

2021年 地科院深部中心

# IGCP 662: 2020-2021年工作概况

**IGCP 662: Orogenic Architecture and Crustal Growth from Accretion to Collision: examples from the Central Asian Orogenic Belt and Tethyan orogen**

从增生到碰撞造山带架构与地壳生长

汇报人：王涛 等

**Institute of Geology, CAGS, Beijing, China**

# IGCP 662: 2020-2021年工作

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◆ 工作概况

◆ 研究进展

◆ 下步计划

# IGCP 662介绍

## IGCP662-Orogenic architecture and crustal growth from accretion to collision: examples from the Central Asian Orogenic Belt and Tethyan Orogen (2018-2022)

**Objectives:** : Compare accretionary and collisional orogens through isotopic mapping. To delineate differences in composition and architecture between accretionary and collisional orogens; To establish criteria to (semi-) quantitatively describe orogenic development by the ratio of juvenile/reworked crust; To better understand the role of orogenic composition on metallogensis.

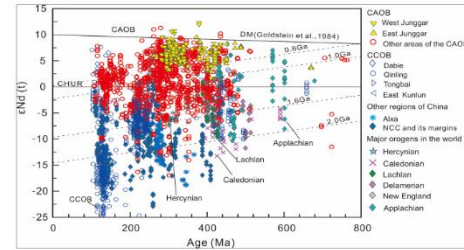
**Project leaders:** Tao Wang (China), Dmitry Gladkochub (Russia), Zengqian Hou (China), Reimar Seltmann ( UK), Inna Safonova (Russia), Wenjiao Xiao (China), Suzanne Y. O 'Reilly ( Australia , Cees van Staal ( Canada ) .  
Website: <http://www.igcp662.org.cn/>

今年给EGU IGCP委员会的宣传材料

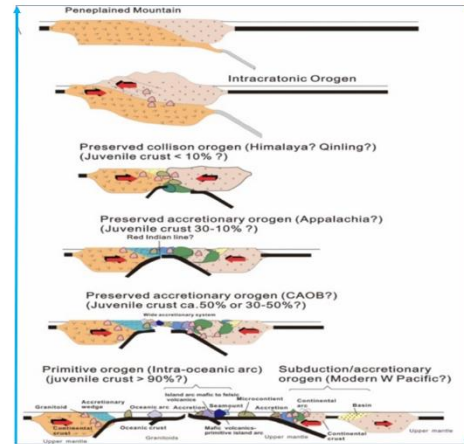
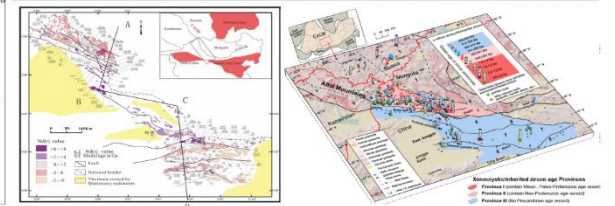
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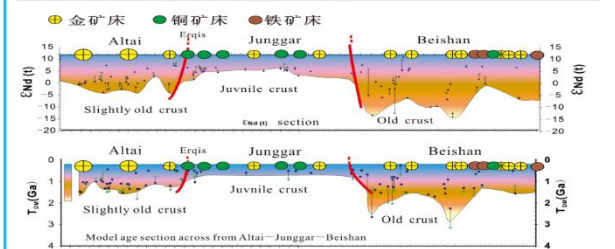
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**Achievements 2018:** Delineate the largest juvenile crustal province and its controlle on metallogenisis in the CAOB through



**Nd isotopic section from Altai-Junggar- Eastern Tianshan-Beishan and controlle on , on the types of deposits**



**Achievements 2018:** The first workshop, field excursion and post-workshop training courses were successfully held in China



More than 90 experts from 12 countries including Australia, Canada, Britain, France, Israel, Russia, Turkey, South Korea, Mongolia, Pakistan, Germany and China, attended the first workshop and post-workshop training courses in Beijing, and the field excursion in the Dunhuang-Guazhou-Liuyuan, Beishan, NW China from September 15 to 22, 2018. The training courses "Using isotopes in zircon and sulfides to understanding crust-mantle evolution" were give by Yusheng Wang (China), Alfred Kröner (German), Suzanne Y. O'Reilly (Australia), Willian Griffin (Australia), Simon Wilde (Australia) and Jean Bédard (Canadian).



# The project leaders



**Prof. Tao Wang** (China)  
Institute of Geology, CAGS

**Prof. Dmitry Gladkochub** (Russia)  
Institute of the Earth's Crust, RAS



**Prof. Zengqian Hou** (China)  
Institute of Geology, CAGS

**Prof. Reimar Seltmann** (UK)  
The Natural History Museum



**Prof. Inna Safonova** (Russia)  
Novosibirsk State University

**Prof. Wenjiao Xiao** (China)  
Chinese Academy of Sciences



**Prof. Suzanne Y. O'Reilly**,  
(Australia), Macquarie University  
Australia

**Prof. Cees van Staal**  
(Canada), Geological Survey  
of Canada



# 2020-2021年工作概况

## 2020年总结了国际交流合作活动总结

Article



by Tao Wang<sup>1\*</sup>, Reimar Seltmann<sup>2</sup>, He Huang<sup>1</sup>, Ying Tong<sup>1</sup>, Dmitry Gladkochub<sup>3</sup>, Suzanne Y. O'Reilly<sup>4</sup>, Cees van Staal<sup>5</sup>, Zengqian Hou<sup>1,6</sup>, Inna Safonova<sup>7,8</sup>, and Wenjiao Xiao<sup>9</sup>

## Orogen architecture and crustal growth from accretion to collision (IGCP#662): Scientific Activities 2018-2019

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<sup>2</sup> The Natural History Museum, Earth Sciences Department, Centre for Russian and Central EurAsian Mineral Studies, London, UK

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<sup>4</sup> Macquarie University, ARC Centre of Excellence for Core to Crust Fluid Systems and GEMOC ARC National Key Centre, Sydney, Australia

<sup>5</sup> Geological Survey of Canada, Ottawa, Canada

<sup>6</sup> National Natural Foundation of China, Beijing, China

<sup>7</sup> Sobolev Institute of Geology and Mineralogy SB RAS, Novosibirsk, Russia

<sup>8</sup> Novosibirsk State University, 1 Pirogova St., Novosibirsk, 630090, Russia

<sup>9</sup> Xinjiang Research Center for Mineral Resources, Xinjiang Institute of Ecology and Geography, Chinese Academy of Sciences, Urumqi 830011, China

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<https://doi.org/10.18814/epiiugs/2020/020062>

# 2020-2021年工作概况

总结了2018-2019年的国际合作交流活动总结



# 2020-2021年工作概况

总结了2018-2019年的国际合作交流活动总结



*Figure 1. Photos during the pre-conference field trip of the first workshop. (a) A group photo in the field trip; (b) and (c). Prof. Cees van Staal (a) and Shoufa Lin introduced the field geology and showed the results of geological mapping by him and colleagues; (c) Participants listen carefully to the introduction by Prof. Cees van Staal.*



**Figure 3. Photos from the post-conference training courses. (a) Prof. Yusheng Wan, (b) Prof. Alfred Kröner, (c) Prof. Simon A. Wilde, (d) Prof. Suzanne Y. O'Reilly and (f) Dr. Jean Bédard, who were giving their lectures; (g) Prof. William Griffin, discussing with the audience after his lecture; (h) Prof. Qiuming Cheng, the president of the IUGS (International Union Geological Society) gave an address; (i) More than 70 young researchers and students taking part in this training course.**



# Joining the organization of international symposium “The Geology of Eurasia” in GFZ Potsdam



## First Announcement

## “The Geology of Eurasia”

International Workshop at GFZ Potsdam / Germany: 27-28 June 2019

Co-sponsored by IGCP-662 project (2018-22)

*“Orogenic Architecture and Crustal Growth from Accretion to Collision: examples from the Central Asian Orogenic Belt and Tethyan orogen”*

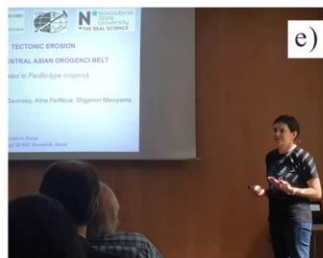
Plenary Talks by Members of Leibniz Society (MLS):

- Prof. Wenjiao Xiao, MLS Inaugural Lecture (CAS Beijing / China)  
*New insights in the Altaids – Tethysides Amalgamation*
- Prof. Celal Sengör, MLS (ITU, Istanbul / Turkey)  
*The Tectonics of the Altaids*

**GFZ—German Research Centre for Geosciences (GFZ)**

The IGCP-662 project joined as co-sponsor the organization of an international symposium “The Geology of Eurasia” held at the Helmholtz-Centre Potsdam-German, GFZ during the 26th of June to 1st of July, 2019.

The IGCP-662 leaders Profs. **Tao Wang, Reimar Seltmann, Inna Safonova and Wenjiao Xiao** attended the symposium and gave talks.



Delegates photo at the GFZ in Albert Einstein Science Park, Potsdam; (b, c, d and e) the IGCP-662 leaders Profs. Reimar Seltmann, Wenjiao Xiao, Tao Wang and Inna Safonova gave talks; (f and g) Photos of field investigation in Erzgebirge part of the Hercynian orogenic belt

# 2020-2021年工作概况

Joining the organization of international symposium “The Geology of Eurasia” in GFZ Potsdam



After the symposium they participated in the field trip examining the Hercynian orogenic belt in German Erzgebirge, to investigate the composition and magma evolution of the Hercynian orogenic belt. During the field trip, they also visited famous outcrops where granulite was first recognized, named and studied.

# Second workshop and field excursion in Mongolia 2019



## SECOND WORKSHOP OF IGCP- 662 PROJECT “OROGENIC ARCHITECTURE AND CRUSTAL GROWTH FROM ACCRETION TO COLLISION”

### FIRST CIRCULAR

Workshop and Field Excursion “Gobi-Altai accretionary orogen”

Dedicated to 80<sup>th</sup> Anniversary of Mongolian Geological Survey

Organized by

Mongolian University of Science & Technology

Institute of Paleontology & Geology, MAS

Institute of Astronomy and Geophysics, MAS

Czech Geological Survey

In cooperation with

The Geological Society of Mongolia and Mongolian Society of Economic Geologists



Photos from the second workshop of the IGCP-662 project. (a) Group photo of the participants; (b) Prof. Tao Wang, the leader of the IGCP-662 project, introduced the work plan of the IGCP-662 project for next year; (c) Prof. K. Schulmann and Dr. Hanžl from the Czech Geological Survey introduced the mapping results obtained over the past years; (d) Group photo during the field trip.

