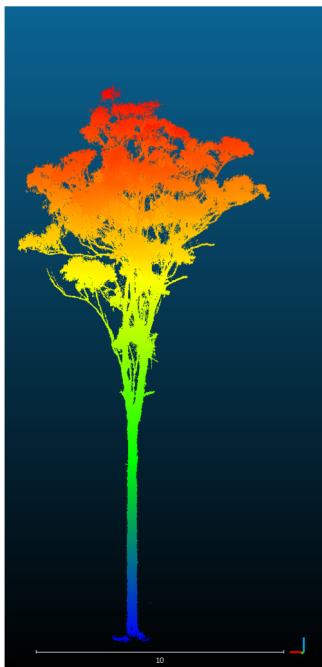
ALS - 2013



ALS - 2013



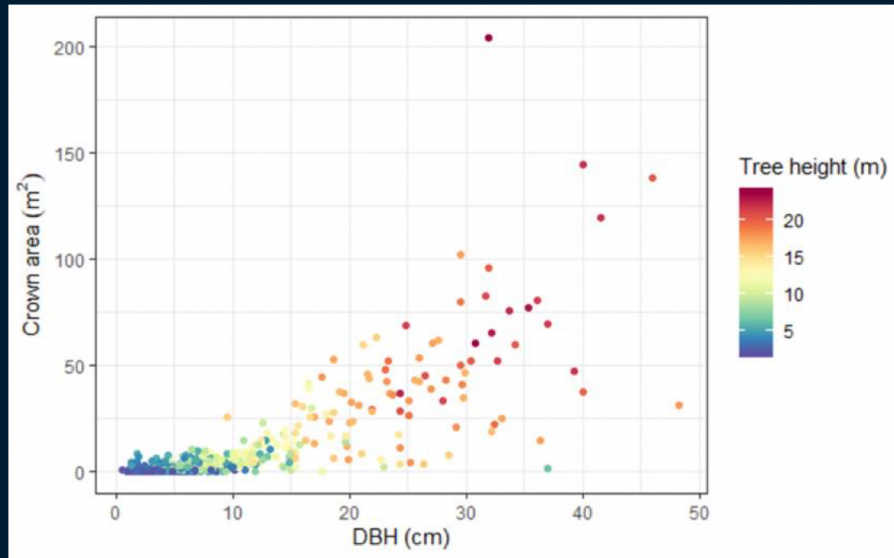
TLS



How much structural variation is there for a given DBH?

