

Degrees Celsius

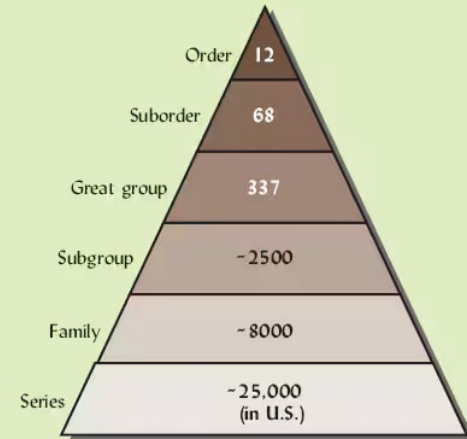
		T_{ANN50} : Mean annual soil temperature at 50cm				
		<0 ↓	0 to 8 ↓	8 to 15 ↓	15 to 22 ↓	> 22 ↓
T_{SUM50} : Mean summer soil temp. at 50cm	> 15 →	Other (primarily permafrost)	Frigid	Mesic	Thermic	Hyperthermic
	< 15 →		Cryic			

Plant Classification

Soil Classification

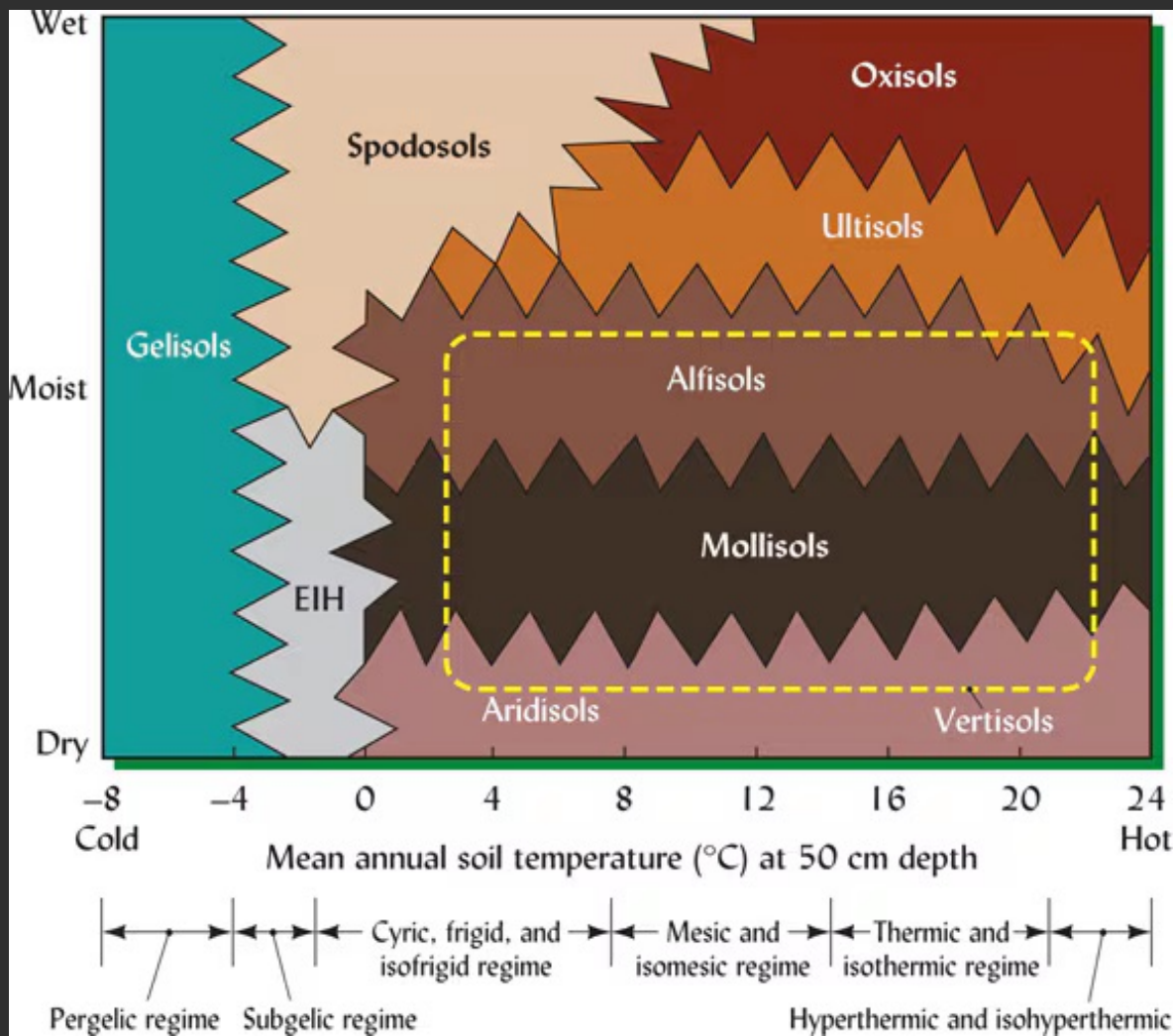
Phylum	Pterophyta	Increase specificity ↓	Order	Alfisols
Class	Angiospermae		Suborder	Udalfs
Subclass	Dicotyledoneae		Great Group	Hapludalfs
Order	Rosales		Subgroup	Oxyaquic Hapludalfs
Family	Leguminosae		Family	Fine loamy, mixed, mesic, active
Genus	<i>Trifolium</i>		Series	Miami
Species	<i>repens</i>		Phase ^a	Miami silt loam

