

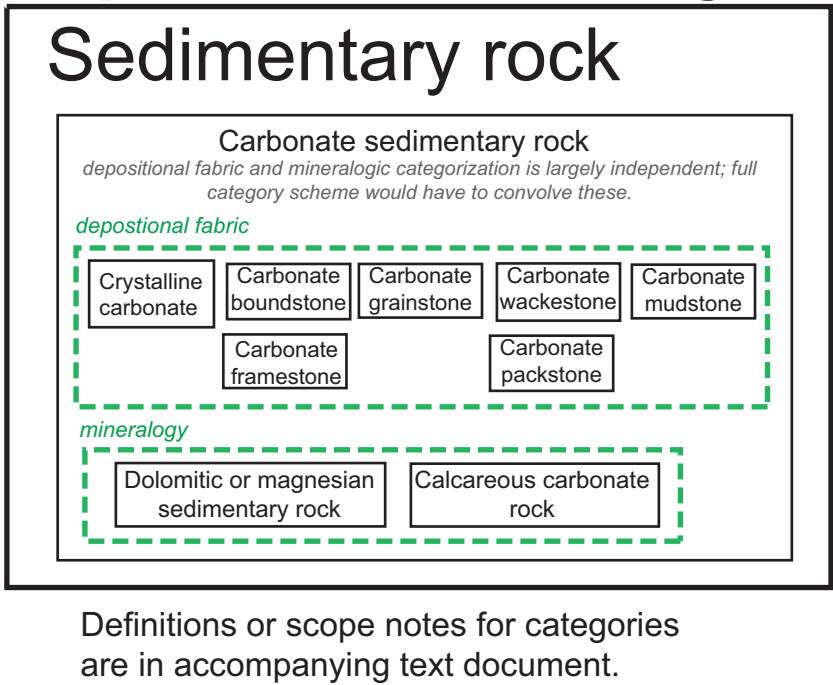
NGMDB Portal Lithology vocabulary

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This document is a ‘road map’ for the lithology vocabulary used by the NGMDB geologic map portal. The words in boxes with black outlines are terms in the vocabulary. These are meant to be used for specifying the rock types that compose a geologic unit. The concepts represented are hand-sample scale rock types to be treated as material constituents of a geologic unit. In each diagram, flow is generally from more general to more specific categories from top to bottom.

This vocabulary includes slightly larger collection of terms than GeoSciML draft lithology vocabulary. Intention is to keep this vocabulary synchronized with GeoSciML vocabulary, such that more specific terms that are included in NGMDB portal vocabulary, will always map to concepts in GeoSciML vocabulary unambiguously.

Explanation of diagrams



All terms in solid-black-line boxes are lithology categories; Terms not in boxes are used for identifying sub vocabularies.

