# CHUN, BYONG-SUK

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## EDUCATION

**University of Arkansas** **2019 - present**
***M.S in Geosciences expected in May 2021***
**Thesis Title: Modeling the Lafourche Delta network in the Mississippi Delta Complex**
**Advisor: Prof. John B. Shaw**

**University of Colorado at Boulder** 2015 – 2018
*B.A. in Geology*

## RESEARCH LABORATORY EXPERIENCE AND PROJECTS

**University of Arkansas** **Present**
**Shaw Sedimentology and Stratigraphy Laboratory**

**Independent Research** **In progress**
Short-term change in sedimentation and depositional environment in the Pleistocence Hamori Formation, Jeju Island, Korea (tentative title)
- Short-term sedimentation of tuffaceous intertidal and lagoonal deposits controlled by hydrovolcanic activity

**CSDMS, University of Colorado at Boulder** 2016
Community Surface Dynamics Modeling System (Advisor: Prof. Irina Overeem)
Undergraduate Research Opportunity Program funding award
- Erosion rates in Ganges river, Megha estuary (time-lapse data)
- Ganges river erosion rates during Asian monsoon season

**Chonnam National University**
Lab of Sedimentary Environment
Internship/Research Assistant
- Analysis and Interpretation of sedimentary structures on the intertidal flat of the western coast of Korea
- Monitoring of chenier and typhoon depositional bodies
- Monitoring of areal change in salt marsh
- Vibra-core(pipe), Box-core, VRS-GPS(RTK), UAV Drone, Sedigraph-5100

## AWARDS

**John G. Williams EGSA Petro Geo (Scholarship, University of Arkansas)** **2020**
**Kern Chandler Jackson Geology (Award, University of Arkansas)** 2019

**University of Colorado UROP** 2016
Undergraduate Research Opportunity Program funding award
CSDMS (Community Surface Dynamics Modeling System)

**Minister of Science and Engineering in S. Korea** 2006
Earth Science and Geology
- Analysis and Interpretation of Cross Sections in Ripple Marks
- Box-core sampling method

## PROFESSIONAL EXPERIENCE

**Teaching Assistant, University of Arkansas** **2019 - present**
**Physical Geology Lab (3 sections each semester, 22 students per each section)**

**Korean Military Service** 2008 - 2010
NSA South Korea (Intelligence Unit of South Korea)

- Liaison Office (SUSLAK US/NSA Korea), Translator
- Sergeant Discharged

## SKILLS

**Programming Language:** Python, MATLAB. **Programs:** Surfer, Grapher, CorelDRAW, ArcGIS, Virtual Surveyor.
**Research Tools:** Sedigraph 5100, VRS-GPS(RTK), UAV Drone, ADCP.
**Computers:** Microsoft Word, Excel, Power Point, Photoshop and comfortable with both Windows and Mac OS.

## AREA OF INTEREST

Sedimentology
Stratigraphy
Geomorphology
Fluid Mechanics
Mechanism of sediment transport
Morphodynamics of Sedimentary bodies
Flume Experiment
Field-based sedimentology with Numerical Modeling
Coastal and Estuarine
River channel/mouth, deltas/delta channel networks, fans, spits/cheniers, barrier-islands and tidal flats
Fluvial-tidal transition zone
Submarine fan system
High- to low-concentration Turbidite
Sediment Gravity Flow
Climate signals in the submarine fans
Micro-plastic sediment transport

## STATEMENT OF RESEARCH INTEREST

The Korean coasts show many cases of coastal features in terms of sedimentology and geomorphology because it has long coast compared to its area. The coasts include all kinds of tidal regime in terms of tidal range, and even are influenced by strong winter storm and summer typhoon. Such kinds of sedimentological and/or hydrodynamic complexity encourage me to study further: sediment transport based on field observation and flume experiment, morphodynamic evolution of coastal sedimentary bodies (past and future) such as erosion of coast and surface of tidal flat, long-term change of fluvial sediment and environment induced by artificial structures, formation and evolution of sedimentary bodies controlled by storms (winter storm and typhoon), and seasonal change of estuarine and tidal-flat sedimentation. I think, these kinds of important sedimentological features on the Korean coasts have been studied very well so far. Unfortunately, my knowledge is also, on my step, too insufficient to think deeply about them. So, I would like to expand my knowledge in the graduate course, and to contribute further to the field of sedimentology.

