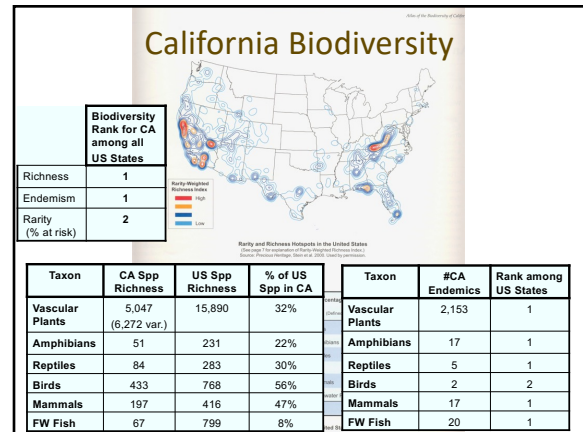
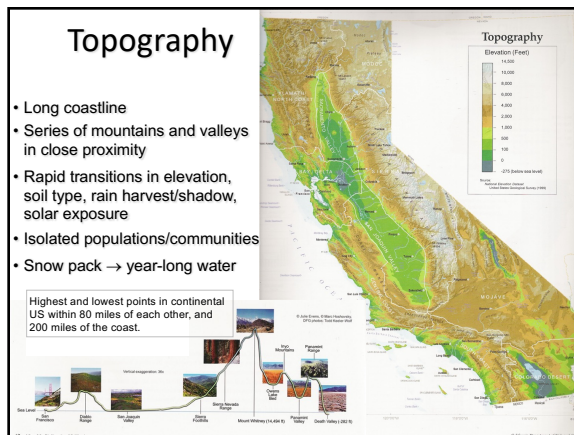




