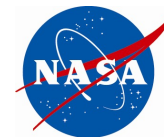




# Complementary Satellite Data Clarify Climate and Wildfire Impacts on Ecosystem Productivity in Alaska



**Problem:** Wildfires are increasing in the boreal-arctic with global warming, but the impact of fire disturbance on ecosystem productivity is unclear.

**Methods:** Satellite vegetation observations (MOD15 FPAR, X-band VOD, GOSIF) and other environmental data were used with a diagnostic carbon flux model (SMAP L4C) to analyze ecosystem gross primary productivity (GPP) and canopy biomass (VOD) recovery from large wildfires (>150 km<sup>2</sup>) in Alaska for 2000-2019.

**Findings:** The positive GPP trend of ~2.1 Tg C yr<sup>-1</sup> in the last two decades was mainly driven by enhanced early season vegetation growth (~1 Tg C yr<sup>-1</sup>). Warming also promotes wildfires, which reduce productivity after disturbance events; but GPP recovers within 1-3 years following less severe fires (**right**).

**Impact:** Projected increases in wildfire frequency and severity are expected to reduce ecosystem carbon uptake in the near-term, which may reinforce climate warming.

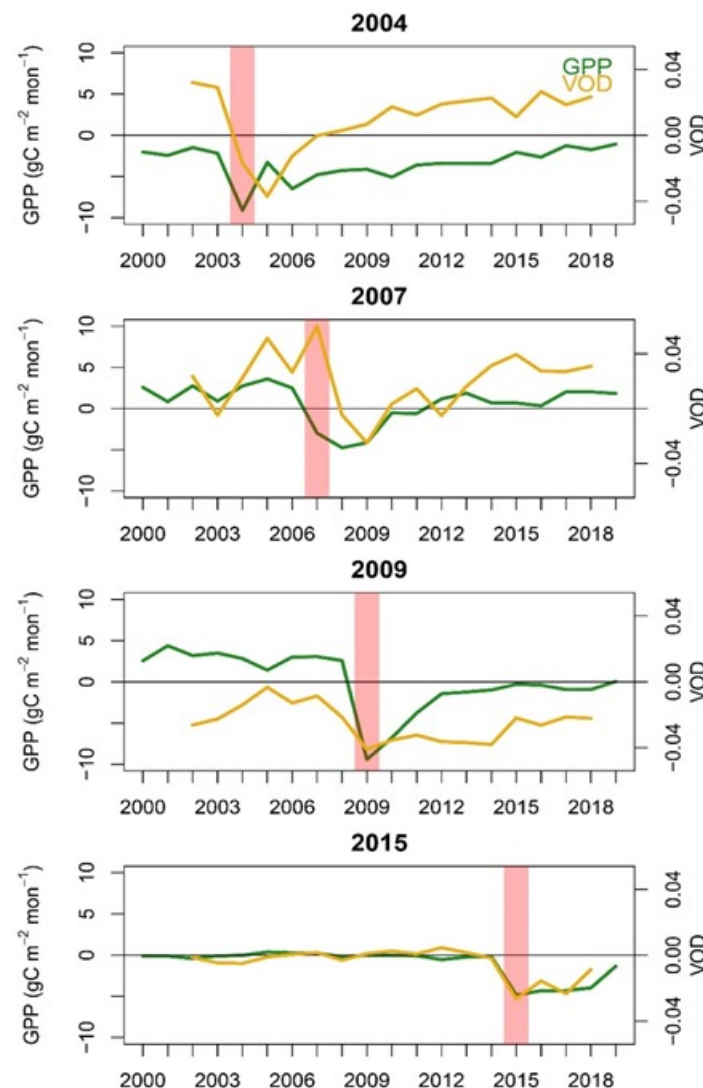


Fig. 1. GPP (green) and VOD (yellow) recovery following large AK wildfires (pink).