

Feature Naming Proposal for Consideration by SCUFN

The “THARP LINE”

Submitted by:	Glen Burrige (Executive Director, European Federation of Geologists)
Executive Summary:	A proposal for the naming of the Earth’s contiguous terrestrial and maritime tectonic plate margins as the “Tharp Line”: <ul style="list-style-type: none"> (i) in honour of Mary Tharp, pioneer in our understanding of the structure of our oceans and Earth’s crust (ii) to assign a name to a fundamental feature of our planet that is currently anonymous
Related Documents:	Please see References list
Related Projects:	N/A

Introduction

1. One of the most astonishing aspects, as earth scientists, when describing the nature of the planet’s plate tectonics is that we do not currently have a name for the [continuous line of plate margins](#) that define this fundamental system. Instead, we tend to refer to the names for individual structural elements (e.g. mountain ranges, rift valleys, transform faults) and the names of the tectonic plates themselves, but no name has ever been assigned for the network of tectonic margins itself.

This is a surprising oversight, but also opens up a substantial opportunity for promoting understanding among the public of the pivotal role of plate tectonics to the evolution of our planet. This benefit could extend to the earth and natural sciences in general, especially if it were named in such a way to incorporate the significant history and a personality closely associated with the discovery of how this planet-wide system functions.

2. The basis of this proposal is that a very suitable subject of such an honour would be [Marie Tharp](#), pioneer of marine geology who epitomises the struggle to comprehend the nature of Earth’s plate tectonics structure during the exciting and rapid revolution in understanding during the 1950’s to 1970’s.

An additional positive outcome from such an honour would be to highlight a contribution from an era where female scientists had difficult in being equitably rewarded for their talent, effort and insight. Assigning her name to such an intrinsic - currently anonymous - part of our planet to which she aided our understanding so greatly would be one way to redress the balance and offer a wonderful catalyst for highlighting the parallel stories of how we have made a step-change in our comprehension of the Earth, the criticality of the oceanic realm and how much we still have to learn and that of Marie Tharp herself and her fellow pioneering scientists who found themselves at the centre of a revolution in scientific knowledge.

Background

The idea was first put forward in several [tweets](#) in 2018/9. Spurred by the [2020 EGU Assembly 100th anniversary event](#) and potential to explore idea further, support was the sought from:

- (i) The Executive Board of the [European Federation of Geologists](#), who provided agreement to exploring potential for this proposal during Summer 2020
- (ii) The [IUGS Tectonics & Structural Geology Commission](#), who confirmed they would be happy to approve the naming of the feature for the continental aspects of tectonic margin line, however would need to defer to SCUFN for the maritime components.

Analysis/Discussion

The basis of this proposal is to honour the courage of conviction Marie Tharp had in her [crucial observation in 1952](#) concerning the significance of rift valleys in the central mid-Atlantic ridge system and the profound implications this had for the confirmation of continental drift and the subsequent succession of discoveries that led to the development of Plate Tectonic theory.

It is one of the seminal insights of earth science that put paid to decades of false premises and stagnation in the earth sciences. It is a discovery without which our understanding of how our planet functions would be impossible.

A combination of factors, both actual and historical, I believe make this proposal timely:

1. Recognition that the most impactful and likely major issues facing the World in the coming decades are at a [planetary scale](#)
2. To address these challenges will require holistic planetary science reaching across the earth sciences and which views our home planet as an interlocking series of biogeochemical systems
3. Such iconic stories can create public appeal which can help raise the “[geological reading age](#)” among all generations and spark ongoing public engagement with topics concerning the oceans, earth and natural sciences
4. The value to the earth sciences of strong narratives that weave together compelling strands of individual life-stories, dramatic explorations, intellectual rigour and inspiring creativity that have changed the way we view our world
5. Provide inspiration to the growing cadre of earth science “ambassadors” who want to drive a more inclusive and socially-conscious [approach](#) to engaging the public
6. Individual events of recent years, e.g. the search for [MH370](#), [evidence of life](#) elsewhere in the solar system or concern about [plastics](#) in our oceans, highlight the continuing deficit in detailed mapping of this realm
7. With the world digesting the implications of the recent landmark [IPCC WG1 AR6 report](#) (with further [results](#) being published in 2022) and the pivotal [COP26](#) in November 2021, there is a sustained attention to earth systems that such a proposal could benefit from
8. 2020 was the 100th anniversary of Marie Tharp’s birth, which led to a [celebration](#) of her work at the EGU Assembly and coverage in the [media](#). This proposal offers an opportunity to connect with that event and capitalise on the attention it garnered
9. This proposal would connect with numerous initiatives to promote greater involvement by women in geoscience by international organisations, e.g. the EU-funded [ENGIE project](#), [Women in Geothermal](#), etc
10. Capitalise on recent high-profile publicity concerning other female geological pioneers, e.g. GSA’s ‘[Women and Geology](#)’, [new book](#) and [statue](#) dedicated to [Mary Anning](#).