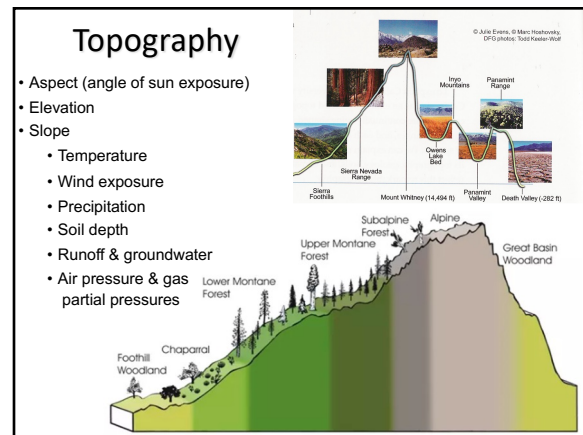
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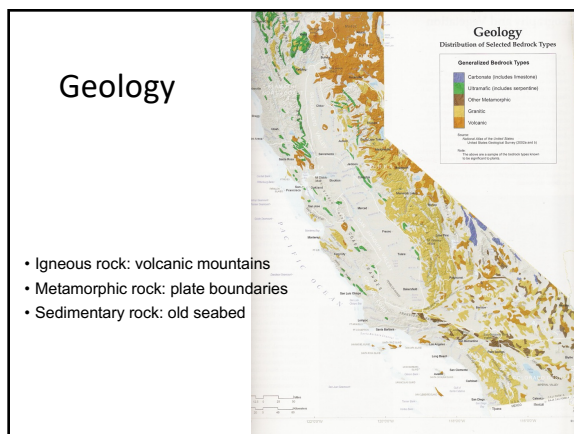
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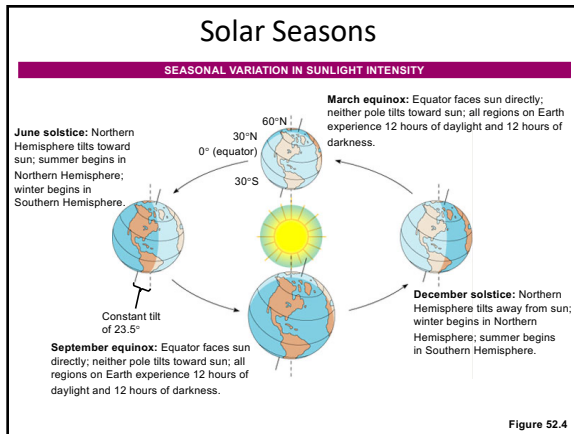
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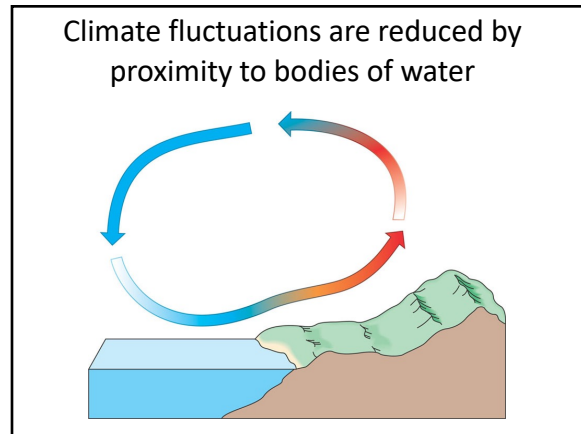
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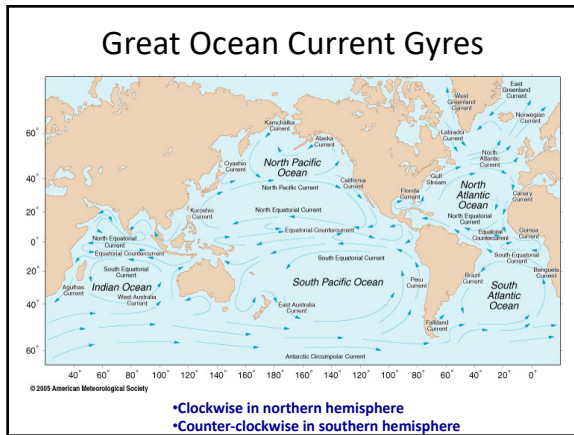
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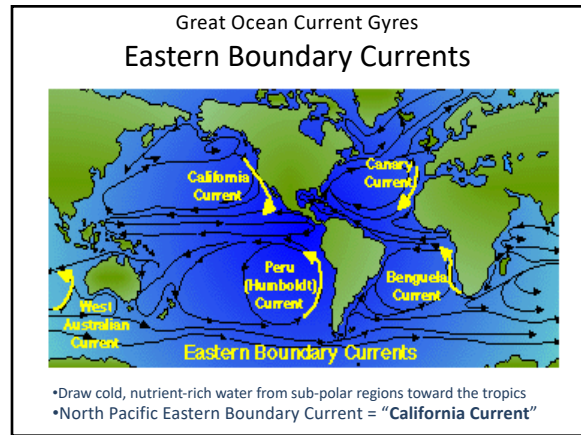
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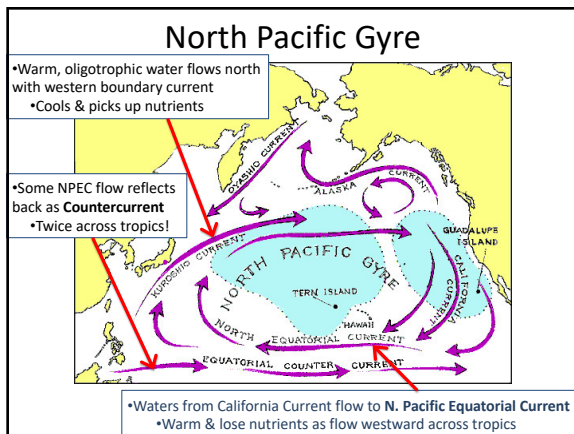
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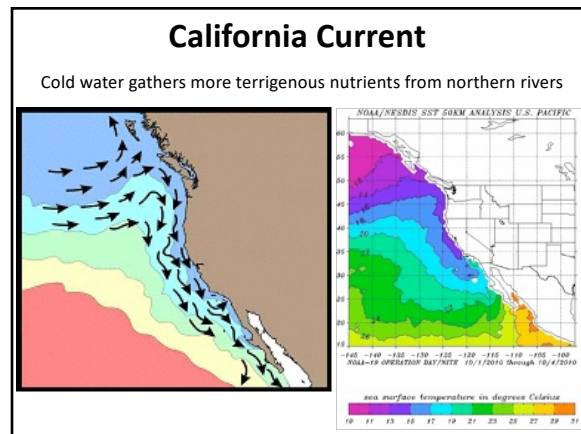
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10