I would like to study further about sediment transport especially in coastal and estuarine environments. At the first step, I am concerning basic principles for fluid mechanics and field experience. Afterwards, I would like to join the researches on flume experiment and numerical modeling. Physical properties and the behavior of sediment particles are concerned. In addition, I would like to study how the sedimentological and geomorphological depositional bodies have evolved by using laboratory experiments combined with field, numerical modeling as well as theoretical studies.

Little more detailed information about research interest:

1) Based on theoretical and quantitative studies including basic principles for fluid mechanics and physical properties of sediments, I am willing to study how small-scale mechanism of sediment transport manifest and control larger scale processes in sedimentary bodies. The behavior of flowing sediment particles with bedload sediment transport, and evolution of coastal to submarine sedimentary bodies are concerned.
2) Preservation potential of event deposits and bodies formed by strong storm and hurricane (typhoon) on coastal and shallow marine environments is concerned as well as those of fair-weather condition. This

would be very helpful to interpret the ancient sedimentary sequence. I am also willing to get some experiences about working on ancient deposits.

3) I know, the formation of low-concentration turbidite has been well known and experimented. However, the high-concentration turbidite has not been well known and experimented. If possible, I wish to study the behavior and deposit of high-concentration turbidity current through flume experiment.
4) I would like to study sediment transport, surface process and sedimentary structure/deposit especially in coastal and estuarine environments, and how the sedimentological and geomorphological depositional bodies shape the surface of Earth and how they create sedimentary records.
5) I am also interested in autogenic processes in sedimentary bodies and their stratigraphic records which could provide us paleo-environmental conditions (eg. sea level, sediment supply, basinal process and isostacy) as well as morphodynamics of sedimentary bodies. If possible, I wish to have some experiences of stratigraphic flume experiments for them. Delta, submarine fan and esutuary/beach/barrier island are concerned on this work.
6) By using combination of field studies, theoretical (quantitative) studies, laboratory experiments, and reduced complexity numerical modeling, I would like to study the processes and feedbacks that shape coastal, estuarine, fluvial and deltaic depositional environments. I believe these diverse research methods can lead to different perspectives in terms of understanding the morphodynamics of sedimentary bodies. Especially, I am interested in detailed field-based sedimentology which could improve and verify the numerical model as well as laboratory experiment.
7) Current MS degree dissertation project is “Modeling the Lafourche Delta Channel Network in the Mississippi Delta Complex,” which focuses on the evolution of distributary channel networks in the fluvial dominated delta. This project attempts to reconstruct the Lafourche Delta channel network which was active 1600-600 years before the present, with a numerical model (Moving Boundary Model for Distributary Channel Networks, MB_DCN).

Also, I am still focusing on the western tidal flat of Korean Peninsula developed on the eastern coast of Yellow Sea. Some of the Korean tidal flats are characterized by a back-barrier system protected by many rocky islands (archipelagos) which seem to be the unique and distinguishing feature. Although the flats correspond to an open-coast depositional environment, they preserved a Holocene development history of stable thick intertidal mudflats. Since they have stacked under a relatively stable depositional environment, their deposits may preserve many hints of sea-level change from centimeter to millennial scale as well as typhoon records. These kinds of sedimentological and paleo-climatological works would be very helpful in future coastal management in Korean coasts, I guess. Along with the thesis project, I am pursuing my independent research and preparing a paper about “short-term sedimentation of tuffaceous intertidal and lagoonal deposits controlled by hydrovolcanic activity”. Its tentative title of paper is “Short-term change in sedimentation and depositional environment in the Pleistocene Hamori Formation, Jeju Island, Korea”.