# 2020-2021年工作概况

## Second workshop and field excursion in Mongolia 2019

The Mongolian University of Science and Technology, the Institute of Paleontology & Geology, of the Mongolian Academy of Sciences (MAS), Institute of Astronomy and Geophysics of the MAS, the Czech Geological Survey and other institutions co-operated for organizing the workshop and field excursion.

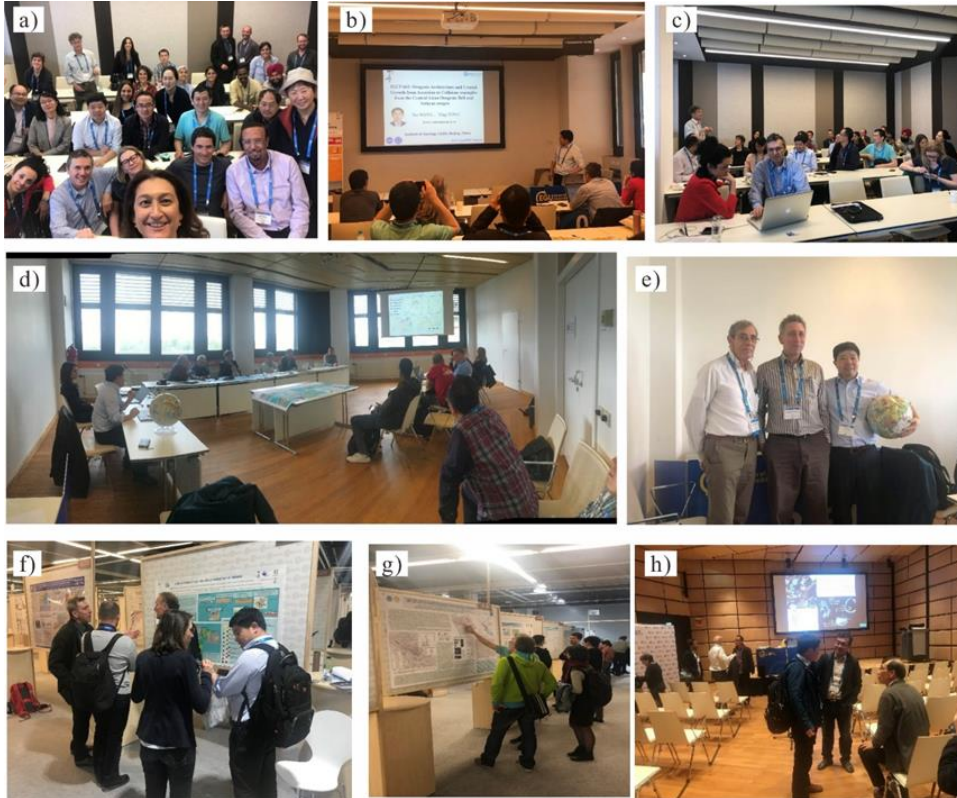
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# 2020-2021年工作概况

## Joining EGU and organizing a session 2019

**TS7.5/GD5.11 Accretion, collision and oroclinal bending in the Late Paleozoic: linking with the supercontinental evolution, Sponsored by IGCP 662**



*Photos from EGU 2019. (a) Group photo of participants in the session “Accretion, collision and oroclinal bending in the Late Paleozoic: linking with the supercontinental evolution (TS7.5/GD5.11)”;* (b) *Dr. Ying Tong introducing the IGCP-662 project;* (c) *Participants discussing in the session;* (d-e) *The IGCP-662 project and the IGCP-667 project exchanged work with the CGMW;* (f-h) *Discussions after the oral report and the communication in the panel area.*

The EGU 2019 was held during 7<sup>th</sup> to 12<sup>th</sup> April in Vienna, Austria. Ying Tong, secretary-general of IGCP 662 and some core members attended the meeting.

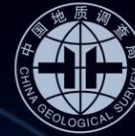
- Drs. Ying Tong, Jianjun Zhang and Peng Song and Pengfei Li, representing the IGCP-662 project team, participated in the meeting of IGCP project leaders organized by UNESCO/IUGS/CGMW. The meeting was presided by Özlem Adiyaman, who first introduced the newly approved IGCP projects in 2019.
- In cooperation with IGCP Project 662, the session “Accretion, collision and oroclinal bending in the Late Paleozoic: linking with the supercontinental evolution (TS7.5/GD5.11)” was organized by Pengfei Li, Daniel Pastor-Galán, Karel Schulmann and Min Sun. Seven oral and 15 poster presentations were presented on the session.
- The IGCP662 project, together with IGCP 667 project, carried out exchanges with Commission for the Geological Map of the World (CGMW) during the EGU 2019.

# 2020-2021年工作概况

在DEEP2021会议上，组织了专题7 学术研讨，21个报告，其中两个被选定在大会报告。

# DEEP

## International Symposium on Deep Earth Exploration and Practices



Hybrid Meeting  
Nanjing, China & International Everywhere  
26-31 October, 2021  
<http://2021.sinoprobe.org>

# 2021



中国地震科学实验场  
China Seismic Experimental Site

## Session 7 Lithospheric architecture and deep material probing (Co-sponsored by IGCP 662)

**CO-CONVENERS:** HOU Zengqian (National Science Foundation of China, Institute of Geology of CAGS, China), WANG Tao (Institute of Geology, CAGS, China), O' REILLY Suzanne Y. (Macquarie University, GEMOC ARC National Key Centre, Australia), SELTMANN, Reimar (The Natural History Museum, UK), XIAO Wenjiao (Xinjiang Institute of Ecology and Geography, CAS, China) , GLADKOCHUB Dmitry (Institute of the Earth's Crust, Siberian Branch, RAS, Irkutsk, Russia), VAN STAAL Cees (Geological Survey of Canada), SAFONOVA Inna (Novosibirsk State University, Russia)

No.	Time/Data (Beijing Time, UTC/GMT+8)	Abstract ID	Abstract Title	Presenter	Invited	Keynote
<b>Session 7-1, Oral, Oct 26, 19:00-19:50</b>						
<b>Co-Chairs: Wang Tao, Suzanne Y. O'Reilly</b>						
1	19:00-19:02		Opening Address and Sessions Overview	Tao Wang, Suzanne Y. O'Reilly		
2	19:02-19:12	20215200257	Mantle lithosphere architecture through the sulfide and olivine lenses	Olivier Alard		Keynote
3	19:12-19:17	20215200326	Mantle Dynamics of the North China Craton Originating From Slab	Lin Liu		
4	19:17-19:22	20215200187	When the mantle hides its (magmatic) sources: disequilibrium, volatiles and other tricks affecting lithosphere composition	Romain Tilhac		
5	19:22-19:27	20215200119	Mantle Flow: The deep mechanism of large-scale growth in Tibetan Plateau	Zengqian Hou		Keynote
6	19:27-19:32	20215200209	Tracking upper mantle heterogeneities using seismic anisotropy: the case of pyroxenite-rich domains	Hadrien Henry		
7	19:32-19:37	20215200204	Cenozoic lithospheric architecture and metallogenesis in Southeastern Tibet	Bo Xu		
8	19:37-19:50		General Discussion			
No.	Time/Data (Beijing Time, UTC/GMT+8)	Abstract ID	Abstract Title	Presenter	Invited	Keynote
<b>Session 7-2, Oral, Oct 26, 17:50-20:40</b>						
<b>Co-Chairs: SELTMANN, Reimar, SAFONOVA Inna</b>						
1	19:50-20:00	20215200241	Probing the physical state of the Earth's interior with thermochemical tomography (invited)	Juan Afonso		Keynote
2	20:00-20:05	20215200169	Lithospheric electrical structure of South China and its tectonic implications	Hui Chen		

3	20:05-20:10	20215200236	The big four: Major Orogenic Scale Lithospheric Discontinuities in the Iberian Massif	Imma Palomeras		
4	20:10-20:15	20215200230	1/3 of Antarctica is not a continent: Geophysical evidence for West Antarctica as a backarc system	Irina Artemieva		
5	20:15-20:20	20215200377	Multi-scale seismic imaging of lithosphere structures combining ambient noise and earthquake data	Yingjie Yang		Keynote
6	20:20-20:25	20215200234	A recursive probabilistic inversion of satellite gradiometry data for density variation in the Earth's upper mantle	Alexander Minakov		
No.	Time/Data (Beijing Time, UTC/GMT+8)	Abstract ID	Abstract Title	Presenter	Invited	Keynote
<b>Session 7-3, Oral, Oct 26, 21:00-22:00</b>						
<b>Co-Chairs: GLADKOCHUB Dmitry, XIAO Wenjiao</b>						
1	20:40-20:50	20215200235	TerraneChron: new Developments, new Deliverables and new Destinations	Elena Belousova		Keynote
2	20:50-20:55	20215200272	Muruntau (Uzbekistan) superdeep drill hole SG-10 and metallogenic implications	Reimar Seltmann		Keynote
3	20:55-21:00	20215200254	A novel and fast method to track the pathways, element load and timing of fluid migration within the lithosphere: in situ Rb/Sr isotopic analysis.	Lauren Gorojovsky		
4	21:00-21:05	20215200143	Contrasting porphyry Cu fertilities in the Yidun arc, eastern Tibet: insights from zircon and apatite compositions	Kang Cao		
5	21:05-21:10	20215200114	Crustal structure and regional differences in the Weiyuan shale gas field, China	Zigen Wei		
6	21:10-21:15	20215200493	Zircon, xenotime And Monazite Geochemistry And U-Pb Geochronology Of Metamorphic Rocks From Sumt Metacomplex, Eastern	Narantsetseg Tserendash		
7	21:15-21:20	20215200300	Crustal growth architectures and orogen types	Tao Wang		
8	21:20-21:25		General Discussion			
9	21:25-21:40		Concluding Remarks	Reimar Seltmann/Suzanne Y. O'Reilly		



# Report of Session 7 of DEEP-2021

**1. Title Session 7: Lithospheric architecture and deep material probing (Co-sponsored by IGCP 662)**

**2. Convenors**

HOU Zengqian (National Science Foundation of China, Institute of Geology of CAGS, China), WANG Tao (Institute of Geology, CAGS, China), O' REILLY Suzanne Y. (Macquarie University, GEMOC ARC National Key Centre, Australia), SELTMANN, Reimar (The Natural History Museum, UK), XIAO Wenjiao (Xinjiang Institute of Ecology and Geography, CAS, China), GLADKOCHUB Dmitry (Institute of the Earth's Crust, Siberian Branch, RAS, Irkutsk, Russia), VANSTAAL Cees (Geological Survey of Canada), SAFONOVA Inna (Novosibirsk State University, Russia)

**3. Scope**

This session is co-sponsored by IGCP-662 project and all conveners come from the co-leaders of IGCP-662. The session focuses on probing on deep materials and lithosphere architecture, one of the important tasks of solid-Earth science. There are 19 presentations, including 6 keynotes. These presentations are grouped into three parts. The first part focuses on mantle compositions and dynamics; the second on multiple approaches of geochemical and geophysical methods; and third on deep crustal compositions and mineralization.

