

North Korean Marine Sedimentary Provinces and Processes

G. Leonard Johnson
School of Fisheries and Ocean Sciences
University of Alaska Fairbanks
Fairbanks, Alaska 99775
Ph 301-464-6724 fax 301-464-6724 e-mail len.johnsoniii@verizon.net

Igor Dmitrenko
International Arctic Research Center
University of Alaska Fairbanks
Fairbanks, Alaska, 99775
Ph 907-474-1139, fax 907-474-5662, igordm@iarc.uaf.edu

Grant Number N00014-04-1-0775

LONG-TERM GOALS

The ultimate goal is to understand the creation of the preserved stratigraphic record, the bedform formation, and its modification on the eastern North Korea continental shelf, slope and adjacent areas as the product of geologic, biologic, and oceanographic processes with both spatial and temporal heterogeneities. The emphasis is on the most upper sediments and the Late Pleistocene - Holocene period of Earth history.

OBJECTIVES

- A. To develop a general geological concept and to outline main structural elements of the North Korean continental margins
- B. To reconstruct the paleoenvironmental evolution of the chosen areas during the Late Pleistocene and Holocene on the basis of geophysical and geological evidence (e.g. seismic reflection and refraction data, lithological and micropaleontological data) in order to link the past and recent environmental changes with possible future development of this region.
- C. To study the morphology and dynamics of the coastal and shelf zones to outline patterns of their expected changes due to the future climate warming and sea level
- D. Riverine impact and development of coastal processes over various time scales and overall sedimentary budget
- E. Sea-bed modification, slope instability

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 30 SEP 2004		2. REPORT TYPE		3. DATES COVERED 00-00-2004 to 00-00-2004	
4. TITLE AND SUBTITLE North Korean Marine Sedimentary Provinces and Processes				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) School of Fisheries and Ocean Sciences,,University of Alaska Fairbanks,,Fairbanks,,AK,99775				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 5	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 30 SEP 2004		2. REPORT TYPE		3. DATES COVERED 00-00-2004 to 00-00-2004	
4. TITLE AND SUBTITLE North Korean Marine Sedimentary Provinces and Processes				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) School of Fisheries and Ocean Sciences,,University of Alaska Fairbanks,,Fairbanks,,AK,99775				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 5	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

APPROACH

We plan to use existing data from the continental shelf and slope of North Korea as shown in Figure 1 to address the goals as outlined above. This will include analyses of the seismic reflection data and refraction data for process related evidence such as gravity flows, erosion, delta progradation, and ancient shorelines. The 730 existing sediment samples will be used to prepare maps of the lithological types of the upper sediment cover; the cross section of the Quaternary deposits; and roughly estimate sedimentation rates for Holocene. In summary the study will define the main features of the sedimentation process on the North Korean shelf and continental slope.

This work will require a number of highly experienced experts from different Russian institutions. The U.S. members will provide overall expertise in marine sedimentology, geology, and oceanography.

Team members will be:

Leonard Johnson (PI), Univ. of Alaska Fairbanks

Igor Dmitrenko, IARC, Univ. of Alaska Fairbanks

Boris Baranov (PI), P.P Shirshov Institute of Oceanology, Russian Academy of Sciences, Moscow

Sergei S. Drachev P.P Shirshov Institute of Oceanology, Russian Academy of Sciences, Moscow

Boris Ya. Karp, Il'ichev Pacific Oceanological Institute, Far East Branch of Russian Academy of Sciences, Vladivostok

Viktor N. Karnauk Il'ichev Pacific Oceanological Institute, Far East Branch of Russian Academy of Sciences, Vladivostok

Felix R. Likht, Il'ichev Pacific Oceanological Institute, Far East Branch of Russian Academy of Sciences, Vladivostok

Alexander N. Derkachev, Il'ichev Pacific Oceanological Institute, Far East Branch of Russian Academy of Sciences, Vladivostok

Anatoly J. Botsul, Il'ichev Pacific Oceanological Institute, Far East Branch of Russian Academy of Sciences, Vladivostok

Igor V. Utkin, Il'ichev Pacific Oceanological Institute, Far East Branch of Russian Academy of Sciences, Vladivostok

The existing and available geological, geophysical data in these institutions will provide an adequate base to address the outlined tasks. Russian graduate and postgraduate students will be involved, via the Vitus Bering Laboratory.

