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Climatic displacement exacerbates the negative impact of drought on plant performance and associated arthropod abundance

*Ecology*

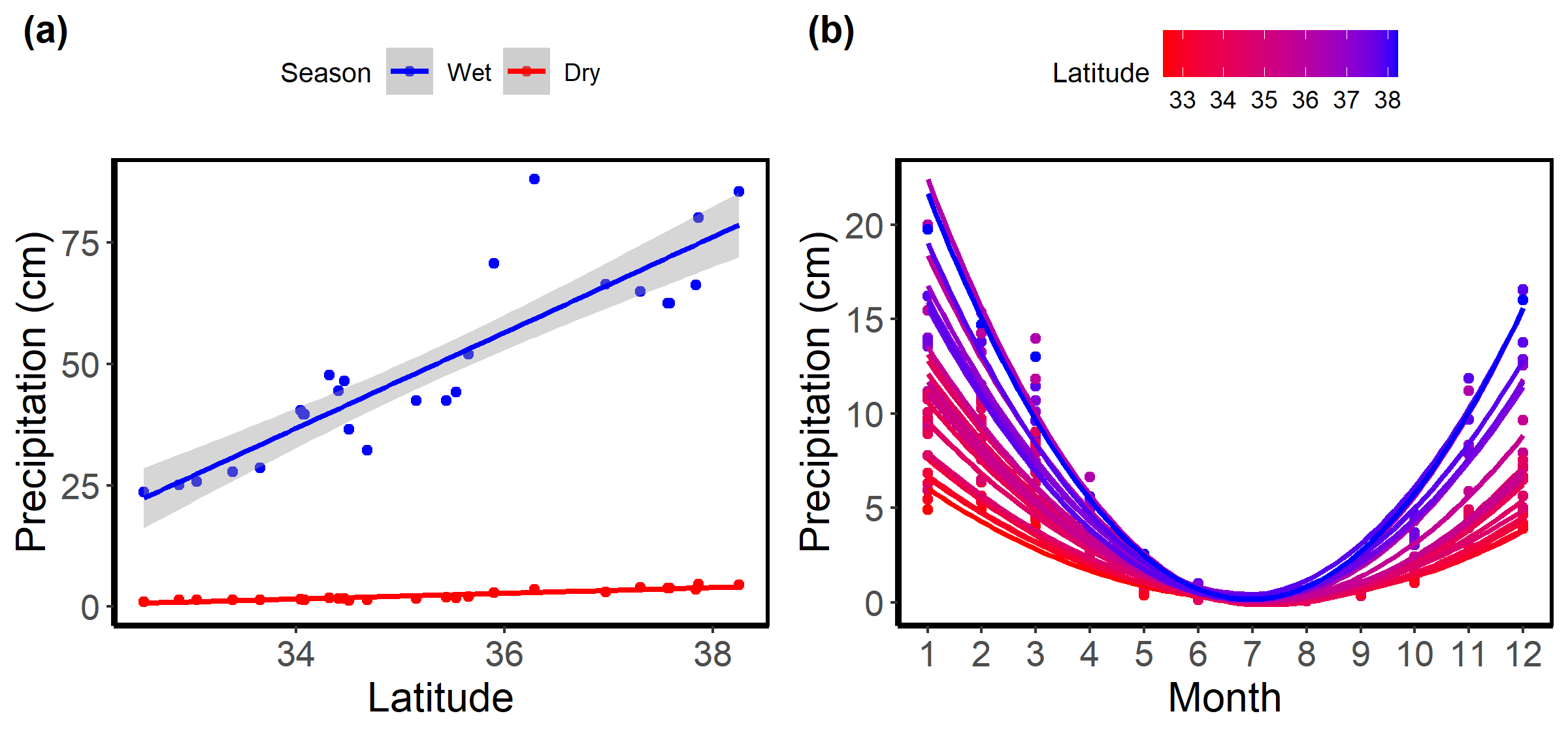
**Appendix S1**: Distribution of *Artemisia californica* populations used in this common-garden study and climatic variation at the garden over time.