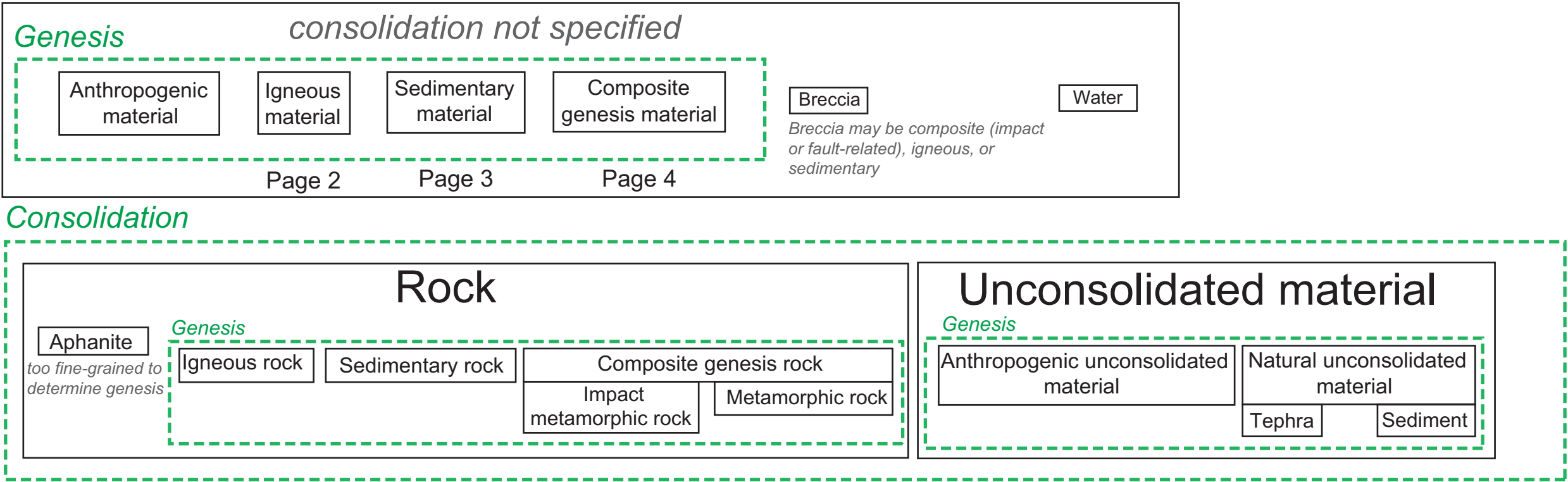
A green-dashed-line box indicates that categories within that box are mutually exclusive, e.g. Carbonate sedimentary rock has two groups of subcategories- one group defined based on depositional fabric, and a second group defined based on mineralogy. The green-text label specifies the property used to distinguish subcategories within the associated green-dashed-line box.

Containment of a boxed group within another boxed group indicates subcategories, e.g. Carbonate sedimentary rock is a kind of Sedimentary rock, and Carbonate packstone is a kind of Carbonate sedimentary rock. In some cases for which only one subcategory is included, or there is no unifying property used to define subcategories, stacking of black-outline boxes in direct contact is used to represent ‘Kind-of’ or subcategory relationship.

Other usage rules are specified in notes on the diagrams.

Compound material

NADM C1 (2004) CompoundMaterial subsumes all categories included.



Igneous material

silica content

Basic igneous material

Intermediate composition igneous material

Acidic igneous material

Fragmental igneous material

Igneous rock

Consolidation

Grain size, texture

these categories have no compositional denotation

Glassy igneous rock Porphyry Aplite Pegmatite Fragmental igneous rock

porphyry may be fine-grained or coarse-grained

unusual or exotic igneous rock types may overlap with other composition based categories, but are distinguished based on textural and mineralogical criteria

composition, texture

Exotic composition igneous rock

Carbonatite Exotic alkalic igneous rock Exotic alkaline rock

Kalsilite- or melilite-bearing igneous rocks

Kimberlite, lamproite, lamprophyre

silica content

Ultrabasic igneous rock

Peridotite Pyroxenite Hornblendite Komatiitic rock

If more than 10 percent kalsilite or melilite is present, classify as exotic alkalic rock

mineralogy, texture

Basic igneous rock

Intermediate composition igneous rock

Use composition-based basic and acidic instead of color-based felsic and mafic

Acidic igneous rock

pyroclastic categories overlap with composition and mineralogic categories

Pyroclastic material

consolidation

Pyroclastic rock

Tuff-breccia, agglomerate, or pyroclastic breccia

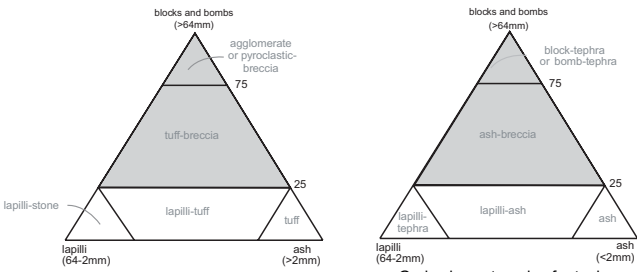
Ash tuff, lapillistone, and lapilli tuff

Tephra

Ash breccia, bomb, or block tephra

Ash and lapilli

grain size



Grain size categories for pyroclastic rocks.

