



Standard Norm of Sea Surface Naming : Issue on Establishing Classification Criteria of Generic Terms

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01. Introduction

1.1 >> Research Background

- Recently, increasing studies centered on sea areas and fishery activities raised the issue of standardization of sea surface name, since the standardized names can reduce the confusion that may occur in communication.
- To standardize sea surface names
 - **Specific term:** should accord with the principles for naming
 - **Generic term:** should indicate the type of feature being identified
- Standardized and consistent usage of generic terms is preferred,
- BUT often the generic terms does not reflect the nature of the feature,
 - the definition of generic terms is ambiguous
 - generic terms were given to any feature in some cases

As a preliminary study to create standard norm of sea surface naming, it aims to **develop classification system** for generic terms of sea surface features

02. Data and Methods

1. Proceed with an analysis of existing glossaries as regards sea surface names to compare the general tendencies adopted by other references

Glossaries used for this study

- Bowditch, N., 2002, The American Practical Navigator, Pub. No. 9, bicentennial Ed., National Imagery and Mapping Agency, Maryland.
 - Canadian Permanent Committee on Geographic Names(CPCGN), 1987, Generic Terms in Canada's Geographic Names.
 - Committee for Geographical Names in Australasia(CGNA), 1996, Glossary of Generic terms in Australia Version 1.0
 - IHO, 1994, Hydrographic Dictionary, 5th edition, Special Publication No. 32. MONACO: International Hydrographic Organization.
 - Korea Hydrographic and Oceanographic Agency(KHOA), 2016, The Guideline for Standardization of Marine Geographical Names.
 - New Zealand Geographic Board(NZGB), 2014, Generic Geographic Features Listing – Maori and English version 1.
-

2.1 >> Data and methods

2. Then analyze the classification systems of geographical names of other countries, and compare the criteria used to classify hydrographic features

- Since often the generic part of the name does not reflect the authoritative definition of the feature type (Hill *et al.*, 1999), each country's national naming authority use the concept of feature term to represent the kind or type of feature.
- As analyzing the classification system regards to feature term, we could get possible criteria to classify generic terms

National naming authorities analyzed in this study

- Geographical Names Board of Canada (GNBC).
 - Committee for Geographical Names in Australasia (CGNA).
 - United States Board on Geographic Names (USBGN)
-

2.1 >> Data and methods

3. Develop classification system for generic terms of sea surface features

- Based on the criteria analyzed from glossaries and classification systems of national naming authorities
- Compared with actual usage presented in S-23 and other gazetteers of ROK, USA, Canada, Australia, and New Zealand

03. Analysis of existing glossaries of generic terms

3 >> Analysis of existing glossaries of generic terms

- When analyzing definitions of generic terms of sea surface names in references, they are roughly divided into
 - **Division of water body**: ocean, sea
 - **Indentation** of the sea or ocean: gulf, bay, bight, sound
 - **Connection** between two water bodies: channel, passage, strait, sound
- The definitions of those generic terms were compared and analyzed based on the shape, inclusion relation, size, function, and other characteristics.

3 >> Analysis of existing glossaries of generic terms

Division of water body : OCEAN, SEA

- **Shape**

- OCEAN: a major area of salt water which is divided geographically

- **Inclusion relation & size**

- SEA: a smaller division of the OCEAN

	Shape	Inclusion relation	Size
OCEAN	<ul style="list-style-type: none"> • The major area of salt water covering the greater part of the earth ^{1, 2, 3, 5, 6} • this body of water is divided geographically ^{1, 3, 6} 		
SEA	<ul style="list-style-type: none"> • more or less confined by continuous land or chain of islands ^{1, 2} 	<ul style="list-style-type: none"> • smaller divisions of the OCEANS ^{2, 3} 	<ul style="list-style-type: none"> • smaller than an OCEAN ^{5, 6}

¹Bowditch(2002), ²CGNA(1996), ³IHO(1994), ⁴NZGB(2014), ⁵CPCGN(2012), ⁶KHOA(2016)

3 >> Analysis of existing glossaries of generic terms

Indentation of the sea or ocean : GULF, BAY, BIGHT, COVE

- **Shape**

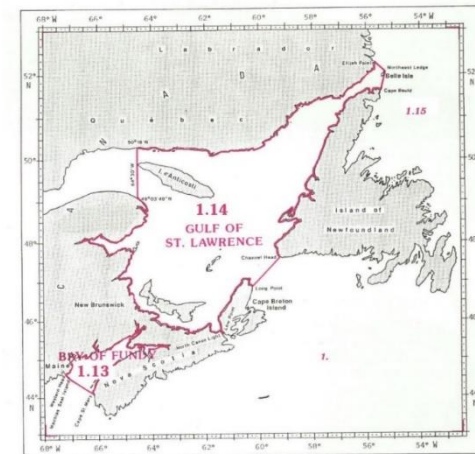
- GULF, BAY, BIGHT, COVE as indentation feature
- BIGHT is a extensive curved indentation of the coastline

- **Inclusion relation**

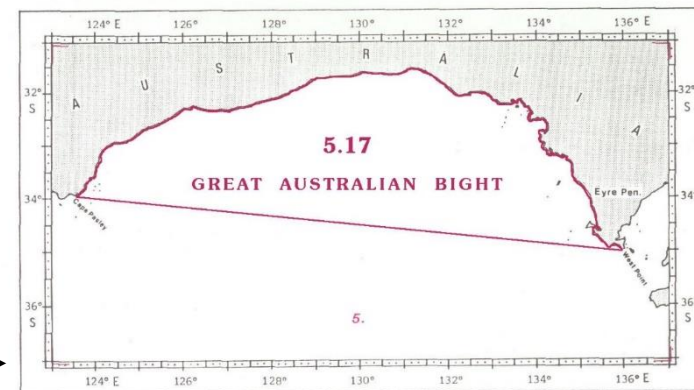
- GULF and BAY as parts of the SEA

- **Size**

- GULF is larger than a BAY
- BAY is larger than a COVE
- BIGHT is similar to or larger than a BAY



▲ GULF OF ST.LAWRENCE
AND BAY OF FUNDY (S-23)



▶ GREAT AUSTRALIAN BIGHT (S-23)

