CHINA CAVES

A history of the China Caves Project

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Abstract: The China Caves Project was initiated in 1985 by British cavers Andy Eavis and Tony Waltham in cooperation with scientists from the Institute of Karst Geology in Guilin and the Guizhou Normal University. The object was to explore and record the geomorphology and biodiversity of the vast karst regions of China, in particular by the exploration of its caves, most of which were virtually untouched by man at the start of the Project. Since the first expedition to Guizhou and Guangxi provinces and excluding reconnaissance trips, around 27 expeditions have been held over 28 years (together with several other spin-off expeditions during the same period), most focussing on Guangxi and Guizhou and other nearby provinces in southern China. The multi-national teams on these expeditions have discovered at least 117 caves of over 3000m in length and surveyed over 420km of previously unexplored underground passages and shafts (high quality surveys being one of the hall-marks of the Project). They have also discovered a number of previously unknown cave-dwelling species of fauna. The geomorphological studies of the teams have contributed significantly to the development of current theories of speleogenesis relating to China karst, including Professor Zhu Xuewen's classic work on tiankeng development, and have also stimulated a robust and extensive geomorphological literature. In recent years the expeditions have often focussed on providing data on underground and surface karst features to allow designation of given areas as national parks or geo-parks, thus supporting the responsible conservation of these areas. Prominent among the successes of this enduring Project has been the development of strong, lasting, personal and professional links between cavers and scientists from China and from not only the UK but also Ireland, Australia, Hungary, France, Japan, Poland, USA, Italy, New Zealand, Slovenia, Switzerland, Croatia and elsewhere.

Genesis of the Project

Throughout the three decades that followed the end of the Second World War, the magnificent karst scenery of China was largely hidden from Western visitors. Only scientists from the communist countries could visit the region; notable among them were Dénes Balázs, the great karst traveller from Hungary, and the Czechoslovakian Jan Šilar, who each visited a number of China's more accessible caves during the 1950s (Balázs, 1960; Šilar, 1965). During the late 1970s the "bamboo curtain" began to yield a little, and it was a Yorkshireman, Joe Jennings, who was the first Western cave scientist to visit China. By then he was resident in Australia and was one of a group from the Australian National University that was invited to visit China during 1975 (Jennings, 1976; Hope, 1976).

Britain's karst links with China began to develop in 1978, when Marjorie Sweeting of Oxford University visited China's southern provinces with a team sponsored by the Royal Society, and was able to confirm that the photographs and paintings of China's spectacular limestone landscape to be seen in the West were not exaggerated (Sweeting, 1978). The sequel to that visit was a Chinese karst scientist coming to Britain; Song Linhua, from Academia Sinica in Beijing, was the man selected by the Chinese authorities. In summer 1980 he was sent to Britain for 2 years, spending most of his time based at the University of East Anglia, where he was mentored by Tim Atkinson. In those days, air tickets from China were particularly expensive, and Song was put on a train in Beijing for the overland journey of eight days to reach Norwich. During his stay, Song became a great friend of many British cavers, and was always known by his family name, Song, as is the convention in China.