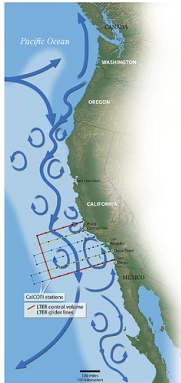
11



12

California Current

- Regional variations:
 - Eddy currents produce local cells
- Seasonal variations:
 - Intensity, depth, and distance from shore vary

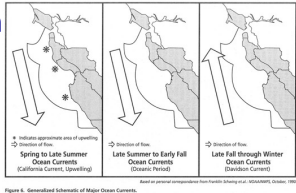


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California Seasons of the Sea

Determined & defined by dominant nearshore ocean conditions

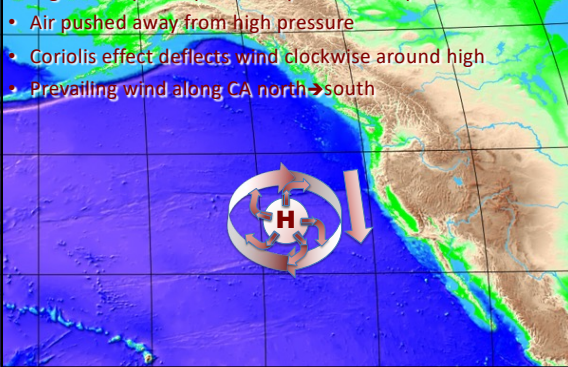
- **Upwelling season**
- **Oceanic season**
- **Davidson season**



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Upwelling Season: mid spring → summer

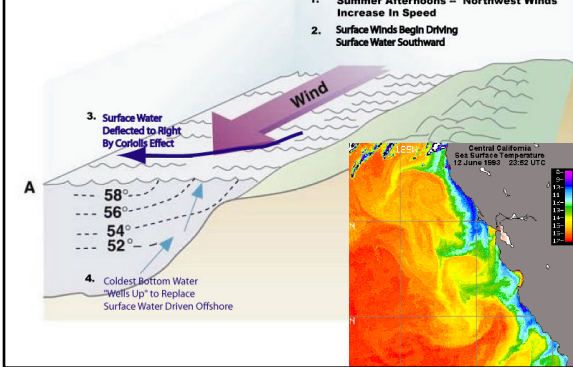
- High atmospheric pressure system develops offshore
- Air pushed away from high pressure
- Coriolis effect deflects wind clockwise around high
- Prevailing wind along CA north → south



15

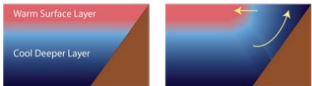
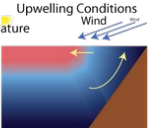
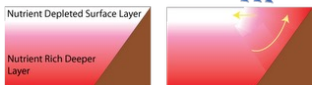
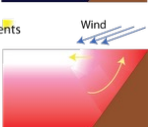
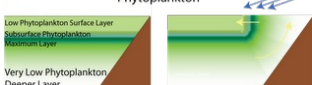
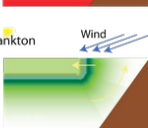
Upwelling Season: mid spring → summer

1. Summer Afternoons – Northwest Winds Increase In Speed
2. Surface Winds Begin Driving Surface Water Southward
3. Surface Water Deflected to Right By Coriolis Effect
4. Coldest Bottom Water "Wells Up" to Replace Surface Water Driven Offshore