3 >> Analysis of existing glossaries of generic terms

Indentation of the sea or ocean

	Shape	Inclusion relation	Size	Other characteristics
GULF	<ul style="list-style-type: none"> major indentation into the land (extending into the land) ^{1, 2, 3, 4, 5, 6} 	<ul style="list-style-type: none"> A part of the SEA ^{1, 2, 3, 4, 5} 	<ul style="list-style-type: none"> smaller than a SEA ⁶ larger than a BAY ^{1, 2, 3, 4, 5, 6} 	-
BAY	<ul style="list-style-type: none"> Wide indentation in the coastline ^{1, 2, 3, 4} A well marked indentation whose penetration is in such proportion to the width of its mouth as to contain land locked waters ⁶ 	<ul style="list-style-type: none"> A part of the SEA ^{2, 4, 5} 	<ul style="list-style-type: none"> smaller than a GULF ^{1, 3, 4, 6} Larger than a COVE ^{1, 3, 4, 6} 	-
BIGHT	<ul style="list-style-type: none"> A large or extensive curved indentation of the coastline ^{1, 2, 3, 4, 5, 6} 	<ul style="list-style-type: none"> Similar to or larger than a BAY ^{2, 4} 		
Cove	<ul style="list-style-type: none"> A small indentation along a coastline or in a lake ^{2, 4} A sheltered recess in a coast ^{1, 5} Semi-enclosed bay ⁴ 	<ul style="list-style-type: none"> A part of seas, lakes, or rivers ¹ Generally inside a larger embayment ³ 	<ul style="list-style-type: none"> smaller than a BAY ^{1, 3, 4, 6} 	(a CREEK or INLET) where boats may shelter

¹Bowditch(2002), ²CGNA(1996), ³IHO(1994), ⁴NZGB(2014), ⁵CPCGN(2012), ⁶KHOA(2016)

3 >> Analysis of existing glossaries of generic terms

Connection between two water bodies : CHANNEL, PASSAGE, STRAIT

- **Shape**
 - narrow water body or waterway connecting two larger bodies of water
- **Inclusion**
 - CHANNEL is included in passage or strait according to the definition of channel (ICSM, 1996; IHO, 1994)
 - However, the definition of PASSAGE can be inferred that passage is included in the channel since it is defined as a CHANNEL that can navigate in Bowditch (2002), ICSM (1996), and IHO (1994).
 - The inclusion relations are contradictorily defined
- **Function**
 - navigable waterway

The distinction between actual cases is ambiguous, it may be difficult to establish standardized definitions related to the marine generic terms

3 >> Analysis of existing glossaries of generic terms

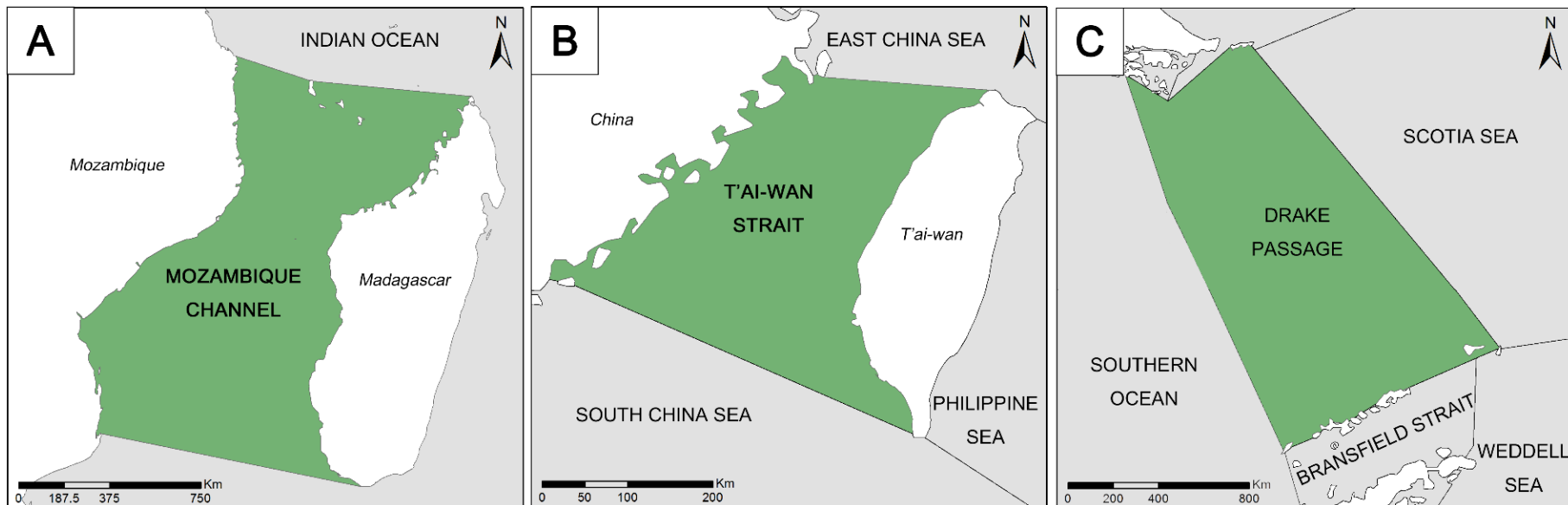
Connection between two water bodies

	Shape	Inclusion relation	Size	Function	Other Characteristics
CHANNEL	<ul style="list-style-type: none"> • Deep waterway ^{1, 2, 3, 6} • Narrow water body joining larger water bodies ^{4, 5} 	<ul style="list-style-type: none"> • Deepest part of a bay, passage or strait ^{1, 2} 	<ul style="list-style-type: none"> • Smaller than a STRAIT ⁶ 	<ul style="list-style-type: none"> • Navigable Route ^{1, 2, 3, 6} 	<ul style="list-style-type: none"> • Natural or dredged ^{1, 2, 3, 6}
PASSAGE	<ul style="list-style-type: none"> • Narrow water body ^{1, 2, 4, 5, 6} • Especially one through reefs or islands ^{1, 2, 3, 6} • Connecting two larger water bodies ^{4, 5} 	<ul style="list-style-type: none"> • Part of CHANNEL ^{1, 2, 3, 6} 		<ul style="list-style-type: none"> • Navigable ^{1, 3, 4, 5, 6} 	
STRAIT	<ul style="list-style-type: none"> • Relatively narrow waterway ^{2, 3, 4, 6} • connecting two larger bodies of water ^{1, 2, 3, 4, 5, 6} 	<ul style="list-style-type: none"> • Part of PASSAGE ^{1, 2, 4} 	-	<ul style="list-style-type: none"> • Usually navigable ^{2, 4} 	

¹Bowditch(2002), ²CGNA(1996), ³IHO(1994), ⁴NZGB(2014), ⁵CPCGN(2012) , ⁶KHOA(2016)

3 >> Analysis of existing glossaries of generic terms

Connection between two water bodies



Comparison between cases of the generic terms CHANNEL, PASSAGE, and STRAIT appearing in S-23

The distinction between actual cases is ambiguous, it may be difficult to establish standardized definitions related to the marine generic terms

3 >> Analysis of existing glossaries of generic terms

Lack of consistency in the generic term

- There are some generic terms which could be applied to ‘indentation’ or ‘connection’ categories.
>> SOUND, CREEK, INLET, GUT
- These generic terms can be diversely applied to many geographical features.

