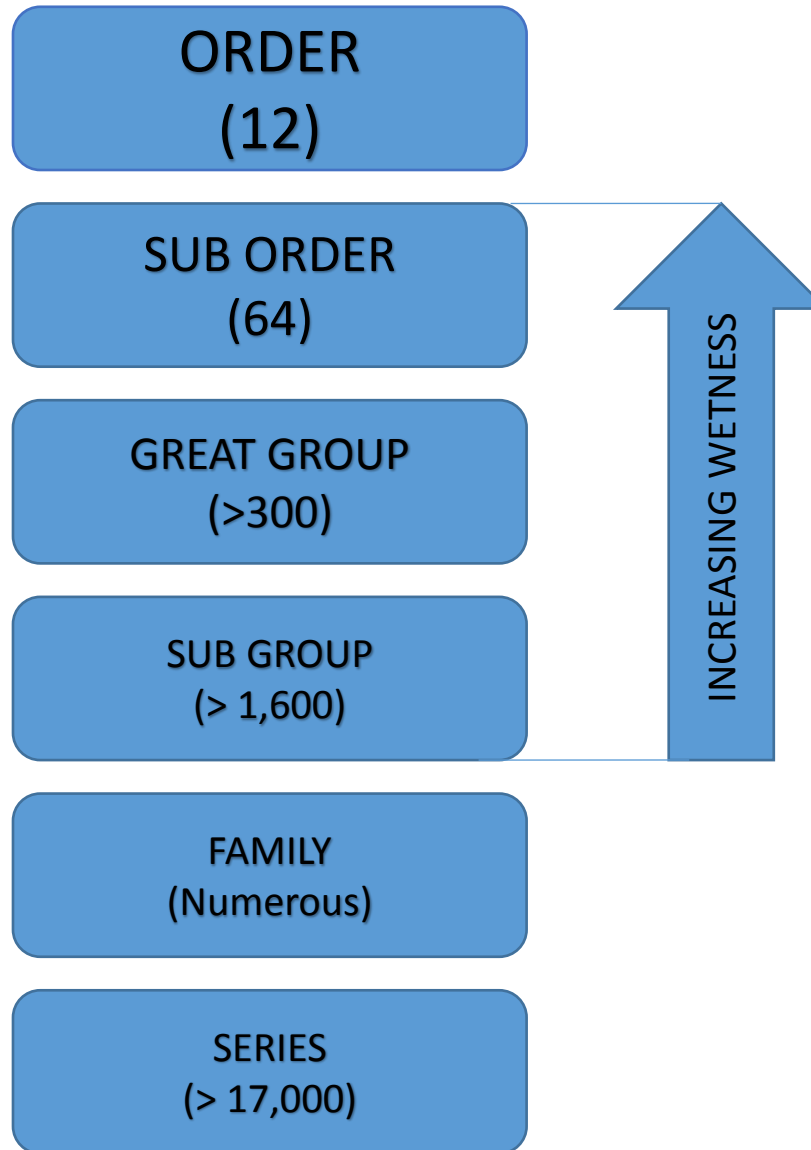


SOIL TAXONOMY



TAXONOMIC NAMES

SOIL ORDER	NAME ENDS IN:	SOIL ORDER	NAME ENDS IN:
• Alfisols	• -Alf	• Inceptisols	• -Ept
• Andisols	• -And	• Mollisols	• -Oll
• Aridisols	• -ld	• Oxisols	• -Ox
• Entisols	• -Ent	• Spodosols	• -Od
• Gelisols	• -El	• Ultisols	• -Ult
• Histosols	• -lst	• Vertisols	• -Ert

Soil Order	Formative Terms	Pronunciation
<u>Al</u> fisols	Alf, meaningless syllable	Pedal <u>fer</u>
<u>And</u> isols	Modified from ando	<u>Ando</u>
Arid <u>is</u> ols	Latin, aridies, dry	Arid <u>is</u>
<u>Ent</u> isols	Ent, meaningless	Recent <u>is</u>
<u>Gel</u> isols	Latin gelare, to freeze	<u>Jell</u>
<u>Hist</u> osols	Greek, histos, tissue	<u>Histology</u>
In <u>cept</u> isols	Latin, incepum, beginning	In <u>ception</u>
<u>Moll</u> isols	Latin, mollis, soft	<u>Mollify</u>
<u>Ox</u> isols	French oxide	<u>Oxide</u>
Spod <u>os</u> ols	Greek spodos, wood ash	<u>Odd</u>
<u>Ult</u> isols	Latin ultimus, last	<u>Ultimate</u>
<u>Vert</u> isols	Latin verito, turn	In <u>vert</u>

