

Section 2: Climate Change Review

Learning outcomes

- how and why humans are affecting climate (not covered in class; see separate document)
- patterns of recent and future climate change (not covered in class; see separate document)
- aspects of physical climate important to biology
- spatial resolution of climate data
- climate velocity

Climate Change Ecology

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Annual water balance
climatic water deficit, D

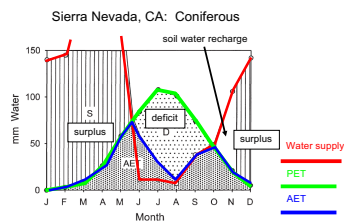


FIG. 1. The annual water balance of a site on level ground, with a depth of 200 m of soil, in the wet Klamath watershed of the northern Sierra Nevada State forest (Stephenson, 1998). From the climate through May, water supply from precipitation (P) exceeds demand (potential evapotranspiration or PET), and during the summer, actual evapotranspiration (AET) does not equal potential PET. In December and January, when water conditions are often most limiting for conifers, the deficit between the water supply and PET exceeds potential and water recharge. From November through May, after soil water has been exhausted, the difference between water supply and PET is negative (the vertical distance from the line through September, PET exceeds water supply). During the period, PET equals water supply (the water exhausted from the soil) which is shown as the curve between the water supply and PET curves. Dotted circles represent the difference between PET and AET.

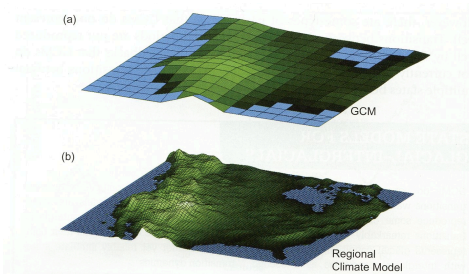
Stephenson, 1998

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Why does finer spatial resolution climate data help climate change ecology studies?



Hannah, *Climate Change Biology*, 2011

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