3 >> Analysis of existing glossaries of generic terms

Lack of consistency in the generic term

- **Indentation features**
 - SOUND as a arm of a sea such as an inlet
 - CREEK, GUT, INLET as a small and narrow opening
 - > INLET as tapering feature towards its head
 - > CREEK which is tidal throughout its whole feature
- **Connection features**
 - SOUND as a long arm of a sea connecting two larger bodies of water
 - CREEK, GUT, INLET as small, narrow waterway

3 >> Analysis of existing glossaries of generic terms

Lack of consistency in the generic term

	Shape	Size	Other characteristics
SOUND (1)	<ul style="list-style-type: none"> An arm of the sea; inlet⁵ 		-
SOUND (2)	<ul style="list-style-type: none"> A long arm of a sea connecting two larger bodies of water^{1, 2, 3} 	usually wider and more extensive than a strait ^{1, 2, 3}	-
	<ul style="list-style-type: none"> A long arm of a sea forming a channel between an island and a mainland^{1, 2, 3, 4} 	-	
SOUND (3)	<ul style="list-style-type: none"> A large body of water from which two or more inlets, arms, or channels branch off⁵ 	-	-
CREEK (1)	<ul style="list-style-type: none"> A wide arm¹ a small, narrow inlet or bay^{2, 3, 5, 6} extends farther inland than a cove³ 	<ul style="list-style-type: none"> Narrow inlet^{2, 3, 5} Small, narrow bay^{3, 6} 	<ul style="list-style-type: none"> tidal^{2, 3, 5, 6}
CREEK (2)	<ul style="list-style-type: none"> a small channel¹ A long narrow water body joining two larger water bodies⁵ 	-	<ul style="list-style-type: none"> Tidal^{2, 5}

¹Bowditch(2002), ²CGNA(1996), ³IHO(1994), ⁴NZGB(2014), ⁵CPCGN(2012), ⁶KHOA(2016)

3 >> Analysis of existing glossaries of generic terms

Lack of consistency in the generic term

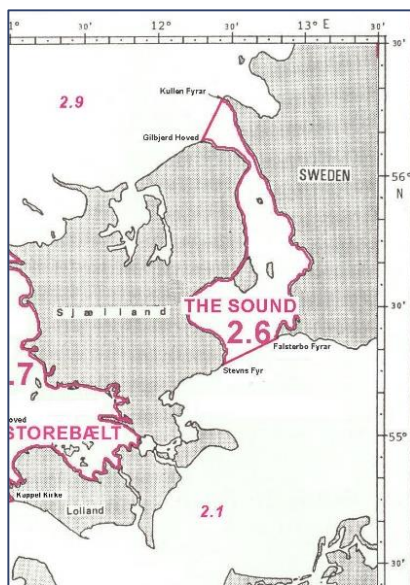
	Shape	Inclusion relation	Size	Other characteristics
INLET (1)	<ul style="list-style-type: none"> • A narrow opening ^{1, 3, 5, 6} • An elongated body of water ⁵ • a minor indentation of water ^{2, 4} • usually tapering towards its head ^{2, 3, 6} 	<ul style="list-style-type: none"> • Often a BAY within a BAY ⁴ • Connected to the SEA ^{2, 5} 		
INLET (2)	<ul style="list-style-type: none"> • A narrow stretch of water connecting two larger water bodies ⁵ 			
GUT (1)	<ul style="list-style-type: none"> • A small or narrow tidal inlet ^{2, 3, 5} 		<ul style="list-style-type: none"> • Small INLET ⁵ 	<ul style="list-style-type: none"> • Tidal ⁵ • sometimes forming a CHANNEL through it ²
GUT (2)	<ul style="list-style-type: none"> • A narrow channel between two larger bodies of water ^{2, 3, 5} 		<ul style="list-style-type: none"> • Narrow CHANNEL/PASSAGE ^{2, 3, 5} 	

¹Bowditch(2002), ²CGNA(1996), ³IHO(1994), ⁴NZGB(2014), ⁵CPCGN(2012), ⁶KHOA(2016)

3 >> Analysis of existing glossaries of generic terms

Lack of consistency in the generic term

- For example, in case of SOUND



▲ The Sound (S-23)



▲ Puget Sound (MODIS image)



▲ Jones Sound (CPCGN)

The inconsistent definition have a problem of possibly causing confusions in use in that one generic term can be diversely applied to many geographical features.

04. Analysis of classification system of feature types

4 >> Analysis of classification system of feature types

- In order to classify the sea surface features, we analyzed the criteria of classification systems used in national database of geographical names.
- National database of geographical names analyzed in this study
 - > Geographical Names Board of Canada (GNBC).
 - > Committee for Geographical Names in Australasia (CGNA).
 - > United States Board on Geographic Names (USBGN).

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Home → Earth Sciences → Geography → Geographical names in Canada → Geographical Names Board of Canada

Earth Sciences

Sciences

Geomatics

Geography

International Boundaries

The Atlas of Canada

Topographic Information

Geographical names in Canada

Application Programming Interface - API

Origins of Canada's Geographical Names

Geographical Names

Geographical Names Board of Canada

In Canada, since 1897, geographical names have been authorized through a national committee, now known as the Geographical Names Board of Canada (GNBC).

Board Membership

The GNBC is comprised of members from each province and territory and various federal departments concerned with mapping, archives, defence, translation, Indian reserves, national parks and statistics. The Chairperson is appointed by the Minister of Natural Resources Canada.

[Contacts for federal, provincial, and territorial GNBC members](#)

A Brief History of the GNBC

The need for a Canadian names authority was recognized in the late 1800s, when resource mapping beyond the frontiers of settlement and extensive immigration made it an urgent matter to manage the country's geographical names - to standardize their spelling and their application to particular features. The Geographic Board of Canada was established in 1897, and became the Geographical Names Board of Canada (GNBC) in 2000.

