Extended Specifications for Global Map Antarctica Version 0.5

Description of the differences from
"Global Map Version 1.2 Specifications"

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Secretariat of International Steering Committee for Global Mapping (ISCGM)

ISCGM Home Page
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1. Introduction

Global Map is developed by National Mapping Organization (NMO) of each country. In the case of Antarctica, Scientific Committee on Antarctic Research (SCAR) completed Global Map Antarctica, through the effort of the Antarctic Digital Database (ADD) project with the assistance of Secretariat of International Steering Committee for Global Mapping (ISCGM) in the area of harmonization of specifications between original Antarctic data and Global Map.

Many challenges were met in producing Global Map Antarctica. If Global Map Antarctica were developed strictly following Global Map Specifications, the product would not have been able to represent Antarctic-specific aspects sufficiently. To solve this problem, Extended Specifications for Global Map Antarctica was developed, on which Global Map Antarctic was completed. In creation of this specifications, the following points were addressed:

- to represent significant Antarctic features to solve environmental problems,
- to adopt an adequate coordinate system and resolution to represent Antarctica, and
- to keep Global Map Version 1.2 Specifications as much as possible to avoid big gap between Global Map Antarctica and general Global Map dataset.

The reader should also consult with Global Map Version 1.2 Specifications as this document only describes the differences between the two specifications.

2. Applicable area

This specifications is applied for the area located further South than 60 degree S. This is the same extent as SCAR has a responsibility for.

3. Data Dictionary

The data dictionary is included in APPENDIX D. The table lists vector and rater feature types and their attributes.

4. Spatial and attribute accuracy

Reference coordinate system

WGS84 coordinates are adopted as the reference coordinate system. Based on WGS84, Global Map Antarctica was projected by the Polar Stereographic projection with a standard parallel at 71 degree S , Central Meridian at 0 degree E.

5. Tiling

The Global Map Antarctica does not adopt tilling scheme. Each layer is supplied as a single file.

6. Structure and features

Raster Data Structure (TBD)

Grid size for raster data is 1 km by 1 km on the projected data. At the 71 degree S, 1 pixel shows about 1km on the ground. The farther the pixel is from the South Pole, the shorter the distance meant by 1 pixel is getting.

7. Output formats

7.1 file names

7.1.1 Vector representation

The contents of Arc Info Export file and ESRI Shapefile as shown below.

Arc Info export file	Contents
bndnet.e00	boundary layer polygon and line data
bndpnt.e00	boundary layer point data
hydronet.e00	hydronet layer polygon and line data
hydropnt.e00	hydronet layer point data
transnet.e00	transportation layer line data
transpnt.e00	transportation layer point data
popnet.e00	population centres layer polygon data
poppnt.e00	population centres layer point data

ESRI shapefile	Contents
bnda.shp	boundary layer polygon data
bndl.shp	boundary layer line data
bndp.shp	boundary layer point data
hydroa.shp	hydronet layer polygon data
hydrol.shp	hydronet layer line data
hydrop.shp	hydronet layer point data
transl.shp	transportation layer line data
transp.shp	transportation layer point data
popa.shp	population centres layer polygon data
popp.shp	population centres layer point data

7.1.2 Raster representation (TBD)

The contents of BIL file are as shown below.

BIL file	Contents
el.bil	elevation
ve.bil	vegetation
lc.bil	land cover
lu.bil	land use

7.2 file format

Vector data is distributed in Arc Info Export file format and ESRI shapefile format. Raster data is distributed as Band Interleaved (BIL) files with a separate header file. (TBD)

8. References

Global Map Version 1.2 Specifications, Secretariat of ISCGM, Revised at 12th ISCGM meeting Cairo, 17 April 2005

Antarctic Digital Database Manual and Bibliography, Scientific Committee on Antarctic Research, July 2000

APPENDIX D Global Map Antarctica Data Dictionary

This table is for Global Map Antarctica vector and raster data dictionary. Antarctic-specific layers, features and attributes are shown in **blue bold type**.

Table 1 Vector data

Optional layers, features and attributes are shown in **red bold type**. For features with optional attributes, fields will be filled for all attributes but the those of optional attributes will be null or have the value UNK if they are not populated.