^aTechnically not a category in *Soil Taxonomy* but used in field surveying. *Silt loam* refers to the texture of the A horizon.



	<i>Mollisols</i>	Order
	<i>Aquolls</i>	Suborder
	<i>Argiaquolls</i>	Great group
Typic	<i>Argiaquolls</i>	Subgroup

Name	Formative Element	Derivation	Pronunciation	Major Characteristics
Alfisols	alf	Nonsense symbol	Ped <u>al</u> fer	Argillic, natric, or kandic horizon; high-to-medium base saturation
Andisols	and	Jap. <i>ando</i> , black soil	<u>And</u> esite	From volcanic ejecta, dominated by allophane or Al-humic complexes
Aridisols	id	L. <i>aridus</i> , dry	<u>Arid</u>	Dry soil, ochric epipedon, sometimes argillic or natric horizon
Entisols	ent	Nonsense symbol	<u>Recent</u>	Little profile development, ochric epipedon common
Gelisols	el	Gk. <i>gelid</i> , very cold	<u>Jelly</u>	Permafrost, often with cryoturbation (frost churning)
Histosols	ist	Gk. <i>histos</i> , tissue	<u>Histology</u>	Peat or bog; >20% organic matter
Inceptisols	ept	L. <i>inceptum</i> , beginning	<u>Inception</u>	Embryonic soils with few diagnostic features, ochric or umbric epipedon, cambic horizon
Mollisols	oll	L. <i>mollis</i> , soft	<u>Mollify</u>	Mollic epipedon, high base saturation, dark soils, some with argillic or natric horizons
Oxisols	ox	Fr. <i>oxide</i> , oxide	<u>Oxide</u>	Oxic horizon, no argillic horizon, highly weathered
Spodosols	od	Gk. <i>spodos</i> , wood ash	<u>Podzol</u> ; odd	Spodic horizon commonly with iron, aluminum oxides and humus accumulation
Ultisols	ult	L. <i>ultimus</i> , last	<u>Ultimate</u>	Argillic or kandic horizon, low base saturation
Vertisols	ert	L. <i>verto</i> , turn	<u>Invert</u>	High in swelling clays; deep cracks when soil is dry





Entisols

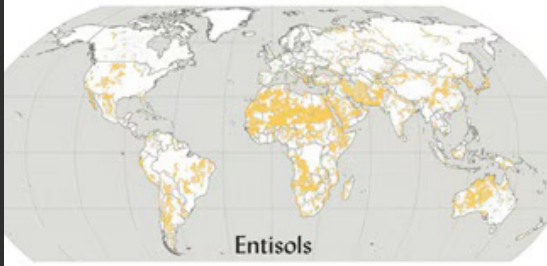
Young, poorly

developed

soils

with no

horizon development.



