


The International Arid Lands Consortium Virtual Conference
Day 3: Forests & Fire. Management of forests for sustainable use and conservation

Calibrating Science Solutions for a Brighter Dryland and Forest Future

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**What science and technology can
improve our relationship with
arid lands, forests, and the planet?**

Continental U.S. Drylands & National Forests and Grasslands



U.S. 'Dry' domain: 922,972,722 acres
(~373,513,800 hectares)

- Approx. 100 million acres (52%) of U.S. Forest Service lands fall within the dry domain.

Ecoregion Domains



Bailey, Robert G. (2020). Bailey's ecoregions and subregions of the United States, Puerto Rico, and the U.S. Virgin Islands. Forest Service Research Data Archive. <https://doi.org/10.2737/RDS-2016-0003>.

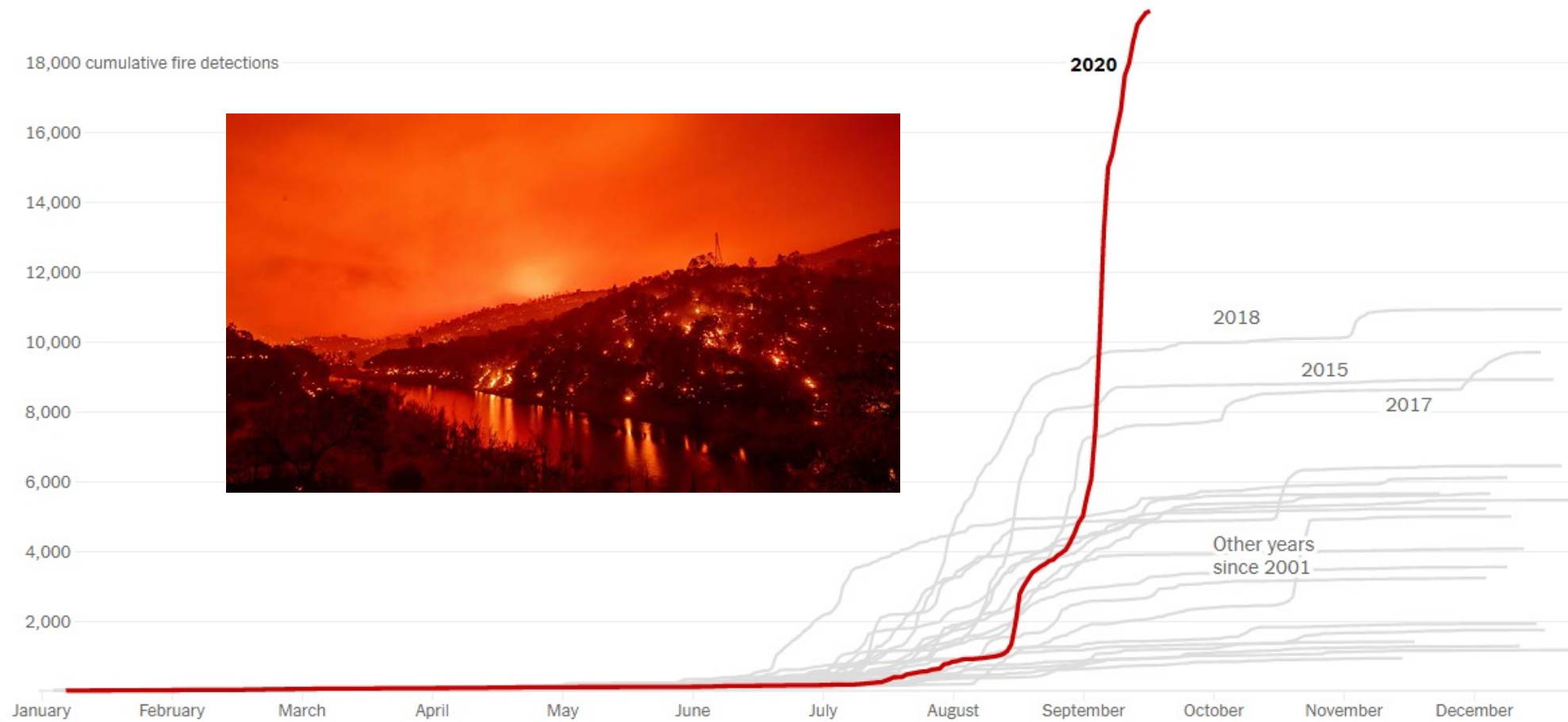


Sycamore Canyon Wilderness, Arizona



Woolsey Fire seen from Topanga, California

The Expanding Fire Footprint



Note: Cumulative sum of fire detections across California, Oregon and Washington. Data as of Sept. 21.

Instruments on Terra and Aqua have experienced periodic outages. - Source: NASA Terra and Aqua satellite data, based on detections with greater than 95 percent confidence levels.

Source: <https://www.nytimes.com/interactive/2020/09/24/climate/fires-worst-year-california-oregon-washington.html>

RESPOND - ADAPT - RESTORE

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**How might Forest Service research,
applications, and tools be applicable
to your work?**



