

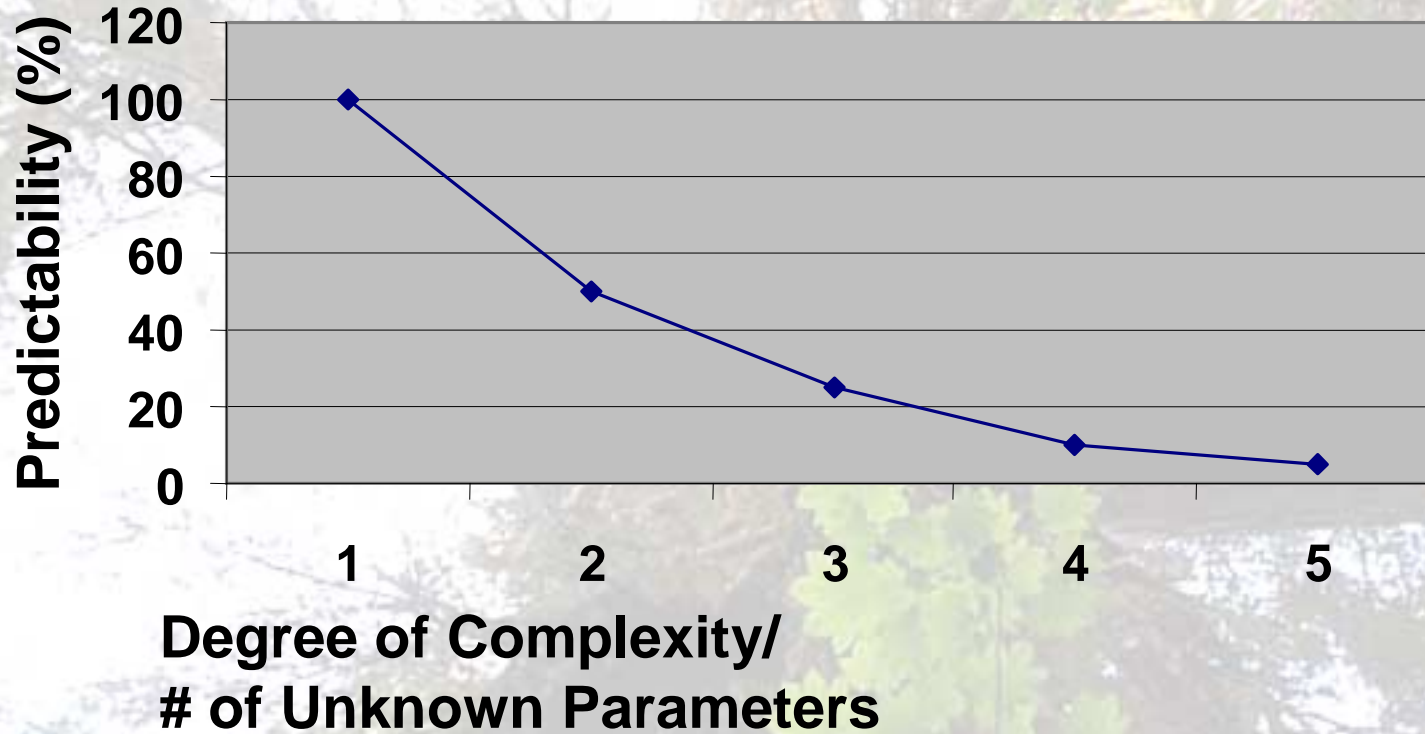
# Chapter 6: Classification

- The act and result of arranging things into groups/classes of like individuals

# Why is it important?

- DESCRIBE and PREDICT
  - What is present in a given area
  - How it might change over time
- Enable Understanding
  - Simplify complexity
  - Generalize patterns
  - Arrange into groups (but not too specific)
- Usefulness depends on heterogeneity remaining within each group – but not too specific

# Example of Clearcutting and Prediction of Landslides



**Fig 2.2c**

# Relevance to Forest Management

- Identify Forest Environment Types
- Plan Management Actions
- Predict Outcome of Activities
  - E.g. it's a bad idea to harvest steep slopes:  
classify lands in terms of topography - steepness