Formative Elements in Names of Suborders

- Names of Suborders have two syllables. The first suggests something about the soil and the second is the formative element from the Order (Udalf – an Alfisol with a udic moisture regime).
- The wet Suborders begin with Aqu, Fibr, Hist, and Sapr and include Albolis.
- By adding the formative elements for the Orders we have the wet Suborders: Aqu + Alf = Aqualfs; similarly we arrive with Aquans, (no Aquids), Aquents, (no aquels or aquists), Aquepts, Aquolls, Aquoxs, Aquods, Aquults, and Aquerts. As well as Albolis.
- Fibr + ist = Fibrists; similarly we have Fibrels (for Gelisols), Hist + ist = Histists; Histrels, and Sapr + ist = Saprists; Saprels
- Therefore the “wet” Suborders are:
Aquans, Aquents, Aquepts, Aquolls, Aquoxs, Aquods, Aquults, Aquerts, Fibrists, Fibrels, Histists, Histrels, Saprists, and Saprels
- Albolis are also wet.
- On the next slide are all the formative elements for all Suborders.

Formative Elements in Names of Soil Suborders

<u>Formative element</u>	<u>Derivation</u>	<u>Connotation</u>
Alb	L. <i>albus</i> , white	Presence of an albic horizon.
Anthr	Modified from Gr. <i>anthropos</i> , human	Modified by humans.
Aqu	L. <i>aqua</i> , water	Aquic conditions.
Ar	L. <i>arare</i> , to plow	Mixed horizon.
Arg	Modified from argillic horizon; L. <i>argilla</i> , white clay ...	Presence of an argillic horizon.
Calc	L. <i>calcis</i> , lime	Presence of a calcic horizon.
Camb.....	L. <i>cambiare</i> , to exchange	Presence of a cambic horizon.
Cry	Gr. <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	Flood plain.
Fol	L. <i>folia</i> , leaf	Mass of leaves.
Gyps	L. <i>gypsum</i> , gypsum	Presence of a gypsic horizon.
Hem	Gr. <i>hemi</i> , half	Intermediate stage of decomposition.
Hist	Gr. <i>histos</i> , tissue	Presence of organic materials.
Hum	L. <i>humus</i> , earth	Presence of organic matter.
Orth	Gr. <i>orthos</i> , true	The common ones.
Per	L. <i>per</i> , throughout in time	Perudic moisture regime.
Psamm	Gr. <i>psammos</i> , sand	Sandy texture.
Rend.....	Modified from Rendzina	High carbonate content.
Sal	L. base of <i>sal</i> , salt	Presence of a salic horizon.
Sapr	Gr. <i>saprose</i> , rotten	Most decomposed stage.
Torr	L. <i>torridus</i> , hot and dry	Torric moisture regime.
Turb	L. <i>turbidis</i> , disturbed	Presence of cryoturbation.
Ud	L. <i>udus</i> , humid.....	Udic moisture regime.
Ust	L. <i>ustus</i> , burnt	Ustic moisture regime.
Vitr	L. <i>vitrum</i> , glass	Presence of glass.
Xer	Gr. <i>xeros</i> , dry	Xeric moisture regime.

Formative Elements in Names of Great Groups

- The name of the Great Groups consist of the Suborder and a prefix that consists of one or two formative elements – diagnostic properties (Paleudalf – an old, deeply weathered Udalf).
- The wetter Great Groups begin with Aqu, and Hist.
- By adding the formative elements for great groups to the formative element for the Suborder and Order we have the Great Group.
- The only great groups with a high probability of being hydric are Aquisalids, Historthels, and Histoturbels great groups **and** all great groups in aquic suborders.
- On the next 2 slides are all the formative elements for great groups.

