GeoMAP

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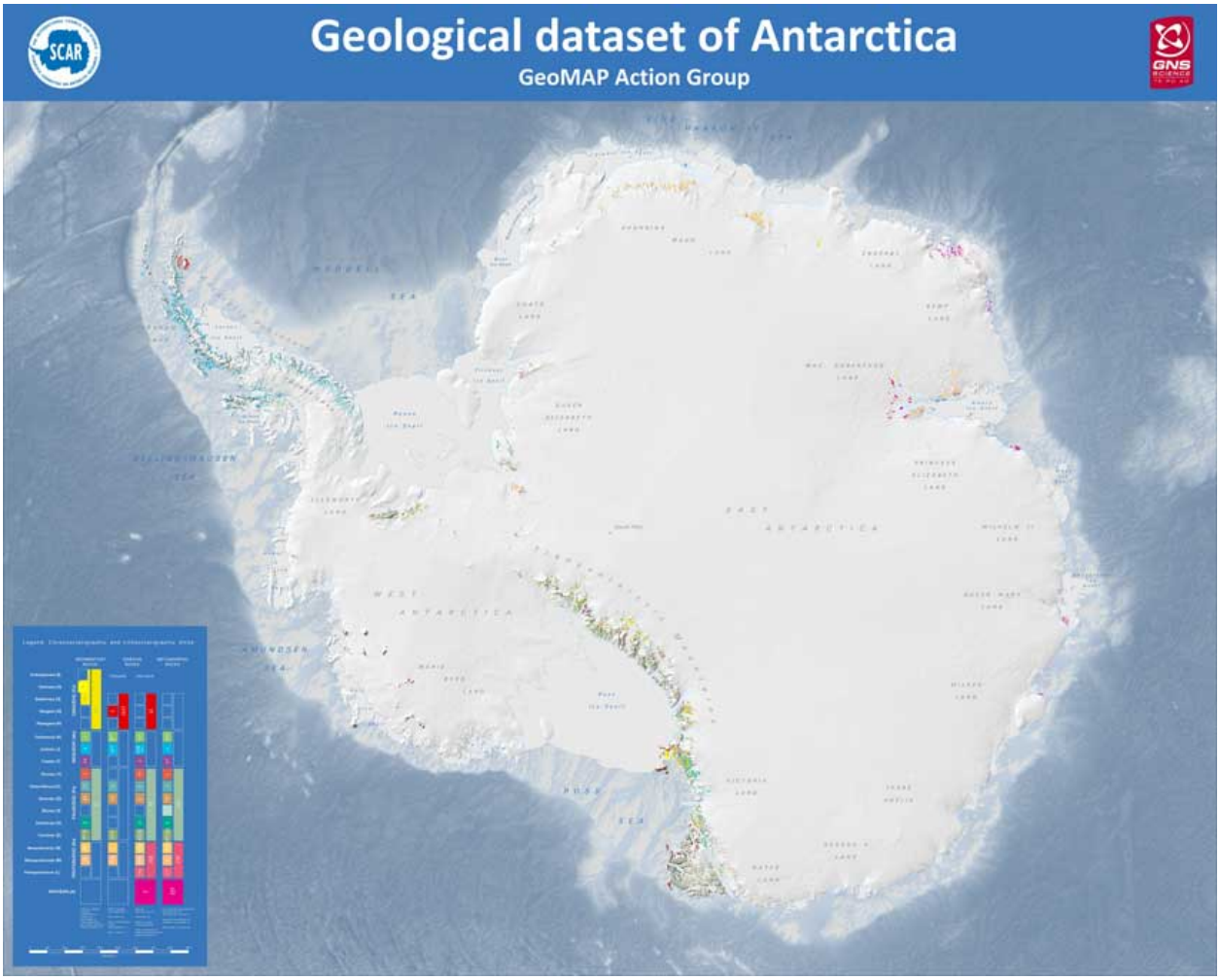
UNOFFICIAL DOCUMENTATION



