

博士論文審査結果報告
Report on Ph.D. / Doctoral Dissertation Defense
National Graduate Institute for Policy Studies (GRIPS)
Professor (joint-appointment) Shinji Egashira

審査委員会を代表し、以下のとおり審査結果を報告します。

On behalf of the Doctoral Thesis Review Committee, I would like to report the result of the Doctoral Dissertation Defense as follows.

学位申請者氏名 Ph.D. Candidate	Tanjir Saif Ahmed		
学籍番号 ID Number	DOC17131		
プログラム名 Program	Disaster Management Program		
審査委員会 Doctoral Thesis Review Committee	主査 Main referee	江頭 進治 EGASHIRA, Shinji	主指導教員 Main Advisor
	審査委員 Referee	萬矢 敦啓 YOROZUYA, Atsuhiro	副指導教員 Sub Advisor
	審査委員 Referee	家田 仁 IEDA, Hitoshi	副指導教員 Sub Advisor
	審査委員 Referee	細江 宜裕 HOSOE, Nobuhiro	博士課程委員会委員長代理 Acting Chairperson of the Doctoral Programs Committee
	審査委員 Referee	下園 武範 SHIMOZONO, Takenori (東京大学大学院工学系 研究科 准教授 Director, Department Civil Engineering, Tokyo University)	外部審査委員 EXternal Referee
論文タイトル Dissertation Title (タイトル和訳)※ Title in Japanese	Numerical Study on Tidal Currents and Bed Morphology in Sittaung River Estuary, Myanmar ミャンマー、シッタウン川 河口域における潮汐流及び地形変動に関する数値 解析研究		
学位名 Degree Title	博士 (防災学) / Ph.D. in Disaster Management		
論文提出日 Submission Date of the Draft Dissertation	2020年5月19日	論文審査会開催日 Date of the Doctoral Thesis Review Committee	2020年6月16日
論文発表会開催日 Date of the Defense	2020年6月16日	論文最終版提出日 Submission Date of the Final Dissertation	2020年8月19日
審査結果 Result	合格 Pass		
	不合格 Failure		

※ タイトルが英文の場合、文部科学省に報告するため、和訳を付してください

Please add a Japanese title that will be reported to MEXT.

1. 論文要旨 **Thesis overview and summary of the presentation.**

This study is to evaluate tidal currents, sediment transportation, and morphological changes as well as to provide ideas for implementing countermeasures against bank erosion in the Sittaung River estuary, Myanmar. Mr. Tanjir conducted this study based on satellite image analysis, field surveys, and numerical simulations using a numerical model and provided valuable results for the associated academic and practical fields. Five chapters constitute his Ph.D. dissertation.

Chapter 1 describes the background, placement, and location of this study through literature reviews with attention focused on the characteristics of estuary morpho-dynamics. The author explains the need for a study to understand the sediment transport process in estuaries where very fine sediment dominates, as well as the impacts of geomorphological changes on human society and the ecological system.

Chapter 2 describes the morphological and hydrological characteristics of the study area based on satellite image analysis and field investigations. He found that stream channels change actively in the estuary, causing drastic bank-line shifts at a rate of around 1 km every year at the most active location. He also points out that such active morphological changes are owing to strong tidal currents followed by tidal bores as well as to high transportability of bed sediment composed of very fine grains with average diameters of 0.02 to 0.04 mm.

Chapter 3 discusses the weaknesses of existing formulas in treating sediment transport processes in the estuary composed of fine sediment and proposes a new model with attention focused on results obtained from studies on mixing processes of density stratified flows. Also, he combined the proposed model with the depth-averaged two-dimensional Reynolds equations to simulate tidal bores, associated tidal currents, sediment transportation, and active morphological changes. The validity of the proposed model was tested using field data on suspended sediment concentration and particle sizes observed in the estuary.

Chapter 4 discusses the results obtained from numerical simulations on tidal currents, sediment transportation, and corresponding channel changes together with sand bar evolution, as well as possible structural countermeasures against the bank erosion in the estuary. In this chapter, he provided many valuable results on tidal bores and associated tidal currents, the evolution processes of stream channels with sand bars, channel bifurcation and lifetime, and some other phenomena in the estuary. These results should benefit the associated academic fields. Besides, he showed a possibility of the countermeasure using spur dikes through numerical simulations focusing on the stability of stream channels with sand bars along the bank line.

In chapter 5, he summarizes the results mentioned above and shows prospects to extend them to assist practitioners as well as policymakers in implementing more effective estuary management.

2. 審査報告 Notes from the Doctoral Thesis Review Committee (including changes required to the thesis by the referees)

Among the members of the doctoral thesis review committee, there was a general consensus about the value of his study. The members also shared the same impression that both dissertation and presentation at the defense were well-organized and clear. Nevertheless, the members provided several valuable comments to revise the manuscript, advising the candidate to:

1. Review many more studies associated with the topics chosen for the Ph.D. dissertation.
2. Explain the meaning of computed results focusing on differences in time scale between present simulations and actual estuary phenomena.
3. Explain the numerical model that causes morphological changes faster than expected.
4. Explain the policy implications and usefulness of the results.

The members of the committee reached conclusions that revisions should be made following these comments and that the members would check a revised version within about a week after its submission.

3. 最終提出論文確認結果 Confirmation by the Main Referee that changes have been done to the satisfaction of the referees

About two weeks after the defense, the revised version submitted by the candidate was sent to the committee members. They checked the new version and found that the revisions were made appropriately. Thus, they left the final check entirely to the main adviser. The main adviser checked the revised version, together with the result of the plagiarism check by Turnitin, and told the candidate to add a few minor revisions. On August 19, 2020, the final version was submitted, and the main adviser found it satisfactory.

4. 最終審查結果 Final recommendation

The doctoral thesis review committee recommends that GRIPS award the degree of Ph.D. in Disaster Management to Mr. Tanjir Saif Ahmed.