Considerations and Risks

- If formally approved by SCUFN and IUGS, greatest value for the new Tharp Line would be realised if we are able to promote its creation in a newsworthy way that will attract support from both the scientific and wider community. This is something EFG and its partners could certainly help drive, alongside SCUFN and other organisations within the earth and natural sciences.
- Whether to include her close collaborator, Bruce Haazeen, in the name of the new feature, e.g. as The Tharp-Haazeen Line?
 Pro: In her own lifetime, she was always keen to emphasise the collaborative and joint nature of their work.
 Con: Would this dilute the ethos behind the naming? Is it too long a name, which would become known simply as the Tharp Line anyway?
 This question could be best addressed in concert with the leading stakeholders of her legacy and in consultation with the wider scientific community.
- The proposed “Tharp Line” is of course a perpetually active and dynamic feature, so two necessary considerations would be:
 1. Its placement, like all other tectonic features, will be slowly migrating in absolute space in time (this can be handled by monitoring of its component parts of course)
 2. This is a feature has an existence that stretches back to the dawn of plate tectonics on Earth, so we could also introduce the concept of the “paleo-Tharp Line” has dramatically transformed itself through the life of the Earth as function of geodynamics and the resultant plate Wilson Cycle.
- We have agreement in principle from the specialist IUGS Tectonics & Structural Geology Commission for the land portions of line to be included in this new feature name, although conceivably it could be restricted to ocean margins only (Don't recommend, but noted as a possibility)

Recommendations

If agreement were given by SCUFN to proceed with this proposal, it would be suggested to:

1. Recontact the IUGS Tectonics & Structural Geology Commission to:
 - (i) Confirm agreement on the terrestrial component of the proposed line feature
 - (ii) Review technical aspects of which specific land features will be included
 - (iii) Liaise on working arrangements for connecting the maritime and terrestrial features
 - (iv) Agree a common approach to promotion
2. Creation of a multi-skilled and diverse Task Group dedicated to a successful launch and embedding of this new title with the scientific lexicon and public consciousness, comprising:
 - ✧ A blend of earth and other natural scientists working on tectonics-related themes
 - ✧ Representatives from both the terrestrial and oceanic plate tectonics communities
 - ✧ Domain experts in science outreach with skills to permeate to a wide audience

Action required of SCUFN

SCUFN is invited to:

- a. Review this proposal
- b. Offer any feedback and required changes
- c. Liaise with the proposer on follow-up (positive result), possible improvements (in case of concerns) or alternatives (negative result)

Contact details of proposer

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References

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Author: Felt, Hali
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Published by Henry Holt & Company, New York, 2012

<https://www.nationalgeographic.com/culture/article/marie-tharp-map-ocean-floor>

<https://theconversation.com/marie-tharp-pioneered-mapping-the-bottom-of-the-ocean-6-decades-ago-scientists-are-still-learning-about-earths-last-frontier-142451>

<https://blogs.egu.eu/divisions/ts/2020/07/30/100-years-of-marie-tharp-the-woman-who-mapped-the-ocean-floor-and-laid-the-foundations-of-modern-geology/>
(including numerous references)

<https://www.whoi.edu/news-insights/content/marie-tharp/>

EGU20: PC1 Centennial perspectives: A celebration of Marie Tharp's legacy
<https://www.youtube.com/watch?v=g2fnaD9jOzc&t=543s>