Formative Elements in Names of Soil Great Groups

<u>Formative element</u>	<u>Derivation and Connotation</u>	
Acr	Modified from Gr. <i>arkos</i> , at the end	Extreme weathering.
Al	Modified from aluminum	High aluminum, low iron.
Alb	L. <i>albus</i> , white	Presence of an albic horizon.
Anhy	Gr. <i>anhydros</i> , waterless	Very dry.
Anthr	Modified from Gr. <i>anthropos</i> , human	An anthropic epipedon.
Aqu	L. <i>aqua</i> , water	Aquic conditions.
Argi	Modified from argillic horizon; L. <i>argilla</i> , white clay .	Presence of an argillic horizon.
Calci, calc	L. <i>calcis</i> , lime	A calcic horizon.
Cry	Gr. <i>kryos</i> , icy cold	Cold.
Dur	L. <i>durus</i> , hard	A duripan.
Dystr, dys	Modified from Gr. <i>dys</i> , ill; dystrophic, infertile	Low base saturation.
Endo.....	Gr. <i>endon</i> , <i>endo</i> , within	Implying a ground water table.
Epi	Gr. <i>epi</i> , on, above	Implying a perched water table.
Eutr	Modified from Gr. <i>eu</i> , good; eutrophic, fertile	High base saturation.
Ferr	L. <i>ferrum</i> , iron	Presence of iron.
Fibr	L. <i>fibra</i> , fiber	Least decomposed stage.
Fluv	L. <i>fluvius</i> , river	Flood plain.
Fol	L. <i>folia</i> , leaf	Mass of leaves.
Fragi	Modified from L. <i>fragilis</i> , brittle	Presence of a fragipan.
Fragloss	Compound of fra(g) and gloss	See the formative elements “frag” and “gloss.”
Fulv	L. <i>fulvus</i> , dull brownish yellow	Dark brown color, presence of organic carbon.
Glac.....	L. <i>glacialis</i> , icy	Ice lenses or wedges.
Gyps	L. <i>gypsum</i> , gypsum	Presence of a gypsic horizon.
Gloss	Gr. <i>glossa</i> , tongue	Presence of a glossic horizon.
Hal	Gr. <i>hals</i> , salt	Salty.
Hapl	Gr. <i>haplous</i> , simple	Minimum horizon development.
Hem	Gr. <i>hemi</i> , half	Intermediate stage of decomposition.
Hist	Gr. <i>histos</i> , tissue	Presence of organic materials.

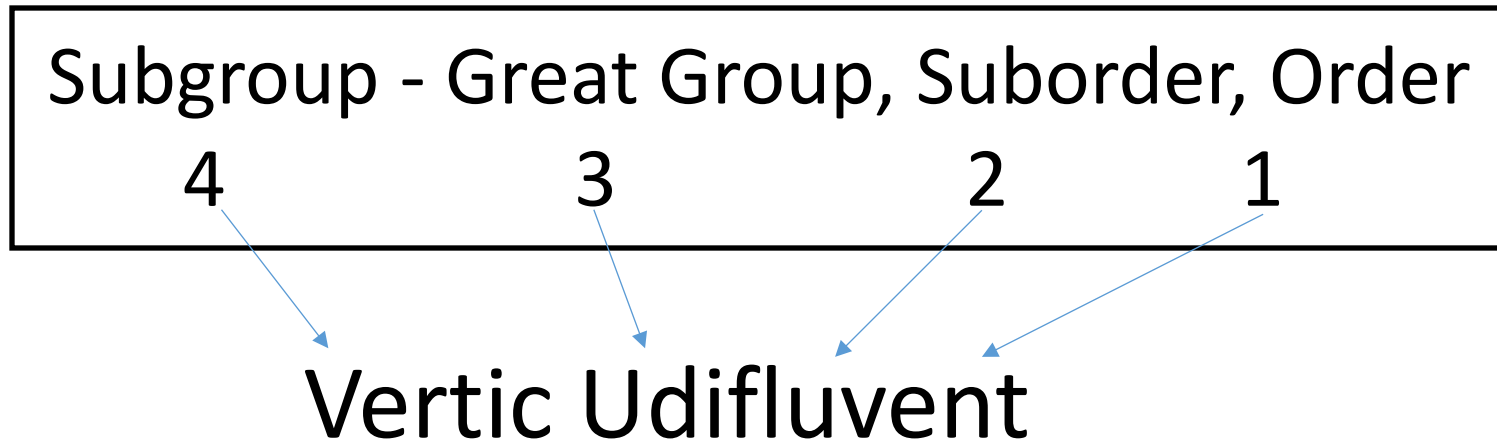
Formative Elements in Names of Soil Great Groups