Suborders are:

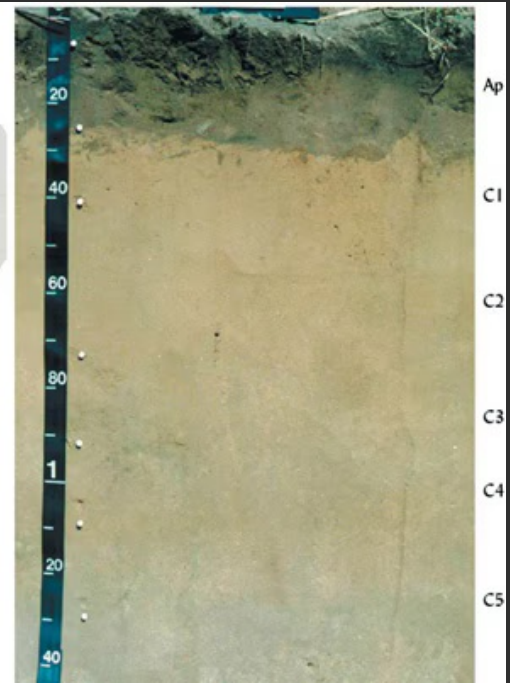
Aquents (wet)

Fluvents (alluvial deposits)

Orthents (typical)

Psamments (sandy)

Wassents (under water)



Inceptisols

- Little

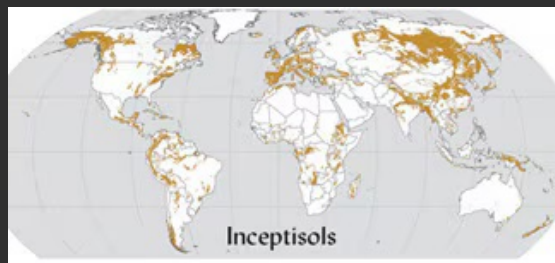
horizon

development.

No clay, Al, Fe,

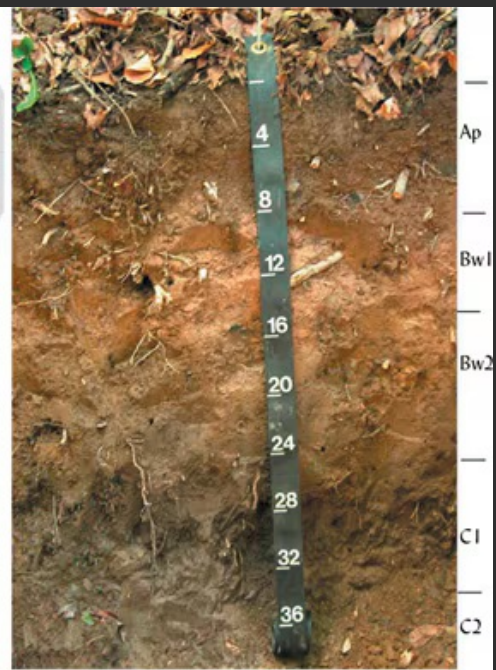
or organic

accumulation



Suborders are:

- Aquepts (wet)
- Cryepts (very cold)
- Gelepts (permafrost)
- Udepts (humid climate)
- Ustepts (semiarid)
- Xerepts (dry summers, wet winters)



Andisols

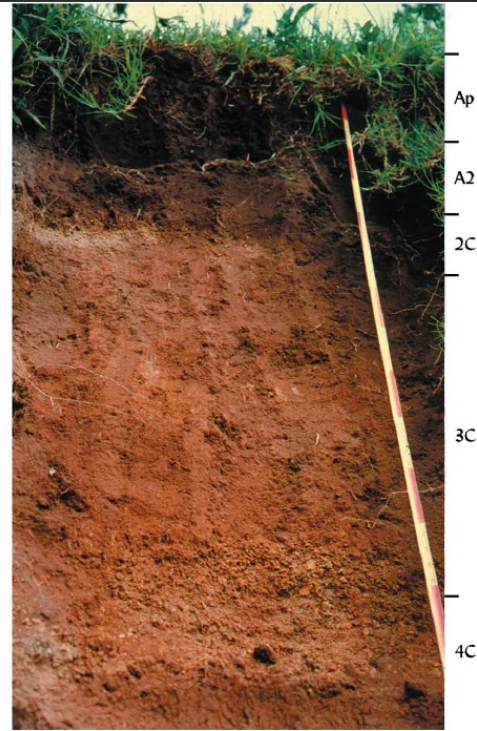
- young poorly
formed soils
from volcanic
ash and ejecta