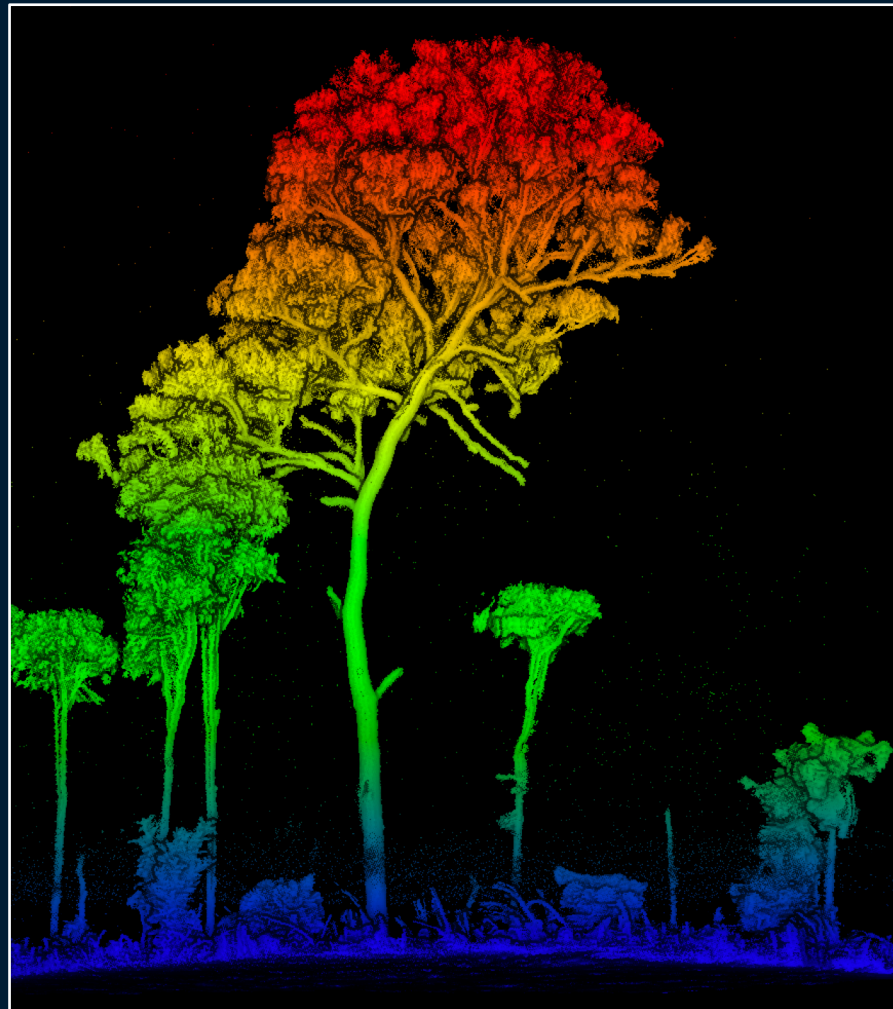


TLS tree crown allometry

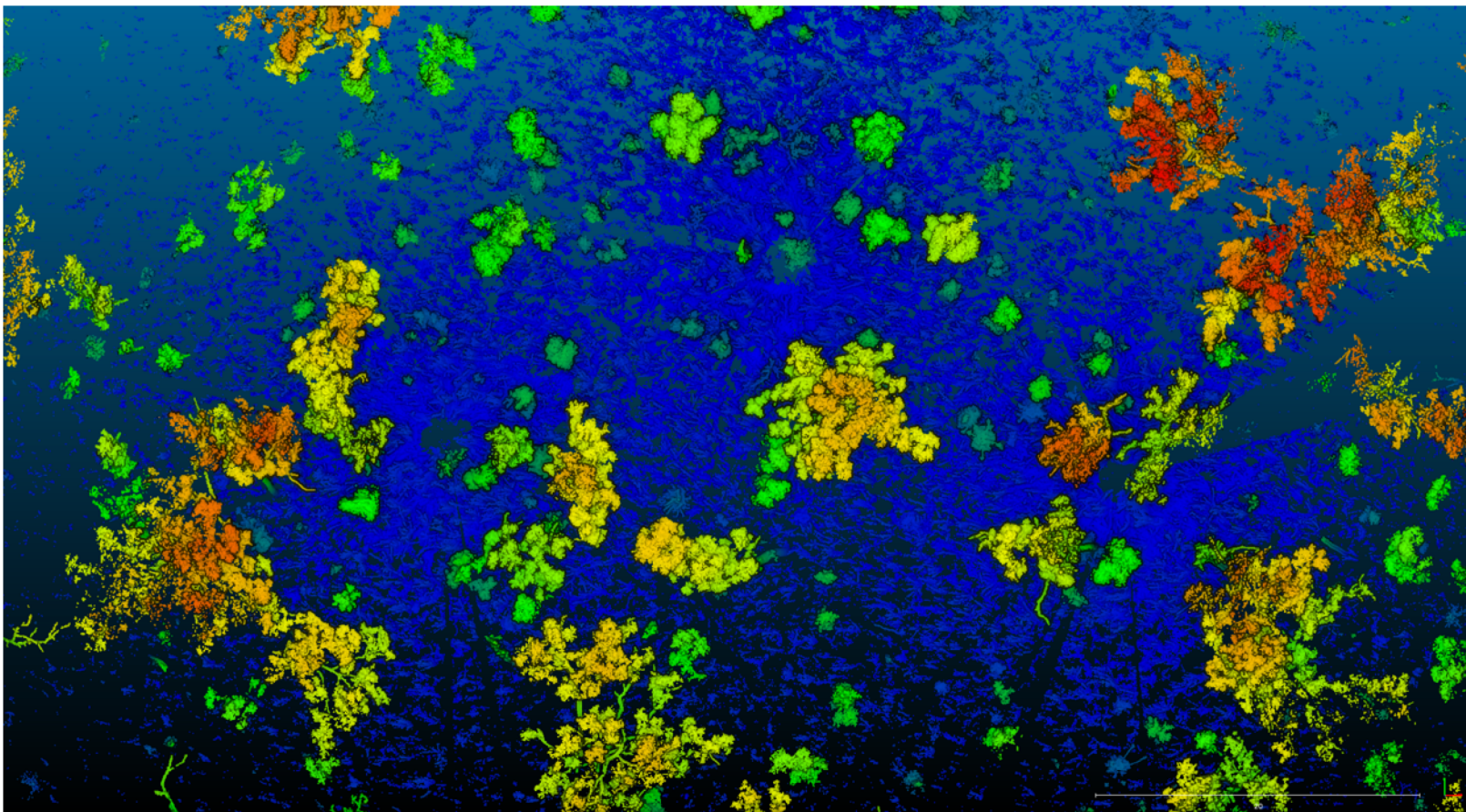


TLS

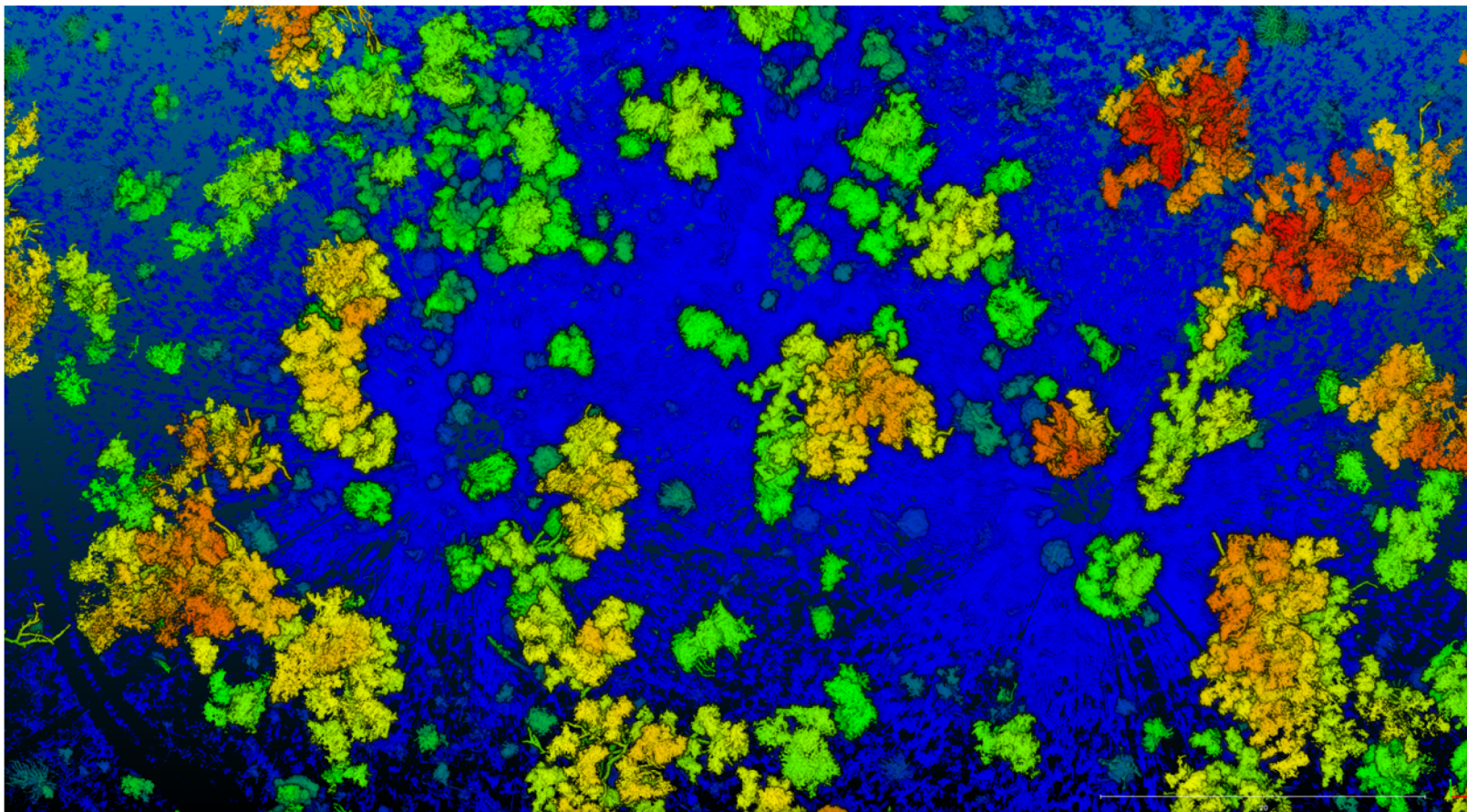
- Star transects
 - 2013, 2018
- 1 ha Plot 1 (tower)
 - 2015, 2017, 2018 (2), 2019
- 1 ha Plot 2 (SE tower)
 - 2019 (4)
- 40 ha track
 - 2016, 2019



