



International Geoscience Programme
Project 653 — Annual Meeting 2017



Filling the gap between the Cambrian Explosion and the GOBE

8 October to 12 October, 2017

Yichang, China

Third Circular & Programme

20 September, 2017

Sponsors

Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences
State Key Laboratory of Palaeobiology and Stratigraphy (Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences)
CAS Key Laboratory of Economic Stratigraphy and Palaeogeography, Nanjing Institute of Geology and Palaeontology
National Natural Science Foundation of China
School of Earth and Space Science, Peking University, China
Wuhan Center of Geological Survey, China Geological Survey
School of Geosciences and Info-Physics, Central South University, China

Time

8 October (Sunday) to 12 October (Thursday), 2017

Venue

Banshan Hotel, Yichang City, Hubei Province, China (No. 56 Fazhan Road, Yichang City, Hubei Province; +86 (0)717 626-9999)

Most activities will be held at the hotel, including the registration, ice breaker, scientific sessions, and workshops.

Summary schedule

Oct. 8, 2017:	Arrival, registration (ice breaker).
Oct. 9, 2017:	Oral and poster presentations.
Oct. 10, 2017:	Oral and poster presentations, workshops.
Oct. 11, 2017:	Mid-conference field trip, conference banquet.
Oct. 12, 2017:	Oral and poster presentations.
Oct. 13-18, 2017:	Post-conference field excursion in Hubei and Hunan provinces.
Oct. 19, 2017:	Departures.

Registration and Icebreaker

Registration will be in **the lobby of the Banshan Hotel** from **8:30 to 21:00, October 8, 2017**.

All participants are strongly encouraged to upload the PPT files into the conference computer at the lobby and to set up posters between 8:30 and 21:00, October 8.

The ice breaker will be in the hotel restaurant from **18:30 to 20:00**.

Academic sessions

Three keynote speakers are invited, focusing on the topics of the IGCP 653 project:

Dr. **Rudy LEROSEY-AUBRIL** (University of New England)

Exceptional preservation in the later Cambrian: insights into a cryptic phase of the early evolution of animals

Dr. **ZHU Maoyan** (Nanjing Institute of Geology and Palaeontology, CAS)

The fate of the Cambrian Evolutionary Fauna: abrupt extinction vs. gradual demise

Dr. **Cole T. EDWARDS** (Appalachian State University)

Geochemical evidence for Ordovician oxygenation: another driver of the Great Ordovician Biodiversification Event

For each keynote talk, **40 minutes** including discussion will be arranged; for regular oral presentations, **20 minutes** will be allowed, including questions and answers.

Posters should be prepared with the size **120 cm (height) x 80 cm (width)**.

Awards for student presentations: the three best oral presentations and one best poster presentation by students will be selected and awards given by the scientific committee.

Workshops

Two workshops will be organized in the afternoon on Oct. 10.

1: An introduction to the Geobiodiversity Database (GBDB) by Dr. FAN Junxuan (Nanjing Institute of Geology and Palaeontology, CAS)

This workshop will focus on the basic principles of the Geobiodiversity Database (GBDB), and how to use it in research and education. Several new functions and apps for data analysis and visualization will be introduced.

2: Guole Konservat-Lagerstätte: specimen observation and discussion by Dr. ZHU Xuejian (Nanjing Institute of Geology and Palaeontology, CAS)

This workshop will focus on the Burgess Shale-type Guole Lagerstätte of Jiangshanian (Furongian) age from the Guangxi Autonomous Region, South China. Participants will be able to examine specimens of trilobites, non-trilobite arthropods, brachiopods, graptolites, cnidarians, echinoderms, hyoliths, palaeoscolecoid worms, and algae.

Mid-conference Field Trip

The mid-conference field trip will be on Oct. 11.

Delegates will visit the Furongian to Upper Ordovician successions, including the GSSPs of the Dapingian (Huanghuachang section) and Hirnantian (Wangjiawan North section) stages near Yichang city, Three Gorges Dam (sites 1–3 on the index map) and a few scenic spots of the Yangtze Gorges.

Departure: **From the front door of the Banshan Hotel. Time: 08:30 am.**

Leaders: ZHANG Yuandong, WANG Xiaofeng, FAN Junxuan, CHEN Qing et al.