Soon after 1897 the provinces and territories were invited to provide advice on the use, spelling and application of names, although until 1961 decisions were ultimately made in Ottawa. At that time, the responsibility for naming was transferred to the provinces. Since 1979, the authority for naming in Indian reserves, national parks, and military reserves has been jointly held by the appropriate federal department and the province concerned. In 1984, Yukon

▲ GNBC

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Permanent Committee on Place Names

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We all use place names everyday to describe our surroundings, where we're going or where we've been.

Rivers, mountains, plains, towns, suburbs, reefs, shoals and undersea features all have names. Whether they are of national or international importance or known only to a handful of people, names connect places to their local communities and often reflect our heritage and culture.

New Zealand and each Australian state and territory - including our Antarctic area of interest - have a place name registrar, naming board or committee for approving or registering names. However it is the Permanent Committee on Place Names (PCPN) that coordinates place-naming activities across Australia and New Zealand.

▲ CGNA

125 years 1890 2015

United States Board on Geographic Names

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The U.S. Board on Geographic Names is a Federal body created in 1890 and established in its present form by Public Law in 1947 to maintain uniform geographic name usage throughout the Federal Government. The Board comprises representatives of Federal agencies concerned with geographic information, population, ecology, and management of public lands. Sharing its responsibilities with the Secretary of the Interior, the Board promulgates official geographic feature names with locative attributes as well as principles, policies, and procedures governing the use of domestic names, foreign names, Antarctic names, and undersea feature names.

The original program of names standardization addressed the complex issues of domestic geographic feature names during the surge of exploration, mining, and settlement of western territories after the American Civil War. Inconsistencies and contradictions among many names, spellings, and applications became a serious problem to surveyors, map makers, and scientists who required uniform, non-conflicting geographic nomenclature. President Benjamin Harrison signed an Executive Order establishing the Board and giving it authority to resolve unsettled geographic names questions. Decisions of the Board were accepted as binding by all departments and agencies of the Federal Government.

The Board gradually expanded its interests to include foreign names and other areas of interest to the United States, a process that accelerated during World War II. In 1947, the Board was recreated by Congress in [Public Law 80-242](#). The usefulness of standardizing (not regulating) geographic names has been proven time and again, and today more than 50 nations have some type of national names authority. The United Nations stated that "the best method to achieve international standardization is through strong programs of national standardization." Numerous nations established policies relevant to toponymy (the study of names) in their respective countries.

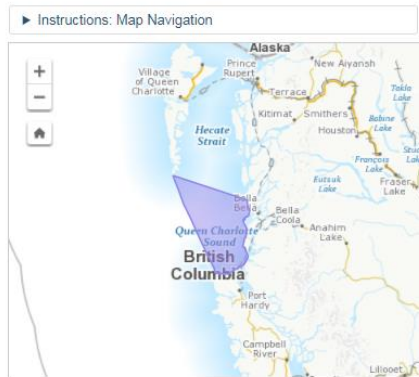
In this age of geographic information systems, the Internet, and homeland defense, geographic names data are even more important and more challenging. Applying the latest technology, the Board on Geographic Names continues its mission. It serves the Federal Government and the public as a central authority to which name problems, name inquiries, name changes, and new name proposals can be directed. In partnership with Federal, State, and local agencies, the Board provides a conduit through which uniform geographic name usage is applied and current names data are promulgated.

▲ USBGN

4 >> Analysis of classification system of feature types

Canada (GNBC)