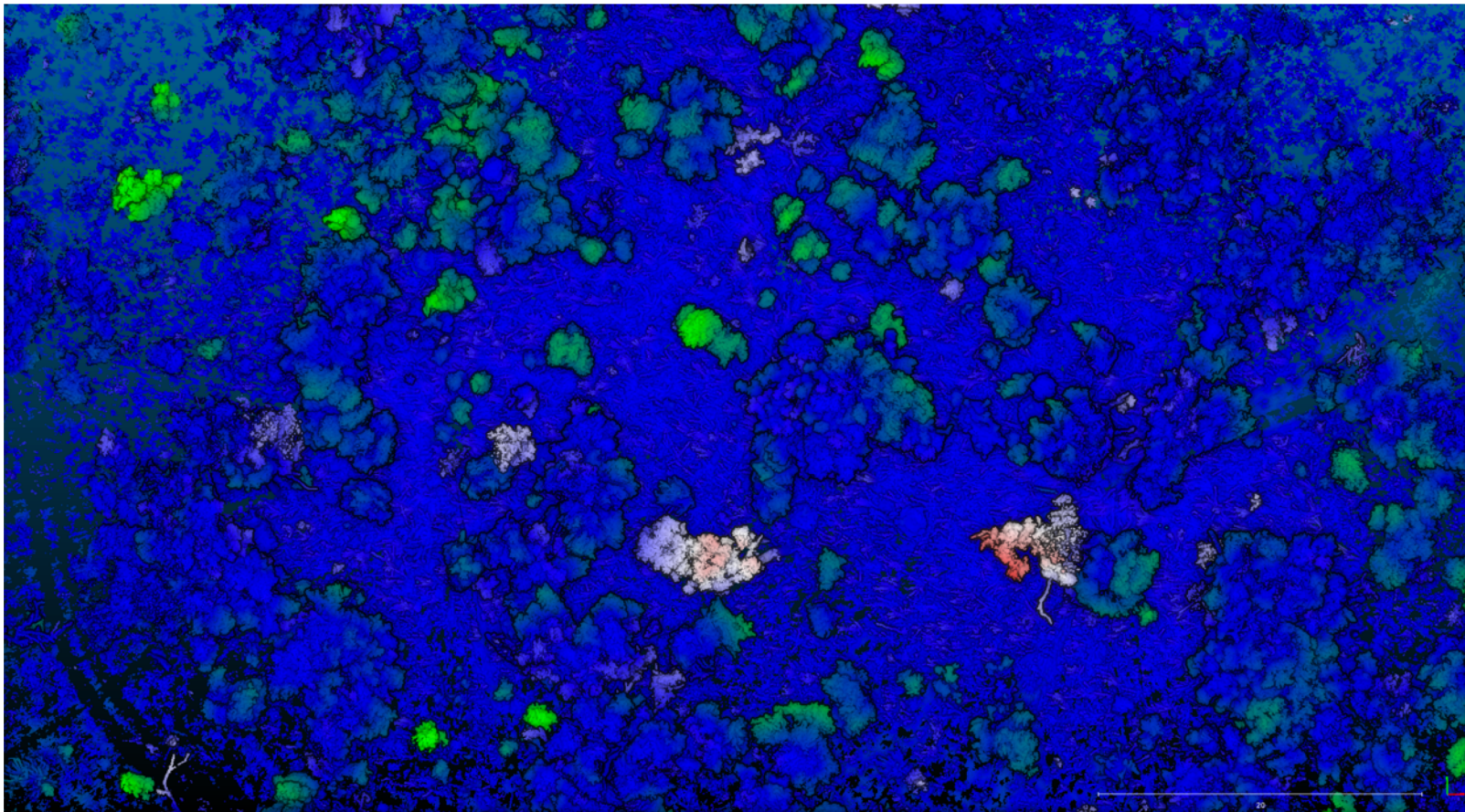
2013



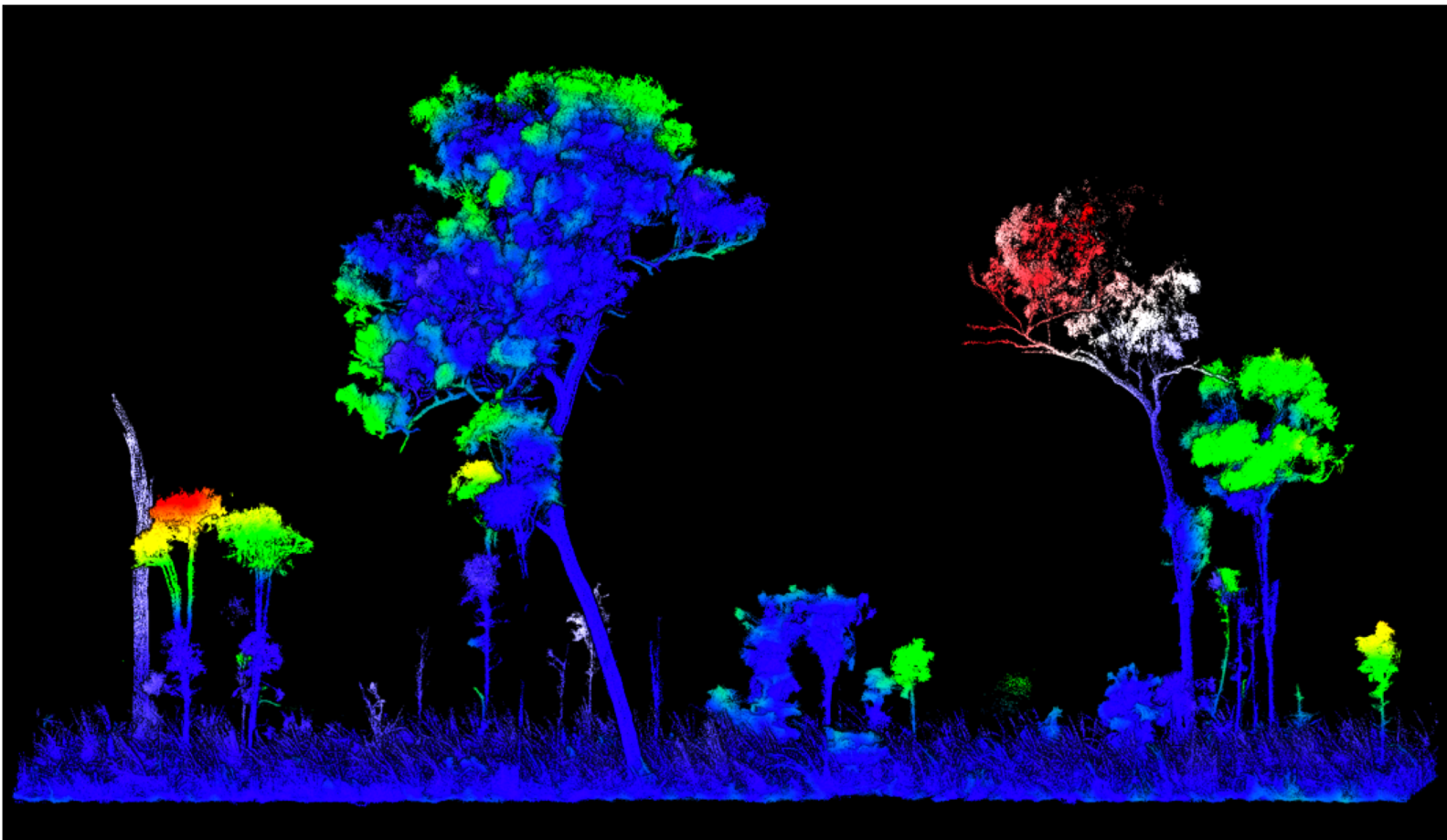
2018