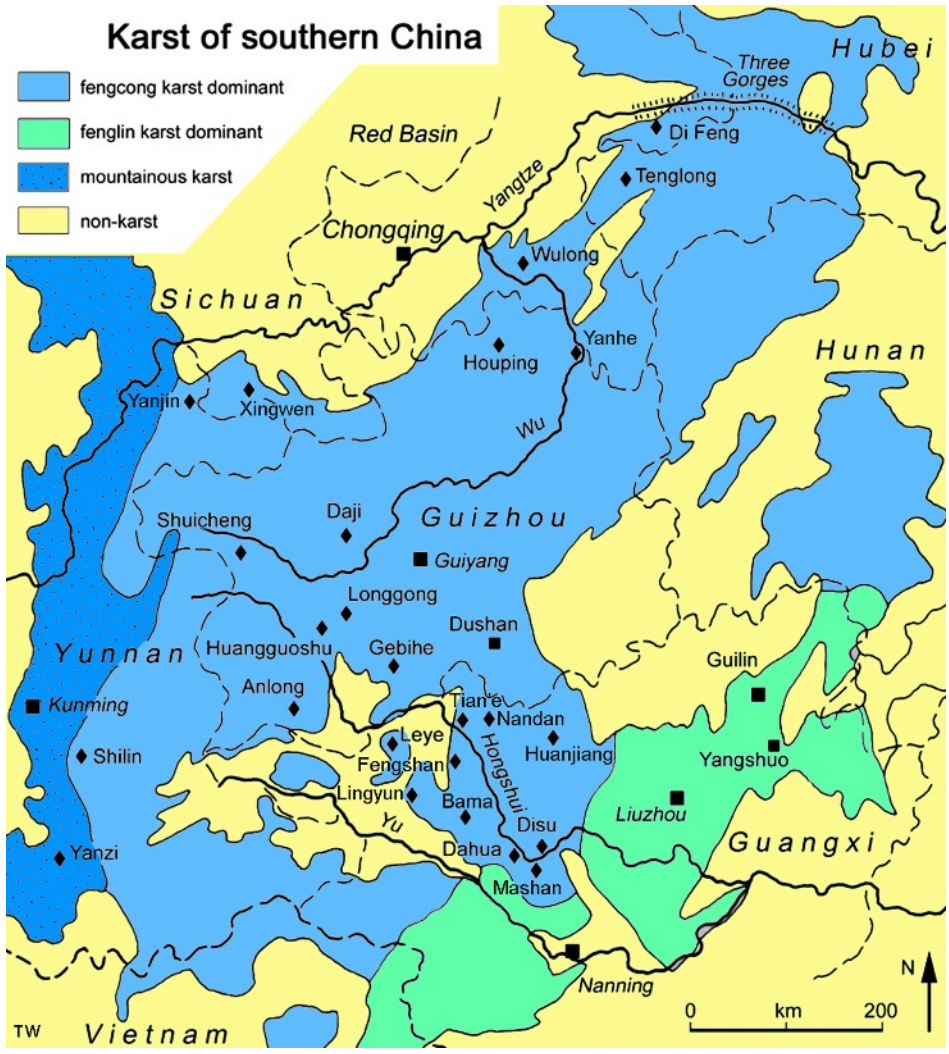
In 1982, two British cavers, Andy Eavis and Tony Waltham, made good use of their connections in Hong Kong to join a tour group for a brief visit to Guilin in the Guangxi Province of China. They were not disappointed by the magnificent fenglin (tower) karst landscapes around Guilin and down the Li River, but had no chance to establish any additional useful contacts. Back in England they continued to be rather exasperated because Song Linhua had not been given appropriate authority from Beijing to arrange any cave exploration visits to China. However, Song was able to provide details of several useful contacts. Additionally, tourist visas for China also first became generally available in Britain during the early part of the 1980s.

So in 1984, driven largely by sheer desperation, Tony Waltham embarked upon a one-way flight to Hong Kong, and travelled through China by train (and then returned home by travelling across Russia, also by rail). While in China he made contact with Professor Yuan Daoxian at the Karst Institute in Guilin and with Professor Yang Mingde at the Guizhou Normal University in Guiyang. While in Beijing, where he stayed with his friend Song, Tony also made contact with Professor Lu Yaoru at Academia Sinica (Waltham, 1984).

Later in the summer of 1984, Tim Atkinson, Song's former mentor, undertook a return visit to the karst of China. All in all, 1984 proved to be a critical year, because Yuan Daoxian also visited Marjorie Sweeting in England, where he met Andy Eavis and invited him to lead a team of cavers to Guilin to explore and survey some of the nearby caves (where local people had never ventured beyond the entrance zones).

Tony Waltham returned to England with a similar invitation, from Yang Mingde, to lead a team to explore caves in Guizhou

Outline map of China with its limestone areas shown darker. Not all of these dark areas are exclusively karst; because the map is highly generalized at this scale they include large areas that comprise impure and discontinuous limestone sequences in which karst is absent or developed only on a minimal scale. This is particularly true of the extensive outcrops in Tibet, in the west (modified from Zhang, 2010).