Post-conference Field Excursion

A six-day post-conference field excursion (Oct. 13 to Oct. 18, 2017) will be arranged to investigate a number of classic sections of the Guzhangian (Series 3, Cambrian) to Upper Ordovician around the Yangtze Gorges area (sites 4–9 on the index map). These sections include at least the Gudongkou section (Xingshan, Hubei), the Xiangshuidong sections (Songzi, Hubei), the Wentang section (Zhangjiajie, Hunan), and the GSSPs of the Paibian Stage (Furongian Series, Huayuan, Hunan) and the Guzhangian Stage (Cambrian Series 3, Guzhang, Hunan). Participants will be able to find fossils including trilobites, brachiopods, graptolites, bryozoans, nautiloids, and echinoderms. During the excursion, visits to the Zhangjiajie UNESCO Global Geopark will be arranged. The excursion will start in Yichang on Oct. 13 and end in Changsha (capital city of Hunan Province) on Oct. 18 (probably late in the afternoon). From Changsha, there are many direct international flights to Thailand, Vietnam, Japan, South Korea, United States (Los Angeles), Germany (Frankfurt), Hong Kong, and other countries, and domestic flights to other cities such as Beijing, Shanghai, Chongqing, and Nanjing.



Day 1 (Oct. 13): Leave at 8:00 am for Xingshan County, and visit the Cambrian–Ordovician section at Gudongkou. Stay overnight at Banshan Hotel in Yichang.

Day 2 (Oct. 14): Check out after breakfast. Leave at 8:00 am for Songzi, southwestern Hubei and visit the Ordovician section at Xiangshuidong. Stay overnight in Songzi city.

Day 3 (Oct. 15): Check out after breakfast. Leave at 8:00 am for Zhangjiajie, northwestern Hunan, and visit the Ordovician section at Wentang. Stay overnight in Zhangjiajie city.

Day 4 (Oct. 16): Leave at 8:30 am to visit the Zhangjiajie UNESCO Global Geopark. Stay overnight in Zhangjiajie city.

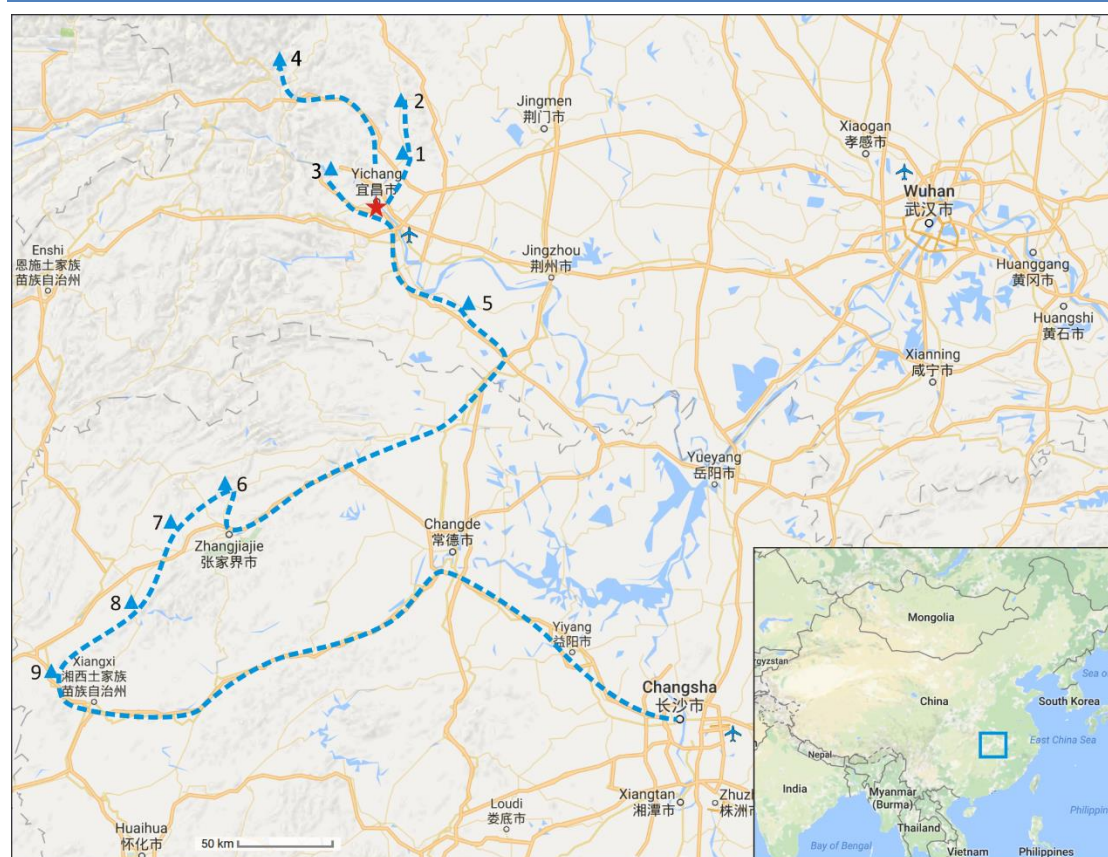
Day 5 (Oct. 17): Check out after breakfast. Leave at 8:00 am for Guzhang, northwestern Hunan, and visit the Cambrian section and the Guzhangian GSSP. Leave the section at 4:00 pm for Huayuan County. Stay overnight in Huayuan.