**Table S1.** Population locations and climate data (mean annual temperature and precipitation) for the 21 populations of *Artemisia californica* used in this study.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Population Location | | Local Climate | | | Gardens | Sample Size |
| Latitude (°) | Longitude (°) | MAT (°C) | MAP (cm) | |
| 32.87 | -117.25 | 16.9 | | 26.6 | 2009, 2011 | 7, 10 |
| 33.05 | -117.29 | 16.1 | | 27.2 | 2011 | 9 |
| 33.65 | -117.89 | 17.6 | | 29.9 | 2011\* | 10 |
| 34.04 | -118.6 | 16.9 | | 42.1 | 2009, 2011 | 20, 10 |
| 34.06 | -118.99 | 17.1 | | 41.0 | 2011 | 10 |
| 34.32 | -119.39 | 16.1 | | 49.5 | 2011 | 10 |
| 34.41 | -119.85 | 15.1 | | 46.1 | 2011 | 10 |
| 34.46 | -120.02 | 14.8 | | 48.3 | 2011 | 11 |
| 34.5 | -120.5 | 13.8 | | 37.9 | 2011 | 10 |
| 34.68 | -120.6 | 13.3 | | 33.6 | 2011 | 10 |
| 35.15 | -120.65 | 14.7 | | 44.2 | 2011 | 10 |
| 35.44 | -120.89 | 14.1 | | 44.3 | 2009, 2011 | 15, 10 |
| 35.65 | -121.23 | 13.4 | | 54.1 | 2011 | 10 |
| 35.9 | -121.46 | 14.3 | | 73.6 | 2011 | 10 |
| 36.29 | -121.84 | 14.1 | | 91.6 | 2011 | 10 |
| 36.97 | -122.12 | 12.1 | | 69.3 | 2009, 2011 | 15, 10 |
| 37.3 | -122.4 | 11.9 | | 68.9 | 2011 | 10 |
| 37.59 | -122.51 | 13.4 | | 66.3 | 2011 | 10 |
| 37.83 | -122.54 | 13.4 | | 69.8 | 2009, 2011 | 14, 10 |
| 37.86 | -122.57 | 13.7 | | 84.7 | 2011 | 9 |
| 38.25 | -122.96 | 12.7 | | 90.1 | 2011 | 9 |
| \* Location of both experimental gardens | | | | | |

**Table S2.** Interannual variation in climate over the duration of the experiment. Precipitation calculated on a hydrologic year (October 1st-May 1st).

|  |  |  |
| --- | --- | --- |
| Year | Temperature (°C) | Precipitation (cm) |
| Average (1964-2013) | 17.6 | 29.9 |
| 2010 | 17.1 | 37.3 |
| 2011 | 17.5 | 42.6 |
| 2012 | 16.8 | 17.9 |
| 2013 | 17.7 | 12.6 |
| 2014 | 18.3 | 10.7 |
| 2015 | 20.3 | 15.2 |
| 2016 | 18.3 | 13.2 |
| 2017 | 17.9 | 43.9 |
| 2018 | 18.2 | 7.3 |

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**Figure S1.** (a) Latitudinal variation in precipitation (1964-2014) for the wet (blue; October-April) and dry (red; May-September) season at the locations of each *Artemisia californica* population used in this study. (b) Average precipitation (1964-2014) for each month colored by the latitude of the *A. californica* population. Blue lines indicate more northern sites and red lines indicate more southern sites.

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**Figure S2.** Relative humidity plotted against total monthly rainfall for each month from 2009-2017 at the common garden site. Precipitation and relative humidity was collected from the John Wayne Airport Station (33.68°, -117.87°) located < 4 km away from our common garden for 2009-2017 (from the NOAA National Centers for Environmental Information online database).