Lidar-infused LANDFIRE

Birgit Peterson

InuTeq, contractor to the U.S. Geological Survey (USGS) Earth Resources Observation and Science (EROS) Center
Sioux Falls, South Dakota 57198

Work performed under USGS contract G13PC00028

U.S. Department of the Interior
U.S. Geological Survey

Lidar-infused LANDFIRE

- Enhanced Wildland Fire Management Decision Support using Lidar-Infused LANDFIRE Data
- Project team:
  - Birgit Peterson (EROS) – Co-PI
  - Matt Jolly (Firelab) – Co-PI
  - Jason Stoker (EROS) – Co-I
  - Kurtis Nelson (EROS) – Co-I
  - Russ Parsons (Firelab) – Co-I
  - Carl Seielstad (U of Montana) – Co-I

Lidar-infused LANDFIRE

- Objectives:
  - Make lidar data more usable to resource managers for developing canopy fuel layers
  - Enhance LANDFIRE data with locally available, lidar-derived canopy fuels layers

Lidar-infused LANDFIRE

- Automated system for processing ALS and combining with Landsat, GLAS, and LANDFIRE data to produce updated canopy fuel layers in local areas for use in fire behavior modeling systems
- Creating Hybrid Structure from LANDFIRE/lidar Combinations tool
- Currently developed as desktop application

Lidar-infused LANDFIRE

ALS data processing and product generation

- Identify elements of canopy structure that can be inferred directly from lidar
- Select lidar metrics that correlate with CH, CC, and CBH
- Adapt algorithms vetted in current literature
- Test methods in different study areas

Lidar-infused LANDFIRE

Integration of GLAS

- Enables spatial extrapolation of canopy fuels metrics beyond area surveyed by ALS
- All processing development completed at EROS
- Expect far less user familiarity with GLAS

