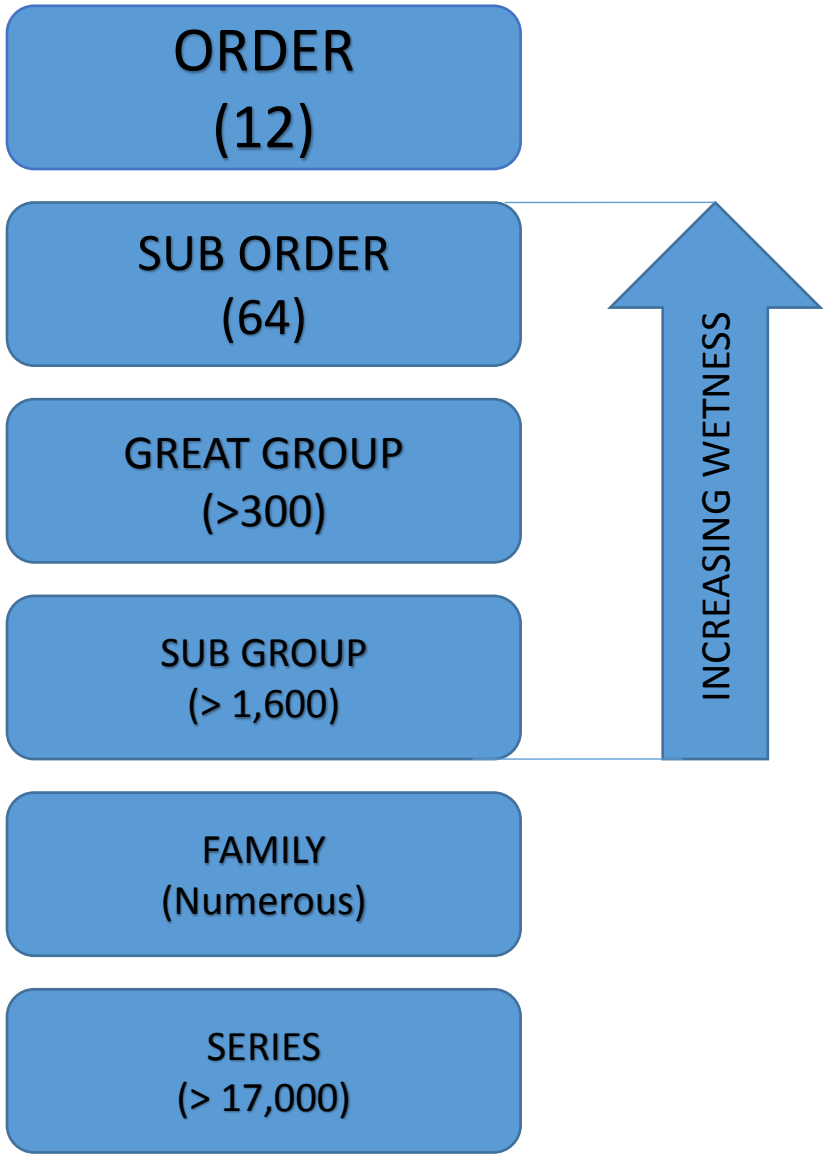
SOIL TAXONOMY



TAXONOMIC NAMES

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

Soil Order	Formative Terms	Pronunciation
Alfisols	Alf, meaningless syllable	Pedalfer
Andisols	Modified from ando	Ando
Aridisols	Latin, aridies, dry	Arid
Entisols	Ent, meaningless	Recent
Gelisols	Latin gelare, to freeze	Jell
Histosols	Greek, histos, tissue	Histology
Inceptisols	Latin, incepum, beginning	Inception
Mollisols	Latin, mollis, soft	Mollify
Oxisols	French oxide	Oxide
Spodosols	Greek spodos, wood ash	Odd
Ultisols	Latin ultimus, last	Ultimate
Vertisols	Latin verto, turn	Invert

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 Albolls.
- 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 Albolls.
- 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
- Albolls are also wet.
- On the next slide are all the formative elements for all Suborders.

Formative Elements in Names of Soil Suborders

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

Formative element	Derivation and Connotation
Acr	Modified from Gr. *arko*s, at the end — Extreme weathering.
Al	Modified from aluminum — High aluminum, low iron.
Alb	L. *albu*s, white — Presence of an albic horizon.
Anhy	Gr. *anydro*s, waterless — Very dry.
Anthr	Modified from Gr. *anthropo*s, human — An anthropic epipedon.
Aqu	L. *aqu*a, water — Aquic conditions.
Argi	Modified from argillic horizon; L. *argill*a, white clay . Presence of an argillic horizon.
Calci, calc	L. *calci*s, lime — A calcic horizon.
Cry	Gr. *kryo*s, icy cold — Cold.
Dur	L. *duru*s, hard — A duripan.
Dystr, dys	Modified from Gr. *dy*s, ill; dystrophic, infertile — Low base saturation.
Endo	Gr. *endo*n, *endo*, within — Implying a ground water table.
Epi	Gr. *epi*, on, above — Implying a perched water table.
Eutr	Modified from Gr. *e*u, good; eutrophic, fertile — High base saturation.
Ferr	L. *ferru*m, iron — Presence of iron.
Fibr	L. *fibr*a, fiber — Least decomposed stage.
Fluv	L. *fluviu*s, river — Flood plain.
Fol	L. *foli*a, leaf — Mass of leaves.
Fragi	Modified from L. *fragili*s, brittle — Presence of a fragipan.
Fragloss	Compound of fra(g) and gloss — See the formative elements “frag” and “gloss.”
Fulv	L. *fulvu*s, dull brownish yellow — Dark brown color, presence of organic carbon.
Glac	L. *glacial*is, icy — Ice lenses or wedges.
Gyps	L. *gypsu*m, gypsum — Presence of a gypsic horizon.
Gloss	Gr. *gloss*a, tongue — Presence of a glossic horizon.
Hal	Gr. *hal*s, salt — Salty.
Hapl	Gr. *haplou*s, simple — Minimum horizon development.
Hem	Gr. *hemi*, half — Intermediate stage of decomposition.
Hist	Gr. *histo*s, tissue — Presence of organic materials.