2018

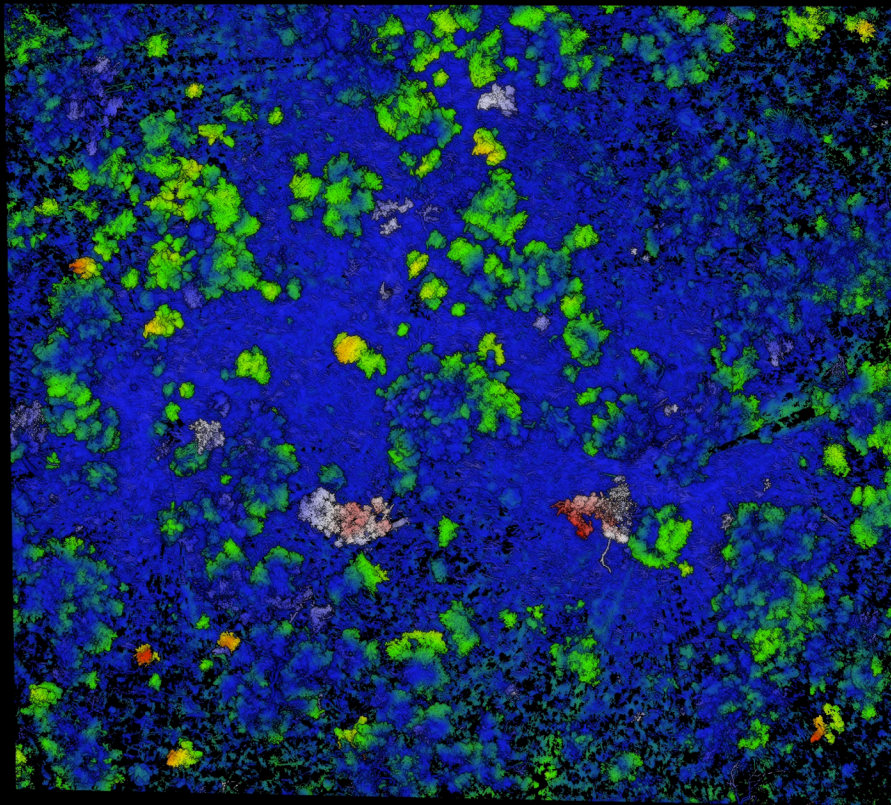


2018

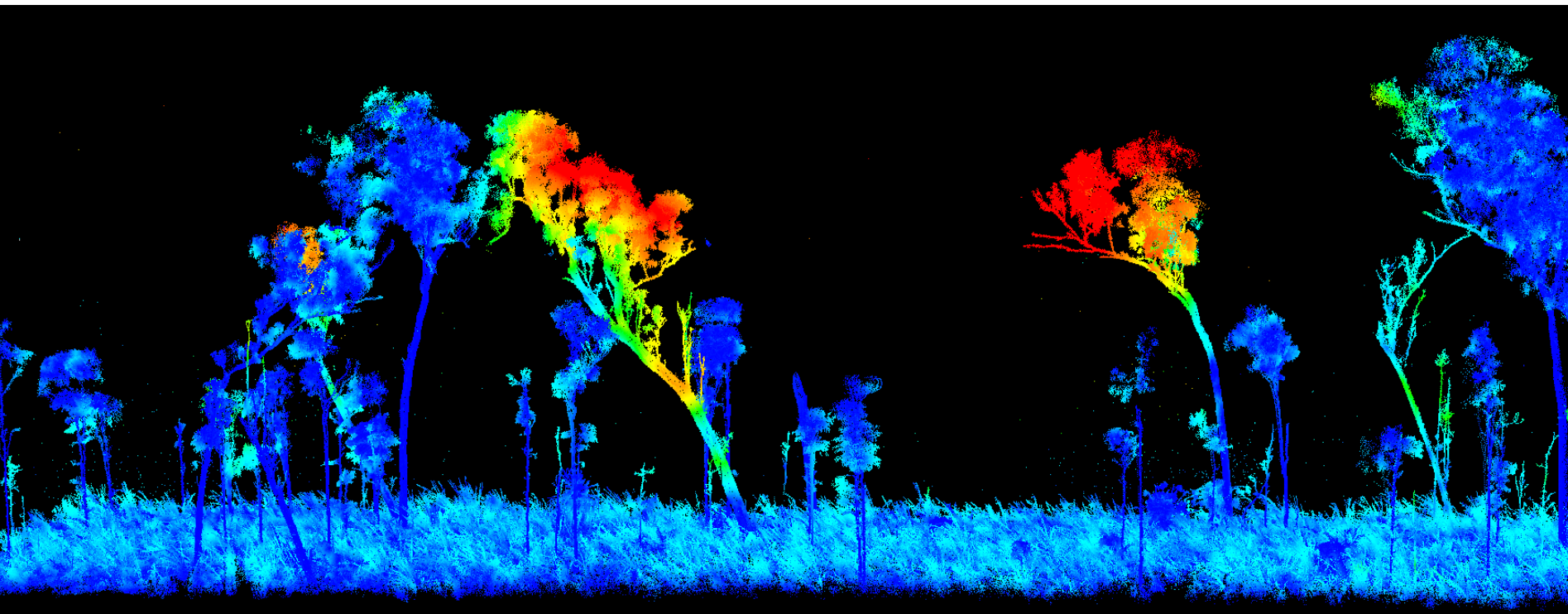