**4. Scientific highlights**

Several presentations present powerful integration of geochemical and geophysical as well as geothermal methods to probe mantle compositions and architecture. In Tibet, mantle flow in a collisional setting was discussed in details. Orogen-scale isotopic mapping demonstrate crustal architecture of orogens and characterize different-type orogens in term of deep compositions.

**5. Level of presentations (at forefront of international research, or?)**

Many presentations show high level at forefront of international research. Multiple approaches (such as isotopic mapping and geophysical investigation) have been used in regional and orogens to probe deep materials and lithosphere architecture. Some new achievements have just published in high-level journals.

**6. Level of discussion, and activity of participants.**

The discussion is heated. The time of the session was planned at 19-21.45, but the session and discussion continued to 23.00.

**7. Facts: No. of papers, approximate No of participants**

There more than 120 participators during the virtual meeting. Some new achievements have just published in high-level journals. Several presentations could be submitted about 3-6 papers.

**8. Organizational support.**

The Organization is good and gave a great help for to organize the session.

**9. Suggestions for future virtual meetings.**

Deep prob on Erath, particularly on deep materials, is a forefront of international research. Hope to continue to organize such similar virtual meetings.

Penners: Tao WANG

O' REILLY Suzanne Y. O' REILLY x

# 2020年挂网文章35篇，2021年20余篇

The screenshot shows the IGCP 662 website homepage. The main header features the project logo and title: "IGCP 662 Orogenic Architecture and Crustal Growth from Accretion to Collision". Below the header is a navigation bar with links for Home, About, Members, Research, News, Maps, Download, and Contact Us. The main content area is divided into several sections: "Events" with a list of workshops and excursions; "IGCP 662" with sub-sections for About, Publications, and Group Members; "Map and Database" with a gallery of maps; "News & reports" featuring a "Session of IGCP662 in IGC 2020" and a "36th International Geological Conference in Delhi 2020-call for abstract"; and "Meetings" with a list of workshops and excursions. A large group photo of participants is displayed in the center.

This screenshot displays the "Publications" section of the IGCP 662 website. It features a list of publications from 2018 to 2021, each with a title, journal information, and a DOI link. The list is organized by year, with 2021 at the top and 2018 at the bottom. The publications cover various topics related to orogenic architecture and crustal growth, including zircon isotopes, magmatism, tectonics, and magma recharge processes.

### Publications (2021)

- Ding-Jun Wen,Zhen-Yu He Late Carboniferous crustal evolution of the Chinese Central Tianshan microcontinent: Insights from zircon U-Pb and Hf isotopes of granites. *Geological Journal*. 2020;55:1947–1963. DOI: <https://doi.org/10.1002/gj.3794>

### Publications (2020)

- Tian-Yu Lu,Zhen-Yu He,Reiner Klemd.Two phases of post-onset collision adakitic magmatism in the southern Lhasa subterrane, Tibet, and their tectonic implications. *The Geological Society of America*. DOI: <https://doi.org/10.1130/B35326.1>
- Li-Li Yan, Zhen-Yu He., Reiner Klemd, Christoph Beier, Xi-Sheng Xu. Tracking crystal-melt segregation and magma recharge using zircon trace element data. *Chemical Geology* 542(2020) 119596. DOI: <https://doi.org/10.1016/j.chemgeo.2020.119596>
- Bolat P. Khassen, Inna Yu Safonova,Pyotr V. Yermolov,Rostislav M Antonyuk,etc. The Tekturmas ophiolite belt of central Kazakhstan Geology, magmatism, and tectonics. *Geological Journal*. 2020;55:2363–2382. DOI: <https://doi.org/10.1002/gj.3782>
- Late Paleozoic Chingiz and Saur arc amalgamation in West Junggar (NW China): implications for accretionary tectonics in the southern Altai. *Song Shuaihua,Xiao Wenjiao,Windley Brian F,etc.* DOI: <https://doi.org/10.1029/2019TC005781>
- Mesozoic juvenile crustal formation in the easternmost Tethys: Zircon Hf isotopic evidence from Sumatran granitoids, Indonesia. *Shan Li, Sun-Lin Chung, Yu-Ming Lai, Azman A. Ghani, Hao-Yang Lee, Sayed Murtadha* *Geology* (2020). DOI: <https://doi.org/10.1130/G47304.1>
- Rejuvenation of ancient micro-continents during accretionary orogenesis: Insights from the Yili Block and adjacent regions of the SW Central Asian Orogenic Belt. *He Huang,Tao Wang, Ying Tong, Qie Qin,Xuxuan Ma,Jiyuan Yin.* DOI: <https://doi.org/10.1016/j.ea.2020.103255>
- Magma recharge processes of the Yandagshan volcanic-plutonic caldera complex in the coastal SE China: Constraint from inter-grain variation of Sr isotope of plagioclase. *Li-H Yan,Zhen-yu He,Xi-Sheng Xu* *Journal of Asian Earth Sciences*, Volume 201, 1 October 2020, 104511. DOI: <https://doi.org/10.1016/j.jseaes.2020.104511>
- Xiao, W\*, Liu, Y., Somerville, I., Schulmann, K., Kusky, T, Seltmann, R., 2020. Accretionary tectonics, deep structures and metallogeny of southern Altai. *Geological Journal*, 55, 1613-1619. DOI: <https://doi.org/10.1002/gj.3797>

### Publications (2019)

### Publications (2018)

# IGCP 662: 2020-2021年工作

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◆ 工作概况

◆ 研究进展

◆ 下步计划

# 2021年研究进展

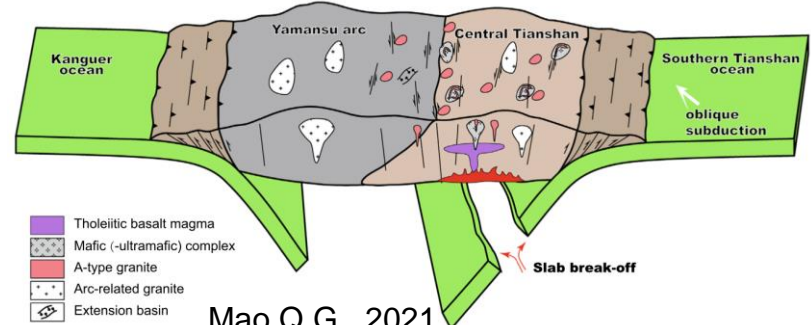
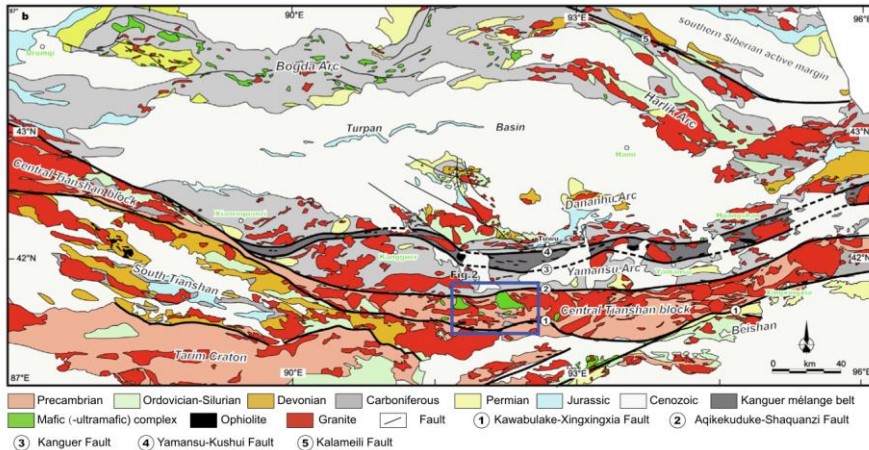
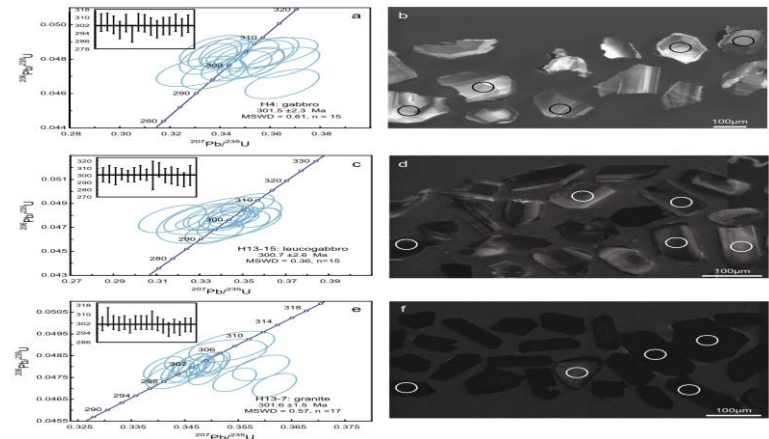
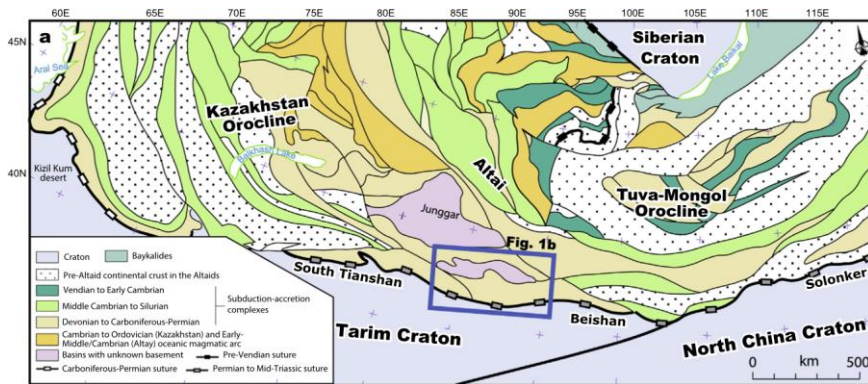
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- 1. 关键地区解剖揭示古亚洲洋闭合过程**
- 2. 建库编图，揭示亚洲花岗岩演化及陆块聚合**
- 3. 提出定量刻画造山带类型新标志和思路**
- 4. 提出地幔通道流新概念—高原生长新机制**
- 5. 造山带物质架构成矿制约实例**

