These data describe competition for light (open solar path) between introduced coconut palm trees (*Cocos nucifera*) and native tree species between 2004 and 2008 at Palmyra Atoll, Northern Line Islands, Pacific Ocean. Data are contained in one table, including values from the start, end, and intermediate samples.  The dataset measures the change in tree growth (DBH and height) and reproductive potential (flower and fruit production) in relation to time and open solar path value. Two treatments are considered: OSP values less than 50% created by *C. nucifera* removal, and OSP values greater than 50%.