1.1 Cox S.C., Smith Lyttle B. and the GeoMAP team (2019). Lower Hutt, New Zealand. GNS Science. Release v.201907.

doi:10.21420/7SH7-6K05

1.2 Documentation created by Sam Elkind

CHAPTER

TWO

LINKS TO GEOMAP RESOURCES

- SCAR GeoMAP Action Group homepage
- Antarctic Explorer
- View a Map of the Data Here
- Download the Data Here
- GeoMAP Metadata
- GeoSciML
- QMAP GIS Specifications

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DOCUMENTATION PAGES

- ATA_geological_units: *Geology attributes glossary*
- ATA_sources_poly: **Coming soon**
- ATA_faults: **Coming soon**
- ATA_GeoMAP_qualityinformation: **Coming soon**

CHAPTER

FOUR

SOURCE CODE

- These pages open source. You can find the content source and build scripts in this Github repository
- To report a problem with the documentation or contact Sam, please open up an issue on github or send an email to samuel.elkind@gmail.com

4.1 Fields

4.1.1 SOURCECODE

Description:A value indicating the geologic identity of the polygon. This is the code or classification initially assigned by a map author (source) pulled directly from the SOURCE publication, following whatever convention was used by the author in their original publication. Values generally follow conventional geological labels (1-2 characters indicating age followed by 1-2 characters indicating lithology) or they can be a number or character-number combination like a sample Identifier. Question marks in the symbol indicate uncertainty in the original author's identification.

Source of Values: Derived from publication listed in SOURCE

Value Format: Determined by original publication authors

Field Values: List of Values

Field Value Restrictions: Unrestricted

More Information:

- Unique Values: 801
- Most frequently occurring value: C-Tr
- Number of values with a single occurrence: 54

4.1.2 MAPSYMBOL

Description:A value indicating the principal geological identity of the polygon. Values are restricted by the formatting convention defined by the GeoMAP *legend*, using CAPITAL letters representing AGE (Chronostratigraphic subdivision) and small letters representing lithology (rock-type as a lithostratigraphic classification). MAPSYMBOL is used to unify original SOURCECODE and classify polygons consistently across the entire GeoMAP dataset.

Source of Values: Value based on the compiler's interpretation of publication listed in SOURCE that conforms to the GeoMap Legend included in download zip

Value Format: The first one or two UPPERCASE characters represent the geological time period. The last lowercase character is a code corresponding to the type of geologic unit as defined in the *legend*. NOTE: Geological units which

span multiple time periods have symbols showing the oldest and youngest time periods. e.g. Cambrian to Ordovician sedimentary rocks = EOs; Paleoproterozoic to Mesoproterozoic high grade metamorphics = LMn

Field Values: List of Values

Field Value Restrictions: See *legend*

More Information:

- Unique Values: 173
- Most frequently occurring value: JKg
- Number of values with a single occurrence: 3

4.1.3 PLOTSYMBOL

Description:A value that is generally the same as MAPSYMBOL. PLOTSYMBOL is used for cartographic purposes to generate colour, or symbols on hard-copy maps. Enables greater user-control. Hs, Qs, Jd are examples where Holocene and Quaternary sediments, or Jurassic dolerites, are differentiated with different PLOTSYMBOL from MAPSYMBOL.

Source of Values: Value based on the compiler's interpretation of publication listed in SOURCE that conforms to the GeoMap Legend included in download zip

Value Format: Determined by GeoMAP dataset compilers

Field Values: List of Values

Field Value Restrictions: Unrestricted

More Information:

- Unique Values: 183
- Most frequently occurring value: JKg
- Number of values with a single occurrence: 3

4.1.4 NAME

Description:A textual name of the rock unit or simplified type of rock. Where possible the formally defined and published stratigraphic name is adopted, however many units have been named informally or only classified by lithology. NAME is generally pulled from the SOURCE publication and follows whatever convention is established by the authors.

