



**Abstracts and Post-symposium**

**Field Excursion Guidebook**

**4<sup>th</sup> International Symposium of the IGCP 507**

## **Paleoclimates of the Cretaceous in Asia and their global correlation**

**Post-symposium Field Excursion: Mifune Dinosaur Museum  
and Upper Cretaceous Dinosaur Site in the Mifune Group,  
Kumamoto**

December 4-6, 2009

Kumamoto, JAPAN

Edited by Organizing and Scientific Committee of the IGCP 507 Symposium

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- Graduate School of Science and Technology, Kumamoto University
- Mifune Dinosaur Museum
- Goshoura Cretaceous Museum
- Kumamoto International Convention and Tourism Bureau
- Tokyo Geographical Society

# Symposium Program

## December 4 (FRIDAY), 100<sup>th</sup> Anniversary Hall

8:00–9:00     *Registration*  
9:00–9:20     *Opening Ceremony*

K-01    9:20–10:00     *Keynote Speech 1*

**Kirk R. Johnson**

LATE CRETACEOUS VEGETATION, FAUNA, CLIMATE, AND ENVIRONMENTS OF  
EASTERN ASIA AND WESTERN NORTH AMERICA

10:00–10:20    *Coffee Break*

### Thematic Session: Vertebrate evolution in Asia during the Cretaceous

T-01    10:20–10:50    **Yoshitaka Yabumoto**  
EARLY CRETACEOUS FRESHWATER FISHES IN ASIA WITH COMMENTS ON  
EVOLUTION OF SOME FISHES

T-02    10:50–11:20    **Tamaki Sato**  
REVIEW OF CRETACEOUS MARINE REPTILES OF JAPAN

T-03    11:20–11:50    **Kyo Tanoue**  
EARLY EVOLUTION OF DENTITION IN ASIAN CERATOPSIANS

11:50–13:20    *Lunch*

T-04    13:20–13:50    **Mahito Watabe, Khishigjav Tsogtbaaar, Tsogtbaatar Chinzorig, and Shigeru Suzuki**  
CRETACEOUS ORNITHISCHIAN DINOSAURS AND OTHER REPTILIAS FROM  
MONGOLIA, AND THEIR HABITATS

T-05    13:50–14:20    **Nao Kusuhashi, Yaoming Hu, Yuanqing Wang, Satoshi Hirasawa, and Takehisa Tsubamoto**  
EARLY CRETACEOUS MULTITUBERCULATE AND “TRICONODONT”  
MAMMALS FROM EAST ASIA: THEIR PALEOBIOGEOGRAPHICAL  
IMPLICATIONS

P-01–28    14:20–16:20     **Poster Session**

15:10–16:10     **Summary (in Japanese)**

**Informal Summary of the thematic session in Japanese mainly for  
undergraduate and/or high school students — Makoto Manabe**

K-02 16:20–17:00

**Keynote Speech 2**

**Matthew H. Dick**, Toshifumi Komatsu, Reishi Takashima, and Andrew Ostrovsky  
OVERVIEW OF CRETACEOUS BRYOZOA AND THEIR OCCURRENCE IN  
EASTERN ASIA