0.7% of global and 1.7% of U.S. ice-free land

Suborders are:

- Aquands (wet)
- Cryands (cold)
- Gelyands (very cold)
- Torrands (hot, dry)
- Udands (humid)
- Ustands (moist/dry)
- Vitrands (volcanic glass)
- Xerands (dry summers, moist winters)



→ Phosphorous, nutrients

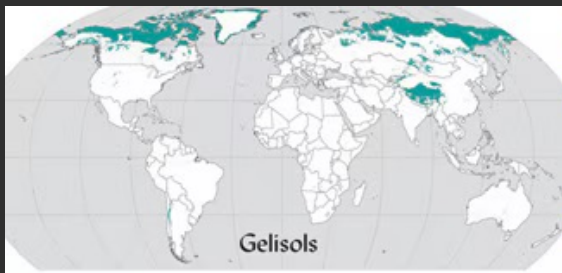
Gelisols

→ poorly developed

soils that

contain

permafrost

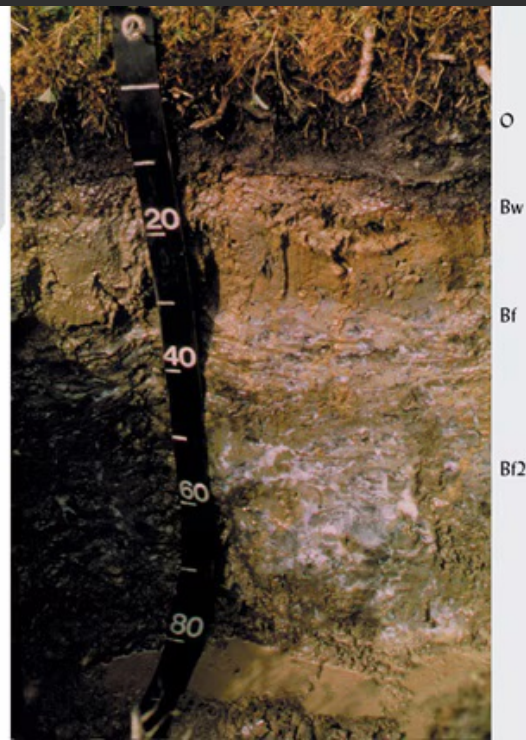


Suborders are:

Histels (organic)

Orthels (no special features)

Turbels (cryoturbation)



Histosols

- young

soils

with an
accumulation
of organic

matter

w/o permafrost



Suborders are:

Fibrists (fibers of plants obvious)

Folistis (leaf mat accumulations)

Hemists (fibers partly decomposed)

Saprists (fibers not recognizable)

Wassists (underwater most of the time)



Aridisols

Ochric

epipedon,

low in

O-matter

and light

in color



CaCO_3

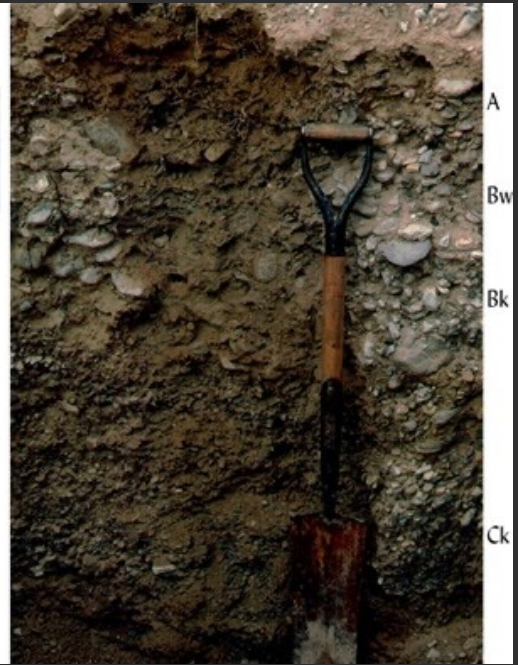
Low leaching

- High nutrients



Suborders are:

- Argids (clay)
- Calcids (carbonate)
- Cambids (typical)
- Cryids (cold)
- Durids (duripan)
- Gypsid (gypsum)