Grain size categories for tephra

Based on Gillespie and Styles (1999), Figure 8, which cites 'modified from Fisher and Schminke, 1984.'

Streckeisen-based mineralogical categories overlap with composition and grainsize-texture categories

Grain size, texture, Streckeisen based mineralogical categories

(less than 90 percent mafic minerals)

Quartz rich igneous rock

any igneous rock with greater than 60 percent quartz

Doleritic rock

finer grained intrusive, typically in dikes or sills

Fine-grained igneous rock

Rhyolitic rock

Dacitic rock

Trachytic rock

Andesitic rock

Basaltic rock

Phonolitic rock

Tephritic rock

fine-grained categories include both mineralogically defined categories and most closely corresponding TAS categories

Phaneritic igneous rock

Granitic rock

Granite

Granodiorite

Tonalite

charnockitic rocks go in granitic rock category

Anorthositic rock

Syenitic rock

Syenite

Monzonite

Dioritic rock

Diorite

Monzodiorite

Gabbroic rock

Gabbro

Monzogabbro

Foid syenitic rock

Foid dioritic rock

Foid gabbroic rock

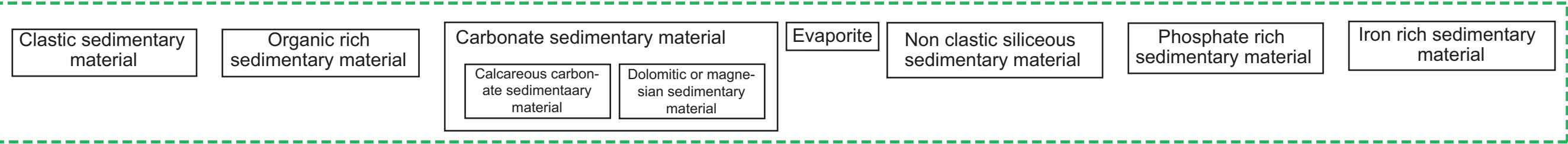
Feldspathoid rich igneous rock

any igneous rock with greater than 60 percent feldspathoid mineral

If melilite or kalsilite is more abundant than feldspathoid phases, rock would be classified as 'Exotic alkalic rock'