Source of Values: Copied from publication listed in SOURCE

Value Format: Determined by original publication authors

Field Values: List of Values

Field Value Restrictions: Unrestricted

More Information:

- Unique Values: 666
- Most frequently occurring value: marine sedimentary and metasedimentary rocks (Carboniferous to Triassic)
- Number of values with a single occurrence: 36

4.1.5 DESCR

Description:A description of the geological mapping unit that the polygon is identified as. Geological maps can be based on lithostratigraphy, biostratigraphy, age, and rock types, or combinations of these. A lithostratigraphic approach has generally been adopted for GeoMAP. Mapping units are based on age and/or rock type. DESCR provides a text description of the range and/or most common rock-types encountered, typically taken from an entry on a geological map *legend*.

Source of Values: Copied from publication listed in SOURCE

Value Format: Determined by dataset compilers, summarized from SOURCE author descriptions

Field Values: List of Values

Field Value Restrictions: Unrestricted

More Information:

- Unique Values: 757
- Most frequently occurring value: unfossiliferous low grade regional metamorphic clastic sedimentary rocks; some basaltic to andesitic lavas
- Number of values with a single occurrence: 41

4.1.6 POLYGTYPE

Description:A restricted value. One of either rock, moraine, or ice. A simplistic description of dominant material within the polygon.

Source of Values: Based on an interpretation of SOURCECODE or MAPSYMBOL

Value Format: String

Field Values: List of Values

More Information:

- Unique Values: 3
- Most frequently occurring value: rock
- Number of values with a single occurrence: 0

4.1.7 MBREQUIV

Description: When the STRATRANK of the polygon is “member”, this is the lithologic member associated with the SOURCECODE. Otherwise value will be “None”

Source of Values: Interpretation based upon multiple sources

Value Format: String

Field Values: List of Values

Field Value Restrictions: Unrestricted

More Information:

- Unique Values: 19
- Most frequently occurring value:

- Number of values with a single occurrence: 5

4.1.8 FMNEQUIV

Description: When the STRATRANK of the polygon is “formation” or narrower, this is the lithologic formation associated with the SOURCECODE. Otherwise value will be “None”

Source of Values: Interpretation based upon multiple sources

Value Format: String

Field Values: List of Values

Field Value Restrictions: Unrestricted

More Information:

- Unique Values: 246
- Most frequently occurring value: LeMay Formation; Trinity Penninsula Formation
- Number of values with a single occurrence: 15

4.1.9 SBGRPEQUIV

Description: When the STRATRANK of the polygon is “subgroup” or narrower, this is the lithologic subgroup associated with the SOURCECODE. Otherwise value will be “None”. Currently, the only named subgroup is “Ross Sea Drift” which has a strat rank of “rank not specified”

Source of Values: Interpretation based upon multiple sources

Value Format: String

Field Values: List of Values

Field Value Restrictions: Unrestricted

More Information:

- Unique Values: 1
- Most frequently occurring value: Ross Sea Drift
- Number of values with a single occurrence: 0

4.1.10 GRPEQUIV

Description: When the STRATRANK of the polygon is “group” or narrower, this is the lithologic group associated with the SOURCECODE.

Source of Values: Interpretation based upon multiple sources

Value Format: String

Field Values: List of Values

Field Value Restrictions: Unrestricted

More Information:

- Unique Values: 59
- Most frequently occurring value:

- Number of values with a single occurrence: 0

4.1.11 SPGRPEQUIV

Description: When the STRATRANK of the polygon is “supergroup” or narrower, this is the lithologic supergroup associated with the SOURCECODE. Otherwise value will be “None”. Currently most supergroups

Source of Values: Interpretation based upon multiple sources

Value Format: String

Field Values: List of Values

Field Value Restrictions: Unrestricted

More Information:

- Unique Values: 14
- Most frequently occurring value:
- Number of values with a single occurrence: 0

4.1.12 TERREQUIV

Description: When the STRATRANK of the polygon is “terrane”, this is the lithologic terrane associated with the SOURCECODE. Otherwise value will be “None”