The main karst region in southern China showing the locations visited by the China Caves Project expeditions. As indicated in the key, the varying shading and the stippled ornament provide a generalized indication of areas that are dominated by either fengcong (cone) karst, fenglin (tower) karst or mountainous karst. See Waltham (2008) for discussion of the approximate equivalences of Chinese and Western terminology. (Map courtesy of Tony Waltham)

Consequently the ***China Caves 1985*** expedition enjoyed 6 weeks in the field, in the karst areas of two provinces, Guangxi and Guizhou, and the expedition members became the first Western cavers to explore underground in the fabled land that was China (Waltham, 1986). In Guizhou (visited by 4 English cavers prior to joining another 6 Britons to form a larger group in Guangxi), three regions were explored by the expedition. These were Longtan, which is about 70km northwest of the provincial capital Guiyang; the Shuicheng karst, much farther to the west (about 230km from the capital), which is cut by a series of major valleys including those of the Fala and San Cha rivers; and Anshun, which lies between Shuicheng and Guiyang and has a surface topography dominated by broad poljes and low karst cones.

Longtan was a region of shafts, one of which (Longtan Dong) was bottomed by the team in a single drop of 275m. Near Anshun the Longgong karst provided the expedition with 3 caves all longer than 1km, including Xian Ren Dong, a deep phreatic system with a switchback profile typical of both the ancient and modern development of the area. Northwest of Shuicheng the San Cha He (river) passes through a deep gorge and into a cave with an entrance nearly 200m high and wide, which was surveyed (along with other caves in the area) for 1.1km to its resurgence.

In Guangxi the team of 10 focused on the remarkable fenglin and fengcong topography near Guilin, and caved in three separate areas: the Guanyan Cave System near the villages of Nanxu and Caoping about 30km southeast of Guilin city; the Xingping area, which is another 20km farther south; and the Haiyang area about 25km east of Guilin. Three expedition members also paid a short visit to the west of the province, examining various hydrological sites in the Tisu karst of Duan County, north of Nanning, the provincial capital city.

Well over 20 caves were explored in the province, of which 14 were surveyed, mostly to BCRA Grade 5b or 5c levels of accuracy and detail. The outstanding level of surveying carried out in this period (with a total length of some 27km) was one of the expedition's main achievements and set the standard for all subsequent China Caves Project expeditions. Among the caves explored were Guan Yan, Xiaoheli Yan, Da Yan Chong and Chuan Yan, which together comprise the main components of the Guanyan Cave System with about 11.4km of surveyed passages. In Haiyang the Hauzhu Yan Cave System, with its streams, sumps and large phreatic passages, was one of the highlights, as was Shibanqiao Dong, which has two entrances, splendid stream passages and a middle section left to await another group of cavers prepared for a very long swim (too often on China Caves Project expeditions the teams have run out of time to complete the exploration of a cave) (Smart *et al.,* 1986; Waltham, 1986).

In terms of its speleological achievements the 1985 expedition was outstanding, but equally important were the links forged by the team and their Chinese colleagues, not only scientists and government officials but also numerous local people met in the towns and countryside. On both sides there was an over-riding enthusiasm to continue and to repeat the process, and so the concept of the China Caves Project was born.

Since then the Project has developed into a sustained, informal programme of cooperation between a variable team of British cavers (and in recent years cavers from many other nations), under the auspices of the British Cave Research Association and various Chinese research institutions, in particular the Institute of Karst Geology in Guilin, a branch of the Chinese Academy of Geological Sciences. The objectives of the Project have been unchanged from the start; to obtain both geological and ecological knowledge of China's karst regions, in particular by the exploration of its caves.

Over the years, the bulk of the costs of the expeditions has been funded by the cavers themselves, only too willing to use their savings to enjoy unbelievable underground experiences. Nevertheless, sponsorship from various charities and commercial organisations has been a valuable feature in supporting the success of many of the ventures. Prominent among these is continued financial support from the UK Ghar Parau Foundation, which has had strong links with the Project since its early days, particularly in helping with the costs of producing post-expedition reports.

Other public and commercial bodies that have assisted the Project over the years include the Royal Geographical Society, the Royal Society, the Sports Council of Great Britain, the Mount Everest Foundation and several caving and outdoor equipment suppliers.

In recent years expeditions have also been funded by some local authorities in the regions explored; this is not necessarily an entirely altruistic activity as the Project's discoveries have commonly had an important impact in stimulating tourism and hence local economic growth.

The expeditions

All China Caves Project expeditions are summarized in chronological order in the following table.

Details may be sparse in the few instances where expedition reports are not available, and for some of the early years of the Project, memories of which are now fading.