<u>Formative element</u>	<u>Derivation and Connotation</u>	
Hum	L. <i>humus</i> , earth	Presence of organic matter.
Hydr	Gr. <i>hydor</i> , water	Presence of water.
Kand, kan	Modified from kandite	1:1 layer silicate clays.
Luv	Gr. <i>louo</i> , to wash	Illuvial.
Melan	Gr. <i>melasanos</i> , black	Black, presence of organic carbon.
Moll	L. <i>mollis</i> , soft	Presence of a mollic epipedon.
Natr	Modified from <i>natrium</i> , sodium	Presence of a natric horizon.
Pale	Gr. <i>paleos</i> , old	Excessive development.
Petr	Gr. comb. form of <i>petra</i> , rock	A cemented horizon.
Plac	Gr. base of <i>plax</i> , flat stone	Presence of a thin pan.
Plagg	Modified from Ger. <i>plaggen</i> , sod	Presence of a plaggen epipedon.
Plinth	Gr. <i>plinthos</i> , brick	Presence of plinthite.
Psamm	Gr. <i>psammos</i> , sand	Sandy texture.
Quartz	Ger. <i>quarz</i> , quartz	High quartz content.
Rhod	Gr. base of <i>rhodon</i> , rose	Dark red color.
Sal	L. base of <i>sal</i> , salt	Presence of a salic horizon.
Sapr	Gr. <i>saprose</i> , rotten	Most decomposed stage.
Somb	F. <i>sombre</i> , dark	Presence of a sombric horizon.
Sphagn	Gr. <i>sphagnos</i> , bog	Presence of sphagnum.
Sulf	L. <i>sulfur</i> , sulfur	Presence of sulfides or their oxidation products.
Torr	L. <i>torridus</i> , hot and dry	Torr moisture regime.
Ud	L. <i>udus</i> , humid	Udic moisture regime.
Umbr	L. <i>umbra</i> , shade	Presence of an umbric epipedon.
Ust	L. <i>ustus</i> , burnt	Ustic moisture regime.
Verm	L. base of <i>vermes</i> , worm	Wormy or mixed by animals.
Vitr	L. <i>vitrum</i> , glass	Presence of glass.
Xer	Gr. <i>xeros</i> , dry	Xeric moisture regime.

Formative Elements in Names of Subgroup

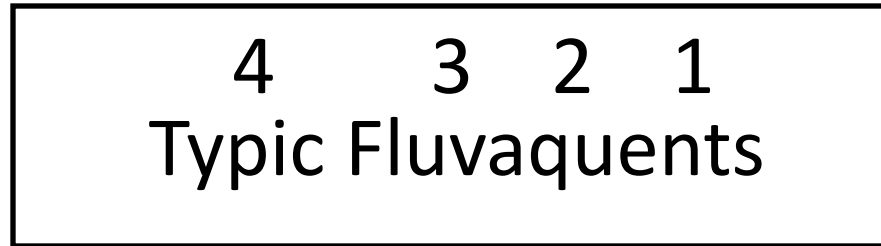
- The name of the Subgroup consists of the Great Group modified by one or more adjectives.
- The formative elements for Subgroup are Typic (implying the central concept for the great group) and names which imply an intergrading toward another great group, suborder, or order.
- Rarely are soils that begin to show wetness at the **subgroup** level hydric soils. Most all hydric soils are wet enough that wetness is implied at a higher category. Exceptions could be soils on flood plains such as Aquic Dystrochreps, Aquic Eutrochrepts, and Aquic Udifluvents.

Interpreting Taxonomic Names



- 4 - Vertic subgroup - invert, shrink-swell, high clay (intergrading toward a Vertisol)
- 3 - Udi(c) great group - humid climate
- 2 - Fluv(ic) suborder - floodplain
- 1 - Ent(isol) order - little soil development