Source of Values: Interpretation based upon multiple sources

Value Format: String

Field Values: List of Values

Field Value Restrictions: Unrestricted

More Information:

- Unique Values: 11
- Most frequently occurring value: Wilson Terrane
- Number of values with a single occurrence: 0

4.1.13 STRATRANK

Description: The level of lithologic classification associated with the SOURCECODE

Source of Values: GeoSciML

Value Format:see GeoSciML link

Metadata Link:http://cgi.vocabs.ga.gov.au/vocab/stratigraphicrank

Field Values: List of Values

Field Value Restrictions:http://cgi.vocabs.ga.gov.au/object?uri=http://resource.geosciml.org/classifier/cgi/stratigraphicrank

More Information:

- Unique Values: 12

- Most frequently occurring value: rank not specified
- Number of values with a single occurrence: 0

4.1.14 TYPENAME

Description: The geologic unit type as defined by GeoSciML following the IUGS Commission for Geoscience Information (CGI) Geoscience Terminology Working Group. Unit types are differentiated based on their defining lithological, stratigraphic, or other physical properties.

Source of Values: GeoSciML

Value Format:see GeoSciML link

Metadata Link:http://cgi.vocabs.ga.gov.au/vocab/geologicunittype

Field Values: List of Values

Field Value Restrictions:http://cgi.vocabs.ga.gov.au/object?uri=http://resource.geosciml.org/classifier/cgi/geologicunittype

More Information:

- Unique Values: 6
- Most frequently occurring value: lithostratigraphic unit
- Number of values with a single occurrence: 0

4.1.15 TYPE_URI

Description: The link to the geologic unit type.

Source of Values: GeoSciML

Value Format:see GeoSciML link

Metadata Link:http://cgi.vocabs.ga.gov.au/vocab/geologicunittype

Field Values: List of Values

Field Value Restrictions:http://cgi.vocabs.ga.gov.au/object?uri=http://resource.geosciml.org/classifier/cgi/geologicunittype

More Information:

- Unique Values: 5
- Most frequently occurring value: http://resource.geosciml.org/classifier/cgi/geologicunittype/lithostratigraphic_unit
- Number of values with a single occurrence: 0

4.1.16 GEOLHIST

Description:A textual representation of the range of time associated with the genesis of the SOURCECODE's geology.

Source of Values: GeoSciML

Value Format:see GeoSciML link

Metadata Link:https://vocabs.ardc.edu.au/repository/api/lda/csiro/international-chronostratigraphic-chart/geologic-time-scale-2020/resource?uri=http://resource.geosciml.org/classifier/ics/ischart/GeochronologicEras

Field Values: List of Values

Field Value Restrictions:https://vocabs.ardc.edu.au/repository/api/lda/csiro/international-chronostratigraphic-chart/geologic-time-scale-2020/collection

More Information:

- Unique Values: 113
- Most frequently occurring value: early Jurassic to early Cretaceous
- Number of values with a single occurrence: 2

4.1.17 REPAGE_URI

Description: The link to the geologic period or era that is representative of the formation of the SOURCECODE's geological unit.

Source of Values: GeoSciML

Value Format:see GeoSciML link

Metadata Link:https://vocabs.ardc.edu.au/repository/api/lda/csiro/international-chronostratigraphic-chart/geologic-time-scale-2020/resource?uri=http://resource.geosciml.org/classifier/ics/ischart/GeochronologicEras

Field Values: List of Values

Field Value Restrictions:https://vocabs.ardc.edu.au/repository/api/lda/csiro/international-chronostratigraphic-chart/geologic-time-scale-2020/collection

More Information:

- Unique Values: 41
- Most frequently occurring value: http://resource.geosciml.org/classifier/ics/ischart/Paleozoic
- Number of values with a single occurrence: 0

4.1.18 YNGAGE_URI

Description: The link to the youngest geologic period or era that is associated with the genesis of the SOURCECODE's geology