Date	Expedition name	Province(s) visited	Region(s) or County(ies) visited	Notes	Number of overseas (non-Chinese) cavers	References
1982	Exploratory trip	Guangxi		"Tourist" trip by Andy Eavis and Tony Waltham, which prepared the ground for the Project	2	
1984		Guangxi and Guizhou		Solo visit by Tony Waltham to plan the 1985 Expedition	1	
1985	The First Anglo-Chinese Cave Project	Guizhou and Guangxi	Guiyang Prefecture, Anshun Prefecture, Shuicheng County (Guizhou); Guilin Prefecture [Yangshuo and Nanxu] and Duan County (Guangxi);	The "launch" expedition; a "double" expedition to 2 provinces. Four cavers first visited Guizhou before joining 6 others in Guangxi. Just 3 team members visited Duan County. Some cave diving was carried out.	4 (Guizhou); 10 (Guangxi)	Smart *et al.*, 1986; Waltham 1986
Winter 1987–1988	China Caves Project 1987–1988: The Anglo-Chinese Project in Caves of South China	Guizhou (1987) and Guangxi (1988)	Shuicheng County (Guizhou); Bama, Duan and Mashan counties (Guangxi)	Another "double" expedition to two provinces. The Duan visit involved cave diving.	9 (Guizhou); 16 (Guangxi)	Fogg and Fogg, 1988; Eavis, 1990; Gill *et al.*, 1990; Fogg, 1990; Parker and Newman, 1990
1988	British Speleological Expedition to China	Guizhou	Anlong County		16 (largely from Wessex Caving Club)	Dunton and Laverty, 1993; Lewis, 1988
Mar–Apr 1989	Guizhou 89 Expedition	Guizhou	Anlong County		9	Dunton, 1990; Dunton and Laverty, 1993
1989	Bama 1989	Guangxi	Bama County; Fengshan County	The expedition was based in Yueli village, Bama County, and from there explored in both Bama and Fengshan counties.	10	Waltham and Willis, 1993
Spring 1991	Mengzi 1991	Yunnan	Mengzi County; Luxi County	Involved some cave diving.	11	Waltham and Willis, 1993
1992	Xingwen 1992	Sichuan and Tibet	Xingwen (Sichuan); Central Tibet	Another "double" expedition. One of the main objectives of the expedition in Xingwen was the making of a film.	12 (Sichuan); 4 (Tibet)	Waltham *et al.*, 1993; Waltham and Willis, 1993; Waltham, 1993
1994	The Yangtzi Gorges Expedition 1994	Chongqing Municipality (Sichuan Province at time of expedition)	Fengjie County (Xin Long, also called Xing Long); Wulong County (Jiang Kou); Ba County; Fulong District; Tongjin County	A reconnaissance expedition visiting several areas in the Municipality.	9	Eavis, 1995; Senior, 1995
1995		Chongqing Municipality (Sichuan Province at the time)	Fengjie County; Wulong County	Reconnaissance by A Eavis and B Judd to set up the Yangtze Caves '96 expedition	2	
Aug–Sep 1996	Yangtze Caves '96	Chongqing Municipality (Sichuan Province at time of expedition)	Fengjie County (Xin Long); Wulong County (Jiang Kou). Also Hong Chi Ba region	The "follow-up" to the 1994 expedition. Essentially two separate explorations by different groups. Hong Chi Ba was visited by 5 members for 3 days	22 (Xin Long 10; Jiang Kou 12)	Lovett and Garman, 1996
Dec 1997		Chongqing Municipality	Fengjie County; Nanchuan District	Expedition spent 8 days in Xin Long (very wet), followed by a few days in Nanchuan (very cold)	?	
Oct 1998		Guangxi	Bama County	Reconnaissance by A Eavis and K Senior with Professor Zhu and Zhang Hai	2	
1999		Guangxi	Lingyun County	Reconnaissance trip by K and A Senior	2	
Oct 1999		Chongqing Municipality	Fengjie County	Time spent mainly at the "Great Crack"	10	
Oct 2000	Guangxi Caves 2000 Expedition	Guangxi	Lingyun County; Leye County	Two areas visited. Joint expedition with the Yorkshire Ramblers Club	16	Campion, 2001a; 2001b; 2001c
2001		Guangxi	Leye County		"Small team"	Campion, 2003
Mar–Apr 2002	The Hidden River Expedition 2002	Guangxi	Leye County		21	Alker, 2003; Campion, 2003a; 2004a; 2004b
June 2002	The Great Crack Expedition	Chongqing Municipality	Fengjie County; Wulong County	Main objective was to link the Great Crack and the Great Doline via Di Feng	?	
Aug–Sept 2002		Chongqing Municipality	Wulong County	China Caves Project/Hong Meigui joint expedition	?	
Sept–Dec 2002	Qikeng Dong 2002 Expedition	Chongqing Municipality	Wulong County	Hong Meigui/China Caves Project joint expedition	?	
Sept–Oct 2003	Tian Xing China 2003 (also Dong Ba 2003 Expedition)	Chongqing Municipality	Wulong County	Primarily a Hong Meigui expedition with China Caves Project involvement	9	Drake, 2005
Feb–Mar 2004	Tian'e and Fengshan 2004 (17th CCP Expedition)	Guangxi	Tian'e County; Fengshan County		6	Bensley *et al.*, 2005
Oct–Nov 2004	Guangxi 2004 (18th CCP Expedition)	Guangxi	Fengshan County		11	Bensley *et al.*, 2005; Campion, 2008
Oct–Nov 2005	Guangxi 2005 (19th CCP Expedition)	Guangxi	Bama County; Fengshan County		12	Bensley *et al.*, 2007; Campion 2006; 2008
Oct–Nov 2006	Lichuan 2006 (20th CCP Expedition)	Hubei and Jiangxi	Lichuan and Jianshi Counties (Hubei); Wannian County (Jiangxi)	Only a few of the team continued from Hubei to visit Jiangxi	17	Bensley *et al.*, 2008; Campion, 2011
Oct–Nov 2008	Yanhe 2008 (21st CCP Expedition)	Guizhou	Yanhe County		12	Bensley *et al*, 2010
Oct–Nov 2009	Huanjiang 2009 (22nd CCP Expedition)	Guangxi	Huanjiang County		10	Bensley *et al.*, 2012
Oct–Nov 2010	Guangxi 2010 (23rd CCP Expedition)	Guangxi	Leye County; Fengshan County		12	Harrison, 2011; Bensley and Harrison, 2012
Spring 2012	Guangxi 2012	Guangxi	Fengshan County	Expedition to support National Geographic and ITV Anglia make a film about the Guangxi karst	2	
Mar 2013	Ma Wang Dong–Jiang Zhou link expedition	Guangxi	Fengshan County	Expedition organized by Jean Bottazzi and Fengshan County officials	4	
Aug 2013		Guangxi		Cave survey (laser scanning) trials by A Eavis	1	
Nov 2013	Yanjin 2013	Yunnan	Yanjin County		5	