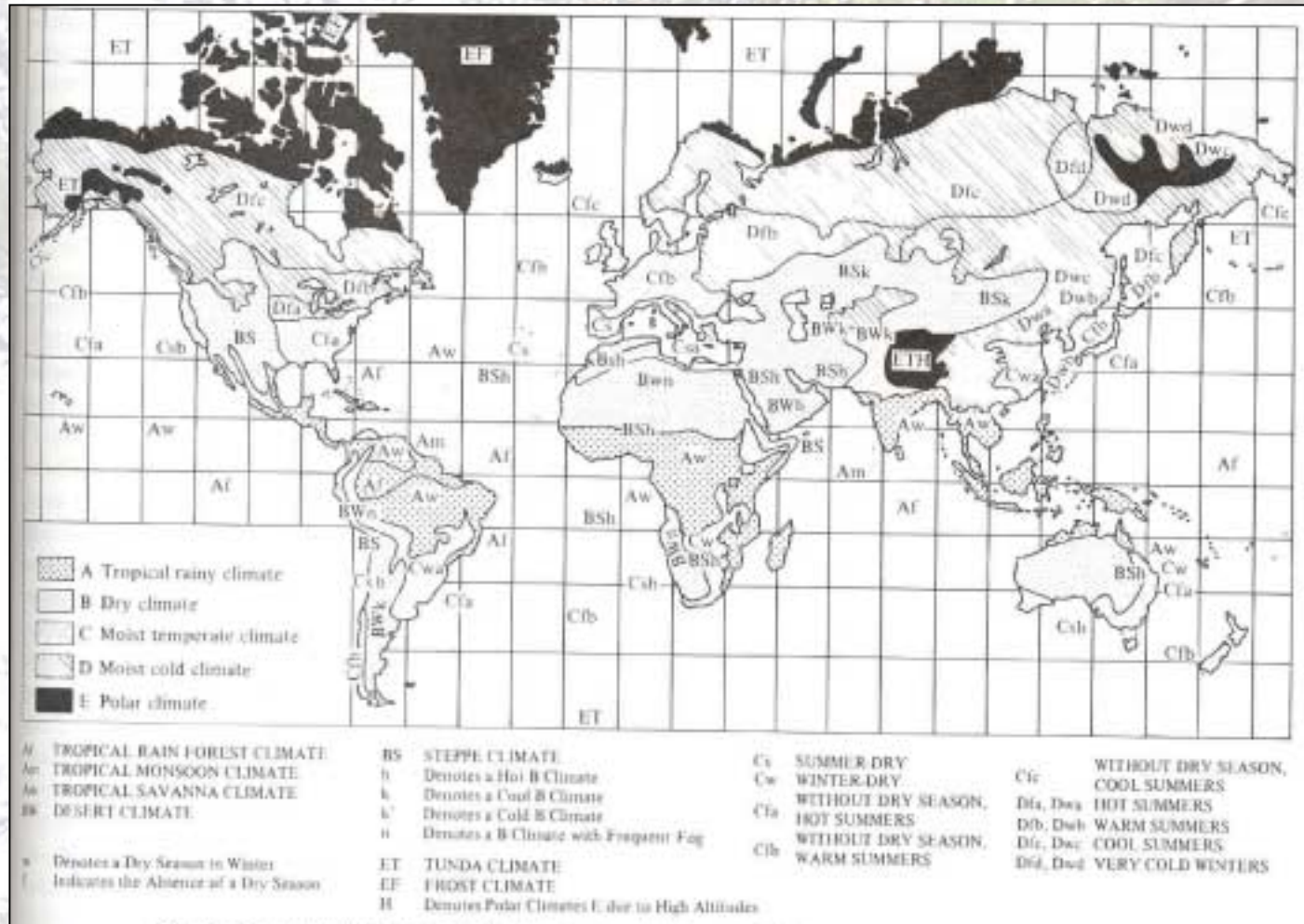
# Classification System Types

- Climatic Classification
- Landform / Physiographic Classification
- Vegetation Classification
- Ecosystematic Classification

# Climatic Classification

- Vegetation types are closely correlated with major climatic zones
- Temperature and Moisture Patterns (aridity & warmth)
- Global / Biome distribution
- Broad Climatic Patterns
  - Often too broad for site-specific uses
  - However, provide a framework for smaller classification systems, regional planning, etc.