All features will have an additional attribute. This attribute identifies the source country for the data. The attribute name is 'soc', the attribute type is 'character text string' and **the field size is 10**. 'soc' values are the country code of the country supplying the data. In the case of Antarctica, soc has a value 'ATA (SCAR)' which combines country code with organization of data provider. The additional value 'vma' indicates data that have been taken unchanged from the Vmap Level 0 product.

Definitions in this dictionary are taken from DIGEST Edition 2.0 02, June 1997.

Field size of * is a field of variable-length and may be applied to any length.

Coverage data have features which have 'UNATT' as f_code. These features should be ignored.

Airport and features of population layers have NAM field in each attribute. Their values have name and their nationality as country code for example 'SHOWA (JPN)'

Layer	Feature Name	Feature Cod Description	Definition	Primitiv type	Attributes	Field name	Field type	Fiel size	Value type/code	Value Description or Example
Transportation	**Airport**	**Airport/ Airfield**	A defined area of land or water used for landing, take-off and movement of aircraft including associated buildings and facilities	point	FACC feature code	f_code	Character text string	5	GB005	
					ICAO Designator	iko	Character text string	4	Null **Actual value**	if not applicable **eg FAJS**
					Name	nam	Character text string	*	UNK **Actual value**	Unknown **eg SYOWA (JPN)**
					Usage	use	Number (short integer)	1	0 **8** **22** **49** **999** 29999 **-500 to 9999**	Unknown **Military/Defence** **Joint Military/Defence/ Civilian** **Civilian/Public** **Other** Unknown **Elevation in metres**
					Airfield/Aerodrome Elevation	zv3	Number (short integer)	1		

Layer	Feature Name	Feature Cod Description	Definition	Primitiv type	Attributes	Field name	Field type	Fiel size	Value type/code	Value Description or Example
	Rail yard	**Railroad Yard/ Marshalling Yard**	A system of tracks within defined limits, and associated features, provided for loading/unloading and assembling trains. (Includes Railway stations)	point	FACC feature code	f_code	Character tex string	5	AN060	
	Railroad	Railroad	A rail or set of parallel rails on which a train or tram runs.	edge	FACC feature code	f_code	Character text string	5	AN010	
					Existence Category	exs	Number (short integer)	1	2 5 28 55 59	Doubtful Under Construction Operational Unexamined/Unsurveyed Not Useable
					Feature Configuration	fco	Number (short integer)		0 **2** **3**	Unknown **Multiple** **Single**
	Road	Road	An open way maintained for vehicular use.	edge	FACC feature code	f_code	Character text string	5	AP030	
					Accuracy Category	acc	Number (short integer)	1	1 2	Accurate Approximate
					Existence Category	exs	Number (short integer)	1	2 5 28 55	Doubtful Under Construction Operational Unexamined/Unsurveyed
					Surface	rst	Number (short integer)	1	0 **1** **2**	Unknown **Paved** **Not paved**
					Median Category	med	Number (short integer)	1	0 **1** **2**	Unknown **With median** **Without median**
					Route Intended Use	rtt	Number (short integer)	1	0 **14** **15** **16** **999**	Unknown **Primary route** **Secondary route** **Limited access route (freeway)** **Other**
					Seasonal availability	rsu	Number (short integer)	1	0 **1** **2**	Unknown **All year** **Seasonal**
	Trails and Tracks Line	Trail	A path worn by the passage of people or animals.	edge	FACC feature code	f_code	Character text string	5	AP050	
					Existence Category	exs	Number (short integer)	1	2 5 28	Doubtful Under Construction Operational