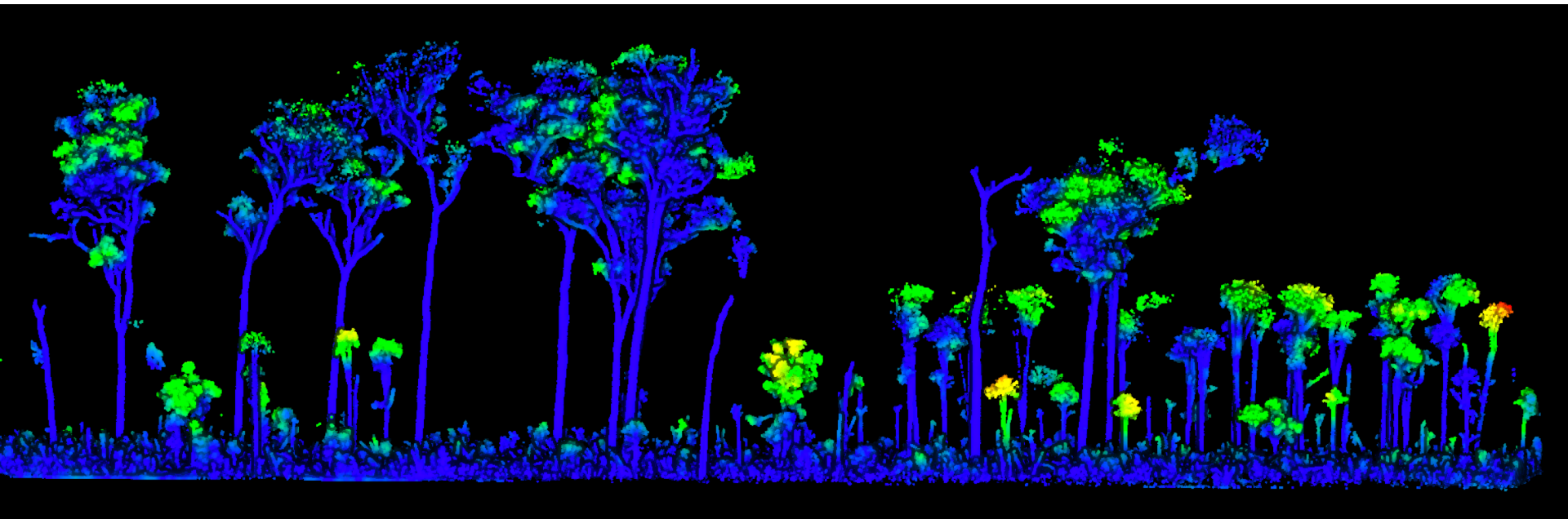
Heterogenous patterns of growth and mortality