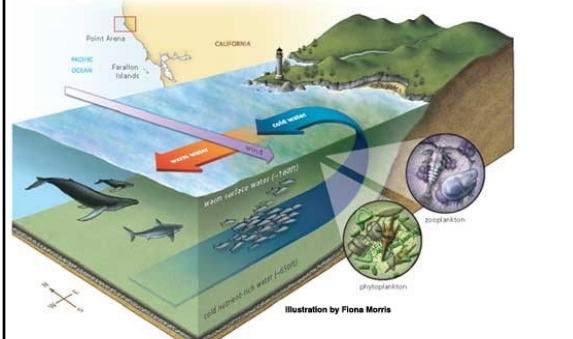
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Upwelling Season: mid spring → summer

Stratified Conditions	Upwelling Conditions
<p>Temperature</p> 	
<p>Nutrients</p> 	
<p>Phytoplankton</p> 	

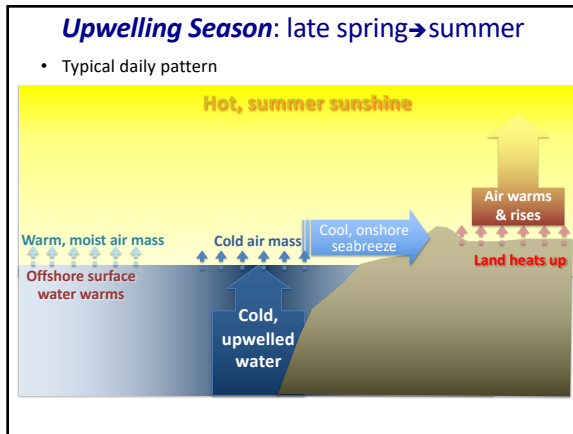
17

Upwelling Season: mid spring → summer

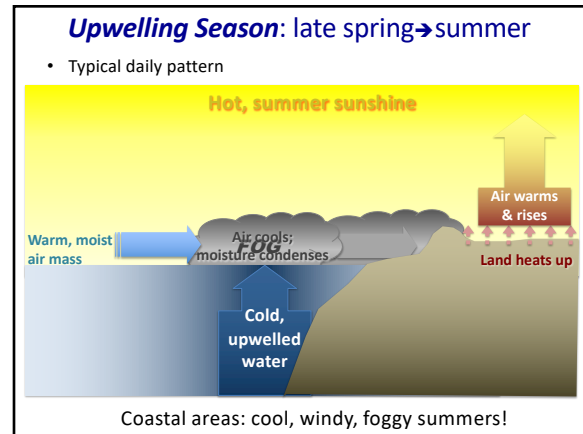


Max nutrients + Max sunshine → ↑↑ Primary Productivity
→ bottom-up amplification of all trophic levels

