

Findings of undersea feature  
names' origins and potential usage of  
outreach activities

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# Backgrounds

- B-8 documents has 3,940 undersea feature names, some of them do not have the origins of the names.

1,479 names do not have origins of their names

1,086 names have only coordinates.

- Database is pretty simple : one table with 11 attributes.

1. Specific term, 2. Generic Term,

3. Associated Meeting such as SCUFN, 4. Proposer

5. Year of Proposal, 6. Discoverer,

7. Year of Discovery, 8. Origin of Name

9. Additional Information 10. Coordinates

11. Secondary Coordinates

# Sketch for the research

3,940 SCUFN UF Names

**B-8 document**



Find the status

suggestion

Application for education

1,479 UF Names w/o the origins of the names  
1,086 UF Names have only coordinates

Quantitatively

suggestion

Qualitatively

Input from  
Other dependable  
DB and experts

filling the gaps

Null values decreased

# Purposes and Methods

- ACUF(Advisory Committee of Undersea features Names in USA) and US NGA(National Geospatial Intelligence Agency) have more facts and descriptions on the origins of the undersea feature names.
- To update and fill the vacant information based on the databases and experts' meetings and discussions with Trent Palmer, Leo Dillon, Jimmy Nerantzis.
- To suggest the necessity of re-verification process
- To check out the potential usage for education and outreach activities.

# Results

## BEFORE

3,940 SCUFN UF Names

1,479 SCUFN UF Names w/o  
the origins of the names

4,821 ACUF Approved Notes

**761 origins of the names  
were found in ACUF**

## AFTER

3,940 SCUFN UF Names

718 left without origins

Example : Abubacer Ridge  
→ From ACUF Approval Note and  
Feature Name Note, it was identified that  
the name Abubacer was named for bn  
Tufayl, known as Abubacer to Europeans,  
12th-century Spanish-Arab philosopher  
and physician

# Results

## BEFORE

3,940 SCUFN UF Names

718 UF Names w/o  
the origins of the names

10,350 NGA UF Names  
and NGA Homepage

**153 origins of the names  
were found in NGA**

## AFTER

3,940 SCUFN UF Names

526 UF Names  
without the origins of the  
names

Albatros Bank

→ From GNS database of NGA, it is written that this bank is an extensive undersea plateau located off the coast of the region extending from Mexico to Ecuador in the Pacific Ocean, which is the northern portion of the East Pacific Rise.

# Results

## BEFORE

3,940 SCUFN UF Names

526 UF Names w/o  
the origins of the names

## AFTER

3,940 SCUFN UF Names

365 SCUFN UF Names  
without the origins of the  
names

Expert meetings and  
library data



Example : **Brasilian Abyssal Plain**

→ It was found out that the feature is deepest part of the Brazil Basin with minimal relief and topographic expression.

Example : **Flora Reef** was only known that the feature was discovered in 1855 and named from a sailing ship.

→ Through the reviews of marine name specialists, it was turned out that it was named for sailing ship "Flora," under the command of Captain James Withers, from Liverpool 3th December 1854, arrived at Port Adelaide, South Australia 7th April 1855. The ship carried emigres for Australia and cargo.

# Results

## BEFORE

3,940 UF Names

1,086 UF Names  
have only coordinates

4,821 ACUF Approved Notes

**758 cases of supplementary information  
were found in ACUF**

## AFTER

3,940 UF Names

328 UF Names  
have only coordinates

Example : “ Abbott Seamount “  
→ From ACUF Approval Note and Feature Name Note, additional information about this feature was found that it is a seamount located north of Midway Islands (US) in the North Pacific Ocean, and the name origin have been unknown as of 1982.



# Results

BEFORE

3,940 UF Names

328 UF Names  
have only coordinates

10,350 NGA UF Names  
and NGA Homepage

**90 cases of supplementary  
information were found in  
NGA.**

AFTER

238 UF Names  
have only coordinates

Example : **Roncador Bank**

→ From NGA data, it was identified that Roncador Bank is located at 13 4N 8 1 W on U.S.H.O. Chart 5487 printed in 1938.