Day 6 (Oct. 18): Check out after breakfast. Leave at 8:00 am to visit the Cambrian section and the Furongian GSSP. Leave the section at 3:00 pm for Changsha. Stay overnight close to Changsha International Airport.

Day 7 (Oct. 19): Field excursion ends; all participants leave for their own destinations.

The registration fee covers all meals, accommodation, transportation, tickets for the geoparks, guide book, etc. during the entire field excursion (Oct. 13 to 18, including the hotel for Oct. 18 in Changsha).

Leaders: ZHAN Renbin, WANG Yi, LIU Jianbo, ZHU Xuejian et al.



Location of Yichang City (★) and the scheduled route for the mid-conference field trip (1–3) and the post-conference field excursion (4–9). 1. GSSP of the Dapingian Stage at Huanghuachang, Yichang, Hubei Province; 2. GSSP of the Hirnantian Stage at Wangjiawan, Yichang, Hubei Province; 3. Three Gorges National Geopark and Three Gorges Dam, Zigui, Hubei Province; 4. Gudongkou Reservoir Bank section, Xingshan, Hubei Province; 5. Xiangshuidong sections, Songzi, Hubei Province; 6. Zhangjiajie UNESCO Global Geopark, Zhangjiajie, Hunan Province; 7. Wentang

section, Zhangjiajie, Hunan Province; 8. GSSP of the Guzhangian Stage (Series 3, Cambrian) at Luoyixi, Guzhang, Hunan Province; 9. GSSP of the Paibian Stage (Furongian, Cambrian) at Paibi, Huayuan, Hunan Province.

Publications

Three volumes are to be published or prepared for the meeting:

(1) A volume including the conference programme and extended summary will be published by Zhejiang University Press & Elsevier and will be available at the meeting.

(2) A thematic issue in *Palaeoworld* (a peer-reviewed journal published by Elsevier) has been arranged for publication of invited regular papers (*ca.* 10 pages) presented at the meeting. The issue will come out in the middle of 2018 (Issue 2 or 3). The deadline for submitting manuscripts is **December 31, 2017**. For formatting requirements, please refer to the author instructions of *Palaeoworld* (<http://www.elsevier.com/locate/palwor>).

(3) A guide book to the post-conference field excursion is being prepared and will be available at the meeting.

Travel and accommodation

Yichang is *ca.* 300 km west of Wuhan City, the capital of Hubei Province (a three-hour drive on the freeway), and is easily accessible by air, train or car. There are many direct international flights every week from Moscow, Tokyo, Bangkok, Rome, Dubai, and other cities to Wuhan City. There are also direct flights from many cities within China to Yichang, including Beijing, Shanghai, Nanjing, and Hangzhou. Another option is the high-speed train (200–250 km/hour) connecting Yichang with Wuhan, Shanghai, Nanjing, Chongqing, and Chengdu. We will arrange cars to pick up delegates arriving in and departing from Wuhan.