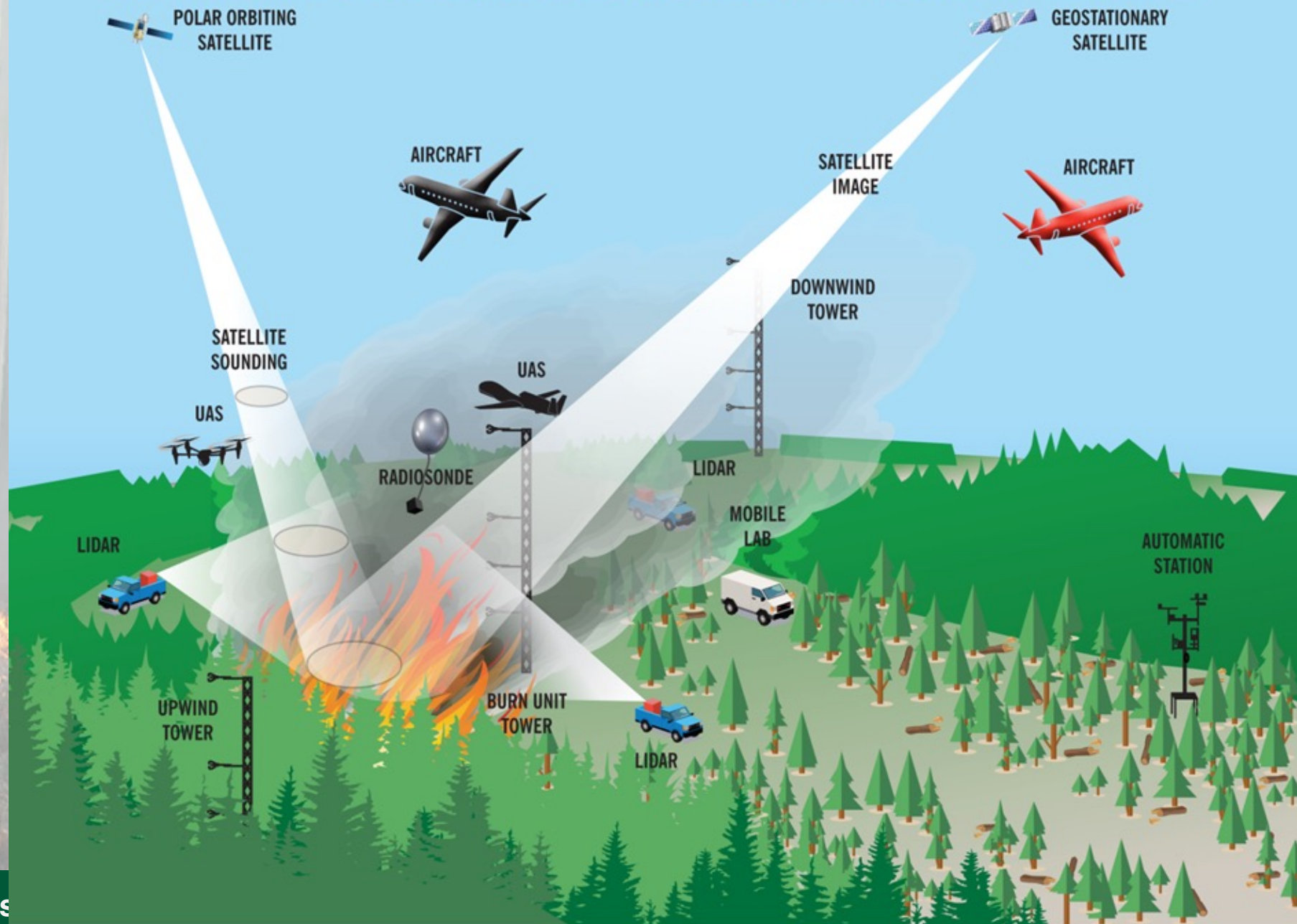
RESPOND: Controlled Fire

Drones capturing smoke during controlled fire



- Reduces hazardous fuel buildup
- Restores important ecological processes
- Recycles nutrients back to the soil