Vertisols

- Shrink -
Swell

Clays, wet

and periods

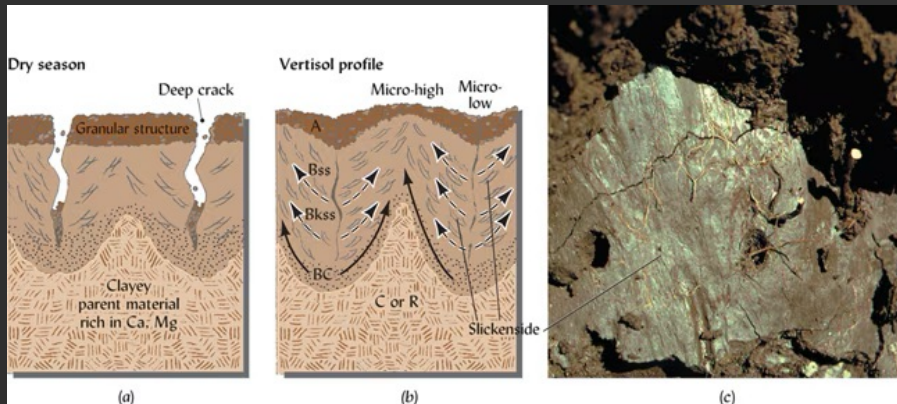
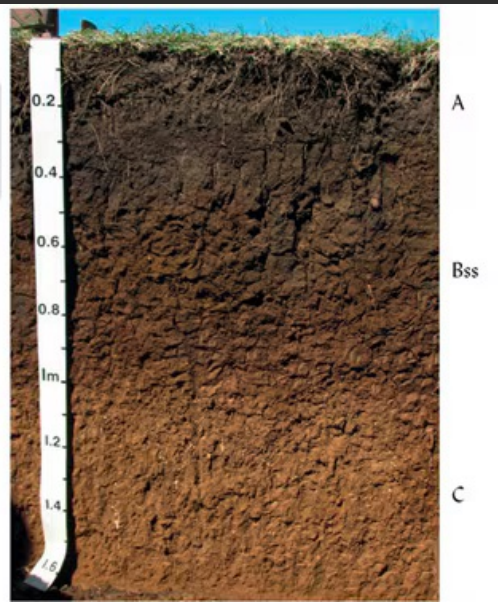
> 30% Shrink/Swell

Clay composite



Suborders are:

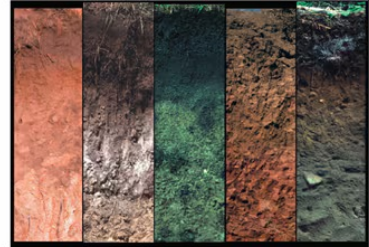
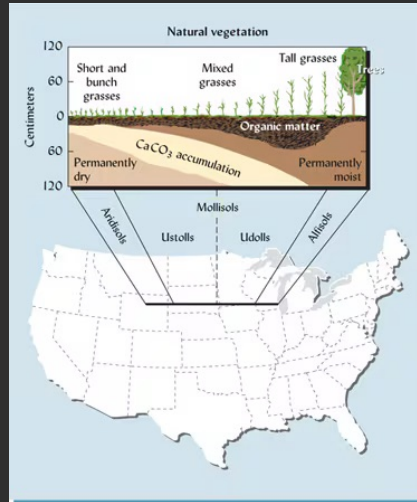
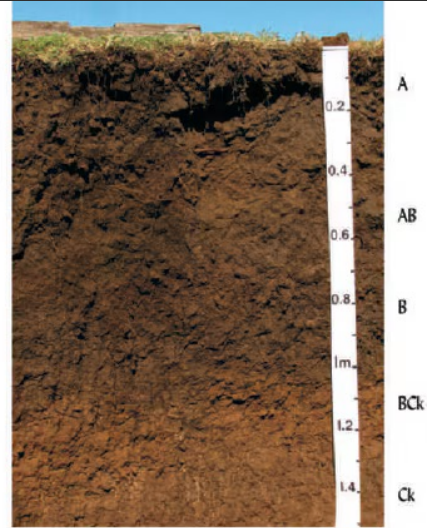
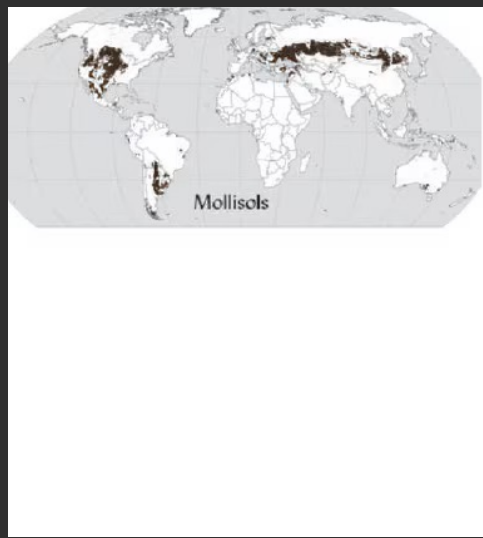
- Aquerts (wet)
- Cryerts (cold)
- Torrerts (hot summer, very dry)
- Uderts (humid)
- Usterts (moist/dry)
- Xererts (dry summers, moist winters)



