INTERNATIONAL GEOSCIENCE PROGRAMME (IGCP)

Annual Report* of IGCP Project No.476

IGCP project short title: **Monsoon evolution and tectonics-climate linkage in Asia**

Duration: **2003 – 2007**

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*) Currently, Ryuji Tada also plays a role of a project secretary

Date of submission of report: December 1, 2005

Signature of project leader:
Annual Report of IGCP-476

1. Website address(es) related to the project

http://igcp.ees.hokudai.ac.jp/~476/

2. Summary of major past achievements of the project

One of the major objectives of IGCP-476 is to prepare proposals for the Integrated Ocean Drilling Program [IODP], International Continental Drilling Program [ICDP], or [IMAGES] that promote our understanding on the evolution of the Asian monsoon system and its relation with the Himalaya and Tibetan Plateau [HTP] uplift and marginal sea opening. Through 3 years of this project, two IODP proposals (Okhotsk-Bering Seas by Takahashi et al. and Indus Fan by Clift et al.) are approved and waiting for scheduling, another two proposals (Asian monsoon by Tada et al. and East Asian Margin by Clift et al.) are finished evaluation by Science Steering and Evaluation Panel [SSEP] and waiting for ranking, and the other three proposals (Ulleung Basin by Lee et al., NW Pacific Transect by Hoyanagi et al. and NW Pacific Coral Reef by Matsuda et al.) and two pre-proposals (Okinawa Trough-Ryukyu Forarc by Wei et al. and East China Sea by Wang et al.) are under evaluation by SSEP. In other word, nine proposals related to IGCP-476 have been submitted to IODP among which seven came out from IGCP-476 activities.

IGCP-476 also started organizing two special volumes of Palaeogeography, Palaeoclimatology, Palaeoecology. First one is titled “Tectonics, Landform Evolution and Climate Change in East Asia” and second one is titled “Quaternary paleoceanography of the Japan Sea”. IGCP-476 Japan also edited a special volume of Journal of Geological Society of Japan titled “Uplift of Himalaya-Tibet and evolution and variability of Asian Monsoon“ that is composed of eight papers.

3. Achievements of the project this year

3.1. List of countries involved in the project (* indicate the countries active this year)

Australia, Bhutan, Canada, China*, Germany, India, Japan*, Republic of Korea*, Russia*, Sri Lanka, Thailand*, United Kingdom*, United States

3.2. General scientific achievements (including societal benefits)

The major scientific achievements this year includes approval of IODP proposal “Indus Fan” by Clift et al., completion of SSEP evaluation of IODP proposals “East Asian Margin” by Clift et al. and “Asian monsoon” by Tada et al., submission of two new IODP proposals “NW Pacific Transect” by Hoyanagi et al. and “Pacific Coral Reef” by Matsuda et al. which are developed from pre-proposals, and submission of one new pre-proposal “East Asia Topography and Monsoon” by Wang et al.

IGCP-476 also continued editorial process of the two special volumes of Palaeogeography, Palaeoclimatology, Palaeoecology. The first special volume titled “Tectonics, Landform Evolution and Climate Change in East Asia” edited by Clift, Zheng, and Tada is a symposium volume of the second international meeting held at Shanghai in 2004. Eleven papers are now in the final stage of review and entire editorial process will be completed by early 2006. The second special volume titled...
“Quaternary paleoceanography of the Japan Sea” edited by Tada, Obi, and Jordan is a follow-up of the first symposium volume and collected papers presented in the first international meeting in Tokyo and second international meeting in Shanghai that specifically dealt with Quaternary paleoceanography of the Japan Sea. Twelve papers are now in review and entire editorial process will be finished by the end of May 2006. IGCP-476 Japan also edited a special volume of Journal of Geological Society of Japan titled “Uplift of Himalaya and Tibet and evolution and variability of Asian Monsoon” which collected eight papers and has been published in November 2005.

IGCP-476 also support an international cooperative research project between Japan and Russia using R/V Mirai to survey Okhotsk, Bering, and Arctic Seas, which is planned next summer. In addition to Japanese and Russian scientists, IGCP-476 members from Korea will also be participated in the project as on-shore scientists.