17:00–18:00 **Workshop: Cretaceous to Recent Bryozoans**  
— Matthew H. Dick

18:30–20:30

**Welcoming Party, Kusunoki Hall**

**Poster Session**

- P-01 **Hiromichi Hirano**, Go-ichiro Uramoto, Rui Tahara, and Yoshihiro Abe  
CRETACEOUS CHEMOSTRATIGRAPHIC CONSTRAINTS ON SEDIMENTARY EVOLUTION  
IN ASSOCIATION WITH CONFINED BASIN FORMATION ALONG THE EASTERN EURASIAN  
MARGIN: CARBON ISOTOPE STRATIGRAPHY FOR THE TURONIAN IN HOKKAIDO, JAPAN
- P-02 **Sung Kyung Hong**, Yong Il Lee, and Sangheon Yi  
CARBON ISOTOPIC COMPOSITIONS OF BULK PLANT MATERIALS IN THE UPPER  
CRETACEOUS GEONCHEONRI FORMATION, GYEONGSANG BASIN, KOREA, AND THEIR  
IMPLICATIONS FOR PALEOCLIMATE
- P-03 **Reishi Takashima**, Hiroshi Nishi, Toshiro Yamanaka, Keiichi Hayashi, and Naoki  
Deguchi  
HIGH-RESOLUTION TERRESTRIAL CARBON ISOTOPE AND PLANKTIC FORAMINIFERAL  
RECORDS OF THE UPPER CENOMANIAN TO THE LOWER CAMPANIAN IN NORTHWEST  
PACIFIC
- P-04 **Taejin Choi**, Yong Il Lee, and Yuji Orihashi  
DETRITAL ZIRCON CHRONOLOGY OF MODERN FLUVIAL SEDIMENTS IN KOREA:  
IMPLICATIONS FOR THE PALEO-PACIFIC PLATE SUBDUCTION DURING THE MESOZOIC  
TIMES
- P-05 **Shin-ichi Sano**  
RUDIST BIVALVES FROM JAPAN: STATE OF THE ART
- P-06 **Yasuhiro Iba**, and Shin-ichi Sano  
MID-CRETACEOUS DEMISE OF *NEITHEA* IN THE NORTH PACIFIC AND ITS  
BIOGEOGRAPHIC AND PALEOCLIMATOLOGICAL IMPLICATIONS
- P-07 **Akinori Takahashi**, and Yasuhiro Iba  
LOWER CRETACEOUS INOCERAMID BIVALVES: PIONEERING SPECIES FOR LATE  
CRETACEOUS INOCERAMID DIVERSIFICATION

- P-08 **Bun'ya Honda**, Takuya Sugawara, and Hiromichi Hirano  
UPPER CRETACEOUS BIOSTRATIGRAPHY AND INOCERAMID BIOZONES IN THE  
SOUTHERN OYUBARI AREA, HOKKAIDO, JAPAN
- P-09 **Takeshi Kozai**  
FAUNAL CHANGES IN EARLY CRETACEOUS BIVALVES ALONG THE EASTERN MARGIN  
OF THE ASIAN CONTINENT
- P-10 **Kotaro Kamada**  
DEPOSITIONAL ENVIRONMENTS OF OYSTER SHELL BEDS FROM THE UPPER  
CRETACEOUS TAMAGAWA FORMATION, KUJI GROUP, NORTHEASTERN JAPAN
- P-11 **Michitaka Sato**, and Toshifumi Komatsu  
EVOLUTIONARY TRENDS IN LATE MESOZOIC *CRASSOSTREA*
- P-12 **Akihiro Misaki**  
MOLLUSCAN BIOSTRATIGRAPHY OF THE MID- TO UPPER CRETACEOUS SYSTEM IN THE  
ARIDAGAWA AREA, WAKAYAMA, SOUTHWEST JAPAN
- P-13 **Kohei Yoshino**, and Atsushi Matsuoka  
MACRO- AND MICROFOSSILS FROM THE UPPER CRETACEOUS IZUMI GROUP IN THE  
SOUTHWESTERN PART OF AWAJI ISLAND, HYOGO PREFECTURE, SOUTHWEST JAPAN
- P-14 **Takanobu Tsuihiji**, Mahito Watabe, Rinchen Barsbold, Shigeru Suzuki, and Khishigjav  
Tsogtbaatar  
NEW MATERIAL OF A TROODONTID THEROPOD (DINOSAURIA: SAURISCHIA) FROM THE  
LOWER CRETACEOUS OF MONGOLIA
- P-15 **Haruo Saegusa**, Tadahiro Ikeda, Satoshi Tanaka, Takashi Matsubara, Hiroshi Furutani,  
and Kumiko Handa  
PRELIMINARY OBSERVATIONS ON VERTEBRATE FOSSILS FROM THE LOWER  
CRETACEOUS SASAYAMA GROUP IN HYOGO PREFECTURE, SW JAPAN
- P-16 **Naoto Handa**, Yukihide Matsumoto, Mahito Watabe, Shigeru Suzuki, Hideo Nakaya, and  
Khishigjav Tsogtbaatar  
MORPHOLOGY OF *PROTOCERATOPS* FROM THE UPPER CRETACEOUS IN ULDYN SAYR,  
MONGOLIA
- P-17 **Daisuke Nakatani**, and Hideo Nakaya  
PHYLOGENETIC ANALYSIS OF THE UPPER CRETACEOUS ELASMOSAURIAN FOSSIL  
FROM OBIRA, HOKKAIDO
- P-18 **Naoshi Kitamura**  
DIVERSITY OF CRETACEOUS SHARKS IN KYUSHU
- P-19 **Muhammad Sadiq Malkani**  
DINOSAUR BIOTA OF THE CONTINENTAL MESOZOIC OF PAKISTAN