# 关键地区解剖揭示古亚洲洋闭合过程

进展：古亚洲洋自西向东于中-晚三叠世准同时闭合

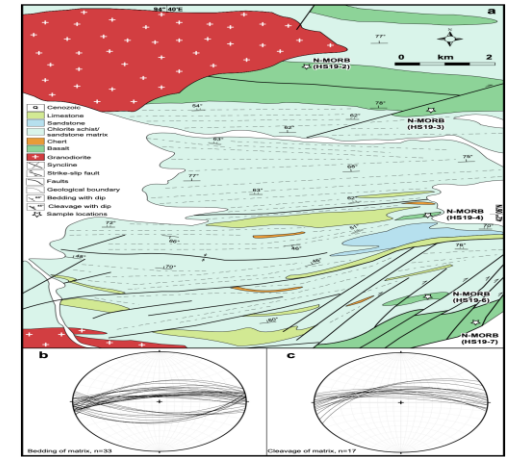
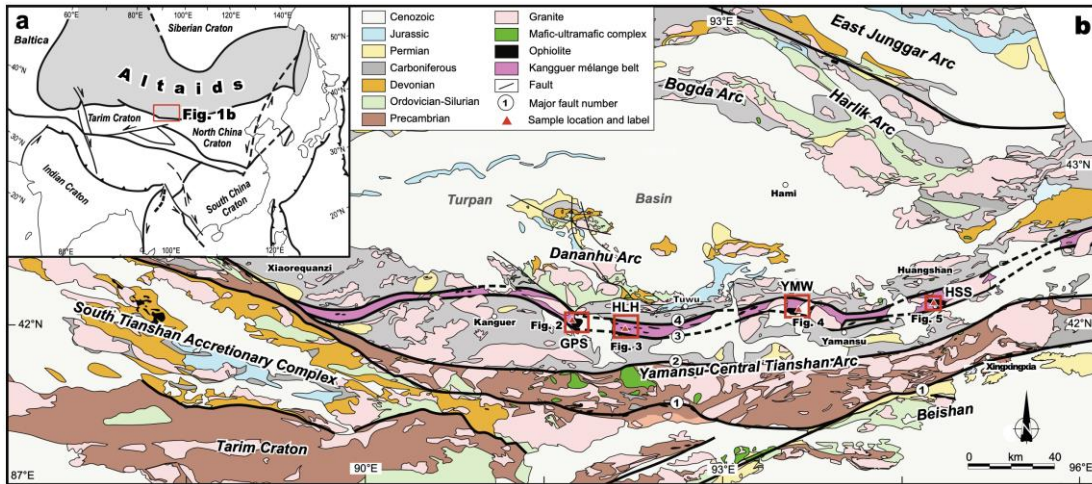
证据1：中天山东段C-P基性-超基性杂岩形成于俯冲下的伸展环境



Mao Q.G., 2021,  
Gondwana Research

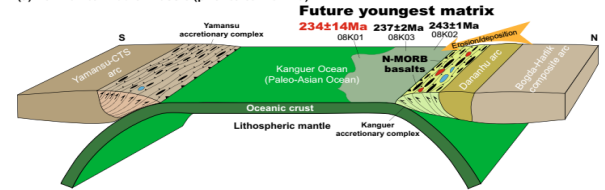
# 关键地区解剖揭示古亚洲洋闭合过程

证据2：东天山发现二叠纪-中三叠世增生杂岩，指示洋于中-晚三叠世闭合

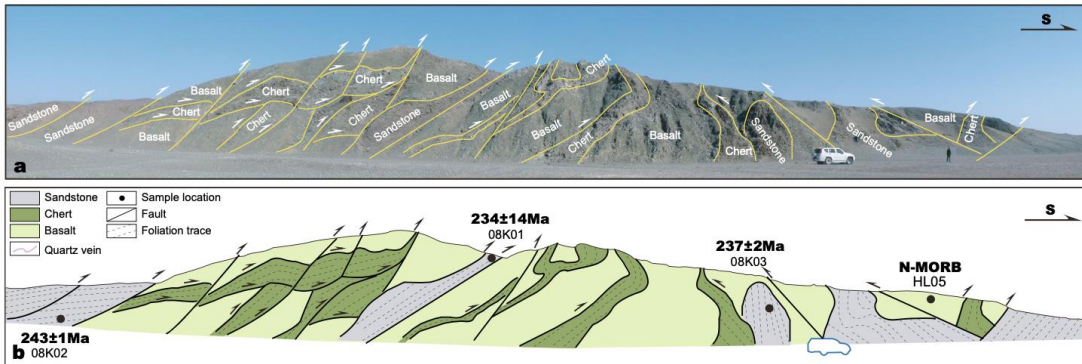
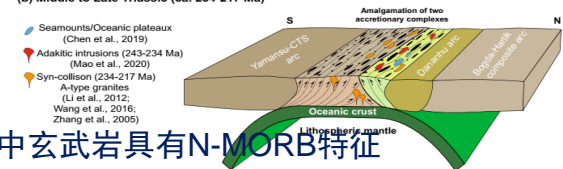


Ao S.J. et al., 2021, International Journal of Earth Sciences

(a) Permian to Middle Triassic (prior to ca. 234 Ma)



(b) Middle to Late Triassic (ca. 234-217 Ma)



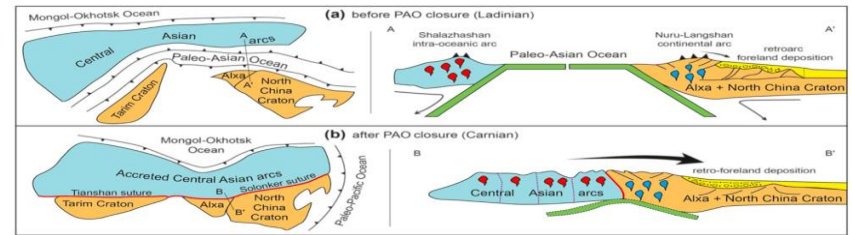
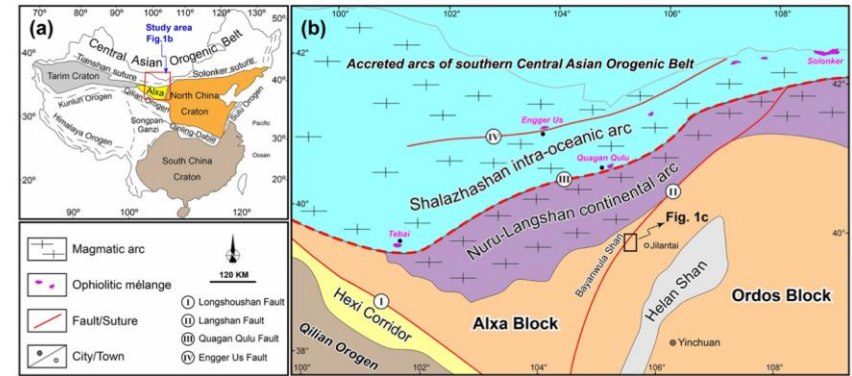
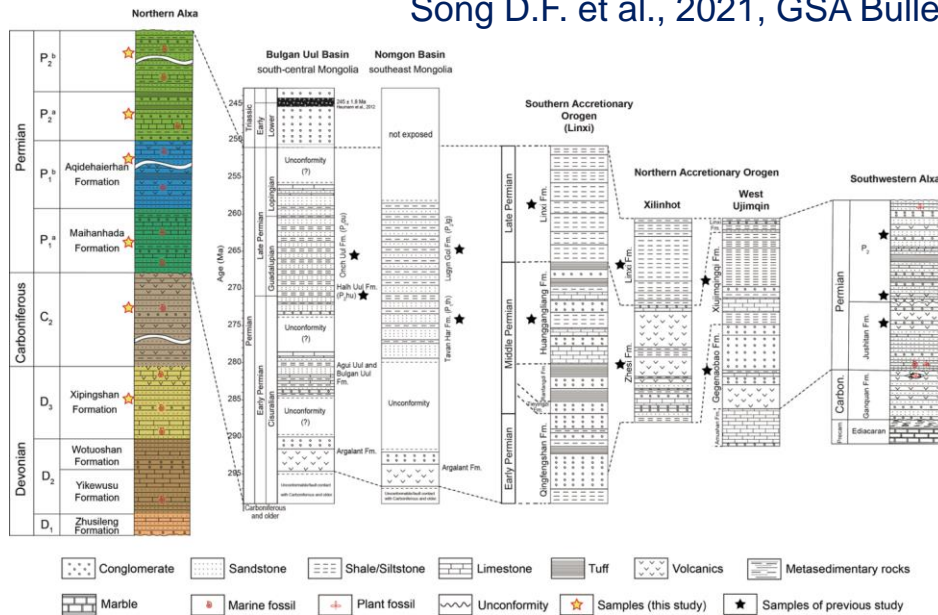
硅质岩、玄武岩、砂岩等构成逆冲叠瓦构造