**Albatros Bank**

→ From GNS database of NGA, it is written that this bank is an extensive undersea plateau located off the coast of the region extending from Mexico to Ecuador in the Pacific Ocean, which is the northern portion of the East Pacific Rise.

# Results

## BEFORE

3,940 SCUFN UF Names

238 SCUFN UF Names  
have only coordinates

## AFTER

3,940 SCUFN UF Names

111 SCUFN UF Names  
have only coordinates

Expert meetings and library data



## Buffon Canyon

→ According to the additional reviews by research team, it was identified that the feature was named for Georges-Louis Leclerc, Comte de Buffon (177-1788), a French naturalist, mathematician and cosmologist.

# Results

## Input from SCUFN members

Walter Reynoso  
Peralta

20 names commented  
In Southern Ocean

Ana Angelica  
Ligiéro Alberoni  
Tavares

28 names commented  
In North Atlantic Ocean  
In South Atlantic Ocean

V. Stagpoole

5 names' coordinates  
fixed  
181 origins

: 339 names do not have the origins  
: 93 names do have only coordinates

### **Sirius Bank**

→ This bank is named from the Brazilian survey vessel "Sirius" specially designed and built for the Brazilian Hydrographic Service.

# Results

- Example : **Moresby Seamount**

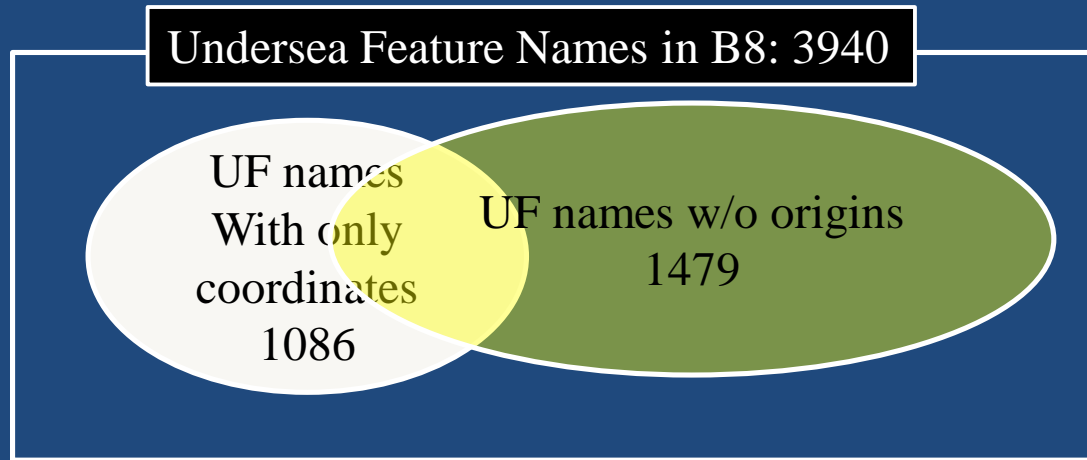
→ Moresby Seavalley was named for proximity to Moresby Island, the major southern island of the Queen Charlotte Island group.

- Example : **Admiralteystvo Rise**

It had no information about origin of the name, even though it has other information such as proposer, discovery, associated SCUFN meeting, etc.

→ From GNS database of NGA, It was identified that it was named in association with the nearby Poluostrov Admiralteystva in Russia.