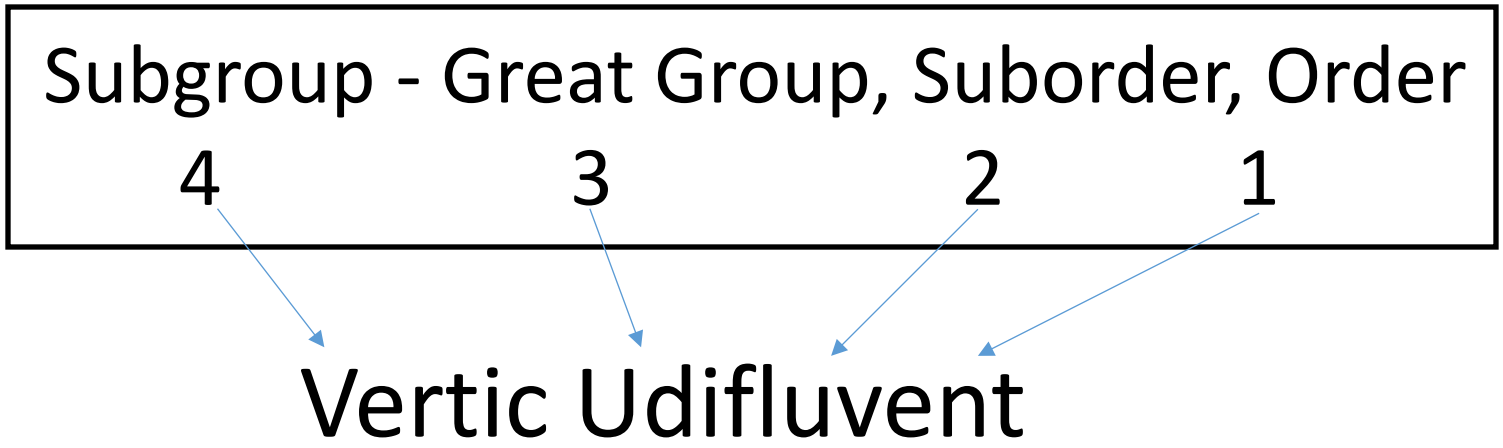
Formative Elements in Names of Soil Great Groups

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

Formative Elements in Names of Sub***group***

- 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 sub**group** 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 3 2 1
Typic Fluvaquents

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

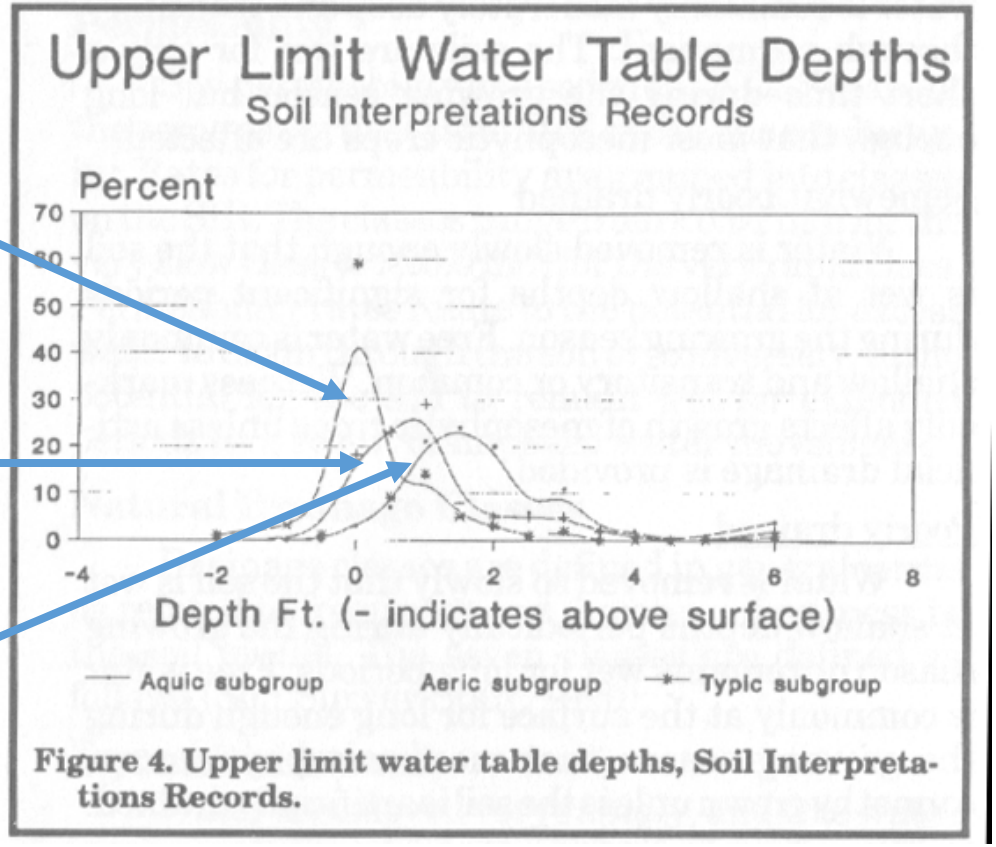


Figure 4. Upper limit water table depths, Soil Interpretations Records.

From Mausbach 1992

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 Prarie 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.