Layer	Feature Name	Feature Cod Description	Definition	Primitiv type	Attributes	Field name	Field type	Fiel size	Value type/code	Value Description or Example
	Structures	**Bridge**	A man-made structure spanning and providing passage over a body of water, depression, or other obstacles.	edge	FACC feature code	f_code	Character text string	5	AQ040	
					Transportation use Category	tuc	Number (short integer)	1	3 4	Railroad Road
		Ferry route	A ferry route in a body of inland water connecting a road or railroad.	edge	FACC feature code	f_code	Character text string	5	AQ070	
					Transportation use Category	tuc	Number (short integer)	1	3 4	Railroad Road
		Tunnel	An underground or underwater passage, open at one or both ends, and usually containing a road or railroad.	edge	FACC feature code	f_code	Character text string	5	AQ130	
					Transportation use Category	tuc	Number (short integer)	1	3 4	Railroad Road
	Transportation text	**Text**	Feature names positioned to allow production of a cartographic product.	text	text					Feature name
Boundaries	Political Boundary	Administrative area	An area controlled by administrative authority.	point	FACC feature code	f_code	Character text string	5	FA001	
					State/province/ prefecture name	nam	Character text string	*	Null **Actual value**	If not applicable **eg VIRGINIA**
					Country code	coc	Character text string	3	See Appendix E for county codes list	eg USA
					Local admistrative area name	laa	Character text string	*	Null **Actual value**	If not applicable **eg FAIRFAX**
	Coast Line	Coastline/ Shoreline	The line where a land mass is in contact with a body of water.	edge	FACC feature code	f_code	Character text string	5	BA010	
					Accuracy Category	acc	Number (short integer)	1	0 1 2 3	Unknown Accurate Approximate Tentative
					Existence Category	exs	Number (short integer)	1	0 1 3 44 46 55 60	Unknown Definite Tentative Approximate/About Man-made Unexamined/Unsurveyed Indefinite (Shoreline)

Layer	Feature Name	Feature Cod Description	Definition	Primitiv type	Attributes	Field name	Field type	Fiel size	Value type/code	Value Description or Example
	Political Boundary Line	Administrativ e Boundary	A line of demarcation between controlled areas.	edge	FACC feature code	f_code	Character text string	5	FA000	
					Accuracy Category	acc	Number (short integer)	1	1 2	Accurate Approximate
					Usage	use	Number (short integer)		23 26 30	International Primary ie state Secondary ie local
	Ocean/Sea	**Water (excep inland)**	An area of water which normally has tidal fluctuations.	face	FACC feature code	f_code	Character text string	5	BA040	
	Political Boundary Area	Administrativ e area	An area controlled by administrative authority.	face	FACC feature code	f_code	Character text string	5	FA001	
					Name (state/province/ prefecture)	nam	Character text string	*	Null **Actual value**	If not applicable **eg VIRGINIA**
					Country code	coc	Character text string	3	See Appendix E for county codes list	eg USA
					Local admistrative area	laa	Character text string	*	Null **Actual value**	If not applicable **eg FAIRFAX**
	Political entity text	**Text**	Feature names positioned to allow production of a cartographic product.	text	text					Feature name
Drainage	**Miscellaneous**	**Dam/Weir**	A permanent barrier across a watercourse used to impound water or to control its flow.	point, edge	FACC feature code	f_code	Character text string	5	BI020	
		Island	A land mass smaller than a continent and surrounded by water.	point	FACC feature code	f_code	Character text string	5	BA030	
		Spring/Water Hole	A natural outflow of water from below the ground surface.	point	FACC feature code	f_code	Character text string	5	BH170	
	Aqueduct/Canal/ Flume/ Penstock	**Inland Water**	A pipe or artificial channel designed to transport water from a remote source, usually by gravity. A man-made or improved natural waterway used for transportation. An open, inclined channel which carries water for use in such operations as mining or logging. A pipeline or channel generally used by hydroelectric plants or water mills to transport water by gravity or under pressure.	edge	FACC feature code	f_code	Character text string	5	BH000	
					Existence Category	exs	Number (short integer)	1	0 **1** **5** **6**	Unknown **Definite** **Under Construction** **Abandoned/Disused**
					Location Category	loc	Number (short integer)	1	0 **4** **8** **25**	Unknown **Below Surface/Submerged Underground** **On Ground Surface** **Suspended or Elevated Above Ground or Water Surface.**