# Comparison with the Original B-8



	B-8 Original 2016	ACUF DB	NGA	NGA homepage	expert meetings	SCUFN members	Norman Cherkis authors	After Research
UF names w/o origins	1479	718	565	526	365	339	294	
UF names With only coordinates	1086	328	251	238	111	93	71	

# Final Stages

- 294 names do not have the origins

Ocean Name	Numbers of UF Names W/O Origins
NORTH PACIFIC OCEAN	97
NORTH ATLANTIC OCEAN	79
MEDITERRANEAN REGION	77
SOUTH ATLANTIC OCEAN	12
SOUTH PACIFIC OCEAN	9
INDIAN OCEAN	8
ARCTIC OCEAN	7
SOUTH CHINA AND EASTERN ARCHIPELAGIC SEAS	4
SOUTHERN OCEAN	1



# More information can be found or fixed with more experts

- We do not suggest our results to be completely made or verified to SCUFN members or GEBCO members.
- We will open our result to have more information, comments, suggestion.



# What is the next step? Verification

- We suggest three issues
  1. Do these geographic names have real geomorphic bodies (undersea features)?
  2. Have these names been named after the rules and procedures of SCFUN?
  3. How accurate and how precise the locations of these UF?

So, Verification process of UF names will be able to be as one of the agenda in SCUFN.

# What to be discussed for the verification process?



- One success story of re-Verification Process: UNESCO world heritage Convention
  - Too many heritages and sites had been registered without verification from 1978 to 1998. (for example: Outstanding Universal Value, Geographic boundary, buffer zone etc.).
  - All the information should be verified based on the mandatory elements. Registered heritage should have accurate information.
  - Inventory heritage have been discussed consequently after 2007 (31th meeting) step by step for Quality Control.

# Undersea Feature names : How to use for educational purposes

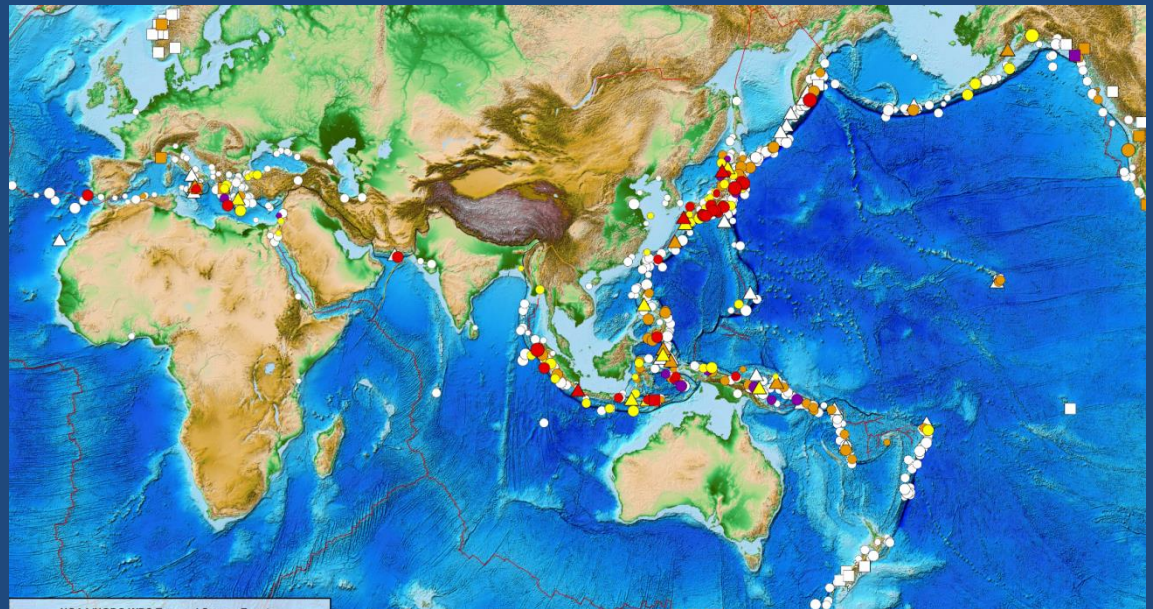
- **Why to teach:**
  - About our 70 percent of earth covered by water, we know a little.  
(to expand human knowledge)
  - Semantic Web is based on Geographic names, for linked data should be considered in Big data Society. (to promote searching ability)
  - Stimulate imagination based on marine and ocean environments, such as cyber games, programs with five-sense experience  
(to offer creative experience and to promote new IT realm)

# Undersea Feature names : How to use for educational purposes

- **What** to teach: Not only the UF names themselves but also the distribution and processes of the features (for example: natural disaster map)

Tsunami map

Pinpoint the place near the US feature names as well as well-known cities.