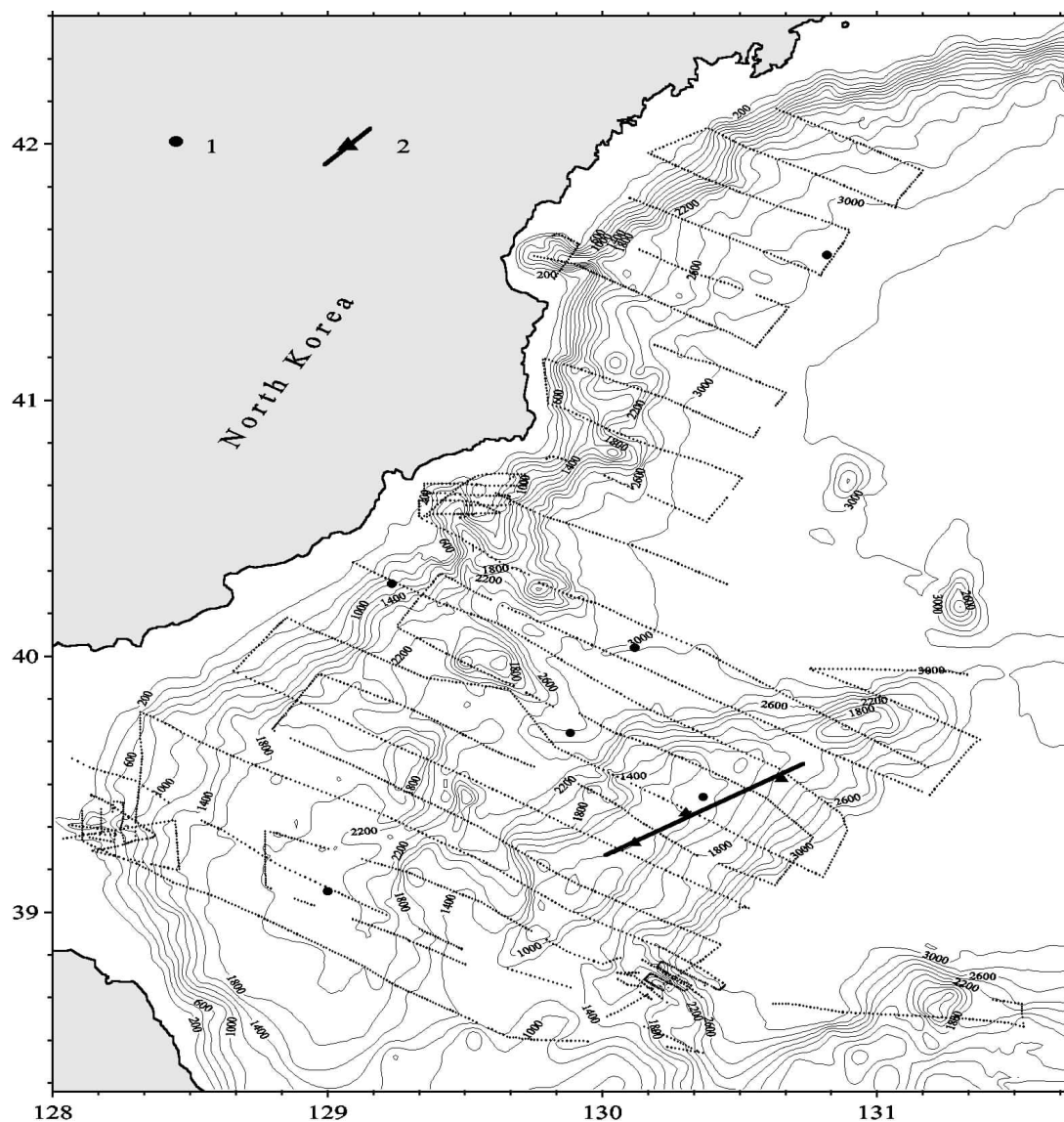
Task A. To develop a general geological concept and to outline main structural elements of the North Korean continental margins: Boris Baranov, Sergei S. Drachev, Igor Dmitrenko, Boris Ya. Karp.

Task B: To reconstruct the paleoenvironmental evolution of the chosen areas during the Late Pleistocene and Holocene on the basis of geological evidence: Boris Baranov, Sergei S. Drachev, Boris Ya. Karp, and Felix R. Likht.

Task C: To study the morphology and dynamics of the coastal and shelf zones to outline patterns of their expected changes due to the future climate warming and sea level: Felix R. Likht; Alexander N. Derkachev, Anatoly I. Botsul, and Igor V. Utkin.

Task D: Riverine impact and development of coastal processes over various time scales and overall sedimentary budget: Felix R. Likht, Alexander N. Derkachev, Anatoly I. Botsul, and Igor V. Utkin.

Task E: Sea-bed modification, slope instability: Boris Ya. Karp, and Viktor N. Karnaukh.



Bathymetric map (contours in meters) of the continental margin of the North Korea, track lines of the single-channel reflection seismic profiles, centers of sonobouy profiles (1) and OBS line (2).

RESULTS

Monies have been delayed in arrival and thus the program is just getting underway. Korean and Russian hydrographic charts have been delivered to NAVO .

Seismic data: Processing of seismic data is now in progress. All data will be prepared in an electronic form by the end of this year. Lithological data:

All lithological data were combined as a data bank. These data are now processed to adjust to Shepard classification used in international literature. The preliminary version of the surface sediment map will be ready this year. The preliminary version will not be prepared in GIS format, This will be done during the next year.

IMPACT/APPLICATIONS

Theses data will be the first analyses of unpublished environmental data seaward of North Korea

TRANSITIONS

North Korean hydrographic charts and Russian hydrographic charts given to Naval Ocean Analysis Div. N92 of Naval Oceanographic Office, SSC.