### 3.3. List of meetings with approximate attendance and number of countries

1) February 17-19
   1st International Symposium on
   “Monsoon Evolution, Paleoenvironments and Paleoclimate Changes in East Asia”
   At Korea Ocean Research and Development Institute, Ansan, Korea
   Korea 20, Japan 5, China 3, India 1

2) September 20-23
   Third IGCP-476 International Symposium joint with RSEG-VII
   “Tectonics and climate evolution of Asia and its impact on East Asian marginal seas
during Cenozoic”
   At V.I. Il’ichev Pacific Oceanological Institute, Vladivostok, Russia
   Russia 20, Japan 10, Korea 6, P.R. China 2, UK 2, Thailand 2, Taiwan 1

3) September 24
   Field Trip to Loess sequence at Primorye, to the northeast of Vladivostok.
   Russia 7, Japanese 3, Thailand 2, China 1

4) November 26-27, 2005,
   Joint Seminar under the Japan-Korea Basic Scientific Cooperation Program “Late
Quaternary Paleoceanography and East Asian Monsoon Reconstruction in the Japan
/ East Sea”
   At Meeting Room A, Tower 111, Toyama City, Japan
   Japan 8, Korea 7, Russia 1

### 3.4. Educational, training or capacity building activities

   No special effort was made.

### 3.5. Participation of scientists from developing countries

   It is difficult to define which country is a developing country and which is a developed
country especially in case of Asian countries. This year, we organized an
international symposium at Vladivostok, Russia that created a rare opportunity for
over 20 Russian scientists (especially young scientists) who had little chance to
attend meetings outside the country to have discussions and exchange information
with foreign scientists especially from Asian countries. We also had two participants
from Thailand, three from China (including one from Taiwan), and six from Korea.
We originally invited two scientists from Sri Lanka and India by providing travel support of up to 800 USD. However, the amount was still insufficient for them to come.

3.6. List of most important publications (including maps)

Distinguish between peer review literature and other (no abstracts).


Chang, Y.-P., S.-M. Wu, K.-Y. Wei, M. Murayama, H. Kawahata, and M.-T. Chen, Foraminiferal oxygen isotope stratigraphy and high-resolution organic carbon, carbonate records from the Okinawa Trough (IMAGES MD012404 and ODP Site 1202. Terrestrial, Atmospheric and Oceanic Sciences, 16: 57-73, 2005.


Huang, C.Y., Chiu, Y.L., Zhao, M., Core description and a preliminary Sedimentology Study of Site 1202D, Leg 195, in the Southern Okinawa Trough, Terrestrial, Atmospheric and Oceanic Sciences (TAO), 16, 19-44, 2005.


Liu, L., Zheng, H., Jian, Z., Abnormal strong summer monsoon before the last two terminations as interpreted from visible reflectance and element record of South China Sea sediments. Earth Sciences, 30(5), 353-549, 2005.


Nagashima, K., Tada, R., Matsui, H., Irino, T., Tani, A., and Toyoda, S., Millennial-scale variations in Asian winter monsoon and westerly during the last 150 kys deduced from eolian grain size, Palaeogeography, Palaeoclimatology, and Palaeoecology, accepted.


Oba, T., Irino, T., Yamamoto, M., Murayama, M., Takamura, A. and Aoki, K., Paleocceanographic change off central Japan since the last 144,000 years based on high-resolution oxygen and carbon isotope records. *Global Planet. Change*, 2005 in press.


Sakai, H., Sawada, M., Takigami, Y., Orihashi, Y., Danhara, T., Iwano, H., Kuwahara, Y., Dong, Q., Cai, H., Li, J., Geology of the summit limestone of Mt. Qomolangma (Everest) and cooling history of the Yellow Band under the Qomolangma Detachment. The Island Arc, 14, Issue 4, 2005 in press.


Ueshima, T., Yamamoto, M., Irino, T., Oba, T., Minagawa, M., Narita, H., Murayama, M., Long term Aleutian Low dynamics and obliquity-controlled oceanic primary production in the mid-latitude western North Pacific (Core MD01-2421) during the last 145,000 years. Global Planet. Change, 2005 in press.


Maps

3.7. Activities involving other IGCP projects or the IUGS
We invited Dr. Chen, one of a co-leader of IGCP-475, to our third international symposium as a liaison to exchange information. Other than this, no special effort was made to organize activities involving other IGCP projects or IUGS.

4. Activities planned

4.1. General goals
General goal of our project is to better understand the tectonics-climate linkage in Asia through drilling the continent and under the sea. To achieve this objective, we encourage participants to submit proposals to international drilling programs such as IODP, ICDP, and IMAGES and promote realization of those proposals through international cooperation under the umbrella of IGCP-476.