Example of Subgroup

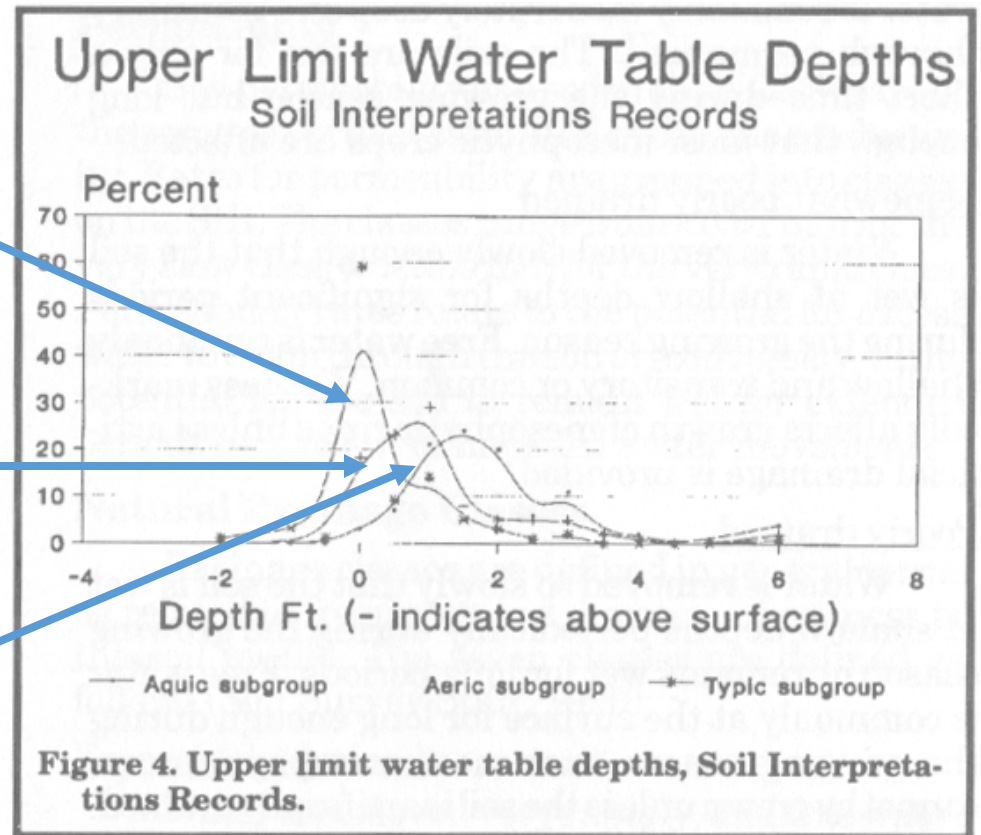


4 1 2
Typical Entisols with aquic moisture regimes
3
that occur on floodplains.

1. Order
2. Suborder
3. Great Group
4. Subgroup (the typical concept of Fluvaquents)

Water Table Depths

- Typic subgroup of an aquic suborder:
 - Typic _____ aqu _____
– wettest
- Aeric subgroup of an aquic suborder:
 - Aeric _____ aqu _____
– better aerated
- Aquic subgroup:
 - Aquic _____
– driest



Landscape Hydrology Indicators:

- Familiarity with redoximorphic processes and recognizing their morphological expressions in soils facilitates on-site determination of depth of seasonal high saturation and, in some cases the probability of inundation.



- In the absence of hydrologic modifications the morphology of soils give evidence of seasonal high saturation or inundation as follows :
- Soils with the 14 following hydric soil indicators have seasonal high saturation to the surface or inundation above the soil surface:
 - A1 (Histosol or Histel), A2 (Histic Epipedon), A3 (Black Histic), A4 (Hydrogen Sulfide), A7 (5 cm Mucky Mineral), A8 (Muck Presence), A9 (1 cm Muck), A10 (2 cm Muck), A12 (Thick Dark Surface), S1 (Sandy Mucky Mineral), F1 (Loamy Mucky Mineral), F10 (Marl), F11 (Depleted Ochric), F16 High Plains Depression).

Hydric Soils with the following 12 hydric soil indicators have seasonal high saturation at the depth where all requirements of the indicator are met. Seasonal high saturation is always within 15 cm of the soil surface; on certain landforms, there may be inundation above the surface.

- A5 (Stratified Layers), A6 (Organic Bodies), A16 (Coast Prairie Redox), S2 (2.5 cm Mucky Peat or Peat), S3 (5cm Mucky Peat or Peat), S4 (Sandy Gleyed Matrix), S5 (Sandy Redox), S6 (Stripped Matrix), S7 (Dark Surface), S8 (Polyvalue Below Surface), S9 (Thin Dark Surface), F13 (Umbric Surface).

Hydric Soils with the following 10 hydric soil indicators have seasonal high saturation at the depth where all requirements of the indicator are met. Seasonal high saturation is always within 30 cm of the soil surface; on certain landforms there may be inundated above the surface.

- A11 (Depleted Below Dark Surface), A13 (Alaska Gleyed), A14 (Alaska Redox), A15 (Alaska Gleyed Pores). F2 (Loamy Gleyed Matrix), F3 (Depleted Matrix), F6 (Redox Dark Surface), F7 (Depleted Dark Surface), F17 (Delta Ochric), F20 (Anomalous Bright Loamy Soils).

Hydric Soils with the following 5 hydric soil indicators have inundation above the soil surface. These indicators are poor indicators of soil saturation.

- F8 (Redox Depressions), F9 (Vernal Pools), F12 (Iron/Manganese Masses), F18 (Reduced Vertic), F19 (Piedmont Flood Plain Soils) These HS indicators occur only on depressions or flood plains.