For accommodation, we have already reserved dozens of rooms in the four-star Banshan Hotel (red star on the map; conference rate *ca.* 50 US dollars per room) for delegates. For those who prefer to stay in other hotels, there are more than ten hotels ranked at three stars or higher in Yichang City, some of which are listed on the following map (marked in green).

The weather of Yichang City in October is usually mild and mostly sunny, with temperatures of 10–25°C, on average 15–20°C. There could be some drizzle, but not commonly. The weather elsewhere in Hubei and Hunan provinces is similar to that in the Yichang City. We suggest that participants, especially those attending the post-conference field excursion, bring their own rain gear. Most of the stops in the mid-conference field trip and the post-conference field excursion are along roadsides or in mining quarries, and are easily accessible, but roads can be muddy and slippery on rainy days, so sturdy running shoes or hiking boots are still recommended.

The local food in Yichang City and neighboring areas is usually a bit spicy, somewhat similar to the famous Sichuan food. If you have any special dietary requirements (e.g. vegetarian, or an allergy to some specific food), please let us know in advance so that we can arrange appropriate food for you.

Banshan Hotel is located at No. 56 Fazhan Road, Yichang City, Hubei Province. Telephone: +86 (0)717 626-9999.



Scientific Committee

Thomas SERVAIS (Chair, Lille, France)
David A.T. HARPER (Durham, UK)
Olga T. OBUT (Novosibirsk, Russia)
Christian M.Ø. RASMUSSEN (Copenhagen, Denmark)
Alycia L. STIGALL (Athens, Ohio, USA)
ZHANG Yuandong (Nanjing, China)

Organizing Committee

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ZHAN Renbin (Vice-Chair), Nanjing Institute of Geology and Palaeontology, China
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Contact information

Any questions or suggestions related to the meeting and field trips should be directed to the e-mail box of the meeting: IGCP653.China2017@nigpas.ac.cn

or if necessary, to:

Dr. FAN Junxuan (Nanjing Institute of Geology and Palaeontology): fanjunxuan@gmail.com

Dr. ZHANG Yuandong (Nanjing Institute of Geology and Palaeontology): ydzhang@nigpas.ac.cn

For further and updated information on the Yichang meeting, please visit the meeting website: <http://igcp653-china2017.geobiodiversity.com/>

Any questions or problems when you arrive in China should be directed to the organizing committee or the hotel:

ZHANG Linna (Registration and scientific sessions): +86 138-5151-2799

ZHANG Junpeng (Airport and train station pick-up): +86 151-0106-6507

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Emergency call (police, ambulance): +86 110

Programme day-by-day

Sunday, Oct. 8	Arrival, registration & ice breaker 8:30–21:00 Registration at the lobby of Banshan Hotel 18:30–20:00 Ice breaker
Monday, Oct. 9	Scientific sessions 8:30 Registration and information service 9:00–18:00 Opening ceremony and scientific sessions 10:40 Group photo
Tuesday, Oct. 10	Scientific sessions & workshops 8:30–11:50 Scientific sessions 13:30–15:30 Workshops 15:30–18:00 City Tour
Wednesday, Oct. 11	Mid-conference field trip 8:30 Departure 19:00–20:30 Conference banquet
Thursday, Oct. 12	Scientific sessions 8:30–16:40 scientific sessions 16:40–17:10 Closing ceremony
Friday, Oct. 13	Post-conference field excursion Day 1 8:00 Departure Accommodation in Banshan hotel, Yichang
Saturday, Oct. 14	Post-conference Field Excursion Day 2 8:00 Check out & departure Accommodation in Songzi County
Sunday, Oct. 15	Post-conference Field Excursion Day 3 8:00 Check out & departure Accommodation in Zhangjiajie City
Monday, Oct. 16	Post-conference Field Excursion Day 4 8:30 departure Accommodation in Zhangjiajie City
Tuesday, Oct. 17	Post-conference Field Excursion Day 5 8:00 Check out & departure Accommodation in Huayuan County
Wednesday, Oct. 18	Post-conference Field Excursion Day 6 8:00 Check out & departure Accommodation in Changsha City
Thursday, Oct. 19	Departure