After the **1985** expedition plans were soon being put together by Andy Eavis for a return to southern China and, in the winter of **1987–1988**, British cavers revisited both Guizhou and Guangxi provinces (Fogg and Fogg, 1988; Eavis, 1990). Nine cavers first went back to the Shuicheng area of the western Guizhou plateau to follow up the 1985 findings. Their main focus was on the Fala–Pan Long–Hou Chang drainage system, where several caves were explored (Fogg and Fogg, 1988). At the end of this time, 16 Project members returned to Guangxi where three counties were visited. The first of these was Duan, nearly 300km southwest of Guilin, where a magnificent area of karst provides the catchment for the Tisu River, one of the wonders of the hydrological world (Parker and Newman, 1990). Exploration in this area was mainly by diving, including 5 dives to more than 75m depth, in shafts in which visibility was commonly extremely limited. Nearby Mashan County was also visited, and two complex cave systems were surveyed to a total length of more than 14km (Fogg, 1990). The final county visited by the expedition was Bama, where several caves in the Pan Yang drainage system, north of Poyue village in the northwest of the county, were surveyed (Gill *et al*., 1990).

China Caves Project was first used informally as a title during the 1987 Expedition. In **1988** and **1989**, operating partly under this new generic branding, British expeditions returned to Guizhou, and were referred to specifically as the ***British Speleological Expedition to China 1988*** and the ***Guizhou 89 Expedition***.

Both expeditions were based in Doshan in Anlong County, about 220km southwest of Guiyang, the provincial capital city, and the team explored a relatively small number of large relict passages on a northward-sloping limestone plateau (Dunton and Laverty, 1993; Lewis, 1988).

