

## Koeppen Climatic Classification

<u>Primary Letters</u>	<u>Secondary Letters</u>	<u>Tertiary Letters</u>
<b>A:</b> Tropical wet or wet/dry	Precip: <b>f</b> (yr-round), <b>w</b> conc in Summer, <b>m</b> : monsoon	None
<b>B:</b> Dry (desert and steppe)	<b>W</b> : desert, <b>S</b> : steppe	<b>k</b> : cold or cool, <b>h</b> : warm or hot
<b>C:</b> Humid Sub-tropical	Precip: <b>f</b> (yr-round), <b>w</b> : conc in Summer; <b>s</b> : conc in winter	<b>a</b> : hot summer <b>b</b> : warm summer <b>c</b> : cool summer
<b>D:</b> Humid Continental	Same as <b>C</b> climates	Same as <b>C</b> climates, but also <b>d</b> : severe winter
<b>E:</b> Polar or Ice-cap	<b>T</b> : tundra <b>F</b> : ice	None

Quantitative Distinctions (temperatures in Fahrenheit, precipitation in inches):

1. To determine **B** – non-**B** distinction, let P = mean annual precipitation and T = mean annual Temperature, and distinguish hemispheres.
  - a. Winter concentration exists when more than 70% of precipitation comes in winter six months
  - b. Summer concentration when more than 70% comes in summer six month.
  - c. If neither holds, i.e., when precipitation is evenly distributed

If a. holds: If $P > 0.44(T-32)$	<b>Non-B</b>
If $P < 0.44(T-32)$ but $P > 0.22(T-32)$	<b>BS</b>
If $P < 0.22(T-32)$	<b>BW</b>
If b. holds: If $P > 0.44(T-7)$	<b>Non-B</b>
If $P < 0.44(T-7)$ but $P > 0.22(T-7)$	<b>BS</b>

If $P < 0.22(T-7)$	<b>BW</b>
If c. holds: If $P > 0.44(T-19.5)$	Non- <b>B</b>
If $P < 0.44(T-19.5)$ but $P > 0.22(T-19.5)$	<b>BS</b>
If $P < 0.22(T-19.5)$	<b>BW</b>

2. **A**: Mean temperature of coldest month at least 64.  
**C**: One or more months less than 64, none below 32, at least one above 50  
**D**: One or more months less than 64, one or more below 32, at least one above 50.  
**E**: No monthly mean over 50.
3. Secondary letters for **A** climates:  
**f**:  $> 2.4$  every month  
**m**:  $P > 40 + 25(2.4 - \text{driest month})$   
**w**:  $P < 40 + 25(2.4 - \text{driest month})$
4. Tertiary letters for **B** climates:  
**h**:  $T > 64$   
**k**:  $T < 64$
5. Secondary and tertiary letters for **C** and **D** climates:  
**s**: summer dry, precipitation in driest month in warm season  $< 1/3$  wettest winter month and  $< 1.6$ .  
**w**: winter dry, precipitation in driest month of cold season  $< 1/10$  of wettest summer month.  
**f**: **s** and **w** do not apply (year-round precipitation).  
**a**. hot summer, mean of hottest month  $> 72$   
**b**. warm summer, mean of hottest month  $< 72$ , 4 to 12 months  $> 50$ .  
**c**. cool summer, mean of hottest month  $< 72$ , 1 to 3 months  $> 50$ .  
**d**. (**D** climates only): severe winter, with coldest month  $< -36$ .
6. Secondary letters for **E** climates  
**F**: all monthly means below freezing  
**T**: not all monthly means below freezing

Percentage of Land Area

<b>Af</b>	9.4	<b>Aw</b>	10.5		<b>A</b>	19.9	
<b>BS</b>	14.3	<b>BW</b>	12.0		<b>B</b>	26.3	
<b>Cf</b>	6.2	<b>Cw</b>	7.6	<b>Cs</b>	1.7	<b>C</b>	15.5
<b>Df</b>	16.5	<b>Dw</b>	4.8		<b>D</b>	21.3	
<b>EF</b>	10.1	<b>ET</b>	6.9		<b>E</b>	17.0	