Sedimentary material

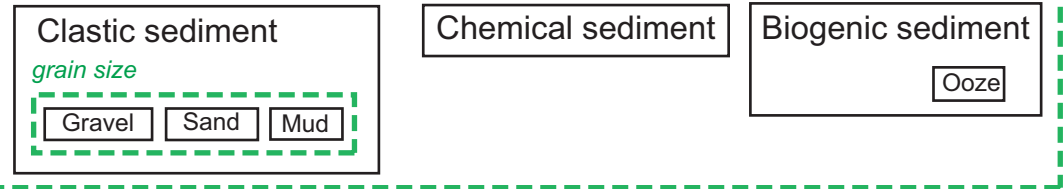
genesis, composition



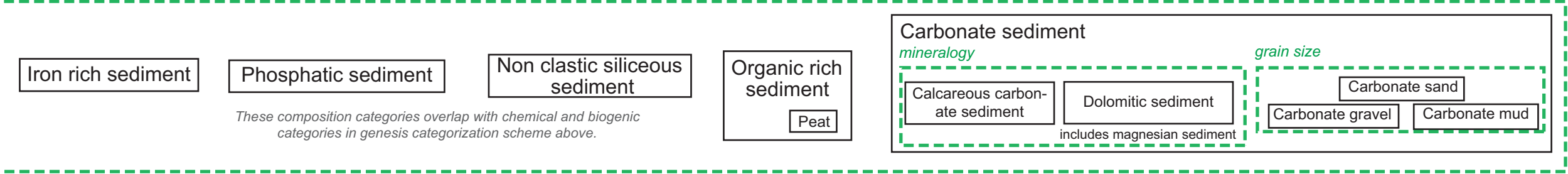
Sediment

genesis

diamicton *sorting, genesis*

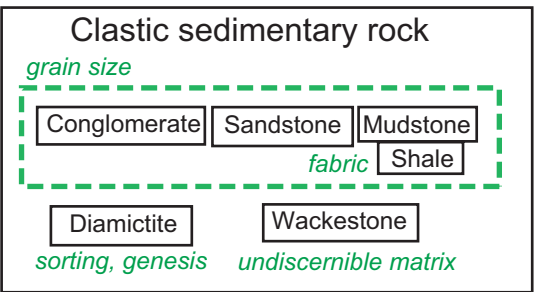


composition

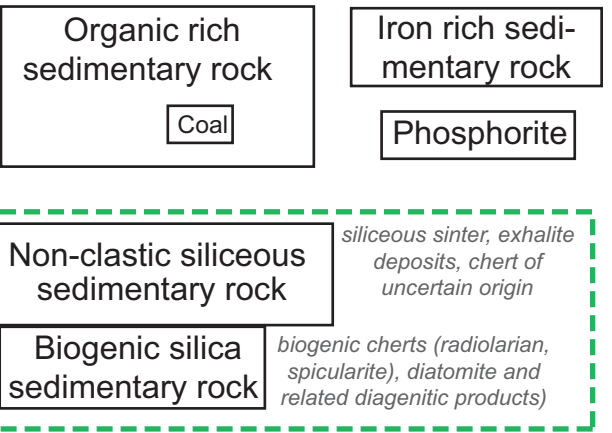
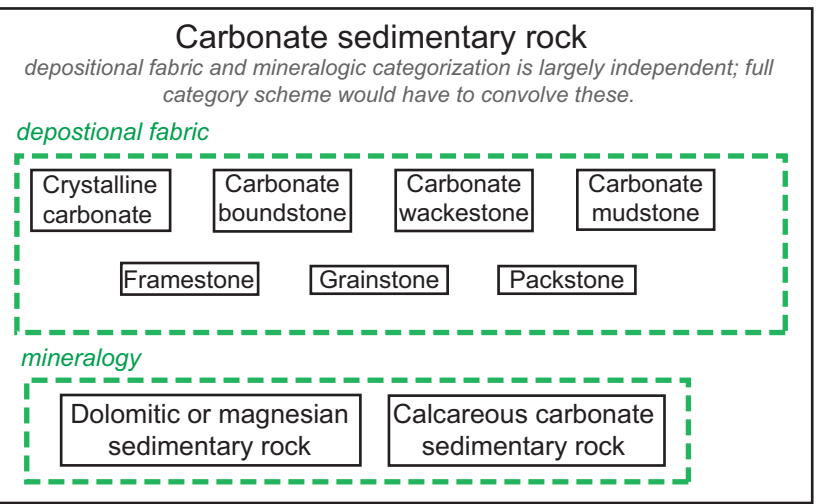


Consolidation

Sedimentary rock



terrigenous clastic carbonate rocks are included in Clastic sedimentary category



Composite genesis material

Consolidation

Composite genesis rock

Genesis

Metamorphic rock is kind of Composite genesis rock; other categories here do not specify consolidation state.

Metamorphic rock

fabric

Hornfels

Granofels

Foliated metamorphic rock

fabric

Gneiss

Schist

Mylonitic rock

Phyllite

Slate

grain size

fabric and mineralogic categories of metamorphic rock are overlapping

Migmatite

mineralogy

Amphibolite

Eclogite

Marble

Serpentinite

Quartzite

Fault-related material

genesis

Breccia-gouge series

Cataclasite series

Impact metamorphic rock

Rock formed in surficial environment

genesis

Duricrust

silcrete, calcrete, etc.

Residual Material

Bauxite

Weathered rock

Soil, residuum, saprolite, laterite, bauxite, grus