- Promotes the growth of trees, wildflowers, and other plants

THE FIRE AND SMOKE MODEL EVALUATION EXPERIMENT (FASMEE)



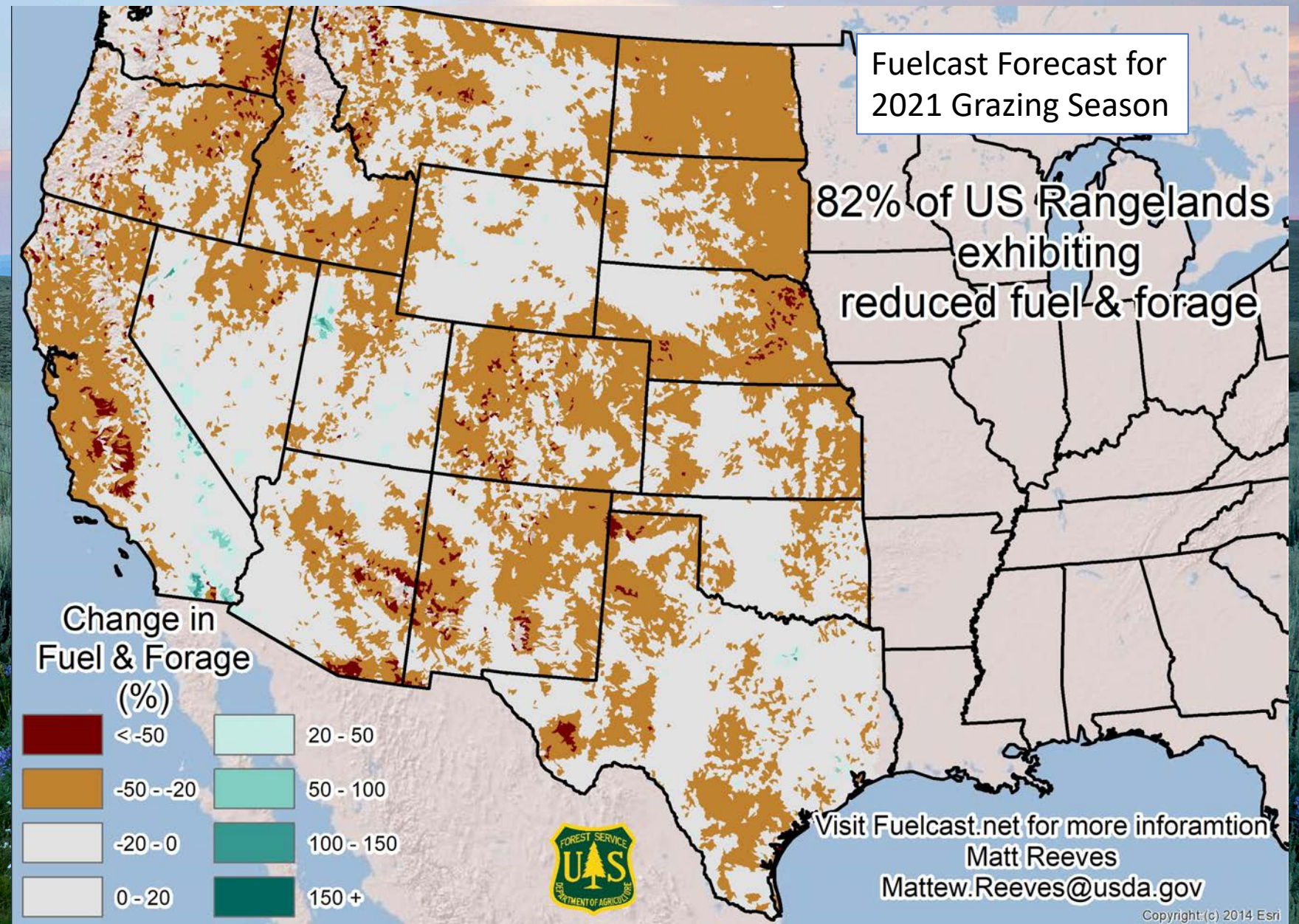
Schematic representation of the FASMEE project measurement platforms