Source of Values: GeoSciML

Value Format:see GeoSciML link

Metadata Link:https://vocabs.ardc.edu.au/repository/api/lda/csiro/international-chronostratigraphic-chart/geologic-time-scale-2020/resource?uri=http://resource.geosciml.org/classifier/ics/ischart/GeochronologicEras

Field Values: List of Values

Field Value Restrictions:https://vocabs.ardc.edu.au/repository/api/lda/csiro/international-chronostratigraphic-chart/geologic-time-scale-2020/collection

More Information:

- Unique Values: 51
- Most frequently occurring value: http://resource.geosciml.org/classifier/ics/ischart/Albian
- Number of values with a single occurrence: 0

4.1.19 OLDAGE_URI

Description: The link to the oldest geologic period or era that is associated with the genesis of the SOURCECODE's geology

Source of Values: GeoSciML

Value Format:see GeoSciML link

Metadata Link:https://vocabs.ardc.edu.au/repository/api/lda/csiro/international-chronostratigraphic-chart/geologic-time-scale-2020/resource?uri=http://resource.geosciml.org/classifier/ics/ischart/GeochronologicEras

Field Values: List of Values

Field Value Restrictions:https://vocabs.ardc.edu.au/repository/api/lda/csiro/international-chronostratigraphic-chart/geologic-time-scale-2020/collection

More Information:

- Unique Values: 52
- Most frequently occurring value: http://resource.geosciml.org/classifier/ics/ischart/Cambrian
- Number of values with a single occurrence: 0

4.1.20 ABSMIN_MA

Description:A floating point value associated with the age in million years when the young-age geologic period or era ended.

Source of Values: GeoSciML

Value Format: Float

Field Values: List of Values

Field Value Restrictions: Positive Integer

More Information:

- Unique Values: 121
- Most frequently occurring value: 100.5
- Number of values with a single occurrence: 2

4.1.21 ABSMAX_MA

Description:A floating point value associated with the age in million years when the old-age geologic period or era began.

Source of Values: GeoSciML

Value Format: Float

Field Values: List of Values

Field Value Restrictions: Positive Integer

More Information:

- Unique Values: 130
- Most frequently occurring value: 541.0
- Number of values with a single occurrence: 2

4.1.22 AGECODE

Description:A one to three character symbol for the representative age geologic period or era used in the MAPSYMBOL value. These values are defined in the *legend*.

Source of Values: Defined for GeoMAP (following convention used for digital geological map of Australia)

Value Format:2-3 Characters

Field Values: List of Values

Field Value Restrictions: See *legend*

More Information:

- Unique Values: 46
- Most frequently occurring value: JK
- Number of values with a single occurrence: 0

4.1.23 LITHCODE

Description:A one character symbol for the representative lithology of the MAPSYMBOL rock-type letter. Defined and restricted by the values in the *legend*.

Field Values: List of Values

Field Value Restrictions: See *legend*

More Information:

- Unique Values: 25
- Most frequently occurring value: s
- Number of values with a single occurrence: 0

4.1.24 LITHOLOGY

Description:A textual description of the lithology restricted to values appearing on GeoSciML's Simple Lithology list.

Source of Values: GeoSciML

Value Format:see GeoSciML link

Metadata Link:http://cgi.vocabs.ga.gov.au/vocab/simplelithology

Field Values: List of Values

Field Value Restrictions:http://cgi.vocabs.ga.gov.au/object?uri=http://resource.geosciml.org/classifier/cgi/lithology

More Information:

- Unique Values: 410
- Most frequently occurring value: unknown
- Number of values with a single occurrence: 11

4.1.25 REPLITH_URI

Description: Restricted text that contains a link to the GeoSciML definition of the lithology that best represents this unit.

