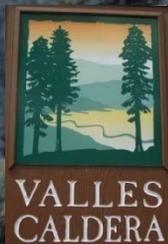
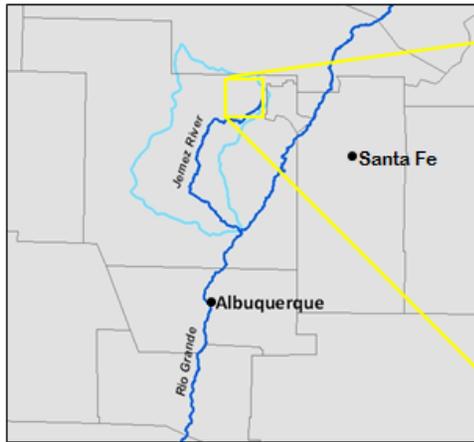


# Understanding Environmental Processes in Real Time - Forest Fire and Water Quality

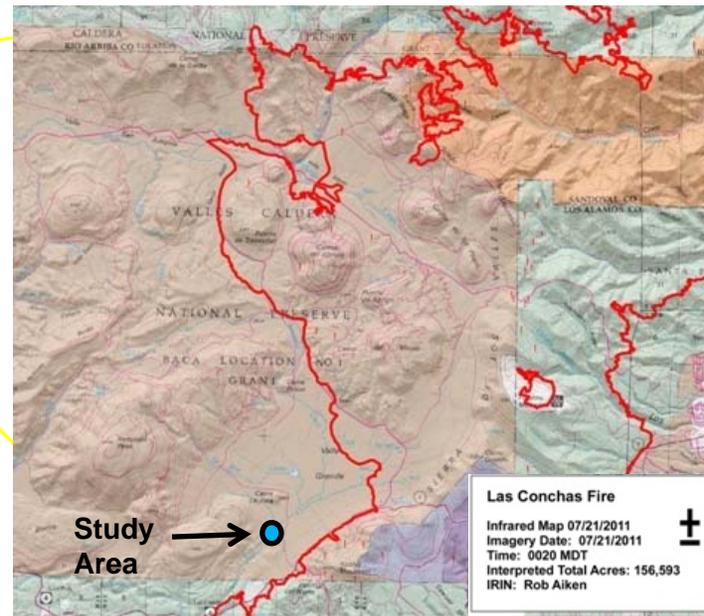
Valles Caldera, New Mexico, USA



# Study Area



 Valles Caldera National Preserve  
 Jemez Watershed



- East Fork Jemez River in the Valles Caldera National Preserve (VCNP) in New Mexico
- High elevation third order stream
- Drainage area = 28 square miles
- Large valley (valles) meadows with surrounding forested catchment
- Las Conchas fire (June 26, 2011 to August 3, 2011) ; area burned ~ 157,000 acres



# Las Conchas Fire - New Mexico (NM) 2011

Was Largest Recorded NM Fire    High Intensity Forest Fire



# Linking wildfire and water quality

- Mobilized burn scar material (black carbon)
- Indios Creek flood flow – July 27, 2011
- Water clarity before and during flood event in Indios Creek
- Flood flow off the burn scar in Cochiti Canyon on August 22, 2011
- Sediment deposit at confluence of Rio Grande and Bland and Cochiti Canyons
- Burn material in Rio San Antonio in Valle Caldera National Preserve



# Continuous Water Quality Instrumentation



- YSI Sondes (SW and GW)**
- Temperature, DO, pH, SC, and Turbidity
  - 15-min intervals



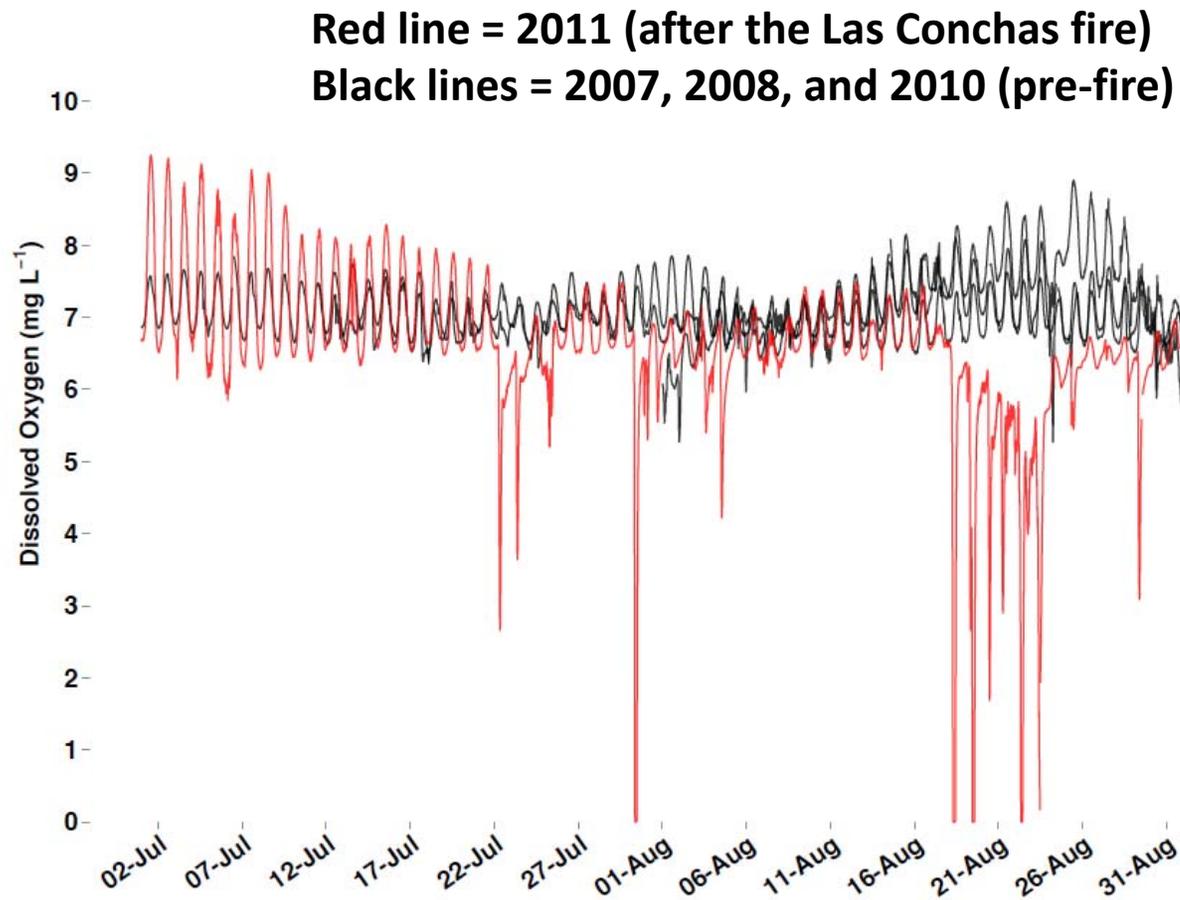
- WETLabs Cycle-P**
- $\text{PO}_4\text{-P}$
  - 1-hr intervals