2018 – before/after fire



2016 – 2018



Opportunity to explore links to fluxes and integrate in demographic models



Aug 19





Sept 19



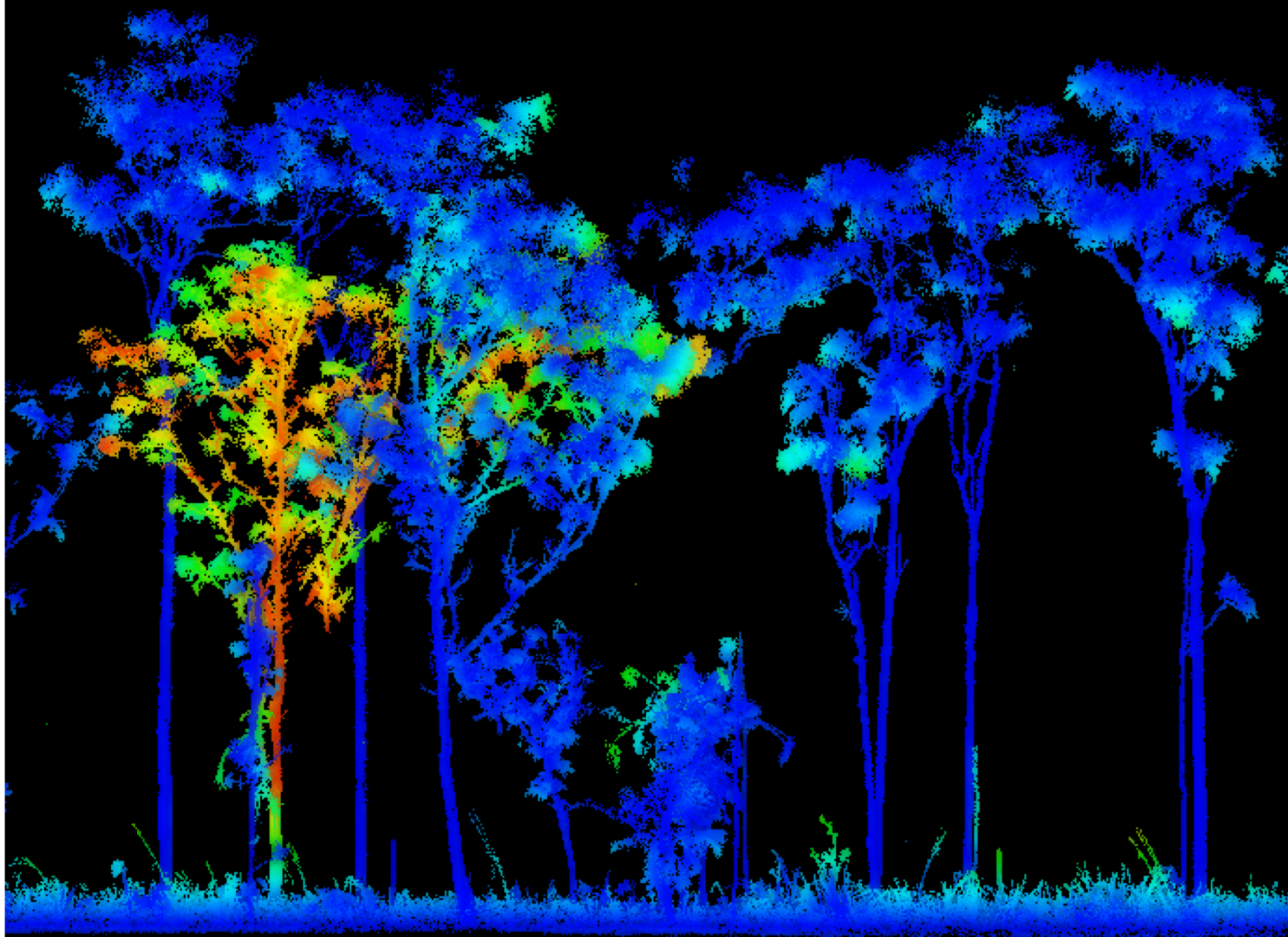


Nov 19



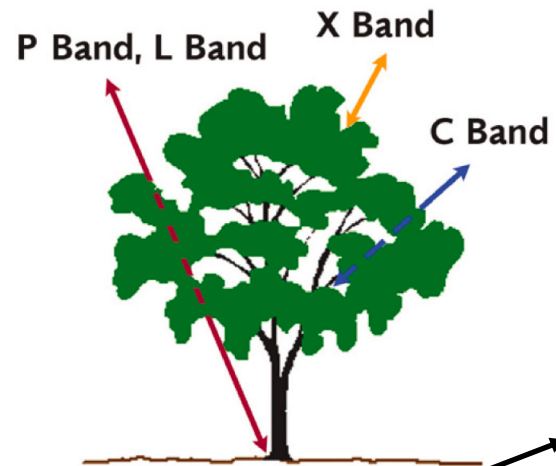
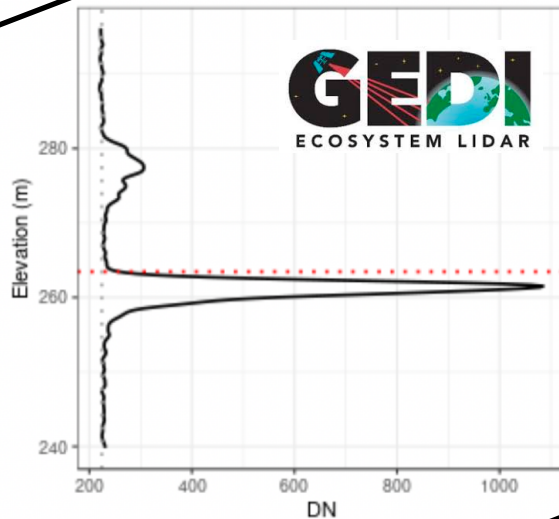
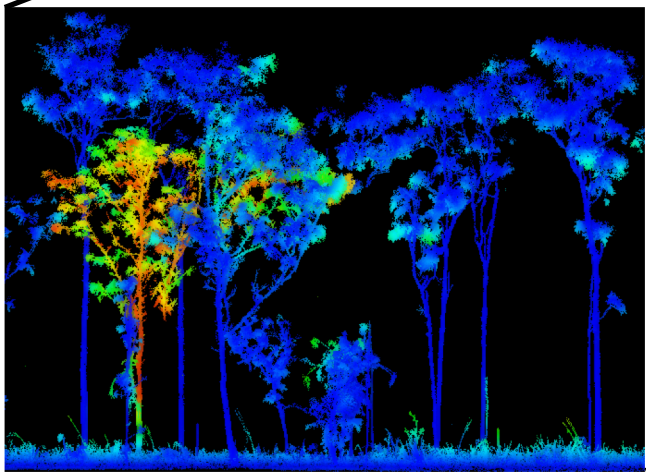