# Köppen's system of world climate classification



- Tropical rainy
- Dry
- Polar

- Humid mesothermal - PNW
- Humid microthermal

**Fig. 6.1** 7

# Landform / Physiographic

- Soil and landform characteristics
  - Identify soil stability, productivity
- Relatively permanent classification, unchanging maps
- Applications for Remote Sensing and GIS
  - Map large areas quickly and with limited \$
- Based on sound ecological basis of parameters
  - Vegetation composition
  - Structure
  - Productivity

# Vegetation Classification

- Vegetation integrates physical and biotic environment (au: Daubenmire), and therefore is the best measurement.
- Identifies discrete, homogenous forest communities.
- Relates to various physical and biological parameters of the vegetation.

# Vegetation:

## Approaches in Classification

- Structure and life form (physiognomic)
- Dominance Type
- Floristic Composition
- Plant Productivity  
(site index: tree age and height)

# Vegetation:

## Approaches in Classification

Criteria for approach to select:

1. Accessibility – easily observed and measured
2. Significance – ability to distinguish among communities
3. Effectiveness – at desired level of detail

# *Structure and life form (physiognomic)*

- Broad-based, global – not site-specific
- Formations based on:
  - Growth form of dominant plants
  - Type of environment

# World Formation Types and Climate

Relation to mean annual temperature and precipitation

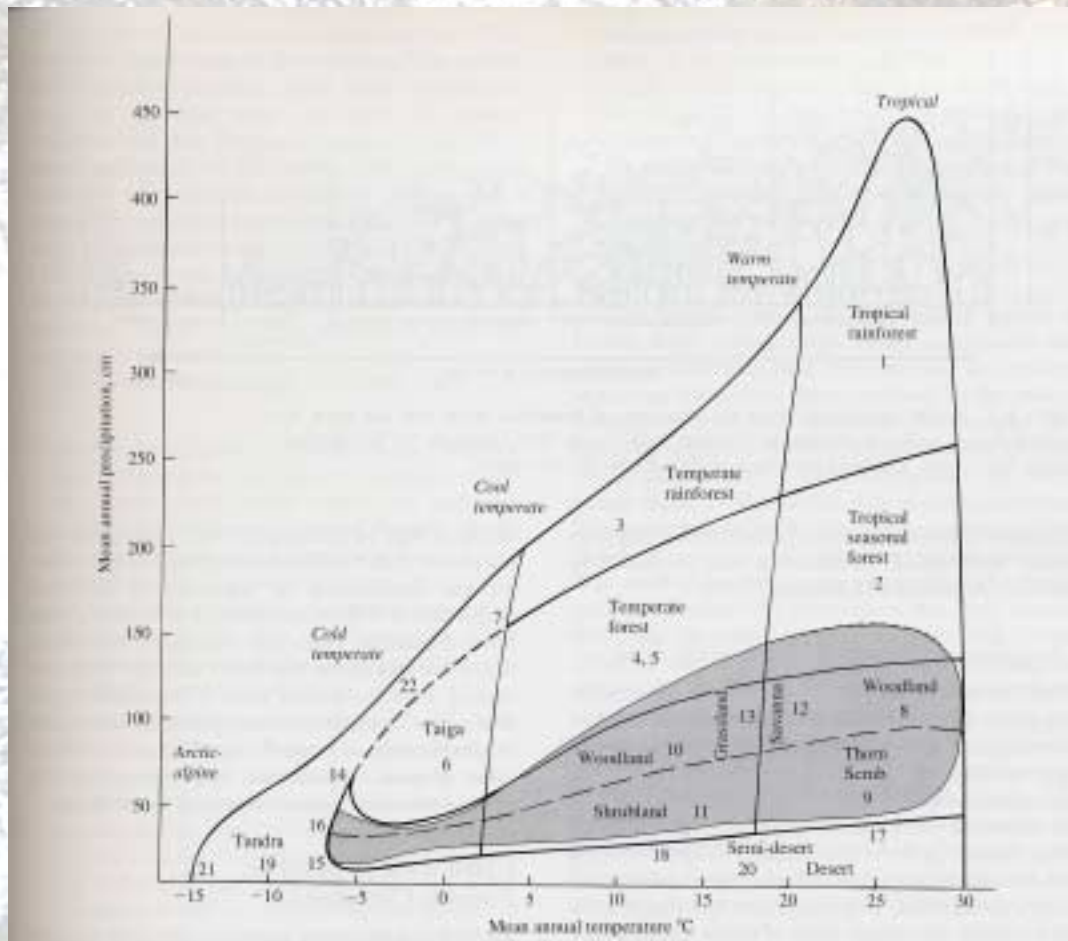


Fig. 6.4

# World Formation Types and Climate

Relation to mean annual temperature and precipitation

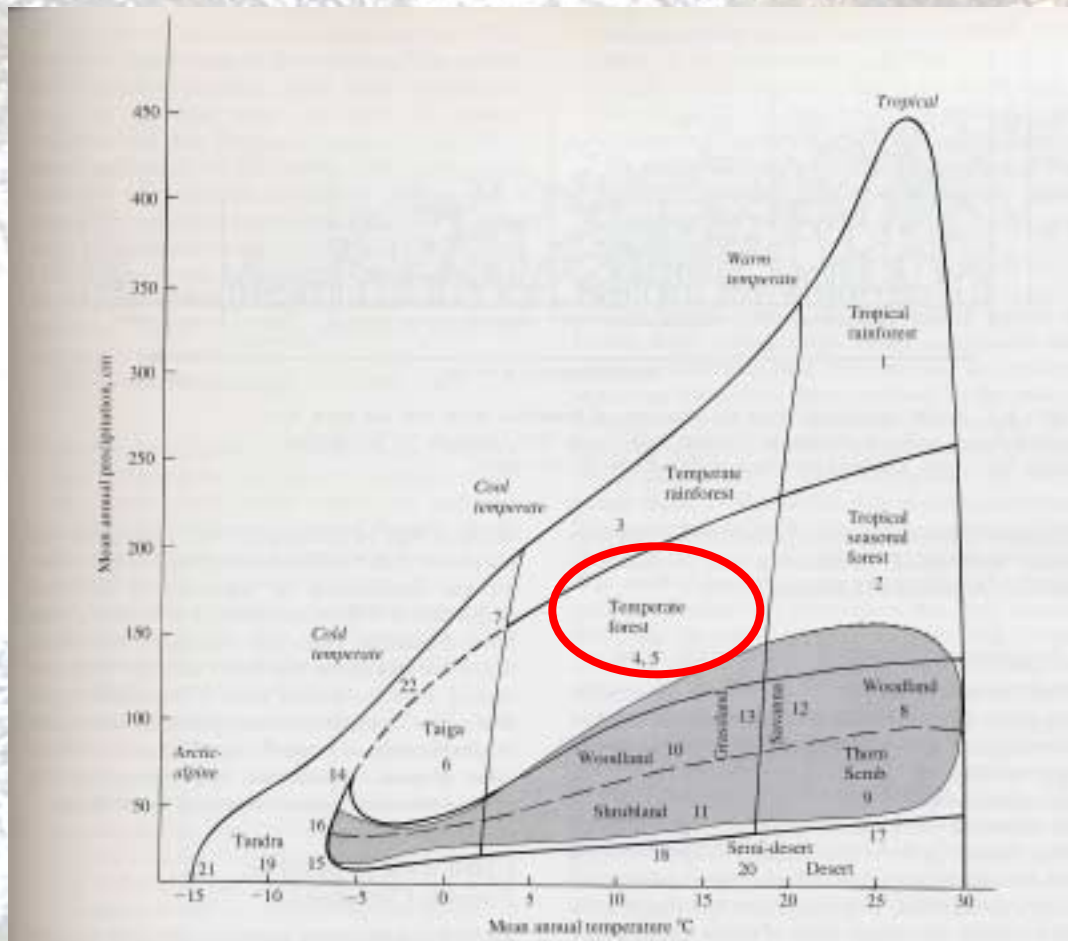
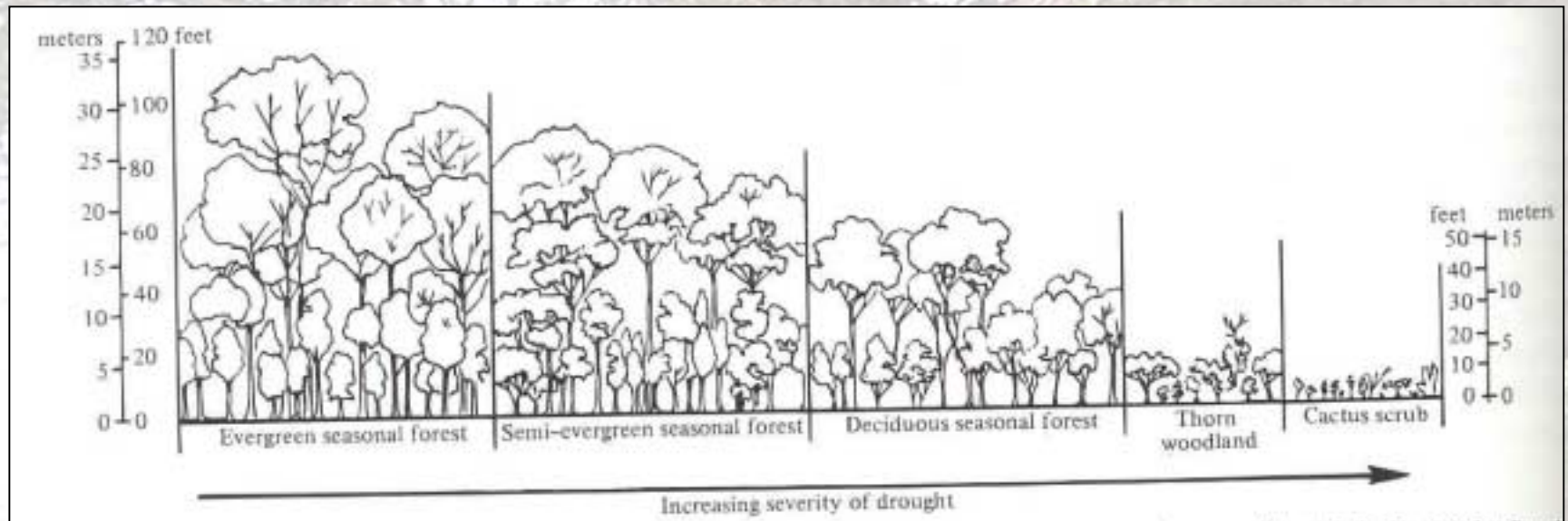