ADAPT: Forage & Fuel Forecasting



Angus Cattle graze on the Gravelly Mountain Range in the Beaverhead-Deerlodge National Forest, Montana.

Forest Service Rangeland Production Monitoring System

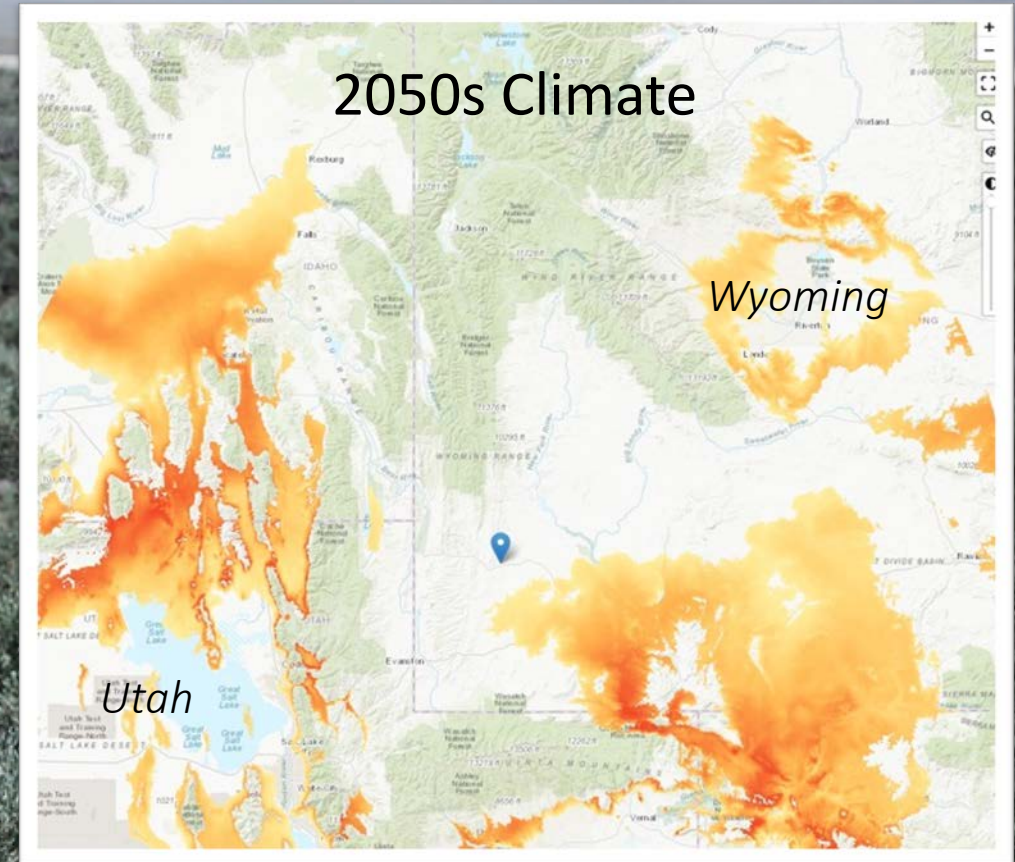
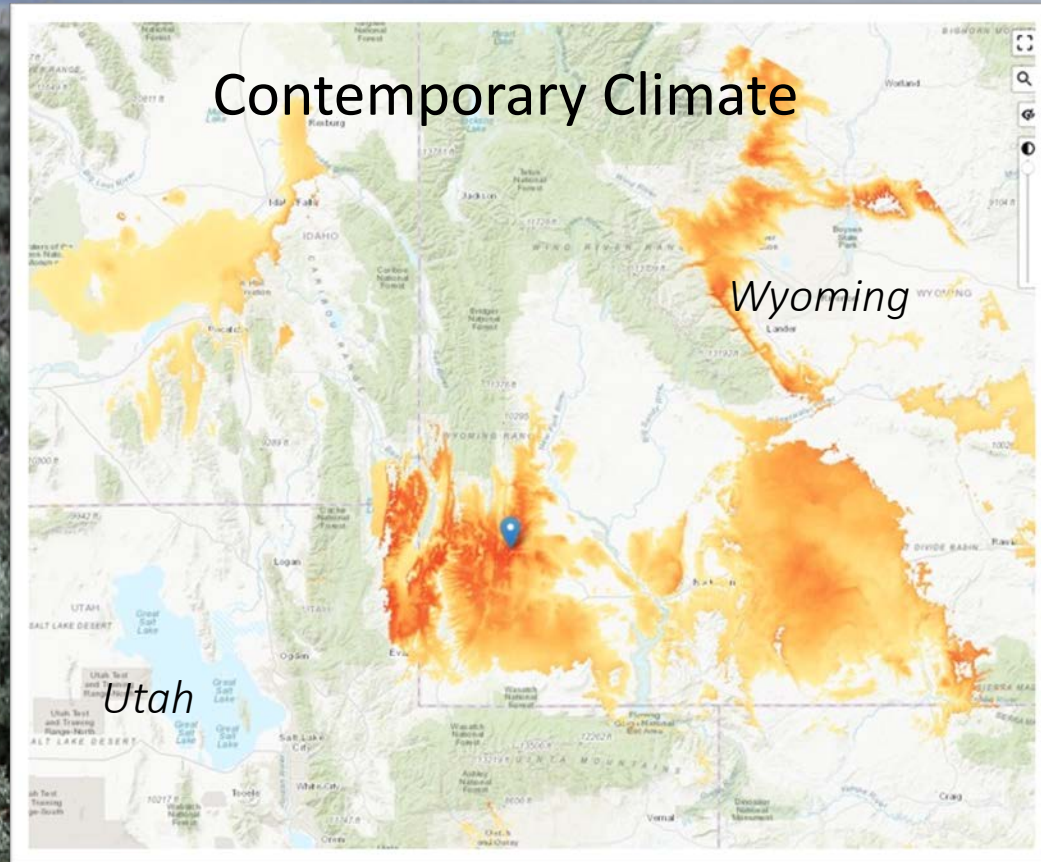