- P-20 **Jung-Kyun Kim**, Min Huh, Seon-Gyu Lee, and Youn-Joong Kim  
PRELIMINARY RESEARCH ON DINOSAUR BONE MICROSTRUCTURE BY APPLYING  
ADVANCED MICROSCOPY TECHNIQUES
- P-21 **Hyun Joo Kim**, In Sung Paik, Ho Il Lee, and Hee Cheol Kang  
BIRD AND PTEROSAUR TRACKS FROM THE CRETACEOUS SEONGPORI FORMATION,  
GALGOTRI, GEOJE CITY, KOREA: OCCURRENCES, TAPHONOMY AND  
PALEOECOLOGICAL ENVIRONMENT
- P-22 **Yuka Miyake**, Miki Aramaki, Toshifumi Komatsu, Makoto Manabe, Ren Hirayama,  
Takanobu Tsuihiji, Tomoyuki Ohashi, Yoshitaka Yabumoto, and Naoki Ikegami  
VERTEBRATE FOSSIL REMAINS FROM THE UPPER CRETACEOUS CAMPANIAN TO  
MAASTRICHTIAN HIMENOURA GROUP IN THE KOSHIKIJIMA ISLANDS, KAGOSHIMA,  
KYUSHU, JAPAN
- P-23 **Tomoyuki Ohashi**, Tatsuya Hirasawa, Takanobu Tsuihiji, Nao Kusuhashi, Kensuke Kondo,  
Toshifumi Komatsu, and Makoto Manabe  
A NEW VERTEBRATE FOSSIL SITE IN FLUVIAL DEPOSITS OF THE LATE CRETACEOUS  
HIMENOURA GROUP IN SOUTHWEST JAPAN
- P-24 **Toshifumi Komatsu**, Tadataka Iwamoto, Osamu Takahashi, Reishi Takashima, Hiroshi  
Nishi, and Yuki Kojo  
BIOSTRATIGRAPHY OF THE UPPER CRETACEOUS SANTONIAN TO CAMPANIAN  
HIMENOURA GROUP ON KAMISHIMA ISLAND, KUMAMOTO, JAPAN
- P-25 **Toshifumi Komatsu**, Hajime Naruse, and Maiko Ono  
INCISED VALLEY TO SLOPE FACIES AND BIVALVE ASSEMBLAGES IN THE UPPER  
CRETACEOUS HINOSHIMA FORMATION, HIMENOURA GROUP, KAMISHIMA ISLAND,  
KUMAMOTO, JAPAN
- P-26 **Yuki Kojo**, and Toshifumi Komatsu  
BIVALVE ASSEMBLAGES FROM SLOPE, BASIN, AND LEVEED CHANNEL FACIES IN THE  
CRETACEOUS HIMENOURA GROUP ON KAMISHIMA ISLAND, KUMAMOTO, JAPAN
- P-27 **Hajime Naruse**, Kenjirou Kawano, and Toshifumi Komatsu  
PROCESS OF FORMATION OF LARGE-SCALE CROSS-BEDDING IN THICK-BEDDED  
TURBIDITES OF THE UPPER CRETACEOUS HIMENOURA GROUP, KYUSHU, SOUTHWEST  
JAPAN
- P-28 **Luvsanchultem Jargal**, and Altangadas Enkhtuya  
PETROGRAPHY OF MESOZOIC COAL DEPOSITS IN MONGOLIA

## **Workshop: Cretaceous to Recent Bryozoans (4 Dec. 2009; 17:00–18:00)**

Matthew H. Dick, Hokkaido University

Bryozoans are a phylum of clonal, modular (colonial) animals widely distributed in modern seas, from the intertidal zone to abyssal depths, with the greatest diversity on nearshore shelves. Colonies, which are macroscopic, are composed of tiny zooids usually less than 1 mm long. Most bryozoans have zooids with an exoskeleton composed of calcite or aragonite, or both, though some have non-calcified walls. Bryozoans are sessile filter feeders, mostly attached to hard substrates or algae, though a few free-living marine species inhabit sandy substrates and are capable of limited mobility. One small group is restricted to freshwater; species produce tough, resistant (and fossilizable) capsules called statoblasts as a means of dispersal.