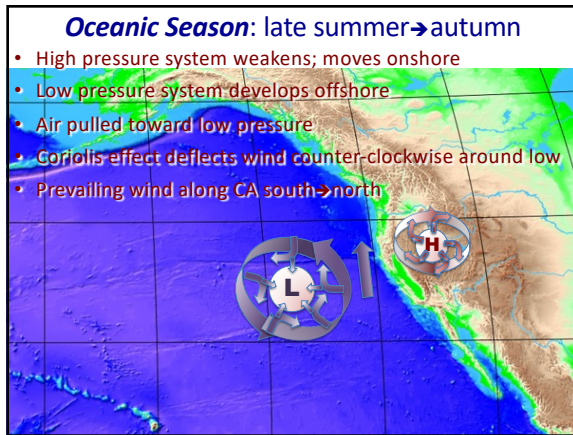
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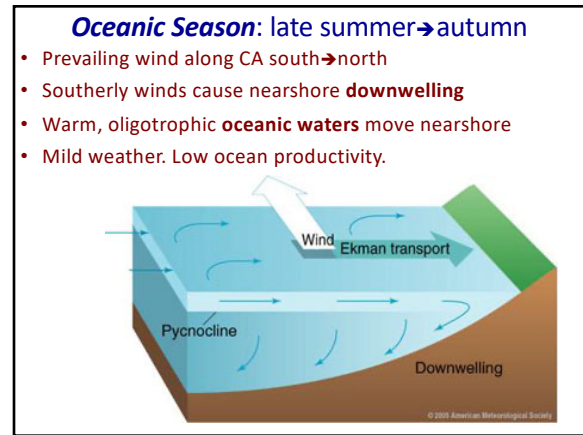
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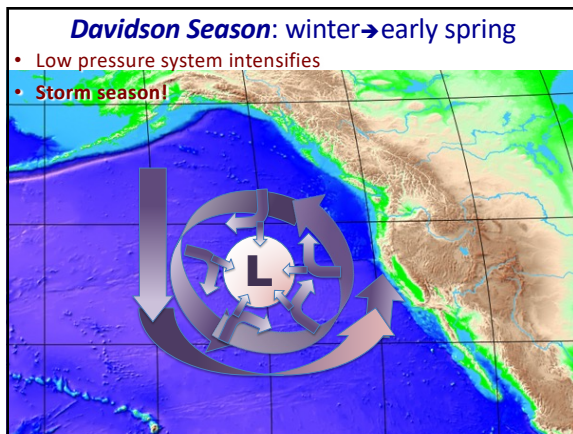
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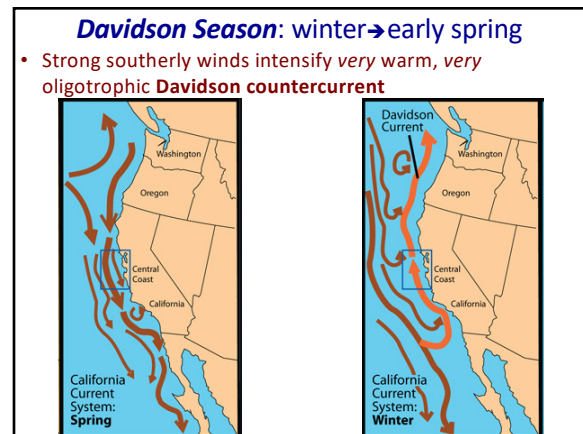
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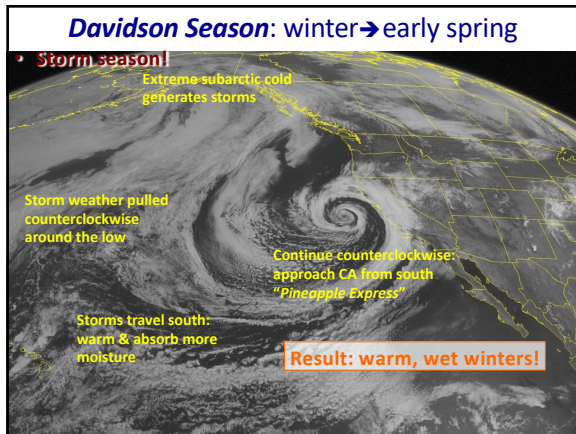
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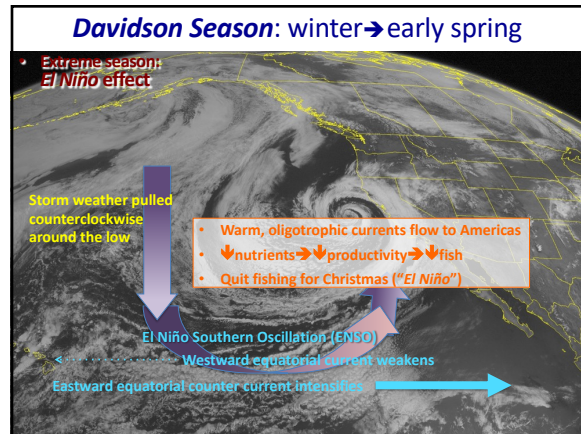