Queen Charlotte Sound

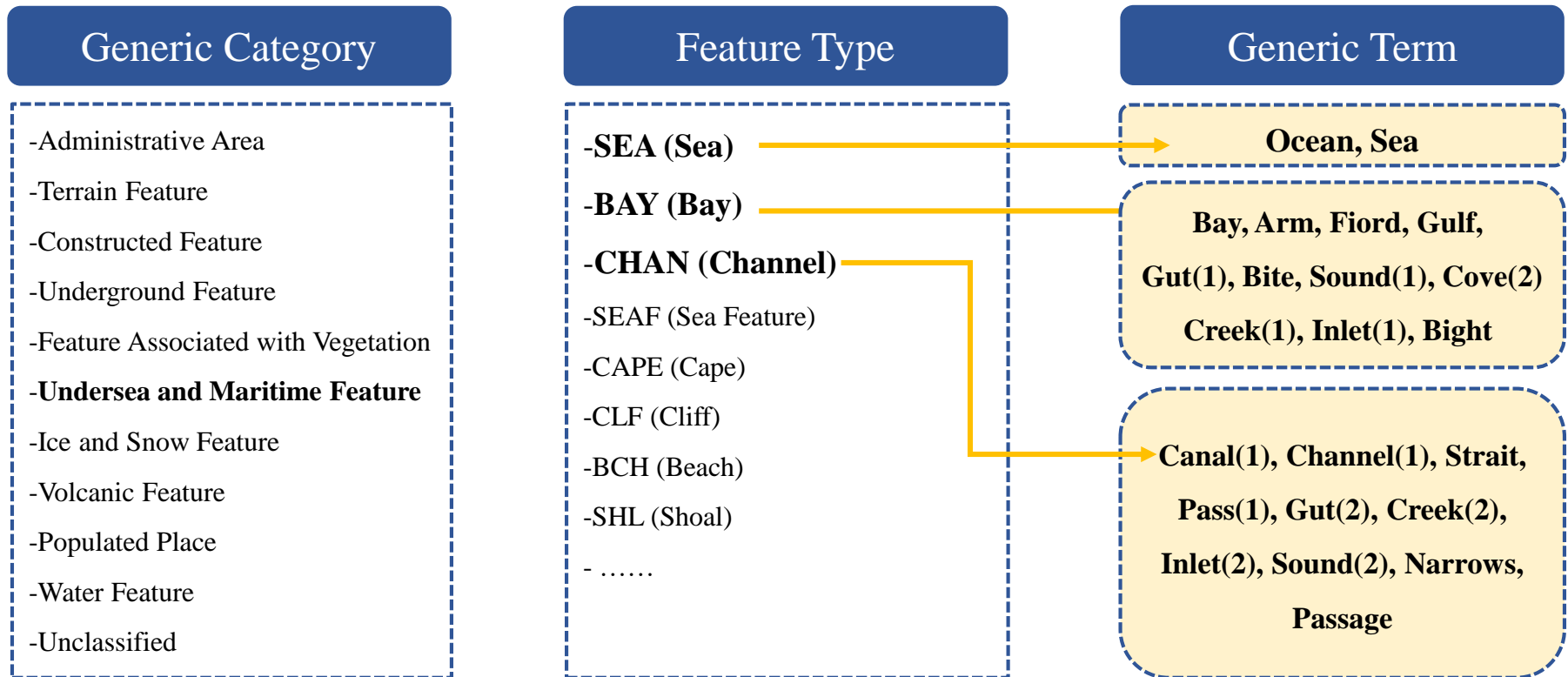


Name	Queen Charlotte Sound
Toponymic Feature ID	0cfc36f5849c20c3881a866d1f1dcbe3
Key	JBWQI
Status	Official
Concise Term	Channel
Generic Term	Sound
Location	Range 2 Coast Land District
Province/Territory	British Columbia
Latitude - Longitude (DMS)	51° 30' 0" N, 129° 30' 0" W
Latitude - Longitude (decimal)	51.5, -129.5
NTS Map Number	102P08
Relevance at Scale	1:5 000 000
Decision Date	1947-05-06
Source	British Columbia-Forests, Lands, Natural Resources

- **Generic category**
 - A higher-level category used to group features based on general type (generic term)
- **Feature type**
 - A short alphanumeric code used to classify or regroup toponyms based on the nature of the related toponymic feature
- **Generic term**
 - A term describing the type of feature the geographical name is associated with

4 >> Analysis of classification system of feature types

Canada (GNBC)



4 >> Analysis of classification system of feature types

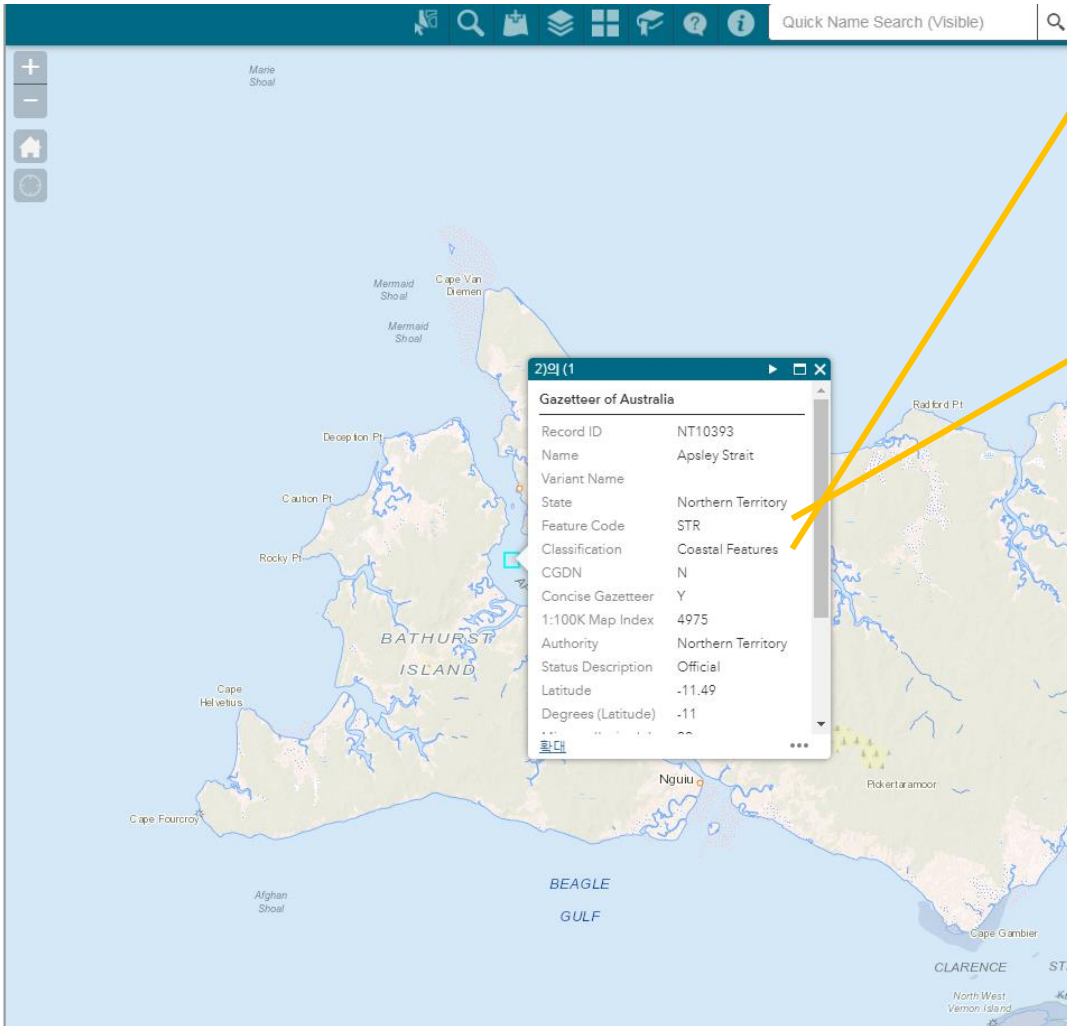
Australia (CGNA)

Toponym		
Linguistic Form	Feature type	Location

Linguistic form	Boat Harbour	Rai Waeteba One	Rest Bay
Feature type	Bay	Bay	Bay
Location (Latitude and Longitude)	34° 30'.959 118° 48'.324 E	08° 27'.941 S 123° 37'.148 E	22° 19'.234 S114° 10'.881 E

4 >> Analysis of classification system of feature types

Australia (CGNA)