RESTORE: Climate-Smart Restoration

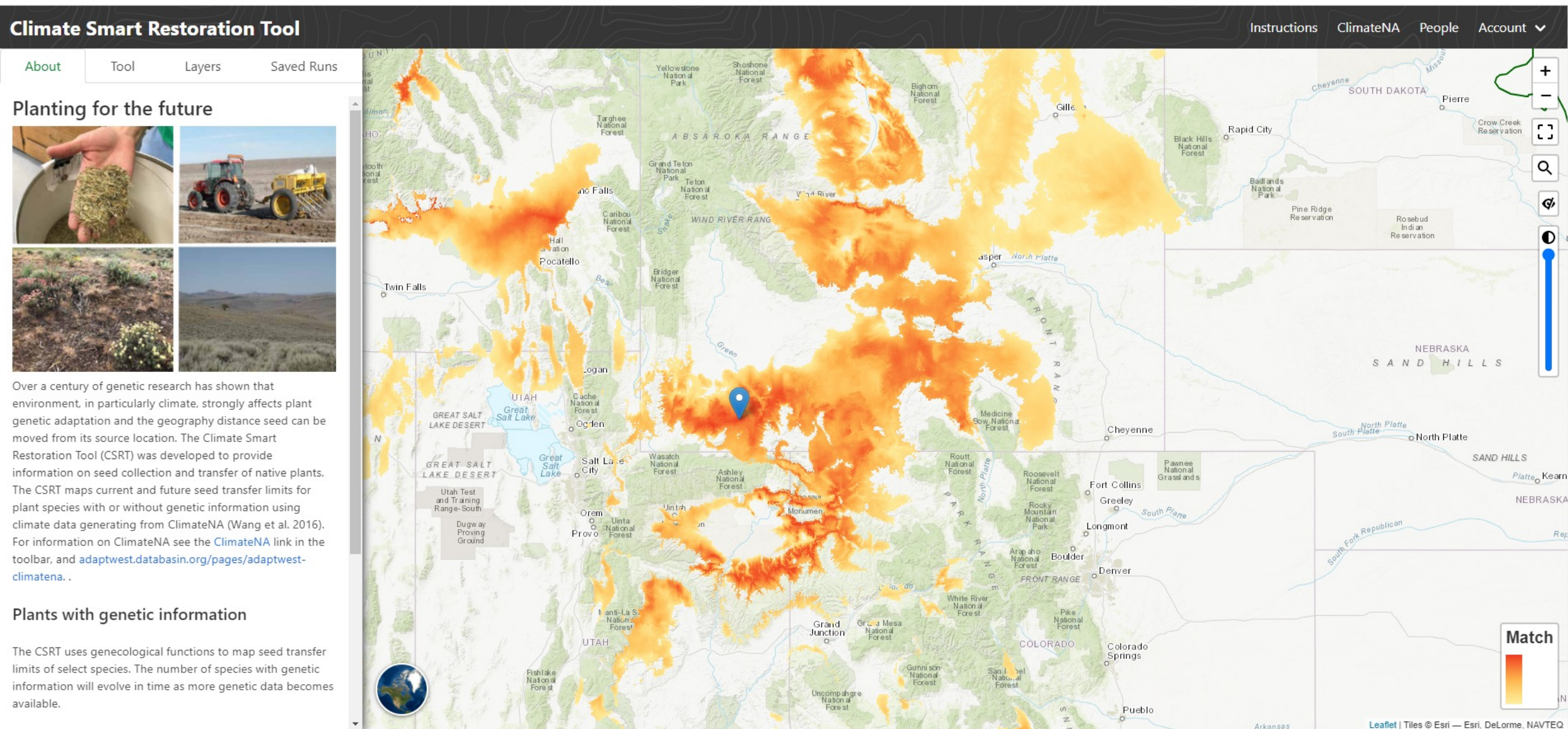


Planted ponderosa pine seedling on the Dixie National Forest, Utah.
These efforts help revitalize areas where the forest is struggling to regrow following wildfire.

Big sagebrush (*Artemisia tridentata*) under current and future climates



Richardson; Chaney. 2018. Climate-based seed transfer of a widespread shrub: population shifts, restoration strategies, and the trailing edge. *Ecological Applications*. 28(8): 2165-2174



Thank you!

Contact: <https://www.fs.usda.gov/about-agency/contact-us>

Forest Service Research & Development: <https://www.fs.fed.us/research/>

NEW Forest Service Research & Development website to be launched summer 2021.