Bryozoans first appear in the fossil record in the Lower Ordovician and are conspicuously and abundantly represented in shallow marine deposits through the rest of the Paleozoic, where they have been well studied. Several groups of stenolaemates were dominant in the Paleozoic, whereas cheilostomes are the dominant group today. Cheilostomes first appeared in the Late Jurassic and underwent an explosive radiation in the Late Cretaceous. The Cretaceous fossil record is key to understanding this major metazoan radiation. In addition, bryozoan zooid size and aragonite/calcite composition can provide information on paleoenvironmental conditions.

Most information on Cretaceous cheilostomes comes from abundant fossils collected in Europe and the USA, with scattered records from other parts of the world. There have been very few records from Asia, though work in the past few years has shown that cheilostomes are fairly common in Aptian to Cenomanian deposits in Japan, but have gone undetected because of poor preservation or because non-specialists might not have recognized them.

This workshop will provide a brief introduction to bryozoan classification and skeletal morphology. Participants will have the opportunity to examine under microscopes Recent bryozoans as well as Cretaceous and Pleistocene fossils from Japan. The goal is to make people aware of what bryozoans look like, with the hope that additional bryozoan-bearing Cretaceous deposits will be detected in Asia.

## December 5 (SATURDAY), 100<sup>th</sup> Anniversary Hall

8:00–9:00     *Registration*

### Session 1: Paleontology

- Pa-01 9:00–9:20     **Naoto Ishida**  
PRE-CRETACEOUS RADIOLARIAN FAUNAL TRANSITIONS: RELATION TO ESTABLISHMENT OF THE CRETACEOUS PALAEOCEANOGRAPHIC MODE
- Pa-02 9:20–9:40     **Hiromichi Koyasu**, Fumiko Yajima, and Hiromichi Hirano  
RE STUDY OF RADIOLARIAN BIOSTRATIGRAPHY FOR THE UPPER CRETACEOUS, HOKKAIDO, NORTHEAST JAPAN, ESPECIALLY BETWEEN THE SANTONIAN AND CAMPANIAN
- Pa-03 9:40–10:00     **Wan Xiaoqiao**, Huang Qinghua, Xi Dangpeng, and Bao Lina  
UPPER CRETACEOUS MICROFOSSIL ASSEMBLAGES FROM THE DEEP CORE OF THE SONGLIAO BASIN, NE CHINA
- Pa-04 10:00–10:20     **Masakazu Nara**  
CRETACEOUS VS. NEOGENE TO QUATERNARY SHOREFACES: COMPARATIVE ICHNOLOGY OF WAVE-DOMINATED SHALLOW MARINE SETTINGS
- Pa-05 10:20–10:40     **Sanjay K. Mukhopadhyay**  
NEW BISERIAL PLANKTONIC FORAMINIFERA IN THE EARLY DANIAN OF MEGHALAYA, INDIA AND ITS POSSIBLE CAUSE OF DEVELOPMENT

### Session 2: Paleoclimate

- PC-01 10:40–11:00     **Sung Kyung Hong**, Yong Il Lee, and Ho Il Yoon  
CARBON ISOTOPIC COMPOSITIONS OF TERRESTRIAL CARBONATES IN THE CRETACEOUS GYEOUNGSANG BASIN, KOREA: RECORDS OF THE CRETACEOUS PALEOCLIMATE ON THE EAST ASIAN CONTINENTAL MARGIN
- PC-02 11:00–11:20     **Kazuyoshi Moriya**, Hodaka Kawahata, Hiroshi Nishi, and Hiromichi Hirano  
OCEANIC TEMPERATURES ON THE LATE CRETACEOUS ASIAN CONTINENTAL MARGIN
- PC-03 11:20–11:40     **Hisao Ando**, Takashi Hasegawa, Hitoshi Hasegawa, Tohru Ohta, Masanobu Yamamoto, and Niiden Ichinnorov  
PALEOENVIRONMENTAL AND PALEOCLIMATIC RECONSTRUCTION OF THE LOWER CRETACEOUS LACUSTRINE DEPOSIT (SHINEKHU DAG FM) IN THE EASTERN GOBI BASIN, SOUTHEAST MONGOLIA: PERSPECTIVE AND PRELIMINARY RESULTS



- PC-04 11:40–12:00 **Helmut Weissert**  
VOLCANIC AND TECTONIC DRIVERS OF CRETACEOUS CLIMATE
- PC-05 12:00–12:20 **Sanjay K. Mukhopadhyay**  
EARLY CRETACEOUS VOLCANISM IN INDIA AND ITS BEARING ON  
THE CONTEMPORANEOUS BIOTA AND CLIMATE
- 12:20–13:20 *Lunch*