东天山康古尔增生杂岩中玄武岩具有N-MORB特征  
最年轻基质（砂岩）最大沉积年龄为234 Ma  
中三叠世北天山洋仍处于俯冲背景

# 关键地区解剖揭示古亚洲洋闭合过程

## 证据3：阿拉善P弧前盆地和T弧背前陆盆地物源变化揭示古亚洲洋于中-晚三叠世最终闭合

Song D.F. et al., 2021, GSA Bulletin



### 中亚南缘二叠纪弧前盆地的区域对比

Song D.F. et al., 2021, Geophysical Research Letters

阿拉善-华北北缘晚古生代多岛洋格局

# 建库编图，揭示亚洲花岗岩演化及陆块聚合

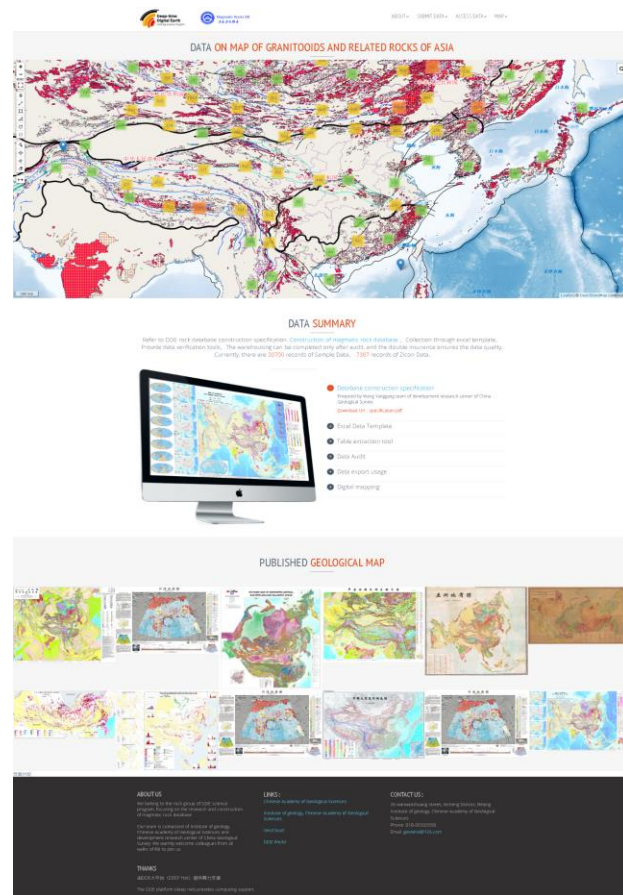
## 初步构建岩浆岩数据库，完善数字化编图

### 主要功能

系统框架已基本搭建完毕，  
临时网址：<http://39.106.68.244/>

两入：  
网站提供了众包模式的数据上传。  
后台python机器人程序实现数据的自动抽取上传。

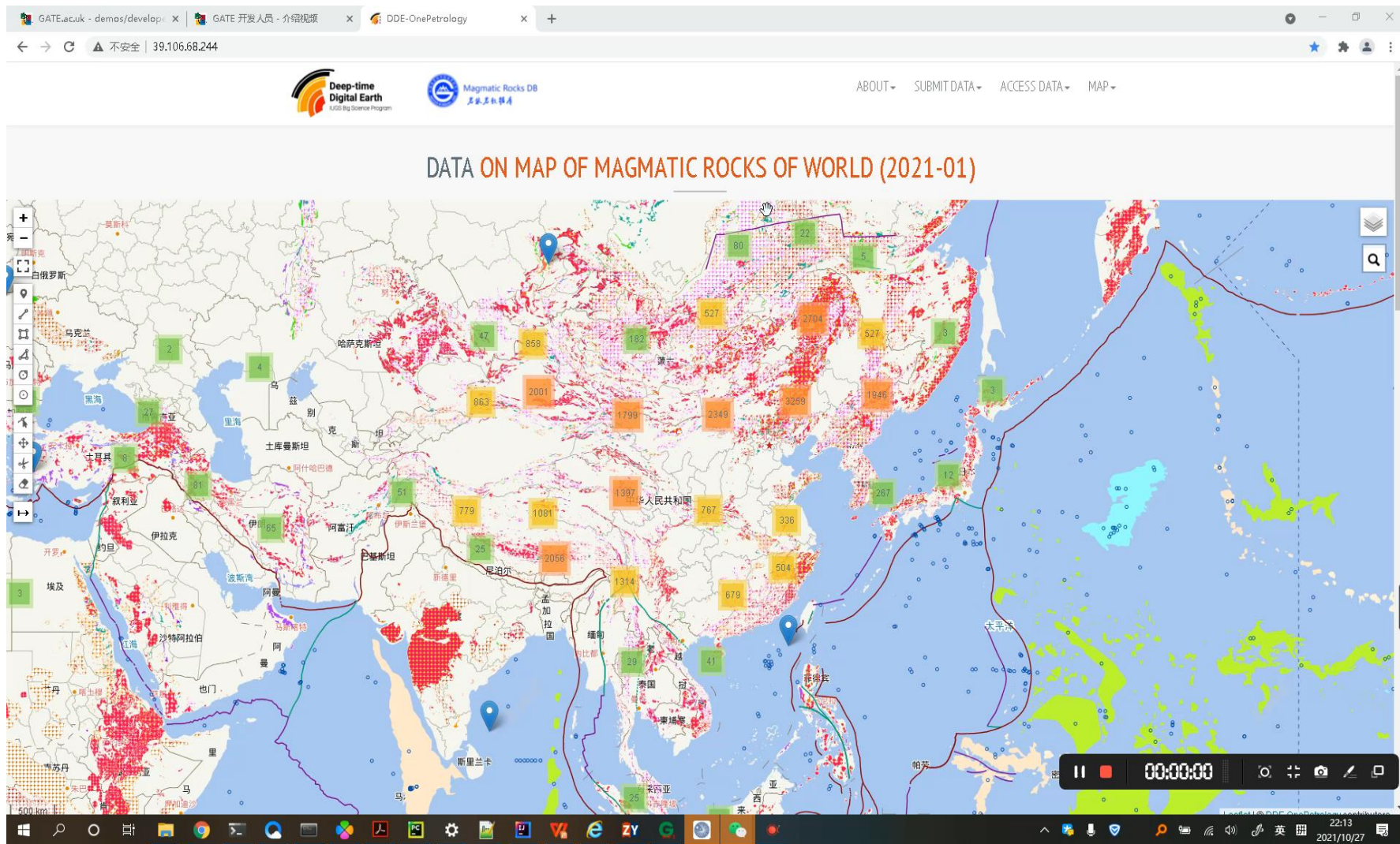
三用：  
◆ 网站提供了成果发布（2020年岩浆岩编图为底图，与高德、esri、osm等数据集叠加显示）。web mocator和wgs84两种投影方式的发布与切图。  
◆ 网站提供了数据查询与导出excel。  
◆ 提供了二次开发接口，RESTful。





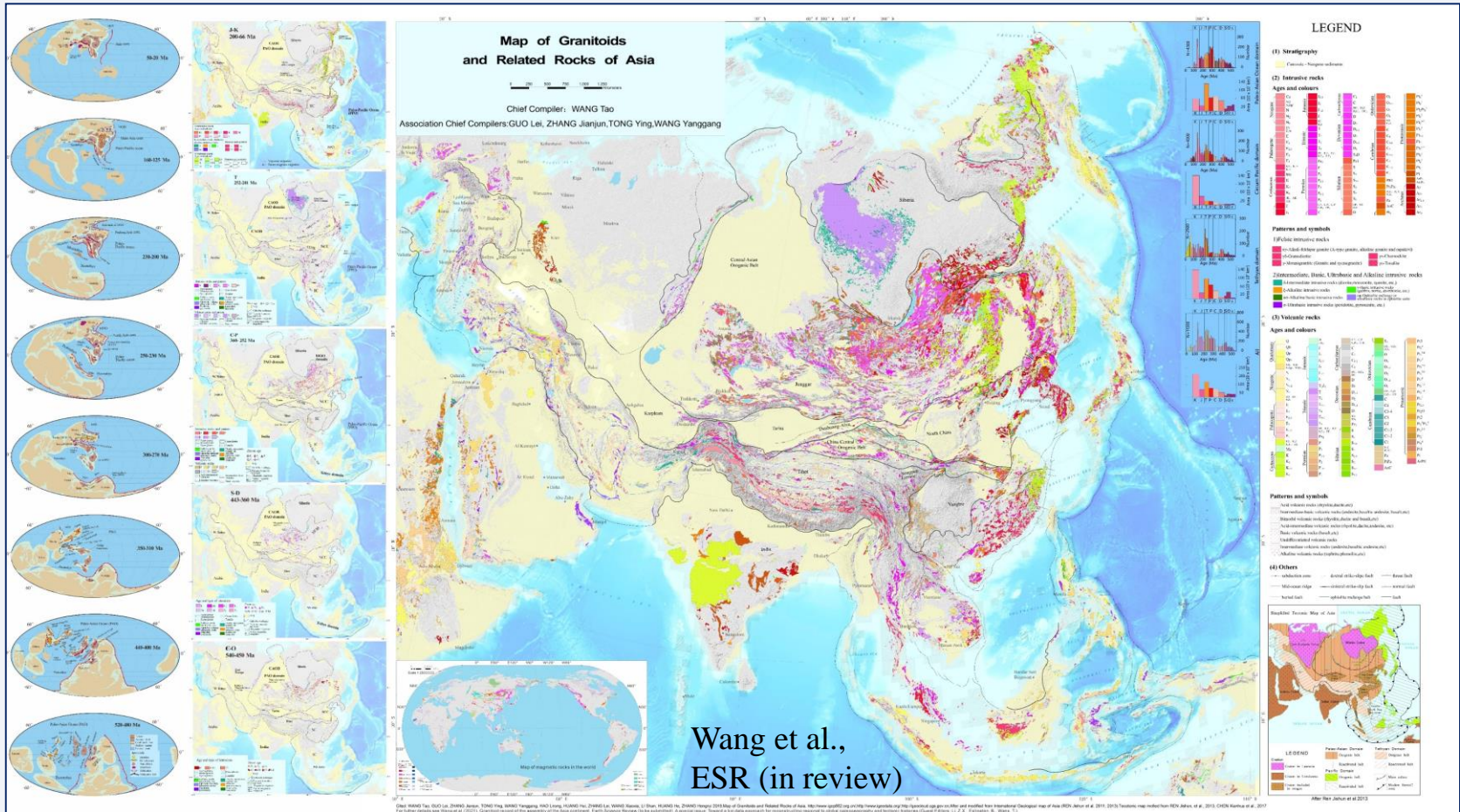
# 建库编图，揭示亚洲花岗岩演化及陆块聚合

## 初步构建岩浆岩数据库



# 建库编图，揭示亚洲花岗岩演化及陆块聚合

建库编图，年代学数据揭示亚洲岩浆演化，提出5个阶段和三种方式的陆块聚合过程 Hutton国际会议大会报告、DEEP2021 专题7 报告



To be submitted to a special issue of ESR: "Toward a big data approach for reconstructing regional to global paleogeography and tectonic histories (Guest Editors: Z. X. Li, B. Eglinton, and T. Wang)"