Scientific Programme

9 October, 2017		
8:30		Registration and information service
9:00	9:10	Opening Ceremony
Chairmen: ZHANG Yuandong & Andrei DRONOV		
9:10	9:50	Exceptional preservation in the later Cambrian: insights into a cryptic phase of the early evolution of animals (Keynote) <i>LEROSEY-AUBRIL, R.</i>
9:50	10:15	The 'Great Ordovician Biodiversification Event' (GOBE): the history of a term <i>SERVAIS, T., HARPER, D. A. T.</i>
10:15	10:40	The Furongian Guole Konservat-Lagerstätte from South China <i>ZHU, X. J., LEROSEY-AUBRIL, R., ORTEGA-HERNÁNDEZ, J.</i>
10:40	11:10	Group photo. Tea break
11:10	11:35	Paleoceanographic background for the initial stage of the Great Ordovician Biodiversification Event: sedimentary and geochemical evidence from South China <i>LIU, J. B., DONG, Y. T., LI, J. T., ZHAN, R. B.</i>
11:35	12:00	Epibole vs. ecological turnover: Contrasting ecosystem impacts of biotic invasions on Ordovician communities <i>STIGALL, A. L.</i>
12:00	13:30	Lunch
Chairmen: WANG Xiaofeng & ZHEN Yongyi		
14:00	14:20	Graptolites in the making – on the origin and early diversification of the Pterobranchia <i>MALETZ, J.</i>
14:20	14:40	The early Ordovician fauna from Langao County, Shaanxi Province, China <i>WANG, J., WANG, X., GU, P. Y., ZHUANG, Y. J., CHEN, R. M., LI, L., GUO, Y. P.</i>
14:40	15:00	Latest Darriwilian to early Sandbian (Late Ordovician) graptolites and biostratigraphy of the Miaopo Formation in Chengkou, northern Chongqing, and Yichang, western Hubei Province, China <i>SONG, Y. Y., ZHANG, Y. D., GOLDMAN, D., LIU, P. J.</i>
15:00	15:20	Graptolite biostratigraphy of the Hulo Formation (Middle Ordovician) in NW Zhejiang, South China <i>MA, X., ZHANG, Y. D.</i>
15:20	15:40	Geographic disparity of graptolite faunas during the late Katian biodiversification event <i>CHEN, Q., FAN, J. X.</i>
15:40	16:00	Early Silurian graptolite biostratigraphy and ecostratigraphy of Ganluo on the south-western margin of the Upper Yangtze Platform, China <i>WANG, W. H., TANG, P., DENG, Q. Y., ZHAO, R.</i>
16:00	16:20	Tea break
16:20	16:40	Floian (Early Ordovician) conodonts of the Canning Basin, Western Australia — biostratigraphy and palaeobiogeographic affinities with Chinese faunas <i>ZHEN, Y. Y., PERCIVAL, I. G., NORMORE, L., DENT, L.</i>
16:40	17:00	Early Ordovician conodonts and graptolites from northeast Vietnam <i>PHONG, N. D., DZIK, J., WILLIAMS, M., KOMATSU, T.</i>
17:00	17:20	Middle and Late Ordovician conodonts from the Hulo and Yenwashan formations, western Zhejiang, southeastern China

