

Changes in grassland ecosystem function due to extreme rainfall events: implications for responses to climate  
Abstract Climate change is causing measurable changes in rain



periods crossed with  $Q \in \{400, 600, 800, 1000\} \text{ mm yr}^{-1}$   
in a randomized complete block design (h

accounts for a large fraction of the biomass in tallgrass prairie and in the mesocosm species assemblages. Leaves were measured under wet (1 day after watering)

$J_{CO_2}$  was measured eight times during May-Septem-

season meant  $J_{CO_2}$  decreased 19% ( $P \leq 0.01$ ; Fig. 2d-f), suggesting that variation in I caused differential

studies have also reported mixed (1/ ) responses in ecosystem processes to changes in rainfall frequency or pattern (Ogle & Reynolds, 2004), sometimes modulated by N availability (Maestre & Reynolds, 2007) or topographic factors (Swemmer et al., 2006). The strong increase with longer I

## Responses to I

Variation in I caused both increases and decreases in ecosystem function (Fig. 2d-f), with longer I increasing leaf-level carbon uptake ( $A_{CO_2}$ ) while simultaneously reducing the carbon efflux from the soil. Previous

processes to varying  $S_E$