Fig. 6.4

# Formation Types along a Moisture Gradient – Profile Diagram



Descriptive diagram of the vertical structure of the vegetation: relative positions of the various layers accurately depicted

# Accurate Depiction

- Bob Van Pelt (Forest Giants)



# *Dominance Type*

- Dominant tree species in overstory
- Biomass, density, height, coverage
- National System of Forest Classification (U.S. Forest Cover Types, Society of American Foresters)
- Preferred by foresters, ecologists, range and wildlife managers

# *Floristic Composition*

Identity and proportion (% cover) of plants occupying the site

1. Ground vegetation – e.g. Finland forest site type
2. Overstory – e.g. US National Forest Cover
3. Entire community – e.g. fidelity classes,  
\*Habitat type approach of Daubenmire

# Vegetation Classification: Floristic Composition (habitat type)

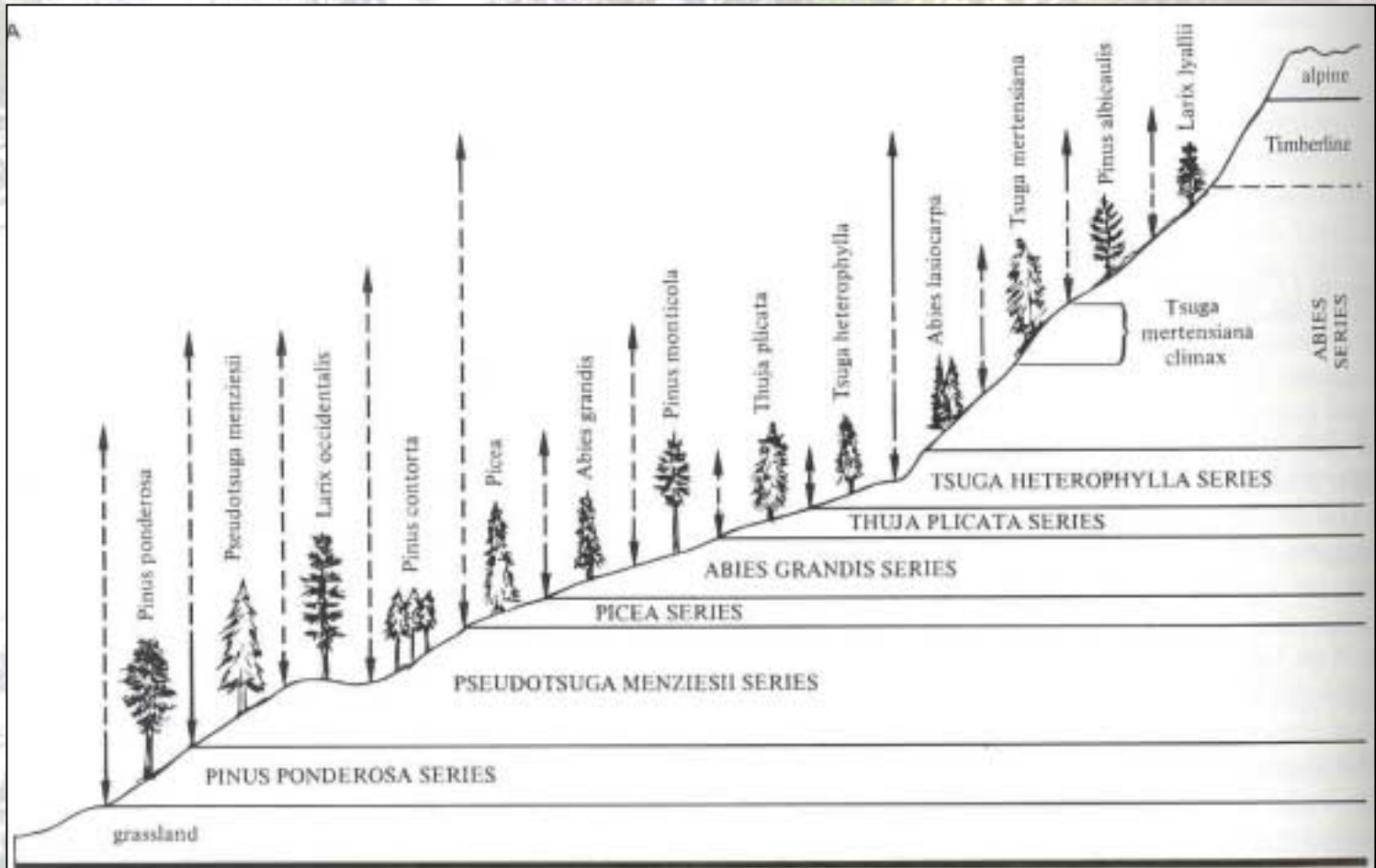


Fig. 6.8

# Ecosystem Classification

- Combines climate, soils, landform, and vegetation characteristics.
- Biogeo-climatic
  - Uses climate to separate vegetation into formations, regions, zones, and subzones.
- Bio-physical
  - Environmental categories rather than taxonomic ecological classification.