Source of Values: GeoSciML

Value Format:see GeoSciML link

Metadata Link:http://cgi.vocabs.ga.gov.au/vocab/simplelithology

Field Values: List of Values

Field Value Restrictions:http://cgi.vocabs.ga.gov.au/object?uri=http://resource.geosciml.org/classifier/cgi/lithology

More Information:

- Unique Values: 80
- Most frequently occurring value: http://resource.geosciml.org/classifier/cgi/lithology/metamorphic_rock
- Number of values with a single occurrence: 3

4.1.26 OBSMETHOD

Description: The manner in which the polygon's attributes were assigned. Values are loosely guided by GeoSciML's list of Geologic Feature Observation Methods

Source of Values: GeoSciML

Value Format:see GeoSciML link

Metadata Link:http://cgi.vocabs.ga.gov.au/vocab/featureobservationmethod

Field Values: List of Values

Field Value Restrictions:http://cgi.vocabs.ga.gov.au/vocab/featureobservationmethod

More Information:

- Unique Values: 5
- Most frequently occurring value: synthesis from multiple sources

- Number of values with a single occurrence: 0

4.1.27 CONFIDENCE

Description: An explanation of the manner by which the age of the geology was determined. Free text that provides a statement concerning the accuracy of the data provided in associated fields.

Source of Values: Value from GeoMap contributers based on SOURCE publication

Value Format: String

Field Values: List of Values

More Information:

- Unique Values: 162
- Most frequently occurring value: GEOLHIST uncertain
- Number of values with a single occurrence: 12

4.1.28 POSACC_M

Description: The estimated positional accuracy of the polygon margins. Units: meters

Source of Values: Value from GeoMap contributers

Field Values: List of Values

More Information:

- Unique Values: 1
- Most frequently occurring value: 250.0
- Number of values with a single occurrence: 0

4.1.29 SOURCE

Description: The primary published or unpublished source referenced to assign attributes to the polygon. A unique identifier that links to the GeoMAP spatial bibliography of geological maps and the geodatabase polygon feature class (or shapefile) ATA_sources_poly.

Source of Values: Value from GeoMap contributers

Value Format: String

Field Values: List of Values

More Information:

- Unique Values: 158
- Most frequently occurring value: Burton-Johnson & Riley 2015
- Number of values with a single occurrence: 8

4.1.30 METADATA

Description: The link to the metadata for this dataset

Source of Values:https://data.gns.cri.nz/metadata/srv/eng/catalog.search#/metadata/1482B48B-3E70-41AE-9BD0-672722A81EC7

Value Format: Link

Metadata Link:https://data.gns.cri.nz/metadata/srv/eng/catalog.search#/metadata/1482B48B-3E70-41AE-9BD0-672722A81EC7

Field Values: List of Values

More Information:

- Unique Values: 1
- Most frequently occurring value: https://data.gns.cri.nz/metadata/srv/eng/catalog.search#/metadata/1482B48B-3E70-41AE-9BD0-672722A81EC7
- Number of values with a single occurrence: 0

4.1.31 RESSCALE

Description: The resolution scale at which the polygon was designed to be used or viewed at.

Source of Values: Value from GeoMap contributers

Field Values: List of Values

More Information:

- Unique Values: 3
- Most frequently occurring value: 250000
- Number of values with a single occurrence: 0

4.1.32 CAPTSCALE

Description: The scale at which the polygon was digitized

Source of Values: Value from GeoMap contributers

Value Format: Date

Field Values: List of Values

More Information:

- Unique Values: 1
- Most frequently occurring value: 50000
- Number of values with a single occurrence: 0

4.1.33 CAPTDATE

Description: The date the polygon was added to the dataset

Source of Values: Value from GeoMap contributers

Value Format: Datetime: YYYY-MM-DDThh:mm:ss

Field Values: List of Values

More Information:

- Unique Values: 14
- Most frequently occurring value: 2017-07-26T00:00:00
- Number of values with a single occurrence: 0

4.1.34 MODDATE

Description: The most recent date when the polygon was modified.