Mollisols

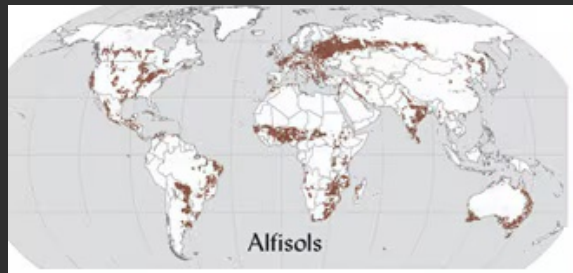
→ Accumulation
of Ca Rich
organic matter

→ Roots of grasses



Alfisols

→ Strongly weathered and have a diagnostic horizon where Si: Clay has accumulated → Broad leaf forests



Suborders are:

- Aqualfs (wet)
- Cryalfs (cold)
- Udalfs (humid)
- Ustalfs (moist/dry)
- Xeralfs (dry summers, moist winters)



Ultisols

Highly

leached -

Warm to

tropical

environments



Suborders are:

Aquults (wet)

Humults (high humus)

Udults (humid)

Ustults (moist/dry)

Xerults (dry summers, moist winters)



Acidic

Sandy
and highly
leached

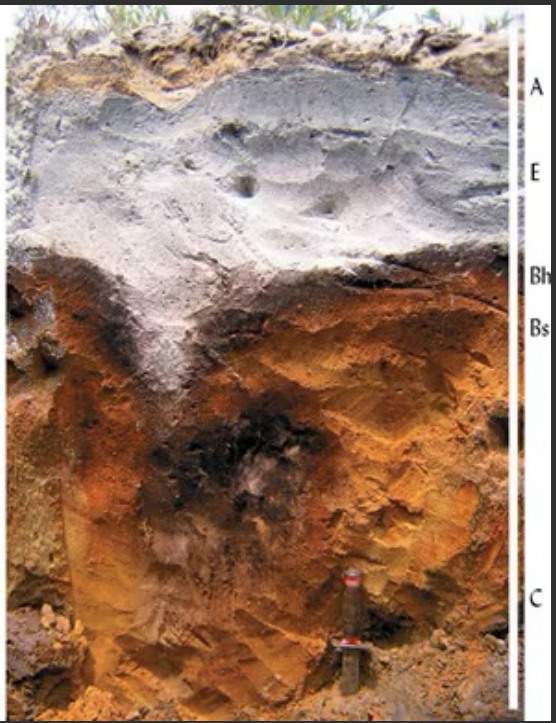
→ esp.