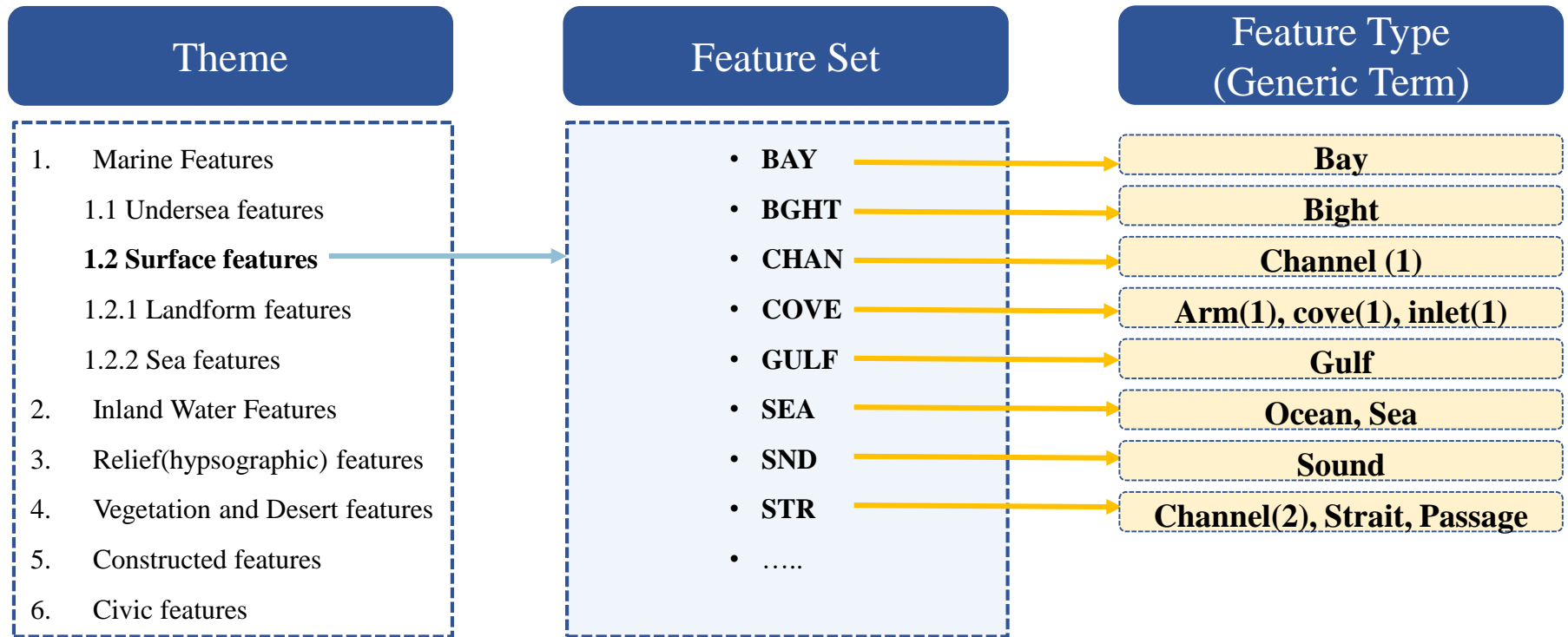
Theme: 6 broad themes that permit further statistical analysis of toponymic feature terms.

Feature Set: 76 feature sets as general category. The sets operate at a higher level of abstraction than the terms themselves.

Feature Type(Generic Term): 225 terms. Many feature terms function as the generic element within a toponym.

4 >> Analysis of classification system of feature types

Australia (CGNA)



The terms difficult to distinct between themselves (such as CHANNEL, PASSAGE, STRAIT) were treated as a synonym in equivalent feature set.

4 >> Analysis of classification system of feature types

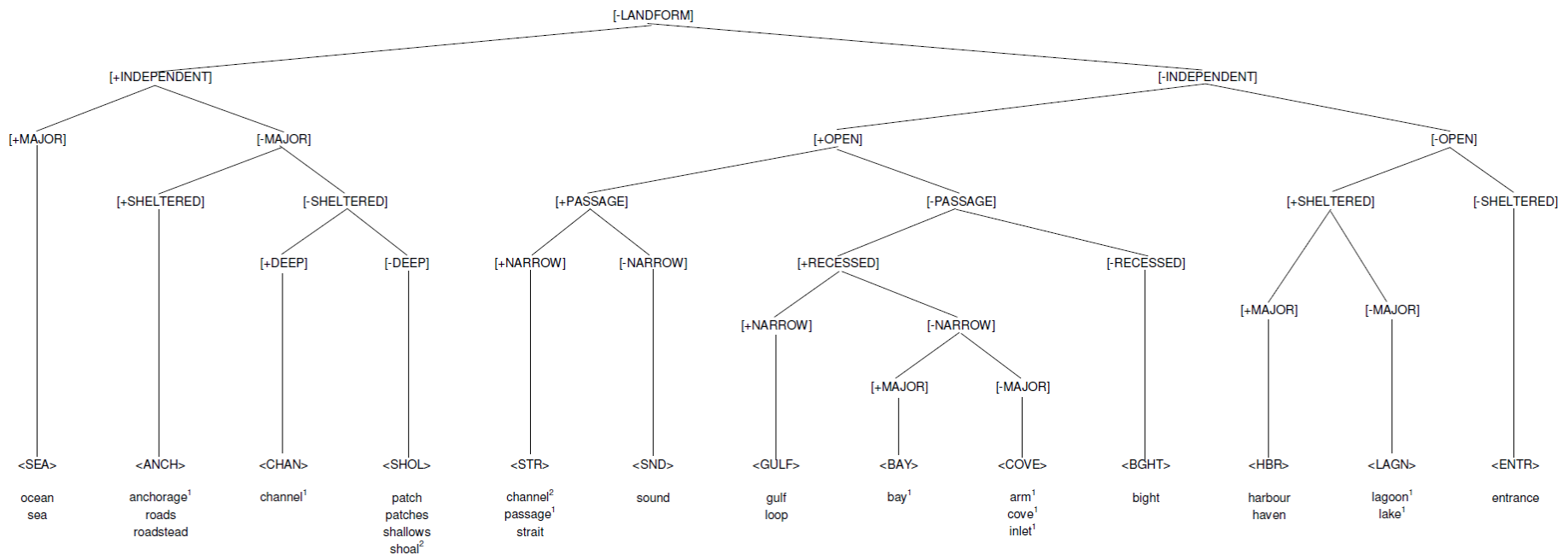
Australia (CGNA)

- Taxonomy of features generated by an intuitive set of binary semantic components
- The process was top-down
: the semantic components produced a taxonomic structure in which various nodes represented **feature sets**, which were in turn manifested by a number of **feature terms**.