4.2. Specific meetings and field trips (please indicate participation from developing countries)
We realized that it is important to further enlarge the community by involving more people of younger generation and from developing countries who shares common interest. We also realized that it is necessary to further enhance international cooperative activities for field survey on land and over the sea to support proposals which came out from our IGCP-476 activities.

For these reasons, we planned following meetings for 2006

1) Special Symposium “Monsoon and Himalaya: tectonics-climate and land-ocean linkages”, which will be held in 17th International Sedimentological Congress at Fukuoka, Japan during 27 August-1 September. This symposium is intended to involve more people of younger generation and from developing countries who shares common interest. We try to invite young and active people especially from SE Asia by encourage them to apply for Travel Grants from ISC. We will promise them to support rest of expense if they will succeed to obtain partial travel support from ISC.

2) Forth IGCP-476 International Symposium and Workshop “Late Cenozoic evolution of climate and tectonics in East Asia (tentative title)”, which will be held at Busan during 3-5 September (tentative).

This symposium plus workshop is planned in the way immediately following the ISC meeting at Fukuoka because Fukuoka and Busan is only 200km apart and it is easy to travel using a ferryboat. This symposium plus workshop will be focused more on having an intensive discussion to specify important topics and/or areas for future drilling, organizing groups to produce proposals, and desirable network structure to communicate between proposals and groups.

5. Project funding requested
6. Request for extension, on-extended-term-status, or intention to propose successor project
Many participants including coleaders have strong intention to propose successor project.

7. Financial statement
IGCP fund of 5000 USD was used exclusively for the third international symposium of IGCP-476 held at Vladivostok. As is shown in a table below, full accommodation supports were provided to 10 participants from 6 countries and partial travel supports were provided to 7 participants from 4 countries. About 10 % of the fund was used for secretariat expense. Rent for symposium rooms, the cost for chartering bus for transportation, and a cost for one day field trip was paid by Pacific Oceanological Institute.

<table>
<thead>
<tr>
<th>Name of persons to whom financial support is provided</th>
<th>Country</th>
<th>Title</th>
<th>Amount of Support (USD)</th>
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<tr>
<td>Goldberg, E.L.</td>
<td>Russia</td>
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<td>450</td>
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<tr>
<td>Kazansky, A.</td>
<td>Russia</td>
<td>Professor Invited</td>
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<tr>
<td>Chen, Z.</td>
<td>China</td>
<td>Professor IGCP-475 Liaison</td>
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</tr>
<tr>
<td>Li, Z.</td>
<td>P.R.</td>
<td>Associate Professor</td>
<td>450</td>
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<td>Zhu, Y.</td>
<td>P.R.</td>
<td>Associate Professor</td>
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<td>Bahk, J.J.</td>
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<tr>
<td>Zhai, Q.</td>
<td>Japan</td>
<td>Post Doc.</td>
<td>450</td>
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<tr>
<td>Khim, B.K.</td>
<td>South Korea</td>
<td>Associate Professor IGCP-476 Coleader</td>
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<th>Supports</th>
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<th>Professor Invited</th>
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<td>Accommodation</td>
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<td>Zhu, Y.</td>
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<td>Harris, N.</td>
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<td>Bahk, J.J.</td>
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<td>Khim, B.K.</td>
<td>South Korea</td>
<td>Associate Professor IGCP-476 Coleader</td>
<td>200</td>
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</tbody>
</table>
As to the 1st International Symposium on “Monsoon Evolution, Paleoenvironments and Paleoclimate Changes in East Asia” at Korea Ocean Research and Development Institute [KORDI], all the costs including accommodation and travel expenses of participants were covered by the fund from Korea Research Council of Public Science and Technology provided to Dr. Suk of KORDI.

As to the Joint Seminar under the Japan-Korea Basic Scientific Cooperation Program “Late Quaternary Paleoceanography and East Asian Monsoon Reconstruction in the Japan / East Sea” held at Toyama City, Japan, costs for accommodation and travel expenses of participants were covered by the fund from Japan Society for the Promotion of Science (Provided to Dr. Irino), Korea Science and Engineering Foundation (provided to Dr. Khim), and Toyama Prefectural Government (provided to Dr. Koizumi).

8. **Attach any information you may consider relevant**

We attach our final symposium report of Vladivostok meeting in 2005, because we realized that this report which we submitted to IGCP office in Jakarta every year within 1 month after the international meeting was not forwarded to the reviewers of the project last year.