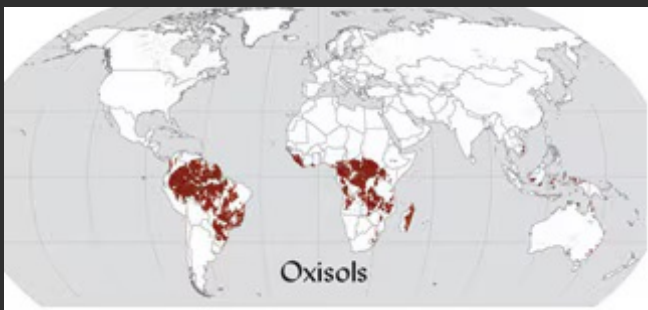
Common

under coniferous trees



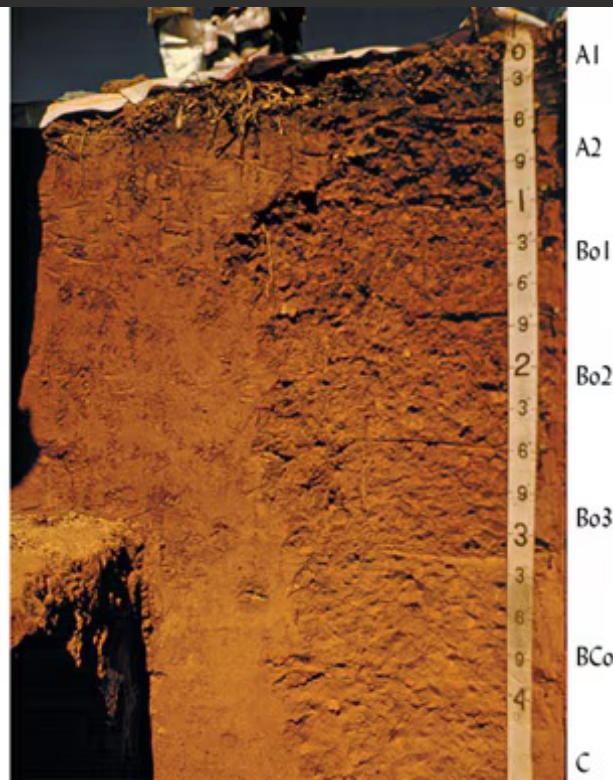
- Suborders are:**
- Aquods (wet)
 - Cryods (cold)
 - Gelods (very cold)
 - Humods (humus)
 - Orthods (typical)





Suborders are:

- Aquox (wet)
- Perox (very humid)
- Torrox (hot, dry)
- Udox (humid)
- Ustox (moist/dry)



Oxisols → Oxidic Subsurface (Fe, Al oxides)
 highly weathered, high clay content

Table 3.4

FORMATIVE ELEMENTS IN NAMES OF SUBORDERS IN *SOIL TAXONOMY*

Formative Element	Derivation	Connotation of Formative Element
alb	L. <i>albus</i> , white	Presence of albic horizon (a bleached eluvial horizon)
aqu	L. <i>aqua</i> , water	Characteristics associated with wetness
ar	L. <i>arare</i> , to plow	Mixed horizons
arg	L. <i>argilla</i> , white clay	Presence of argillic horizon (a horizon with illuvial clay)
calc	L. <i>calcis</i> , lime	Presence of calcic horizon
camb	L. <i>cambriare</i> , to change	Presence of cambic horizon
cry	Gk. <i>kryos</i> , icy cold	Cold
dur	L. <i>durus</i> , hard	Presence of a duripan
fibr	L. <i>fibra</i> , fiber	Least-decomposed stage
fluv	L. <i>fluvius</i> , river	Floodplains
fol	L. <i>folia</i> , leaf	Mass of leaves
gel	Gk. <i>gelid</i> , cold	Cold
gyps	L. <i>gypsum</i> , gypsum	Presence of gypsic horizon
hem	Gk. <i>hemi</i> , half	Intermediate stage of decomposition
hist	Gk. <i>histos</i> , tissue	Presence of histic epipedon
hum	L. <i>humus</i> , earth	Presence of organic matter
orth	Gk. <i>orthos</i> , true	The common ones
per	L. <i>per</i> , throughout time	Of year-round humid climates, perudic moisture regime
psamm	Gk. <i>psammos</i> , sand	Sand textures
rend	Modified from Rendzina	Rendzina-like—high in carbonates
sal	L. <i>sal</i> , salt	Presence of salic (saline) horizon
sapr	Gk. <i>sapros</i> , rotten	Most decomposed stage
torr	L. <i>torridus</i> , hot and dry	Usually dry
turb	L. <i>turbidus</i> , disturbed	Cryoturbation
ud	L. <i>udus</i> , humid	Of humid climates
ust	L. <i>ustus</i> , burnt	Of dry climates, usually hot in summer
vitr	L. <i>vitreus</i> , glass	Resembling glass
wass	G. <i>wasser</i> , water	Positive water potential at the soil surface year round
xer	Gk. <i>xeros</i> , dry	Dry summers, moist winters