Source of Values: Value from GeoMap contributers

Value Format: Datetime: YYYY-MM-DDThh:mm:ss

Field Values: List of Values

More Information:

- Unique Values: 15
- Most frequently occurring value: 2018-06-06T00:00:00
- Number of values with a single occurrence: 0

4.1.35 FEATUREID

Description: The unique identifier of the polygon

Source of Values: Geomap naming scheme

Value Format: Geomap naming scheme

Field Values: List of Values

More Information:

- Unique Values: 95161
- Most frequently occurring value: ATA_geological_units_045973
- Number of values with a single occurrence: 95161

4.1.36 SPEC_URI

Description: Not really sure what this is

Source of Values:http://defs.opengis.net/elda-common/ogc-def/resource?uri=http://www.opengis.net/def/nil/OGC/0/missing&_format=h

Value Format: Link

Metadata Link:http://defs.opengis.net/elda-common/ogc-def/resource?uri=http://www.opengis.net/def/nil/OGC/0/missing&_format=htn

Field Values: List of Values

Field Value Restrictions:http://defs.opengis.net/elda-common/ogc-def/resource?uri=http://www.opengis.net/def/nil/OGC/0/missing&_fo

More Information:

- Unique Values: 1
- Most frequently occurring value: http://www.opengis.net/def/nil/OGC/0/missing
- Number of values with a single occurrence: 0

4.1.37 DATASET

Description: The dataset from which the polygon came from. Alludes to the region of Antarctica where the polygon is located (Peninsula, North Victoria Land, etc).

Source of Values: Geomap naming scheme

Value Format: Geomap naming scheme

Field Values: List of Values

More Information:

- Unique Values: 9
- Most frequently occurring value: ATA_PEN_geological_units
- Number of values with a single occurrence: 0

4.1.38 REGION

Description: The region in which the polygon is located {East Antarctica, West Antarctica}

Source of Values: Value from GeoMap contributers

Value Format: String

Field Values: List of Values

More Information:

- Unique Values: 2
- Most frequently occurring value: East Antarctica
- Number of values with a single occurrence: 0

4.2 Ages and Age codes

4.2.1 ARCHEAN (A)

4.2.2 PROTEROZOIC (Rz)

- Paleoproterozoic (L)
- Mesoproterozoic (M)
- Neoproterozoic (N)

4.2.3 PALEOZOIC (Pz)

- Cambrian (E)
- Ordovician (O)
- Silurian (S)
- Devonian (D)
- Carboniferous (C)
- Permian (Y)

4.2.4 MESOZOIC (Mz)

- Triassic (T)
- Jurassic (J)
- Cretaceous (K)

4.2.5 CENOZOIC (Cz)

- Paleogene (P)
- Neogene (G)
- Quaternary (Q)
- Holocene (H)
- Anthropocene ($)
- Uncertain (?)

4.3 Lithologies and Lith codes

4.3.1 SEDIMENTARY ROCKS:

- mudstone, siltstone, sandstone, conglomerate (s), limestone (l), volcanogenic sediments (j), mixed sediments and volcanic rocks (w), chemical sediments (c).

4.3.2 VOLCANIC ROCKS:

- felsic (f), metamorphosed felsic volcanics (r), intermediate (a), mafic to ultramafic (b), metamorphosed mafic to ultramafic extrusive rocks (t), undifferentiated felsic to mafic (v).

4.3.3 INTRUSIVE ROCKS:

- felsic (g), mixed intrusives (i), intermediate (h), mafic (d) metamorphosed mafic intrusive (t), metamorphosed mafic to ultramafic intrusive (e), alkaline ultrabasic (k).

4.3.4 METAMORPHIC ROCKS:

- Low-medium grade (p), metacarbonate (m), siliciclastic (y), hornfels (o); High-grade metamorphics (n), quartzite (q), complexes (x).

4.3.5 OTHER:

- Faults/shear rocks tectonic (z). Unknown (?)

Chronostratigraphic Legend for Antarctic Surface Geology

Note: Geological units which span multiple time periods have symbols showing the oldest and youngest time periods. e.g. Cambrian to Ordovician sedimentary rocks = EOs; Paleoproterozoic to Mesoproterozoic high grade metamorphics = LMn