		WU, R. C., WANG, Z. H., ZHANG, Y. D., SONG, Y. Y.
17:20	17:40	Integrated conodont biostratigraphy and carbon chemostratigraphy of the Upper Ordovician Shiyanhe Formation at the Sigang section, Neixian, Henan, central China <i>JING, X. C., STOUGE, S., YANG, Z. H.</i>
17:40	18:00	Cephalopod palaeobiogeography in northeastern peri-Gondwana during the Middle–Late Ordovician <i>FANG, X., CHEN, T. E., ZHANG, Y. B., ZHANG, Y. D., LI, W. J.</i>
18:00	19:30	Supper
10 October, 2017		
Chairmen: Thomas SERVAIS & FAN Junxuan		
8:30	9:10	The fate of the Cambrian Evolutionary Fauna: abrupt extinction vs. gradual demise (Keynote) <i>ZHU, M. Y.</i>
9:10	9:30	Geometric morphometric analysis of <i>Protoconites</i> from the Lower Cambrian Yanjiahe Formation, Yichang, Hubei, China <i>GUO, J. F., CHEN, Y. L., SONG, Z. C., ZHANG, Z. F., ZHEN, Y. J., YAO, X. Y.</i>
9:30	9:50	<i>Rusophycus carleyi</i> on the edge of the Siberian platform <i>DRONOV, A. V., KUSHLINA, V. B.</i>
9:50	10:10	Lower Paleozoic bioerosion trace fossils from Estonia, Baltica <i>TOOM, U., VINN, O., HINTS, O.</i>
10:10	10:30	Tea break
10:30	10:50	Dispersal and endemic diversification: differences in sponge faunas between the Cambrian Explosion and the GOBE <i>MUIR, L. A., BOTTING, J. P.</i>
10:50	11:10	The post-extinction Anji Biota (Zhejiang, China) and a wider Hirnantian sponge mega-community <i>BOTTING, J. P., MUIR, L. A., ZHANG, Y. D., WANG, W. H.</i>
11:10	11:30	Keratose-like sponges in lower Paleozoic successions and their implications for paleoecology and carbonate sedimentology <i>LEE, J. H., HONG, J. S.</i>
11:30	11:50	End-Ordovician Mass Extinction—role of the deep-water sponges <i>LI, L. X., JANUSSEN, D., ZHAN, R. B., WU, R. C., WANG, G. X., WEI, X., GONG, F. Y., REITNER, J.</i>
12:00	13:30	Lunch
13:30	14:30	Workshop 1: An introduction to the Geobiodiversity Database (GBDB)
14:30	15:30	Workshop 2: Guole Konservat-Lagerstätte: specimen observation and discussion
15:30	18:00	City Tour
18:00	19:30	Supper
11 October, 2017		
8:30	18:00	Mid-conference Field Trip
19:00	20:30	Conference banquet
12 October, 2017		
Chairmen: Ian G. PERCIVAL & LIU Jianbo		
8:30	9:10	Geochemical evidence for Ordovician oxygenation: another driver of the Great Ordovician Biodiversification Event (Keynote)

		EDWARDS, C. T.
9:10	9:30	The Lower-Middle Ordovician $\delta^{18}\text{O}$ record and its relation to diversification pulses of the GOBE LEHNERT, O., WU, R. C., MÄNNIK, P., REPETSKI, J. E., JOACHIMSKI, M. M., CALNER, M., KRÖGER, B., SERVAIS, T., HARPER, D. A. T., ZHAN, R. B.
9:30	9:50	CA-IDTIMS geochronology of Lower Ordovician subsurface stratigraphy in the Canning Basin, Western Australia and integration with conodont biostratigraphy NORMORE, L., ZHEN, Y. Y., DENT, L., CROWLEY, J., PERCIVAL, I. G., WINGATE, M. T. D.
9:50	10:10	Carbon isotope chemostratigraphy of the Ordovician-Silurian boundary strata of the Yihuang-1 Drillcore, Yichang, Hubei, South China LI, C., FAN, J. X., ZHANG, Y. D., SUN, Z. Y.
10:10	10:30	Tea break
10:30	10:50	Paleoecological complexity during the Cambrian Explosion: evidence from brachiopods ZHANG, Z. F., HOLMER, L. E.
10:50	11:10	Ecology, biofacies, biogeography and systematics of micromorphic lingulate brachiopods from the Ordovician (Darriwilian to Sandbian) of south-central China HOLMER, L. E., POUR, M. G., POPOV, L. E., ZHANG, Z. L., ZHANG, Z. F.
11:10	11:30	The brachiopod <i>Altaethyrella</i> from the late Katian Hadabulaktag Formation in the Tarim Basin, northwest China, and its paleogeographical significance SPROAT, C. D., ZHAN, R. B.
11:30	11:50	Late Ordovician brachiopod <i>Rongatrypa xichuanensis</i> from Xichuan, Henan Province, China ZHANG, Y. C., ZHAN, R. B.
12:00	13:30	Lunch
Chairmen: ZHAN Renbin & Alycia L. STIGALL		
14:00	14:20	The beginning of the Ordovician Evolutionary Radiation in the Baltic region: substrate revolution, explosive increase in diversity of stalked echinoderms, and the cyanobacterial origin of hardgrounds ROZHNOV, S. V.
14:20	14:40	Cambrian to Lower Ordovician Reefs on the Yangtze Platform, South China Block, and their controlling factors ZHANG, Y. Y., LI, Q. J., LI, Y., KIESSLING, W., WANG, J. P.
14:40	15:00	The first report of Ordovician reefs from Peninsular Malaysia LI, Q. J., SONE, M.
15:00	15:20	"Hidden diversity" and the GOBE: in the aspect of origins of automicrites SHEN, Y. F., NEUWEILER, F.
15:20	15:40	Tea break
15:40	16:00	Constraint of the Early-Middle Ordovician marine red beds along the marginal Yangtze Platform, South China LUAN, X. C., WU, R. C., ZHAN, R. B.
16:00	16:20	Slump structures of Late Ordovician age in the Putangkou section, Zhejiang Province, South China, and their geological implications LI, W. J., ZHANG, Y. D., CHEN, J. T., YUAN, W. W.
16:20	16:40	A high-performance parallel CONOP program based on hybrid strategy of simulated annealing and genetic algorithm HOU, X. D., FAN, J. X.
16:40	17:10	Closing Ceremony (by Dr. ZHAN Renbin)