# Undersea Feature names : How to use for educational purposes

1) Search a Undersea Feature Name in Google

A screenshot of a Google search for "Altair Seamount". The search results show several links, including a background document on the Altair Seamount Marine Protected Area, a page about the Altair Seamount High Seas MPA, a research paper on the time variability of satellite derived SST and Ocean Colour, and the ICES Journal of Marine Science. The search bar at the top contains "Altair Seamount" and the search button is visible.

2) Seamount catalog will be connected

A screenshot of the Seamount Catalog website. The page is titled "Seamount Catalog -- Index Page" and features a navigation menu with "Home" and "Help". Below the menu is a grid of seamount names, organized alphabetically from A to Z. The names listed include Abaiang Guyot, Abbott Seamount, Academician Berg Seamount, Aceste Seamount, Adams Seamount, Aean Kan Guyot, Africana Seamount, Agavale Seamount, Agerholm Seamount, Agostinho Seamount, Aquilas Seamount, Ahe Atoll, Ahunui Seamount, Ahui Seamount, Ailinginae Guyot, Ailinglapalap Seamount, Ailuk Atoll, Akashi Knoll, Ake-No-Myojo Seamount, Akiaki Seamount, Alarcon Seamount, Albatross Knoll, Albert Seamount, Alberta Guyot, Alcatraz Guyot, Alcock Rise Seamount, Alden Seamount, Alexa Seamount, Alexander Seamount, Alexander Agassiz Tablemount, Aife Seamount, Algol Seamount, Alix Seamount, Allen Guyot, Allison Guyot, Aimirante Saldanha Seamount, Alphecca Seamount, Altair Seamount, Alvaro Martins Hill, Amanu Atoll, Amber Guyot, Ampere Seamount, Amu Tau Seamount, An-Ei Seamount, Anaa Ridge, Anakena Seamount, Anchise Seamount, Anderle Knoll, Andrew Guyot, Andromeda Seamount, Anewetak Atoll, Anita Jones Seamount, Anna De Koningh Seamount, Antialtair Seamount, Anton Dohrn Seamount, Antonio de Freitas Hill, Anuanurunga Seamount, Anuanururo Seamount, Aotea Knoll, Apataki Atoll, Applequist Seamount, Apuupuu Guyot, Arabis Seamount, Aracataca Hill, Arago Reef Seamount, Aratika Atoll, Arawac Hill, Archimedes Seamount, Archimedes Seamount, Arere Seamount, Argentina Seamount, Argo Seamount, Argentina Seamount, Argus Seamount, Ari'i Moana Guyot, Arnold Guyot, Arorae Guyot, Arroyo Seamount, Arutua Atoll, Ashton Seamount, Asquith Rise Seamount, Asterias Seamount, Atafu Atoll, Ati'apiiti Seamount, Atka Seamount, Atlantic Seamount, Auckland's Escarpment, Aur Atoll, Auriga Seamount, Ava Seamount, Avalon Knoll, Awatea Seamount, Axthelm Seamount, Ayers Seamount.