It was clear from the 1987–1988 expedition that Bama County had much more to offer in terms of exciting caving in large systems, and so a team returned in **1989**, establishing a base in Yueli village in the northwest of the county. From there they explored caves in both Bama and Fengshan, spending most of the time in four cave systems easily reached from the village. These were Gantuan Dong and Ma Wang Dong in Fengshan to the west of Yueli, and to the south and east, a sequence of caves in a fracture zone and Feng Dong. Between them, the 1988 and 1989 expeditions based in Bama mapped more than 50km in the two counties, many of these kilometres being in enormous caves decorated with massive stalagmites (Waltham and Willis, 1993).

During the spring of **1991** ten British cavers, together with Chinese colleagues, explored the karst of Mengzi County, southern Yunnan Province, just 50km north of the border between China and Vietnam. Several caves on the fengcong (cone karst) plateau near Caoba village were investigated, with some explorations involving cave diving. A brief visit was also made to Luxi County, north of Mengzi, where cave diving explorations were again undertaken (Waltham and Willis, 1993). In **1992** the China Caves Project went to the spectacular karst formed on a limestone escarpment at Xingwen in Sichuan Province, finding the area to be a textbook example of karst development within a massive dipping limestone. They found a series of caves with clearly displayed patterns of development and they also studied the pollution problems associated with the local sulphur extraction industry (Waltham *et al*., 1993; Waltham and Willis, 1993). One of the expedition's main objectives was to support the production of a film by Sid Perou and others.

Prior to joining the larger team in Xingwen, four of the British cavers joined two colleagues from the Karst Institute to make a brief survey of the limestone of the Tibetan Plateau. Here the extent of cave development proved to be disappointing, because of limited dissolutional activity on the limestones resulting from low rainfall, few fractures in the plastically deformed rock, and the lack of streams on the high limestone outcrops (Waltham and Willis, 1993; Waltham, 1993).

In **1994** the Project (operating under the title ***The 1994 Yangtze Gorges Expedition***) went to Chongqing Municipality, then part of Sichuan Province (Senior, 1995; Eavis, 1995). This was a reconnaissance expedition, aiming to visit several areas in the region but, in the event, staying in two of them for sufficient time to make some detailed studies. These were around the village of Xin Long, 35km south of Fengjie city which is 300km east of Chongqing, the capital of the municipality, and at Jiang Kou which is near Wulong city, again to the east of Chongqing. Shorter visits were made to Ba County (Xian) and to the Fulong region, both closer to Chongqing. Many caves were assessed, with more than 20 being wholly or partially surveyed, and a number were earmarked for more extensive studies by a later expedition. Prominent among those surveyed were the cave systems under and near the massive Xiaozhai Tiankeng at Xin Long, which might rank as the largest tiankeng in the world (Zhu and Chen, 2005), and the shafts of Qikeng Dong and Dongba Dong in Wulong County, now known to be entrances to the extensive Tianxing Cave System, the deepest in China (Wade, 2007).

Chongqing was revisited briefly in **1995** by Andy Eavis and Brian Judd to set up a large expedition for the following year. In **1996** two independent groups re-examined two of the geographically separate areas visited in 1994 and 1995: Xin (or Xing) Long and Jiang Kou. The teams were inhibited by a lack of vertical caving gear (stuck in Hong Kong docks for the duration of the expedition!) and by abnormally wet weather. Nevertheless, progress was made in increasing knowledge of the geomorphology and hydrology of both areas. Beneath Xiaozhai Tiankeng little progress could be made because of the volume of water, but Tau Yuan He Dong was explored further than in 1994, and the bottom of a cave that had been noted and named the *Green Eyed Monster Cave* in 1994 was reached after descents totalling more than 200m. Many shafts were discovered and descended in Jiang Kou, as far as the restricted amounts of gear would allow. Prior to the main expedition five members of the Jiang Kou team also reconnoitred another area of the province, called Hong Chi Ba, where two deep shafts were partially descended and noted for future attention (Lovett and Garman, 1996).

In **1997** the China Caves Project was back in Xin Long, and specifically to *The Great Crack*, a 5.5km-long gorge with sheer, 200m-high walls, that leads down to the Di Feng sink. Unfortunately the weather was too wet to make very significant progress, and after 8 days the team moved on to the Nanchuan District (another part of the Chongqing Municipality) for a few days in the caves on Yingfo Mountain in very cold weather.