**Digit Mapping + big data + integration research**

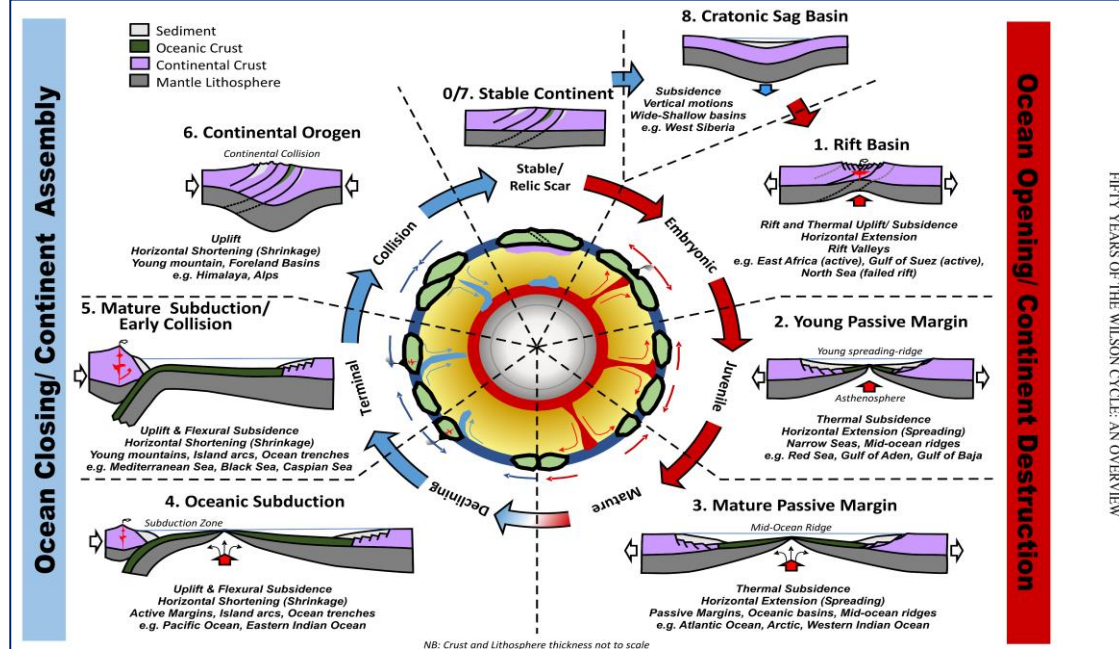
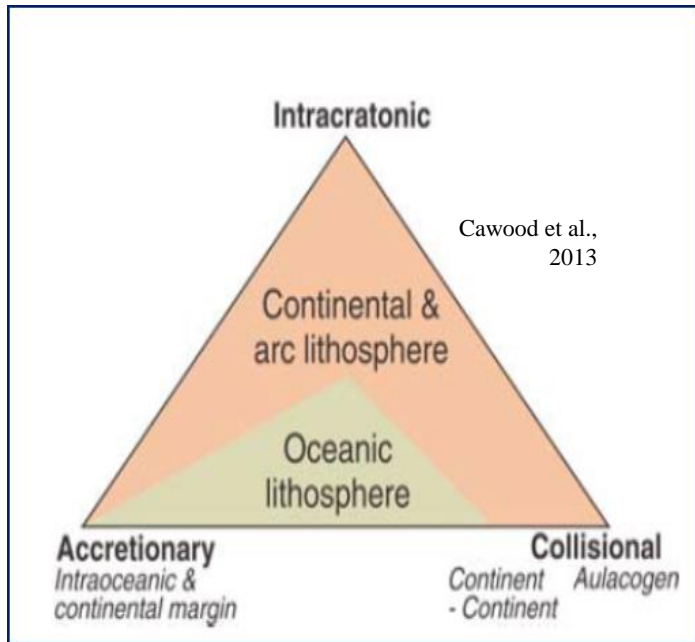


# 提出定量刻画造山带类型新标志和思路

同位素填图揭示造山带深部物资组成架构，提出定量刻画造山带类型新标志和思路，揭示造山与地壳生长关系（DEEP2021 报告）

## Questions

- ◆ How to classify and describe orogens by architecture?
- ◆ Relationships between orogenesis and crustal growth ?

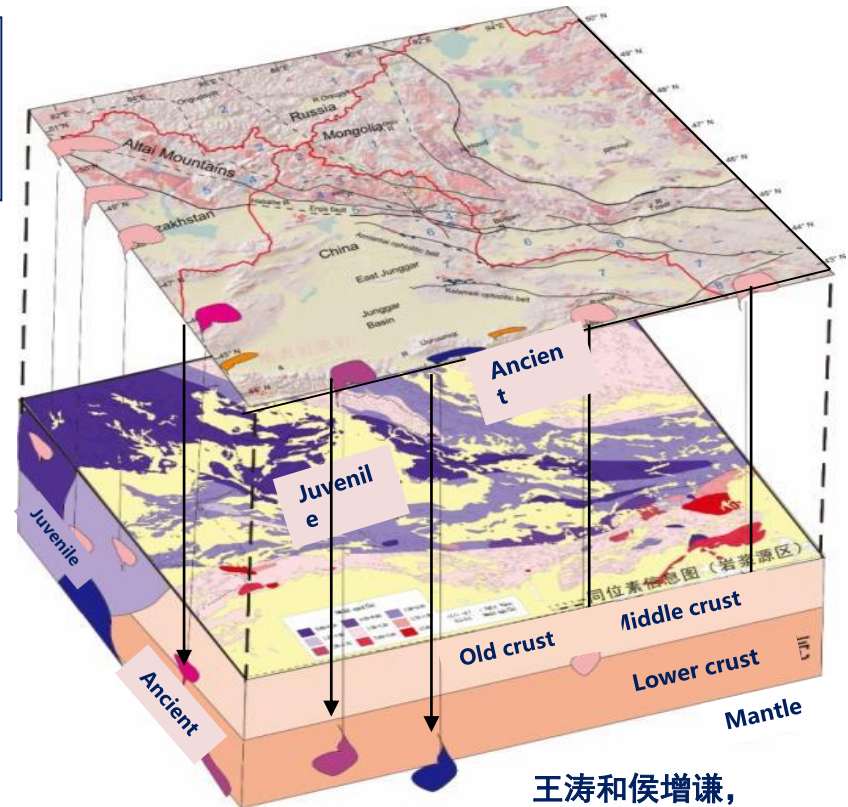
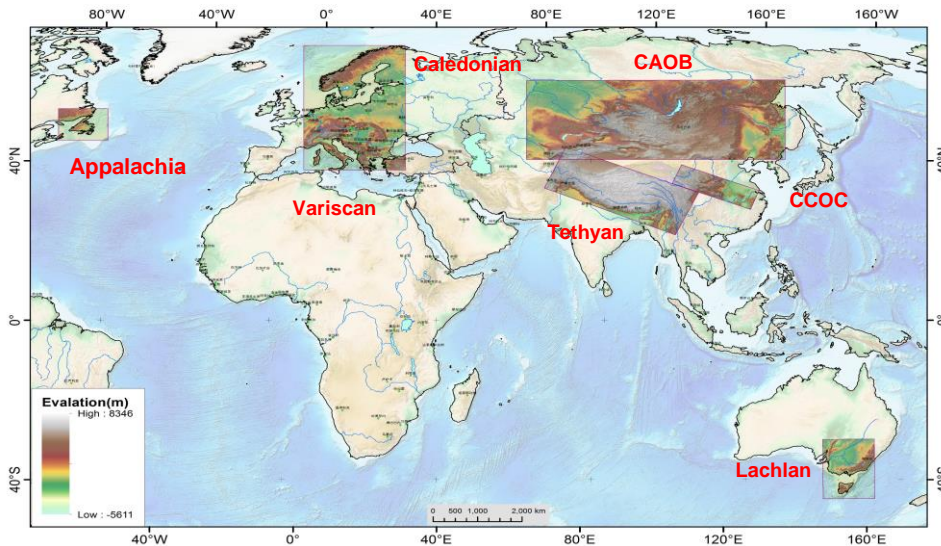


# 提出定量刻画造山带类型新标志和思路

## Approaches

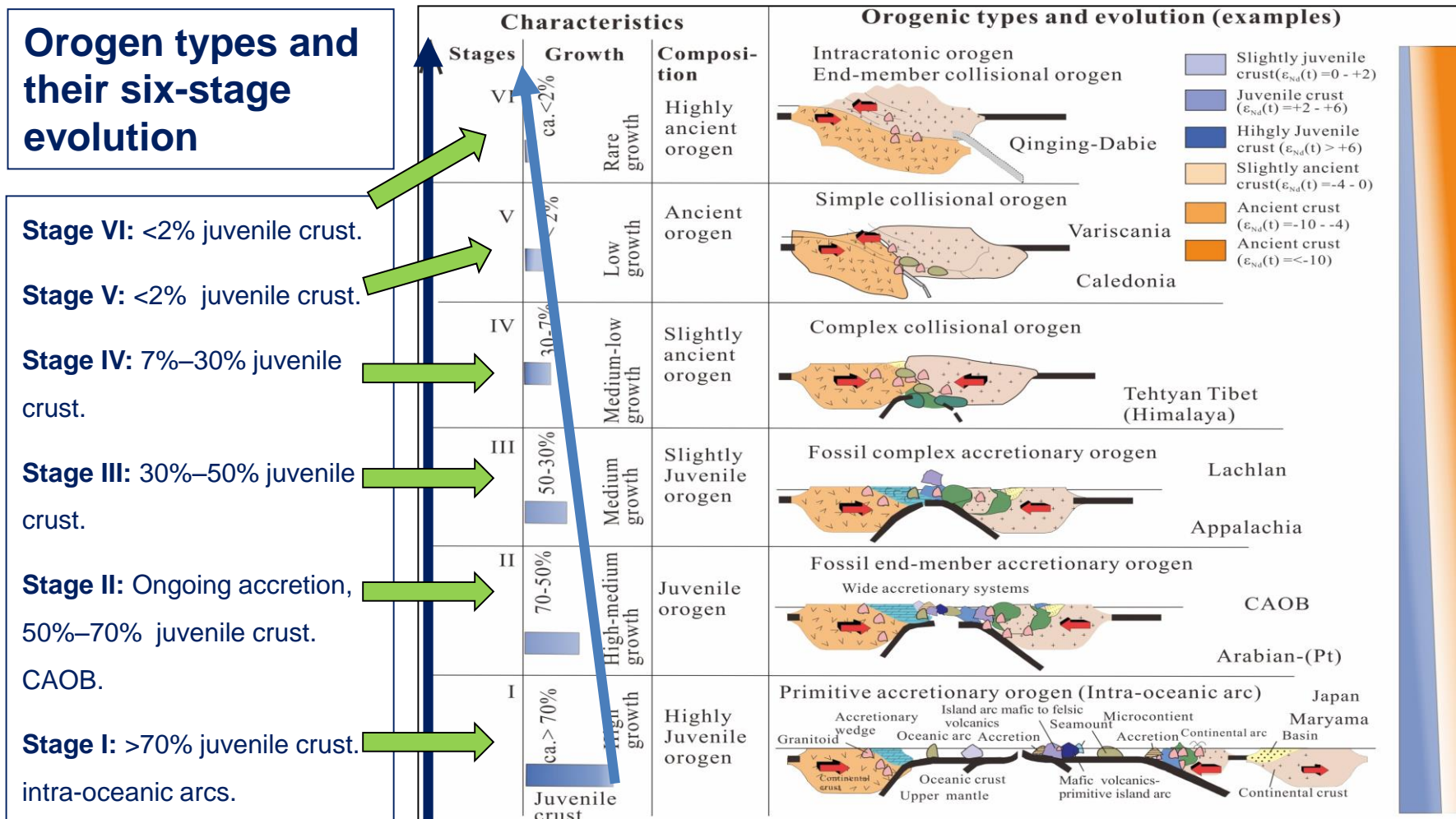
Isotopes of felsic to intermediate igneous rocks probe deep crust, similar to drilling exploration

- ◆ Isotopic (Nd) mapping
- ◆ Compare architecture of 7 orogens



王涛和侯增谦,  
2028

# 提出定量刻画造山带类型新标志和思路



➤ Nd-isotopic mapping shows that the proportions of juvenile crust decrease from accretion to collision.