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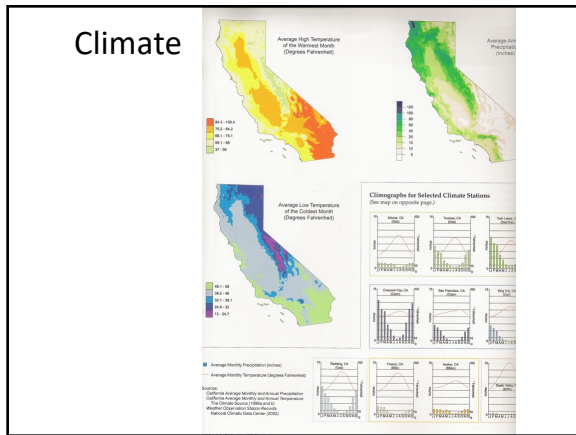
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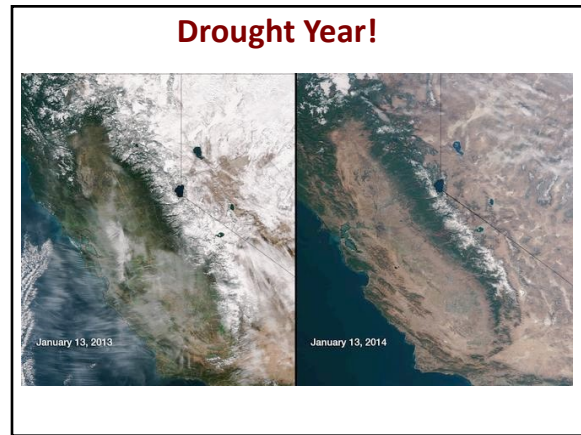
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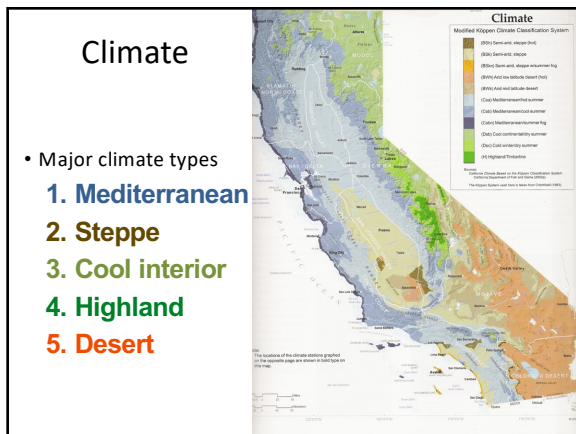
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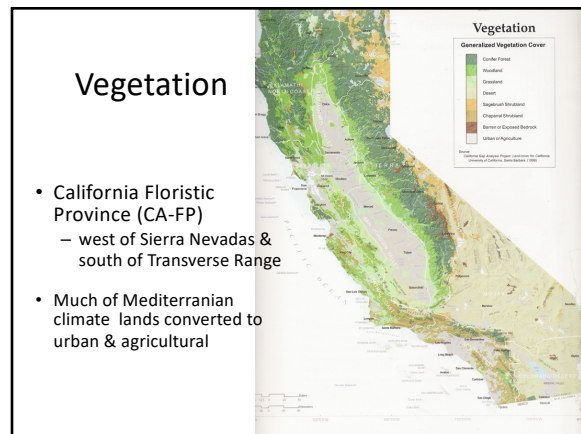
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Mapping California's Biodiversity