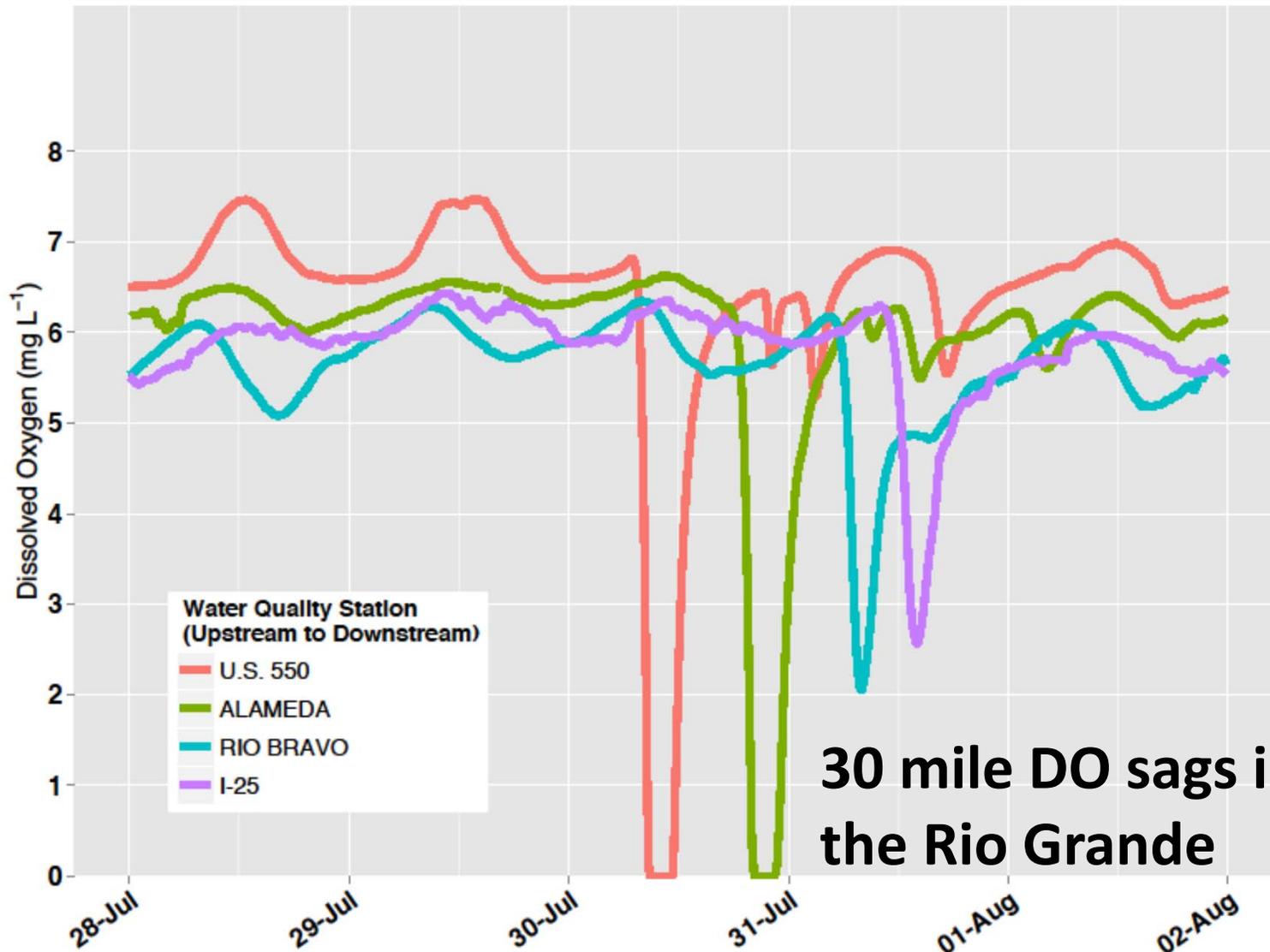
- Satlantic  
SUNA**
- $\text{NO}_3\text{-N}$
  - 30-min intervals



# Dissolved Oxygen Concentrations Rio Grande 550 Bridge for July and August



# Downstream DO Sags – Rio Grande



**30 mile DO sags in the Rio Grande**

**Severe water quality degradation downstream of burn scars will occur.**