# Undersea Feature names : How to use for educational purposes

3) Individual record is shown: but a lot of holes without data

The screenshot displays two overlapping web pages. The left page, titled 'Detailed Seamount Information', shows data for the 'Altair Seamount'. It includes a bathymetric map on the left and a table of metadata on the right. The table lists fields such as Index, Location, Plate Age, Region, Plate, Tectonic Setting, Volume, Shelf Edge, Classification, Elongation Irregularity, Oceanic Province, Alternative Names, Age, Seamount Top, Ocean Bottom, and Volcanic Activity. Below the table are links for 'BATHYMETRIC MAPS' and 'GRID FILES'. The right page, from 'Enduring Resources Earth Science Education', features a lesson plan titled 'Hotspot Lessons for a High School Earth Science Class' by Jamie A. Russell. It includes sections for 'Introduction', 'Lesson Outline', and 'Contents'. The 'Lesson Outline' section details 'Week 1: Overview Daily Lessons and Activities', explaining the focus on hotspot theory, plate tectonics, and the Hawaiian Islands. The 'Contents' section includes a map of the Hawaiian Islands chain with labels for French Frigate Shoals, Nihoa, Kauai, Oahu, Necker, Niihau, and Hawaii.

Index	SMNT-447N-0341W	Classification	Sea
Location	44Å° 43.20' N 34Å° 04.80' W	Elongation Irregularity	
Plate Age		Oceanic Province	
Region		Alternative Names	
Plate		Age	
Tectonic Setting		Seamount Top	
Volume		Ocean Bottom	
Shelf Edge		Volcanic Activity	

**Hotspot Lessons for a High School Earth Science Class**  
Lesson Plan by **Jamie A. Russell** - Also Available at **SERC's Pedagogy in Action**

**Introduction**

This is a two week learning segment on hotspot volcanoes. This is a collaborative effort between Melanie McWilliams, a high school Earth and Planetary Science teacher at Chula Vista High School in San Diego, California, and Jamie A. Russell, a masters student at the Scripps Institution of Oceanography, in La Jolla. Utilizing data collected during Jamie's research, the students were taught about the hotspot theory and how hotspot volcanoes are important to understanding other Earth science concepts. The segment begins with five lessons, one for each day of the week and culminates with a group project for the students.

**Lesson Outline**

**Week 1: Overview Daily Lessons and Activities**  
**Details**

- The first week of the hotspot lesson plan is dedicated to providing the students with a understanding of the hotspot theory. The first day is spent learning about relative dating. This sets the stage for the students to understand about the different ages of islands within an island chain. The second day students are taught about the hotspot theory, what it is and who came up with it as well as some examples of islands formed by hotspots and how hotspot chains are used to determine absolute plate motions. The third day is dedicated to mantle plumes. Mantle plumes are a suggested mechanism for magma production at hotspots. The fourth day the students learn about Samoa and the presumed Samoan hotspot. The fifth day is a discussion of how scientists conduct research and how Jamie determined the age of the rock samples from Samoa.
- Each lesson is designed to provide a foundation for understanding the hotspot theory and how hotspot island chains are used to determine absolute plate motions. Each lesson begins with a daily warm-up to get the students thinking about Earth sciences or remembering things from previous lessons.

**Week 2: Final Project**

**Contents**

French Frigate Shoals, Nihoa, Kauai, Oahu, Necker, Niihau, Hawaii  
HAWAIIAN ISLANDS  
Hawaii-Emperor Seamount Trail

4) More detailed programs are shown and additional information is listed such as events, tools, scientific documentation for further studies

5) Undersea features names are the first button to ocean and marine science

# Undersea Feature names

## : How to use for educational purposes

- **How** to teach: with some applications and online software or services.
  - educational materials for each grade
  - **open source software** for handling ocean data such as QGIS
  - GEBCO-site also shows the location of each undersea feature
- **When** to teach
  - regular course
  - extra-curriculum course during the vacation
  - long-life education
- **Whom** to teach:
  - those who is interested in earth and sea

# Undersea Feature names

## : How to use for educational purposes

- **Where** to teach: classroom or computer lab or open science lectures in restaurants or natural history museums or ocean museums





# Conclusions

- More than 90 percent of unknown origins of Undersea Features are updated by tedious and consequent searches for ACUF, NGA and experts meetings
- More information of undersea features of which coordinates have been updated.
- We suggest various application or usage of updated attributes of undersea features
- B-8 documents may require to reflect our results in some way after gather more comment and formal procedure.
- Verification Process of UF names will be able to an agenda in SCUFN.