Poster presentations

To be displayed during the conference.

1	AKODAD, M., HARIRI, K. E., GUTIÉRREZ-MARCO, J. C., LEFEBVRE, B., LEHNERT, O., MARTIN, E. L. O., NOWAK, H., SERVAIS, T.	The precise age of the Fezouata Lagerstätte, Lower Ordovician, Morocco
2	DENG, Q. Y., TANG, P., WANG, W. H., ZHAO, R.	Melanosclerites: a special kind of Paleozoic microfossil and its new discoveries in China
3	FANG, X., ZHANG, Y. B., CHEN, T. E., ZHANG, Y. D.	Early evolution of nautiloid faunas through the Cambrian-Ordovician transition: a general overview
4	LIANG, K.	Symbiotic interactions in Late Ordovician <i>Catenipora</i> from Xiazhen Formation, South China
5	MUIR, L. A., BOTTING, J. P.	Agglutinated tubes as a signature feature of Tremadocian (Early Ordovician) communities
6	SUN, Z. Y., FAN, J. X.	The Upper Ordovician bentonites in South China and North China
7	WANG, Z. H., ZHEN, Y. Y., BERGSTRÖM, S. M., WU, R. C., ZHANG, Y. D., MA, X.	A new conodont biozone classification of the Ordovician System of South China
8	WEI, X., ZHAN, R. B.	Lower Silurian (Rhuddanian) trilobites of Xichuan (East Qinling), western Henan, central China
9	YAN, K., LI, J., SERVAIS, T., SHAN, L. L.	A Tremadocian acritarch assemblage from Songzi, Hubei Province
10	ZHANG, J. P., FAN, T. L., ZHANG, Y. D.	Sluggish oceanic oxygenation delayed faunal colonization during the Cambrian Explosion in the South China Block
11	ZHANG, L. N., FAN, J. X., CHEN, Q., ZHANG, Y. D.	Spatial distributions of the Lower-Middle Ordovician Meitan and Dawan formations in the Upper Yangtze region
12	ZHANG, X. L., LIU, J. B., WANG, Y., RONG, J. Y.	Distribution and formation mechanism of widespread siliciclastic marine red beds in the middle Telychian of the eastern Yangtze Platform
13	ZHANG, Z., LUO, H., WANG, Y. J., ZHANG, Y. D.	Occurrences of Cambrian and Ordovician radiolarians in China: a brief overview
14	ZHAO, R., WANG, W. H., ZHANG, M. H., DENG, Q. Y.	Applications of X-ray synchrotron microtomography to three-dimensionally preserved Late Ordovician graptolite specimens from Hunan, South China
15	ZHEN, Y. Y., PERCIVAL, I. G., WOO, J. S., PARK, T. S.	Latest Cambrian–earliest Ordovician conodonts and microbrachiopods from northern Victoria Land, Antarctica