Layer	Feature Name	Feature Cod Description	Definition	Primitiv type	Attributes	Field name	Field type	Fiel size	Value type/code	Value Description or Example
	Water Course	River/Stream	A natural flowing watercourse.	edge	FACC feature code	f_code	Character text string	5	BH140	
					Hydrological Category	hyc	Number (short integer)	1	0	Unknown
									6	Non-Perennial/ Intermittent/ Fluctuating
									8	Perennial/Permanent
									11	Glacier flowline
									12	Glacier margin
					Name	nam	Character text string	*	UNK	unknown
									Actual value	NILE
	Inland Water	Inland Water	Any known inland waterway body, such as: lake/pond, reservoir, river/stream, etc. requiring separation into individual features due to status/type grouping that is currently indeterminable.	face	FACC feature code	f_code	Character text string	5	BH000	
					Hydrological Category	hyc	Number (short integer)	1	0	Unknown
									6	Non-Perennial/ Intermittent/ Fluctuating
									8	Perennial/Permanent
									13	Sea surrounded by ice shelves
									14	Ice shelf
									15	Ice tongue
					Name	nam	Character text string	*	UNK	unknown
									Actual value	LAKE TANGANYIKA
	Water text	Text	Feature names positioned to allow production of a cartographic product.	text	text					Feature name
Population Centres	Built-up Area	Built-up Area	An area containing a concentration of buildings and other structures.	point	FACC feature code	f_code	Character text string	5	AL020	
					Name	nam	Character text string	*	UNK	unknown
									Actual value	EMBARCACION
	Miscellaneous Population	Settlement	A concentration of small dwellings.	point	FACC feature code	f_code	Character text string	5	AL105	
					Name	nam	Character text string	*	UNK	unknown
									Actual value	SHOWA (JPN)
	Built-up Area	Built-up Area	An area containing a concentration of buildings and other structures.	face	FACC feature code	f_code	Character text string	5	AL020	
					Name	nam	Character text string	*	UNK	unknown
									Actual value	NAIROBI
	Population text	Text	Feature names positioned to allow production of a cartographic product.	text	text					Feature name

Table 2 Raster data (TBD)

Layer	Definition	Feature Class	Attributes Description	Value Meaning	
Elevation	Elevation above mean sea level.	cell	**Elevation in metres**	-407 to 8752 (-9999 for areas masked as sea)	
Vegetation	Global Map Vegetation Classification (Modified Walter)	cell		Tropical rainforest: *Evergreen forest which has high rainfall and high humidity throughout the year. This class has an upper canopy formed by trees from 30 to 40m tall and may have occasional emerging trees taller than the upper canopy.*	10
				Hydrotropic forest: *Deciduous broad-leaved trees which are defoliated in dry season and foliate in rainy season.*	20
				Grassland in tropical or sub-tropical zone: *Grassland which has a long dry season and is heavily dried. Trees are only sparsely distributed. Plant density depends on dryness.*	30
				Semi desert in tropical or sub-tropical zone: *Plants are sparsely distributed in the area which has a little rainfall and is heavily dried*	40
				Desert in tropical or sub-tropical zone: *Plants are very sparsely distributed in the area which has a little rainfall and is extremely dried.*	50
				Evergreen thick-leaved forest: *Forest which has high rainfall in the rainy season and is relatively dried in summer. Trees which have evergreen thick and hard leaves dominate this forest.*	60
				Evergreen broad-leaved forest: *Forest in the warm temperate zone which has high rainfall in summer, or is humid throughout the year. Broad-leaved trees which have a little larger leaves than evergreen thich-leaved trees are the main component of this forest.*	70
				Deciduous broad-leaved forest: *Forest which mainly consists of trees defoliated in winter. This forest appears in the area which has sufficient rainfall in cool temperate zone.*	80
				Grassland in temperate zone: *Grassland in drier climates in temperate zone. No trees grow.*	90
				Semi-desert in temperate zone: *Heavily dried area in the temperate zone. Grasses, such as mugwort and pigweed cover this area.*	100
				Desert in temperate zone: *Extremely dried area in temperate zone. Grasses, such as mugwort and pigweed cover this area.*	110
				Northern coniferous forest: *Coniferous trees in semi-frigid zone which has very cold and long winter. Trees in this forest are usually evergreen*	120
				Tundra: *Plant colony consists of shrub, grass with broad leaves, moss and lichen. Trees cannot become tall due to severe cold.*	130
				Water body: *Water surfaces, such as rivers and lakes.*	140
				Ice and snow: *Area which is covered with snow and ice throughout the year.*	150
				Ice shelf and ice tongue: A thick, floating ice area attached to land.	**151**
				Wetland: Vegetated area with waterlogged soils or surface water for significant periods of the year.	210
				Mixed forest: Forest containing a mixture of types. Usually deciduous and coniferous.	220
				Mixed land: Area containing a mosaic of other types.	230
				Non natural: Cultivated, urban or otherwise modified vegetation.	240