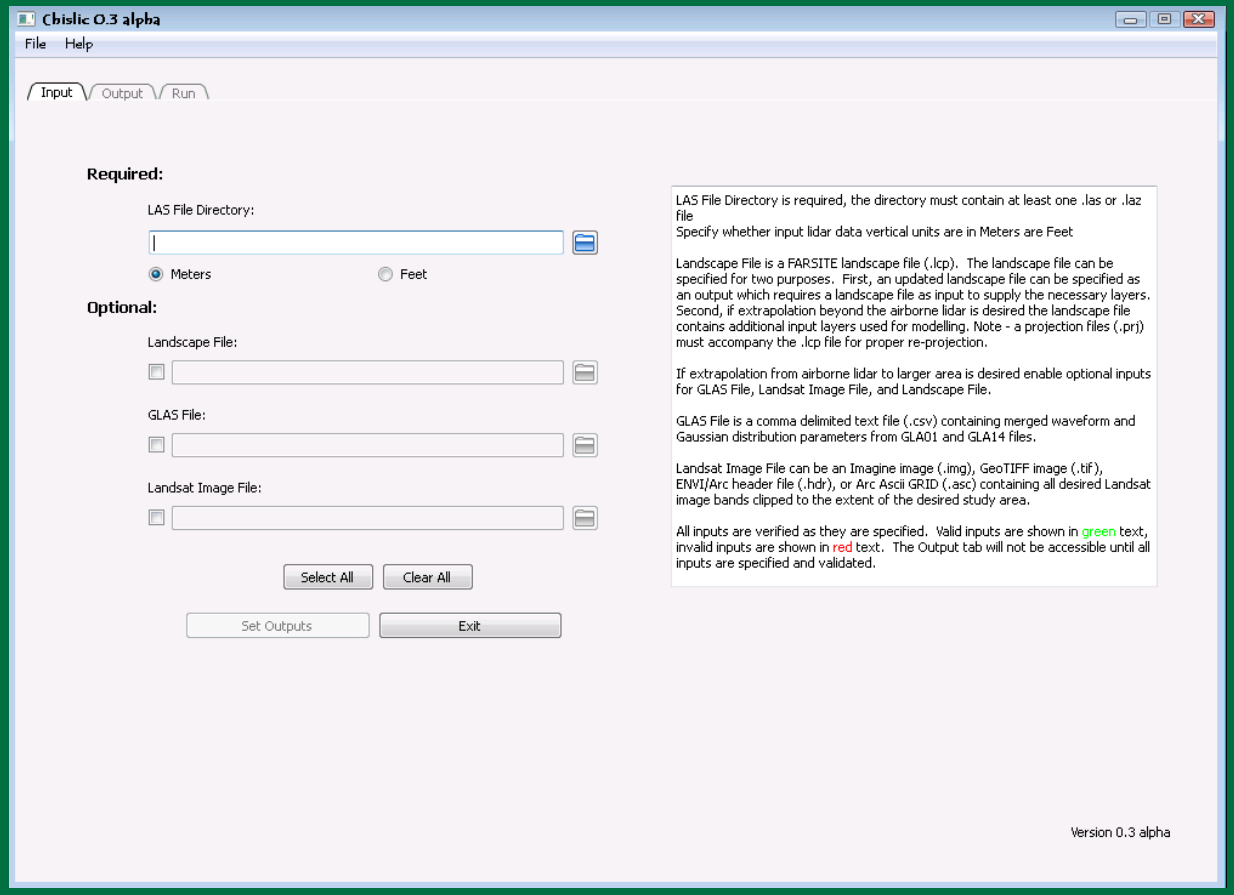
Lidar-infused LANDFIRE

CHISLIC testing

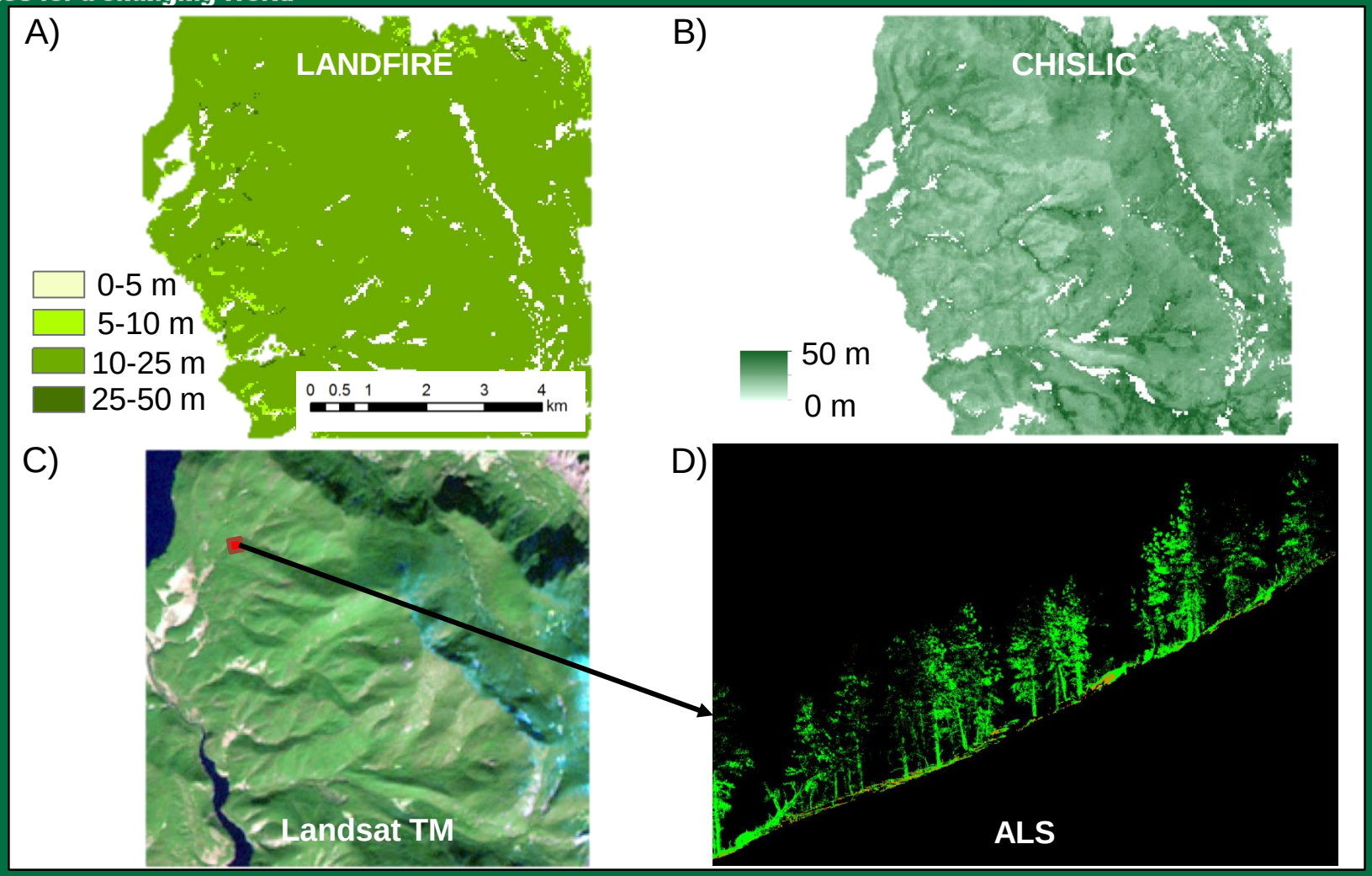
- External test group will provide feedback on tool design, usability, and applicability
- Sites tested include:
  - Grand County, CO
  - Garcia River, CA
  - Big Pine Key, FL
  - Coeur d'Alene Indian Reservation, ID
  - Tenderfoot Experimental Forest, MT
  - Yukon Flats Ecoregion , AK