➤ The architecture of crustal growth (e.g., the proportions of juvenile to reworked crust) can quantitatively characterize orogenic types and evolution in a Wilson Cycle.

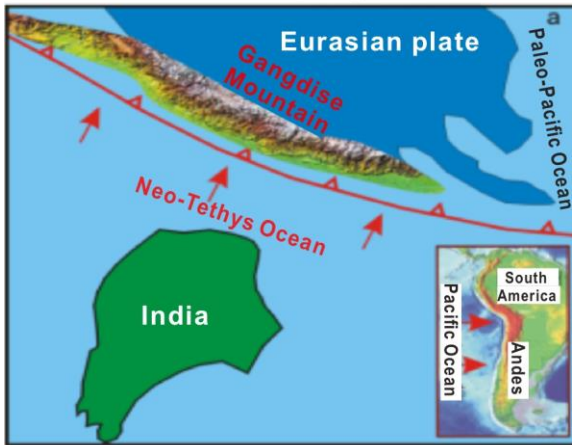
# 提出地幔通道流新模型及其成矿制约

侯增谦等, 2021

How the Tibetan Plateau grew on a large-scale is a major scientific question.

Oceanic subduction

100-65 Myr



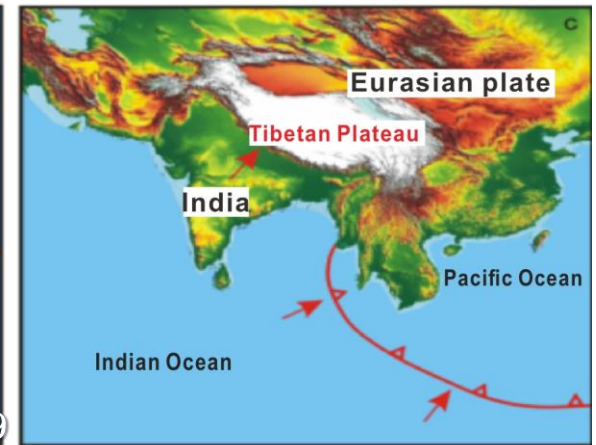
Continental collision

65-45 Myr

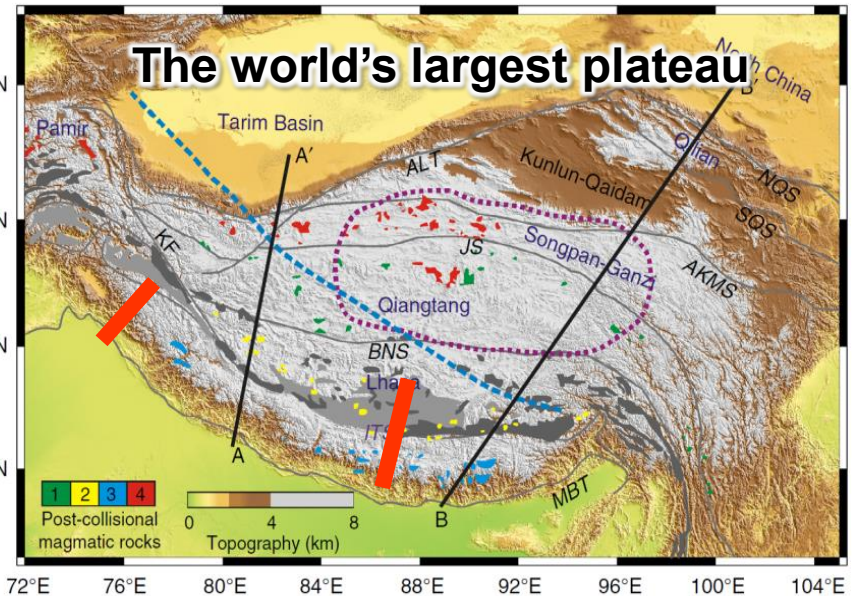
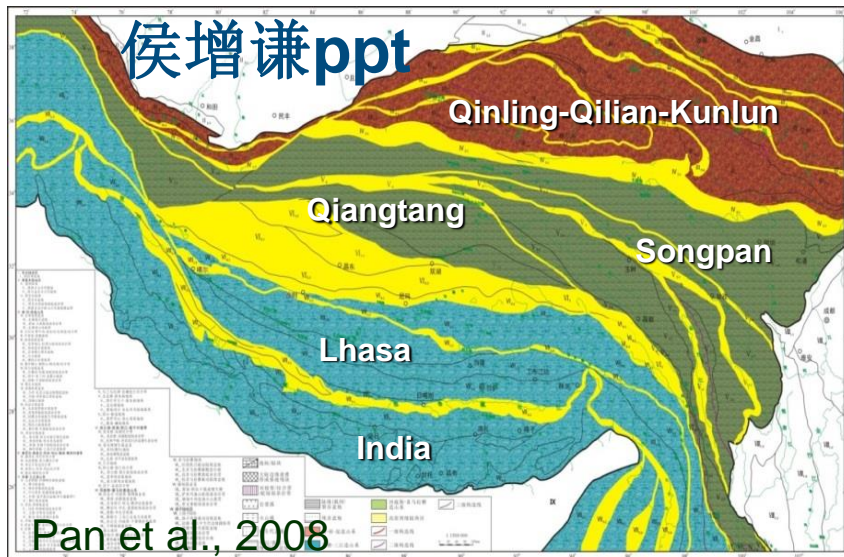


Tibetan Plateau uplift

45-0 Myr



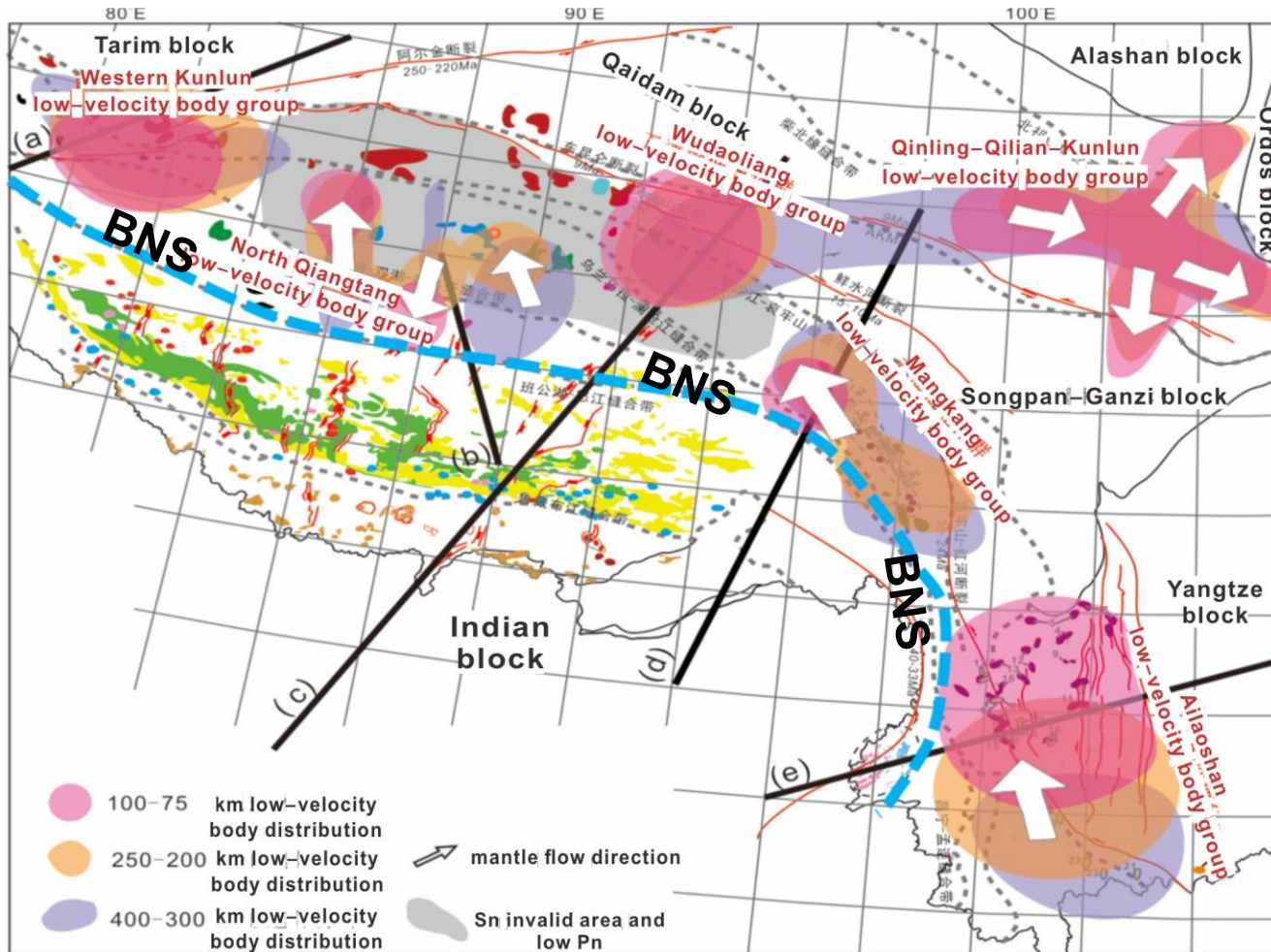
Ding et al., 2019



# 提出地幔通道流新模型及其成矿制约

## 1. Six low-velocity body groups with clustered, equidistant and discontinuous distribution

Distribution of large low-velocity anomalous bodies      Spatial development location