- 2003
- CA Dept. of Fish & Game project
- Use published distributions to create resource map to identify localities of significant:
 - Richness (diversity)
 - Rarity (special status)
 - Endemism

State of California
The Resources Agency
Department of Fish and Game

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Geographical Information Systems (GIS)

A computerized GIS can combine layers of information in various ways to produce maps or conduct analyses.

What a Computerized Geographic Information System (GIS) Can Do

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Geographical Information Systems

• Diversity — Species (taxon) Richness

Number of Species

33

Geographical Information Systems

• **Rarity-weighted Richness Index (RWRI)**
"Index of irreplaceability"

- For "species of special status"
 - Very limited distribution
 - Low population levels
 - And/or immediate threat, esp. habitat loss

1. State divided into equal hexagonal grid cells (250.4 mi² each)
2. How many cells does a species occupy? ↓ cells = ↑ rarity rank
3. RWRI for each cell = \sum (special species x its rarity rank)

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Plant Diversity

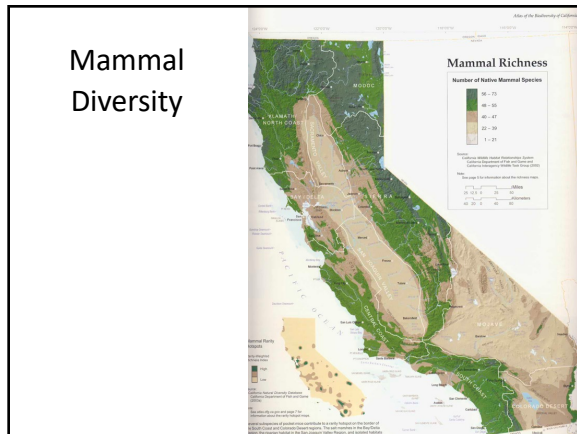
Plant Richness
Number of Native Plant Taxa by Jepson Geographic Subregion

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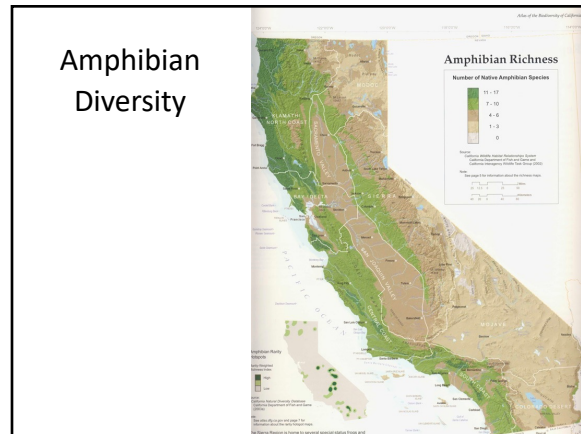
Plant RWRI

Plant Rarity Hotspots
Rarity-weighted Richness Index

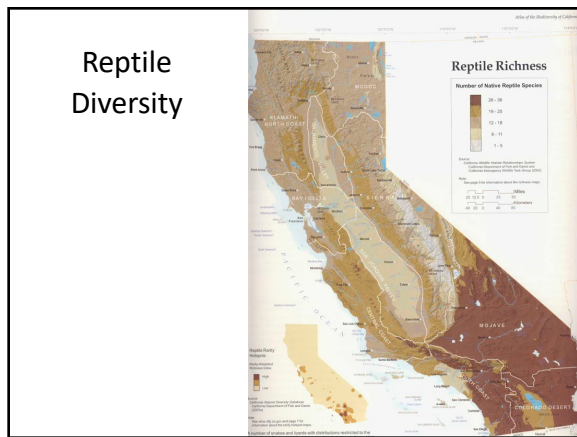
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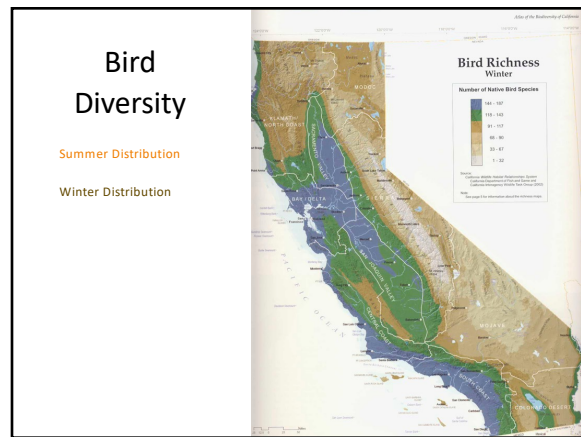
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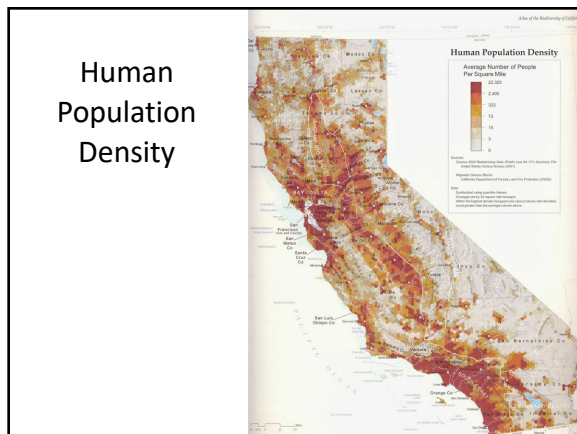
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