Lidar-infused LANDFIRE

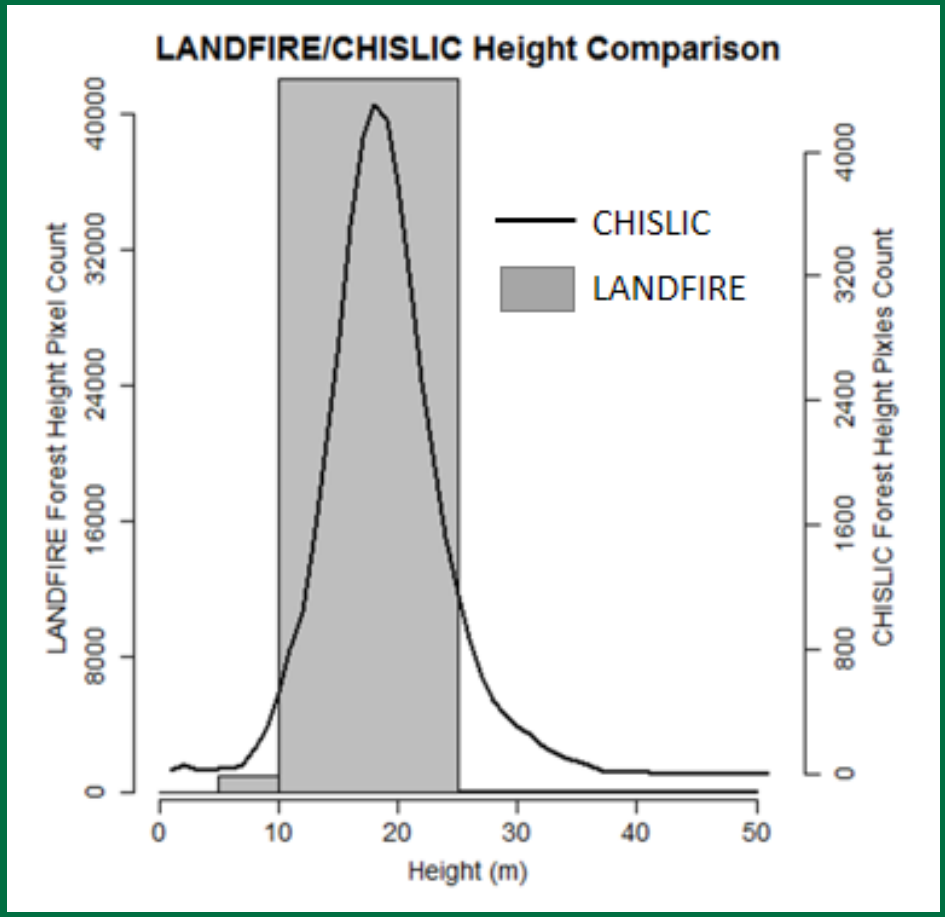
- CHISLIC interface



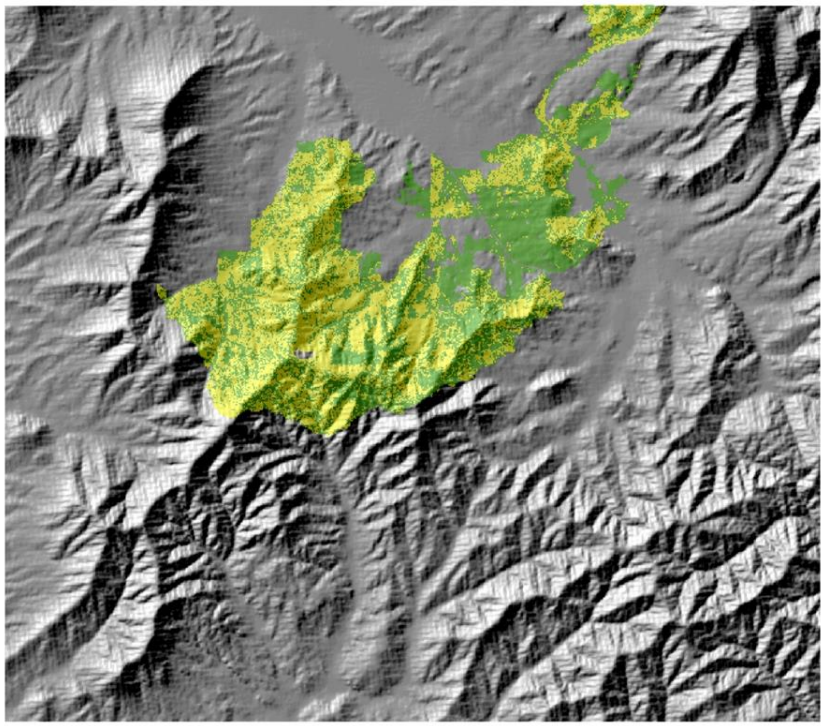
USGS
science for a changing world



Lidar-infused LANDFIRE tool

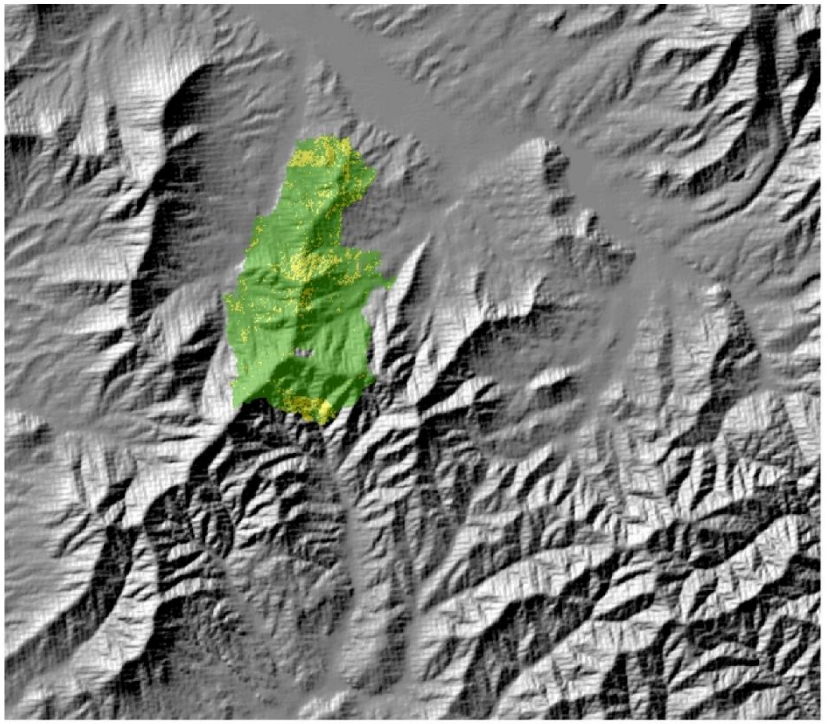


Lidar-infused LANDFIRE tool



Crown Fire Type

- Surface
- Torching
- Crowning



Lidar-infused LANDFIRE

- Operations partner is Wildland Fire Assessment System (WFAS) project
  - Co-PI Jolly is the project manager for WFAS
- Phase 2 plans include:
  - Transition from desktop application to web-based
  - Pre-processing and staging of GLAS data
  - Web links to lidar and imagery data sources
  - Generate full suite of FARSITE inputs