### Session 3: Sedimentology

- S-01 13:20–13:40 **Muhammad Sadiq Malkani**  
BASAL (J/K) AND UPPER (K/T) BOUNDARIES OF THE CRETACEOUS  
SYSTEM IN PAKISTAN
- S-02 13:40–14:00 **Li Xianghui**, Cao Ke, Chen Sidun, Chen Yunhua, and Xu Baoliang  
CRETACEOUS PALEOSOLS AND  $P\text{CO}_2$  CHANGES FROM CALCAREOUS  
CONCRETIONS IN ZHEJIANG AND FUJIAN, SE CHINA
- S-03 14:00–14:20 Jong-Hwa Chun, **Daekyo Cheong**, and Byeong-Kook Son  
PETROPHYSICAL AND MINERALOGICAL PROPERTIES OF SANDSTONES  
RELATED TO THEIR DEPOSITIONAL ENVIRONMENTS IN THE CRETACEOUS  
GYEONGSANG BASIN, KOREA
- S-04 14:20–14:40 **Tohru Ohta**, Gang Li, Kazuaki Aida, Takashi Sakai, Hiromichi Hirano,  
Takeshi Kozai, and Takenori Yoshikawa  
PALEOCLIMATE CONDITIONS DURING THE EVOLUTION OF THE JEHOL  
BIOTA: A CASE STUDY FROM LOWER CRETACEOUS LACUSTRINE DEPOSITS  
IN LUANPING, HEBEI PROVINCE, NE CHINA
- 14:40–15:00 *Coffee Break*

### Session 4: Tectonics

- T-01 15:00–15:20 **Djajang Sukarna**, Suyono, and S. Andi Mangga  
THE JURASSIC – CRETACEOUS TECTONOSTRATIGRAPHY OF TERRANES IN  
SOUTHERN SUMATERA, INDONESIA
- T-02 15:20–15:40 **Taejin Choi**, and Yong Il Lee  
THERMAL HISTORY OF THE CRETACEOUS BASINS IN KOREA: RESPONSE OF  
THE EAST ASIAN CONTINENTAL MARGIN TO SUBDUCTION OF THE PALEO-  
PACIFIC PLATE
- T-03 15:40–16:00 **Kye-Hun Park**  
VARIATION OF MAGMATISM AND BASIN EVOLUTION IN KOREAN  
PENINSULA DURING THE CRETACEOUS

- T-04 16:00–16:20 **Americus D. Perez**, Graciano P. Yumul Jr., Rodolfo A. Tamayo Jr., Decibel V. Faustino-Eslava, and Carla B. Dimalanta  
JAMMED TERRANES: THREE OPHIOLITES, A METAMORPHIC BODY AND SEVERAL COLLISION EVENTS IN NW MINDORO, PHILIPPINES
- T-05 16:20–16:40 **Karlo L. Queano**, Graciano P. Yumul Jr., Rodolfo A. Tamayo Jr., and Carla B. Dimalanta  
THE CRETACEOUS ANTIQUE OPHIOLITE COMPLEX: CLUES TO UNDERSTANDING THE ARC-CONTINENT COLLISION IN CENTRAL PHILIPPINES
- T-06 16:40–17:00 **Takashi Sakai**, and Hiromichi Hirano  
TECTONICS OF THE EARLY CRETACEOUS SEDIMENTARY BASINS IN NE CHINA AND JAPANESE ISLANDS: AN APPROACH FROM SEQUENCE STRATIGRAPHY
- 17:00–18:00 *Business Meeting*

## December 6 (SUNDAY), Mifune Dinosaur Museum

### Post-symposium Field Excursion

#### **Mifune Dinosaur Museum and Upper Cretaceous Dinosaur Site in the Mifune Group, Kumamoto**— Naoki Ikegami, Makoto Manabe, Takanobu Tsuihiji, Toshifumi Komatsu and Hajime Naruse

Small buses will pick you up at the official hotel, Toyoko Inn Kumamoto Suido-cho Denteimae, at 9:00 a.m. You will return to the hotel around 5:30 p.m.

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|--------|-------------|--|
| Stop 1 | 10:00–11:00 | Dinosaur and microvertebrate locality around Amagimi Dam |
| Stop 2 | 11:30–13:30 | Mifune Dinosaur Museum and Lunch                         |
| Stop 3 | 14:30–17:00 | Kumamoto Castle  |