4 >> Analysis of classification system of feature types

Australia (CGNA)

1.1 - SEA FEATURES



**Generic terms which can be diversely applied to many geographical features were distinguished with numbers.
e.g. SOUND¹, SOUND²**

4 >> Analysis of classification system of feature types

USA (USBGN)

Feature Name ▲	ID	Class	County	State	Latitude	Longitude	Ele(ft)	Map	BGN Date	Entry Date
Anna Maria Sound	290682	Bay	Manatee	FL	272954N	0824149W	0	Bradenton Beach	01-JAN-1976	19-OCT-1979
Barnes Sound	278116	Bay	Monroe	FL	251428N	0802243W	0	Blackwater Sound	-	19-OCT-1979
Blackwater Sound	278970	Bay	Monroe	FL	251005N	0802516W	0	Blackwater Sound	-	19-OCT-1979
Buttonwood Sound	279757	Bay	Monroe	FL	250640N	0802729W	0	Rock Harbor	-	19-OCT-1979
Card Sound	280028	Bay	Monroe	FL	251955N	0801839W	0	Card Sound	-	19-OCT-1979
Cumberland Sound	293979	Bay	Nassau	FL	304320N	0812901W	0	Fernandina Beach	-	19-OCT-1979
Cumberland Sound	313214	Bay	Camden	GA	304729N	0812912W	0	Cumberland Island South	-	25-SEP-1979
Florida Bay	282598	Bay	Monroe	FL	245909N	0805003W	0	Buchanan Keys	01-JAN-1965	19-OCT-1979
Gasparilla Sound	282963	Bay	Charlotte	FL	264755N	0821506W	0	Placida	-	19-OCT-1979
Hobe Sound	284063	Bay	Martin	FL	270148N	0800623W	0	Hobe Sound	-	19-OCT-1979
Indian River Lagoon	1923067	Bay	Brevard	FL	281542N	0803649W	0	Cocoa Beach	01-JAN-2001	30-MAY-2001
Jupiter Sound	285007	Bay	Martin	FL	265825N	0800507W	0	Jupiter	01-JAN-1950	19-OCT-1979
Largo Sound	285349	Bay	Monroe	FL	250755N	0802331W	0	Blackwater Sound	-	19-OCT-1979
Little Blackwater Sound	285609	Bay	Monroe	FL	251243N	0802635W	0	Blackwater Sound	-	19-OCT-1979
Little Buttonwood Sound	285630	Bay	Monroe	FL	250815N	0802656W	0	Blackwater Sound	-	19-OCT-1979

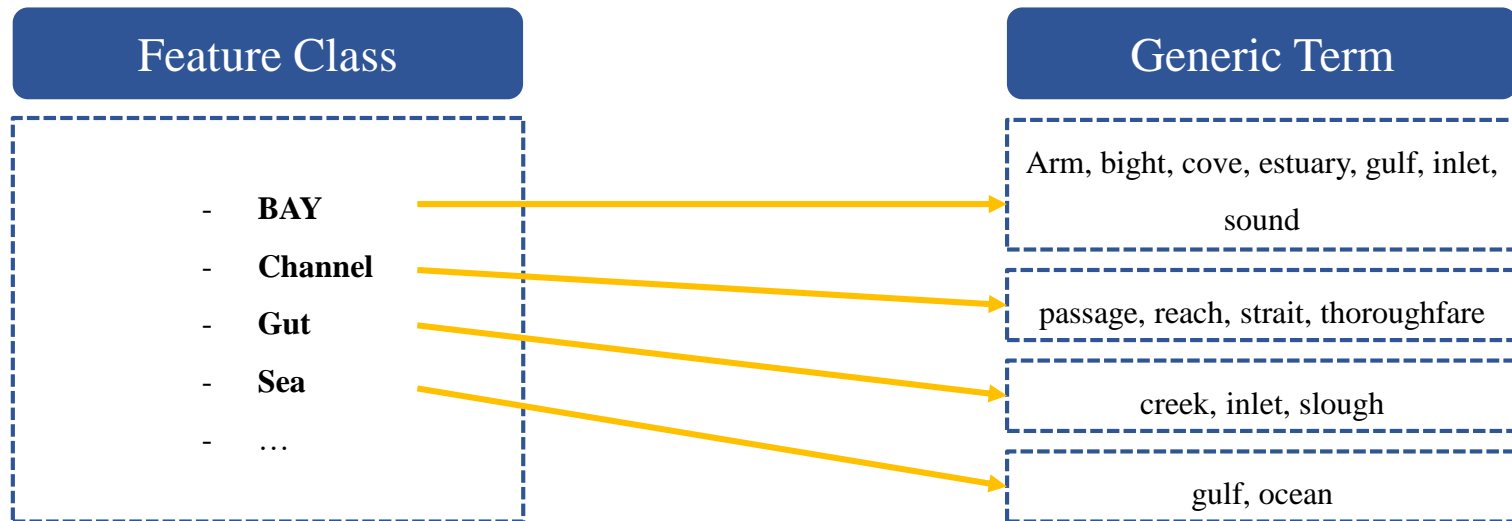
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4 >> Analysis of classification system of feature types

USA (USBGN)

Feature class: a group of features in a broadly defined descriptive category. They are defined for the purposes of this system and have no status as standards.