				Unclassified: Areas not included in other classifications. For example, baren land.	250
Land Cover	International Geosphere Biosphere Programme Land Cover Classification (DISCOVer data set)	cell		Evergreen Needleleaf Forest: Lands dominated by trees with a percent canopy cover >60% and height exceeding 2 meters. Almost all trees remain green all year. Canopy is never without green foliage.	1
				Evergreen Broadleaf Forest: Lands dominated by trees with a percent canopy cover > 60% and height exceeding 2 meters. Almost all trees remain green all year. Canopy is never without green foliage.	2
				Deciduous Needleleaf Forest: Lands dominated by trees with a percent canopy cover > 60% and height exceeding 2 meters. Consists of seasonal needleleaf tree communities with an annual cycle of leaf-on and leaf-off periods.	3
				Deciduous Broadleaf Forest: Lands dominated by trees with a percent canopy cover > 60% and height exceeding 2 meters. Consists of seasonal broadleaf tree communities with an annual cycle of leaf-on and leaf-off periods.	4
				Mixed Forest: Lands dominated by trees with a percent canopy cover > 60% and height exceeding 2 meters. Consists of tree communities with interspersed mixtures or mosaics of the other four forest cover types. None of the forest types exceeds 60% of the landscape.	5
				Closed Shrublands: Lands with woody vegetation less than 2 meters tall and with shrub canopy cover > 60%. The shrub foliage can be either evergreen or deciduous.	6
				Open Shrublands: Lands with woody vegetation less than 2 meters tall and with shrub canopy cover between 10-60%. The shrub foliage can be either evergreen or deciduous.	7
				Woody Savannas: Lands with herbaceous and other understory systems, and with forest canopy cover between 3-=60%. The forest cover height exceeds 2 meters.	8
				Savannas: Lands with herbaceous and other understory systems, and with forest canopy cover between 10-30%. The forest cover height exceeds 2 meters.	9
				Grasslands: Lands with herbaceous types of cover. Tree and shrub cover is less than 10%.	10
				Permanent Wetlands: Lands with a permanent mixture of water and herbaceous or woody vegetation that cover extensive areas. The vegetation can be present in either salt, brackish, or fresh water.	11
				Croplands: Lands covered with temporary crops followed by harvest and a bare soil period (e.g., single and multiple cropping systems). Note that perennial woody crops will be classified as the appropriate forest or shrub land cover type.	12
				Urban and Built-Up: Land covered by buildings and other man-made structures.	13
				Cropland/Natural Vegetation Mosaic: Lands with a mosaic of croplands, forests, shrublands, and grasslands in which no one component comprises more than 60% of the landscape.	14
				Snow and Ice: Lands under snow and/or ice cover throughout the year.	15
				Barren or Sparsely Vegetated: Lands with exposed soil, sand, rocks, or snow and never has more than 10% vegetated cover during any time of the year.	16
				Water Bodies: Oceans, seas, lakes, reservoirs, and rivers. Can be either	17

				fresh or salt water bodies.	
				Ice shelf and ice tongue: A thick, floating ice area attached to land.	**150**
Land Use	Global Map Land use classification	cell		Forest: *Area dominated by trees higher than shrubs with a canopy cover greater than or equal to 10 percent.*	10
				Mixture: *Area where more than two classes are mixed including Non-vegetated area, Agricultural area, Grassland/Shrub and Wetland. This class is not applied where one class dominates.*	20
				Grassland/shrub: *Area covered by trees with canopy cover less than l0percent.*	30
				Agricultural area: *Area where agricultural activities are implemented constantly.*	40
				Wetland: *Area where underground water level is near the ground surface, or area with humid soil.*	50
				Barren area: *Non-vegetated area where no artificial structures exist.*	60
				Ice shelf and ice tongue: A thick, floating ice area attached to land.	**61**
				Built-up area: *Area where artificial structures occupy significant surfaces.*	70
				Drainage/water: *Area inside coastline forming water surface.*	80
				Ocean: *Area outside coastline forming water surface.*	90