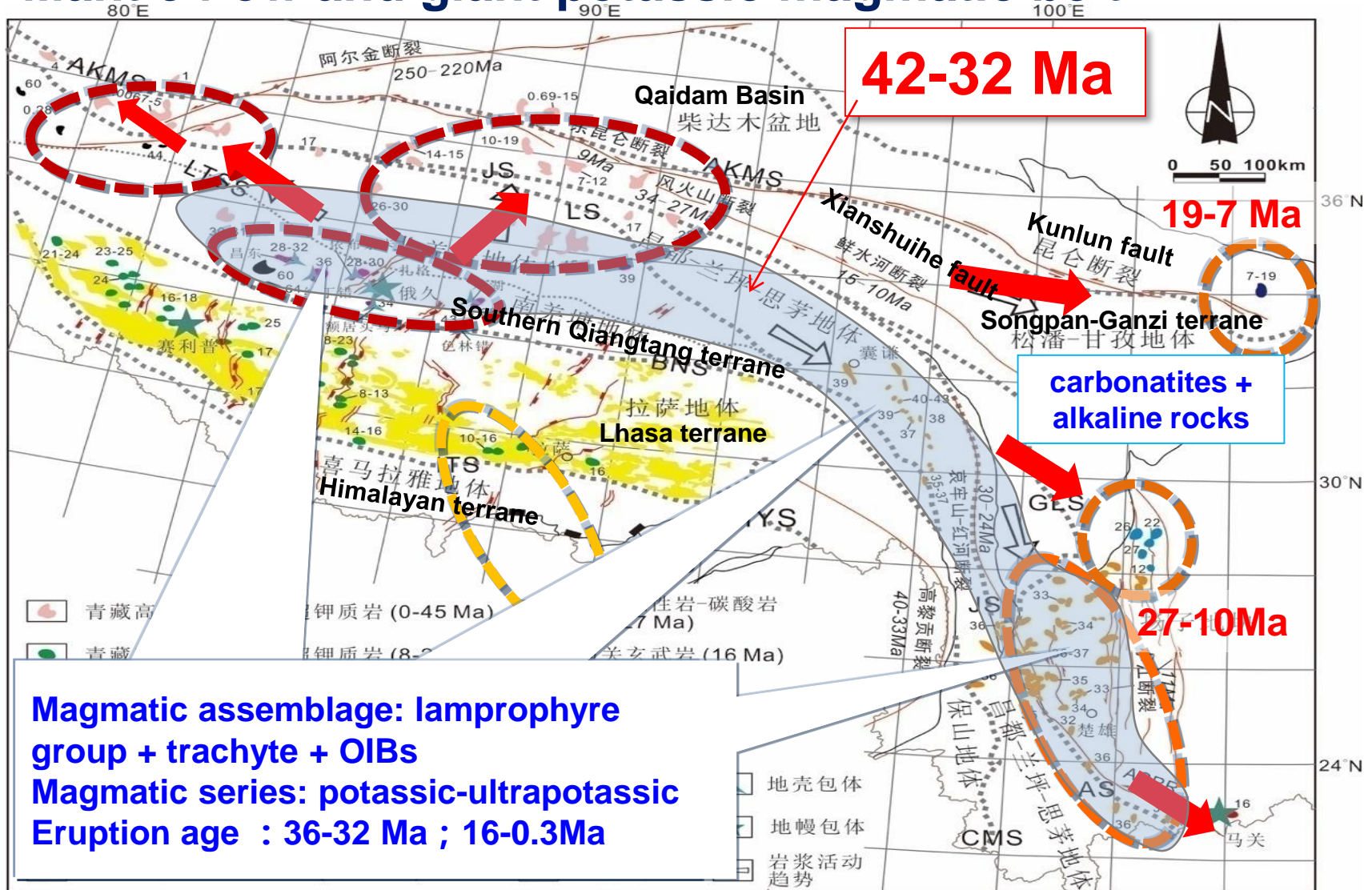


**Primary control**  
**Continental subduction front**  
 e.g. North of BNS  
**Secondary control**  
**Rigid continental margin**  
 Southern margin of Tarim, western margin of the Yangtze, Alxa / Ordos  
**Third control**  
**Lithospheric discontinuity**  
 Ancient suture zone; intersection zone of supracrustal faults; large strike slip fault zone



# 提出地幔通道流新模型及其成矿制约

## Mantle flow and giant potassic magmatic belt

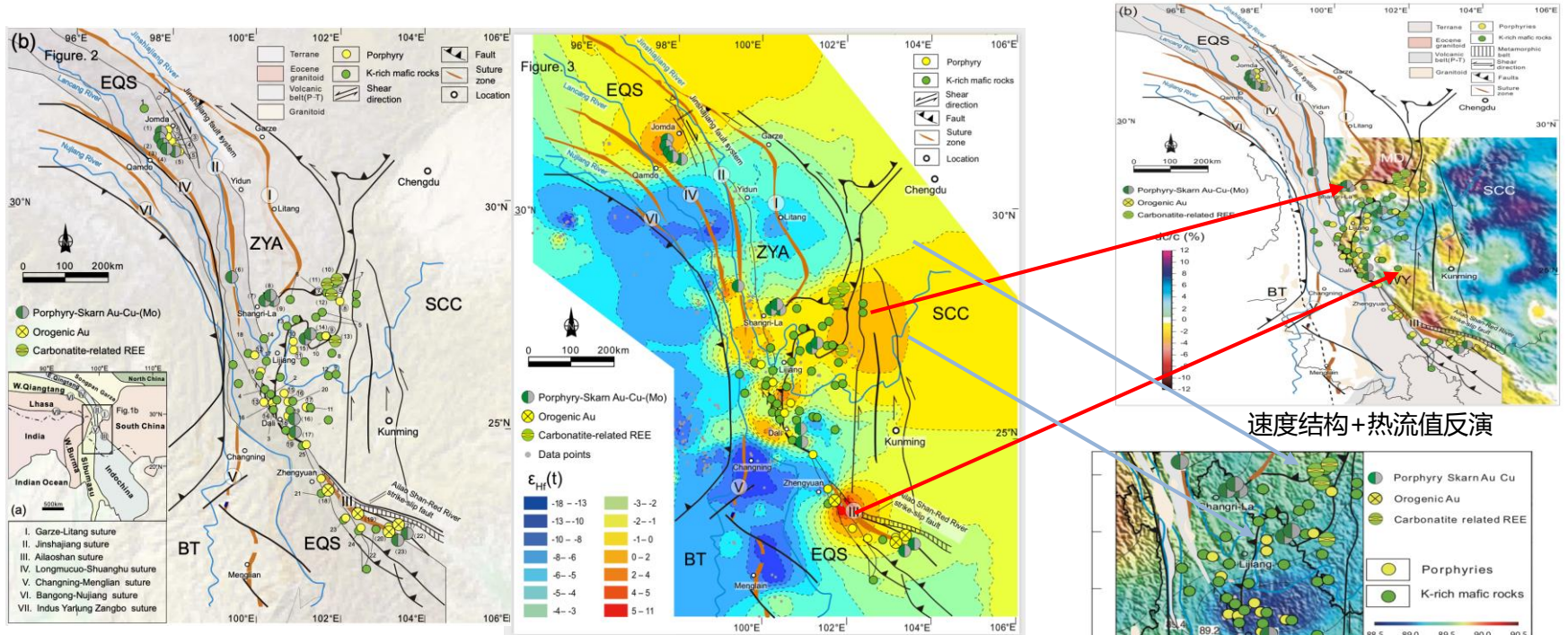


Hou et al., 2021

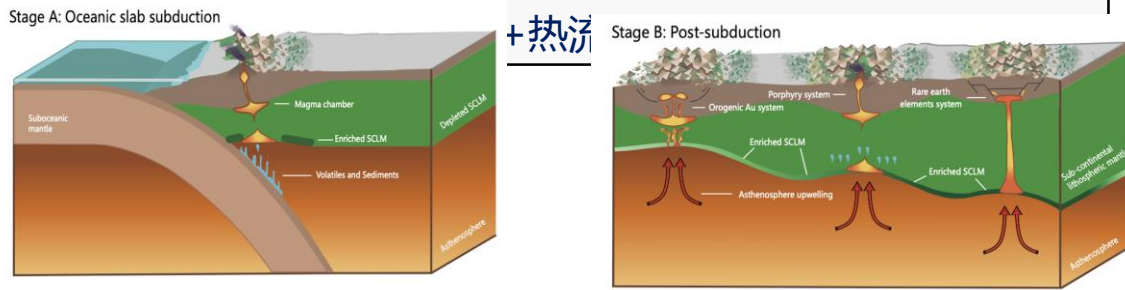


# 造山带物质架构成矿制约实例

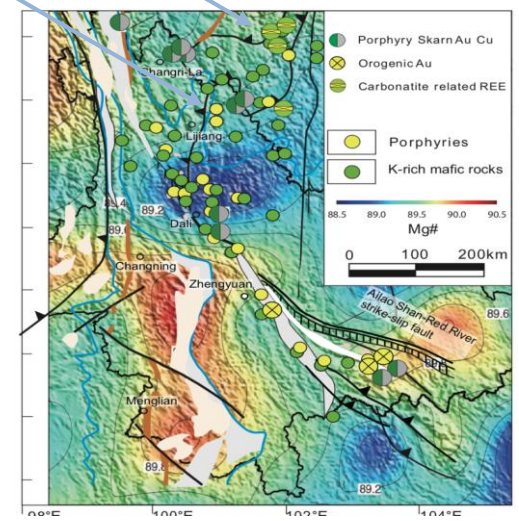
同位素填图、地球物理、数值模拟揭示出斑岩矿床都形成于新生的岩石圈区 ( Hf 正值、Mg值高、低速区域，软流圈改造区)。斑岩矿床的挥发分来自大洋俯冲，提供成矿远景区依据



速度结构+热流值反演



扬子西缘岩石圈受到软流圈物质的改造



# Working plane

**2018:**

**Website.**

**First workshop.** Pre-and post workshop training course

**2019:**

**Second workshop** Ulaanbaatar. Mongolia / Germany.

**2020 -2021:**

1. **Third workshop** during the 36<sup>th</sup> IGC, New Delhi, India.
2. 圣彼得堡工作及野外会议
3. Pub special issues

**2021:**

**Fourth workshop** in August 2020, in Irkutsk, Russia,

越南胡志明及野外会议

参与DDE, 在巴黎UNACO 做好全球岩浆岩图、岩浆岩数据库发布

**2022:**

**Final workshop** in Beijing, Pre-workshop near Beijing, Post workshop fieldwork in Yunnan



# Thank you!

Welcome [www.igcp662.orn.cn](http://www.igcp662.orn.cn)

The screenshot shows the homepage of the IGCP 662 website. At the top left is the IUGS UNESCO logo. The main header features the project title "IGCP 662 Orogenic Architecture and Crustal Growth from Accretion to Collision" and the CGS logo. A navigation bar includes links for Home, About, Members, Research, News, Maps, Download, and Contact Us. The main content area is divided into several sections: "Events" with a list of workshop activities; "IGCP 662" with sub-links for About, Publications, and Group Members; "Map and Database" with a gallery of maps; "Field Work Photos" featuring a large group photo of the first workshop and training course in Beijing, 2018, with numbered callouts (1-8) on the image; "News & reports" with a "NEW" banner and a link to the program and guide book; "Meetings" with two entries; "Recently Publications" with two references; "Photos of the Field Excursion of the First workshop" with two photos and captions; "Related Websites" listing UNESCO, IUGS, IGCP, CERCAMS, CGS, and CAGS; "Related IGCP Projects" listing IGCP 667, 648, 632, 589, 668, 649, 646, and 628; and "Maps Website" with logos for ONE, TERRA, and Earth Science & GIS.