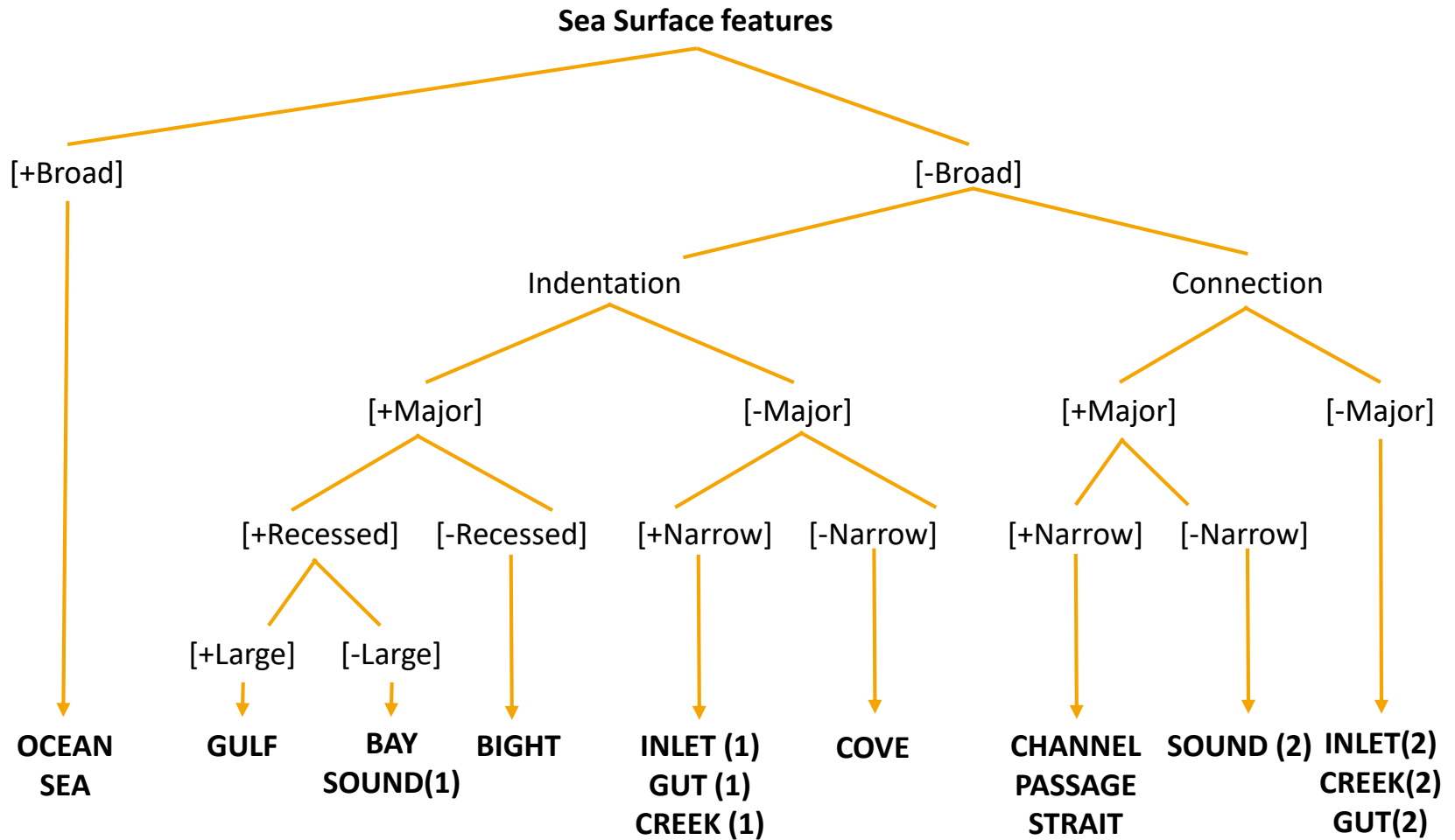
Generic term: commonly used generics. It assists in understanding the range of cultural and natural entities represented by the term.



05. Development of classification system

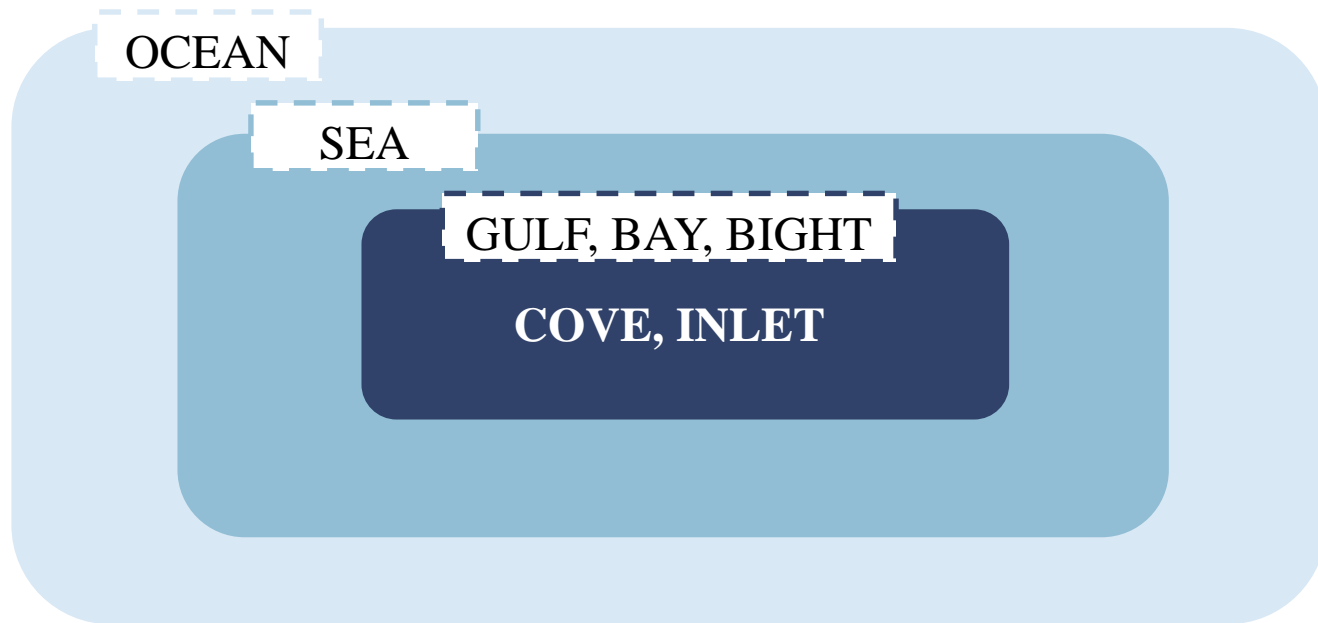
5 >> Development of classification system

- Based on the criteria of generic terms analyzed from the glossary and classification systems, we made a frame to classify generic terms of sea surface features
- In case of similarity problem among the definition of different generic terms
 - they were treated as a synonym in equivalent feature set, rather than separate CHANNEL, PASSAGE, and STRAIT.
- In case of lack of consistency in the generic term
 - Generic terms which can be diversely applied to many geographical features were distinguished with numbers. e.g. SOUND(1), SOUND(2)



5 >> Development of classification system

- We could find the relation of hierarchical between generic terms in definition.
- But it is not considered in classification systems. Furthermore, unlike the definition, hierarchy does not appear well in usage.



▲ Hierarchical relation between generic terms according to the definitions of glossaries

06. Conclusion and Discussion

6 >> Conclusion and Discussion

- To solve the problem of vague distinction between each generic term of sea surface features
- Based on the criteria analyzed from glossaries and classification systems of national naming authorities
- Compared with actual usage presented in S-23 and other gazetteers
- ▶ **made a classification frame of generic terms for sea surface features.**
- However, this classification frame doesn't consider the hierarchy between generic terms
- It is not easy to find hierarchical relationship in classification systems or in usage, whereas the relations of hierarchy are proposed among the generic terms in glossaries.
- ▶ **Further detailed researches are needed to develop standard norm of generic terms.**

Thank you
for Your Attention

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