Aug-Sept





Structure and biomass calibration



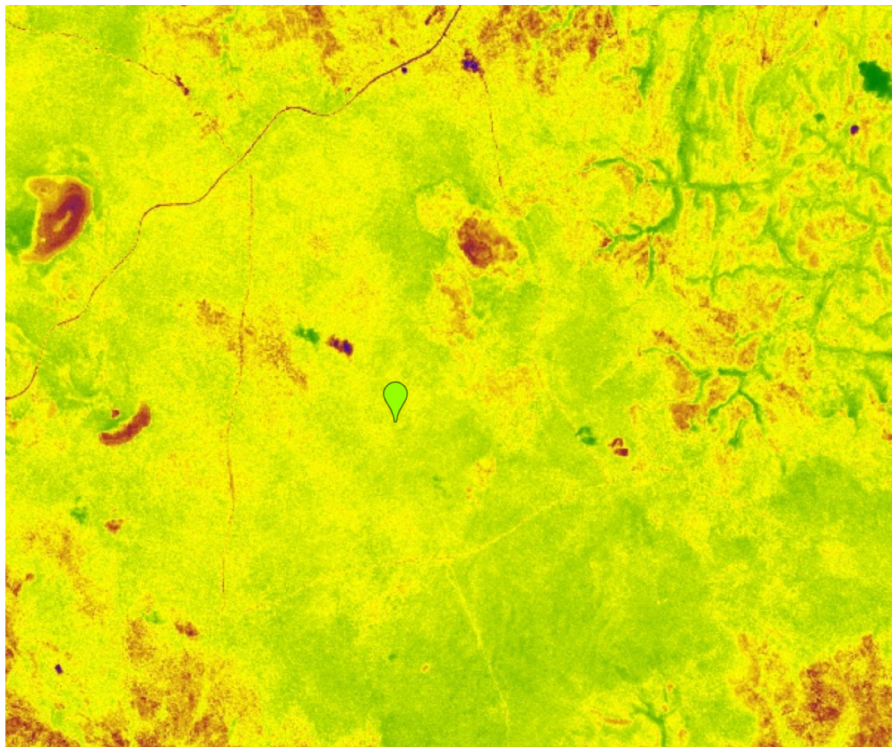
Disturbance/dynamics sensitivity analysis



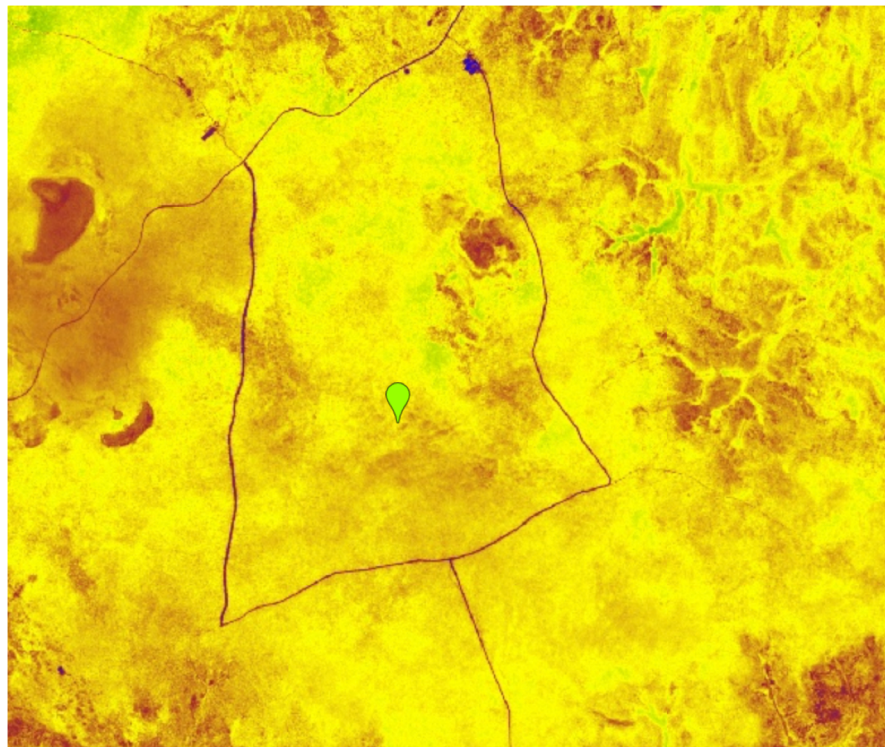
Future directions

- LiDAR-based biomass allometries
 - Establish repeat survey precision
 - Error propagation from tree to region
 - Spatial/temporal uncertainty partitioning
 - Biodiversity relationships
- Multitemporal TLS
 - LEAF
 - GEDI/ICESAT-2
 - Multi-wavelength SAR
 - C-, S-, L-, P-band
 - Increased use of MLS/ULS
 - Follow up ALS campaigns
- Sentinel-5P
 - PRISMA/DESI/HISUI

Feb 2019



Feb 2020 (cloudy)





Thank You

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