# BIOGEOCLIMATIC CLASSIFICATION E.G.

Type of  
Overstory  
Soil  
Moisture

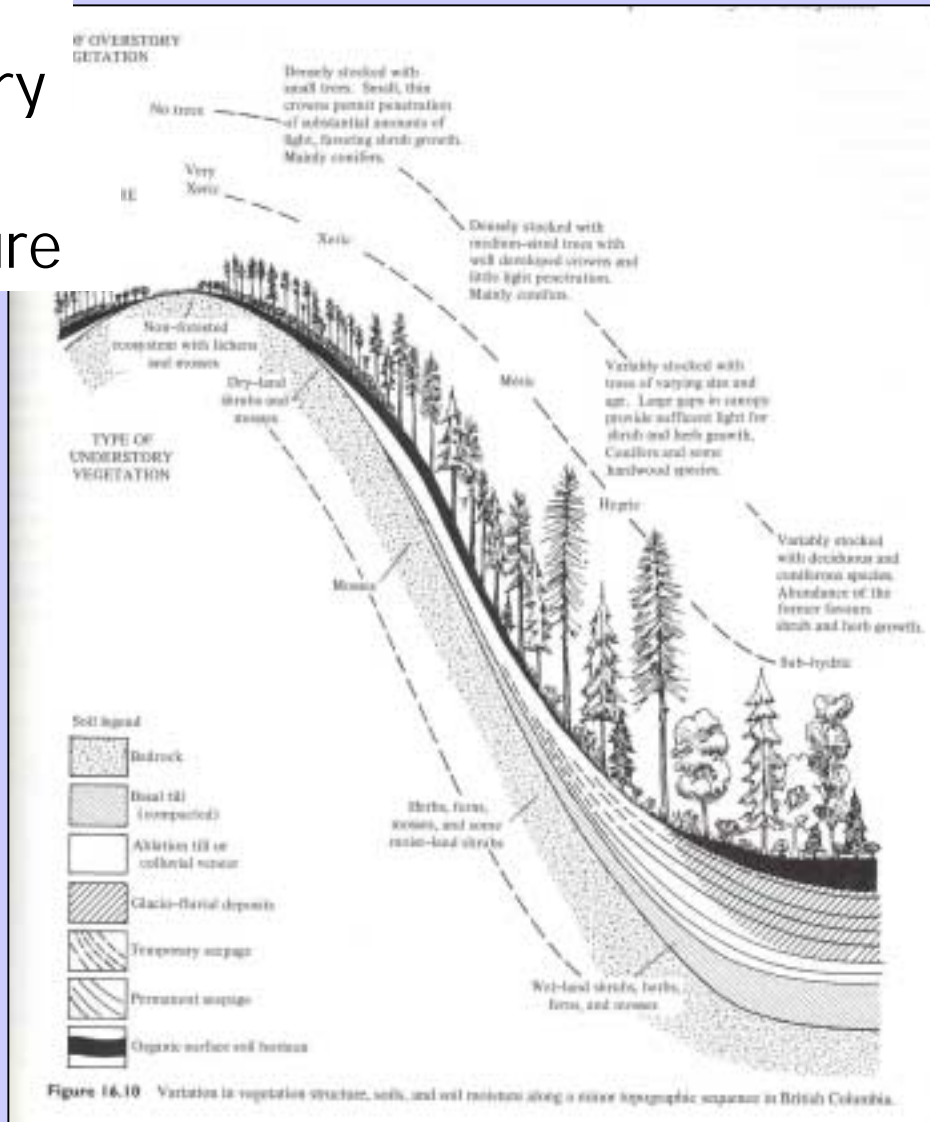


Figure 16.10 Variation in vegetation structure, soils, and soil moisture along a river topographic sequence in British Columbia.

Vegetation  
structure, soils  
and soil  
moisture along  
a topographic  
sequence in a  
subzone of  
British  
Columbia

Fig. 6.10

# Measures of Relative Moisture Availability

- Xeric – water removed very rapidly – soil only moist briefly after precipitation
- Mesic – water removed slowly – soil may remain moist for long periods of time
- Hygric – water removed so slowly soil remains wet for most of growing season (Devil's club)
- Hydric – water is at or above soil surface all year
- \* Important component of biogeoclimatic classification system

# BIOPHYSICAL

- Series of inventories of climate, soils, landforms, and vegetation
- Synthesized into “environmental categories”
- Usu. Requires team of specialists
  - Geologist
  - Pedologist
  - Plant ecologist

# To wrap up...

- Variety of classification systems used to describe forests
- The type of system employed will depend on the objectives of the researcher/forest manager
- Our lab gives us some insight into an example of how these classification systems can work