October 1998 saw Andy Eavis and Kevin Senior back in China for a brief reconnaissance, with Professor Zhu, of Bama County in Guangxi, following which Andy presented a lecture on the China Caves Project to the Royal Geographical Society in Hong Kong.

In **October 1999** an expedition comprising 10 western cavers returned to Xin Long in Chongqing Municipality to tackle *The Great Crack* again. This was a very tough trip; the team discovered that bolts previously placed in 1997 had been sheared off by the force of floodwater, leaving only stubs of stainless steel visible in the limestone. Nevertheless, in 4 weeks in the field, the "surface section" of *The Great Crack* was explored for the first time, with surveys totalling more than 10km completed.

The **2000** expedition to the western part of Guangxi Province was a joint undertaking, shared with the Yorkshire Ramblers' Club, to which most of the cavers belonged. It was a two-centre trip, starting in Lingyun County, with some of the team then moving to Leye County, a little farther north. Lingyun had been visited for 4 days during the previous year by Andy Eavis and Kevin Senior, a visit that provided the basis for the 2000 trip. Initial explorations centred round the Shiyui River, which sinks and rises to the north of Linyun town.

Time was also spent to the south of the town, where several large dolines are located.

Halfway through the expedition a team of 6 cavers was dispatched to Leye County, 40 miles to the north, to examine the caves there and particularly the Dashiwei Tiankeng. This spectacular feature had only become known to the Chinese scientific community in 1998 when Professor Zhu was led there by local people. It is among the giants of the tiankengs, 400–600m across, with unbroken perimeter walls that have a maximum height of 613m. In 1999 the tiankeng had been descended by a Chinese Army expedition but, tragically, one of the soldiers lost his life when he was drowned in the cave river at its foot, about 500m underground. The 2000 expedition team explored much further down the river and also surveyed six more caves and shafts in the area (Campion, 2001a, 2001b, 2001c, 2002).

The successes of the 2000 expedition prompted a return to Leye in **2001** by a small team that made notable discoveries in tiankengs adjacent to Dashiwei, including Bai Dong and Cacao Cave, thus helping to unravel part of the upstream intricacies of the river system under Dashiwei (Campion, 2003). In **2002**, a very strong team of 21 overseas cavers under the leadership of Andy Eavis was put together to take part in the ***2002 Hidden River Expedition***, with the prime objective of linking the Dashiwei Tiankeng underground river with its resurgence, about 20km to the north. Whereas the hoped for connection was not achieved the expedition was incredibly successful in mapping large sections of this underground watercourse, including 4.4km beneath the tiankeng itself, and in exploring a vast array of nearby caves, most of which proved to be vertical shafts up to 400m deep with little horizontal development at the bottom. In the same year an outlying limestone area to the east of the Leye karst massif, Ma Drong, was also explored (Alker, 2003; Campion, 2003a, 2003b, 2004a, 2004b).

Also in **2002**, in June, the China Caves Project returned to Chongqing and specifically to Fengjie County as the ***Great Crack Expedition***, to attack this massive karst feature yet again, and to try to make an underground connection between ***The Great Crack*** and ***The Big Doline***. Some members of the team also revisited nearby Wulong County to look at the shafts near Tian Xing village. Attention focused on Qikeng Dong, descended for over 500m and still going at the end of the expedition. Brian Judd couldn't resist returning here later in the year to push the shaft further to minus 707m, and again in **2003** when he and a small team reached a depth of 920m. (It was then left to the recently formed Hong Meigui Cave Exploration Society to link it to many nearby shafts, all parts of the Tianxing Cave System, and to reach its present depth of 1020m).

The expeditions in 2002 marked a turning point for the China Caves Project. Most expeditions up to this had been led by Andy Eavis, with local logistics and support ably provided by Professor Zhu and his colleagues at the Guilin Karst Institute. Their work to date was celebrated and publicized by the holding of the China Caves International Symposium at the Royal Geographical Society in London in September 2004, an event co-hosted by the Project and the Committee on Speleology of the Chinese Geological Society.

The wealth of information gathered over the previous two decades was described in a series of presentations, supported by the premiere of a film on the Project by Gavin Newman. Participants, friends and sponsors had the opportunity to reminisce and exchange stories, and then to join in a field trip to the caves of South Wales and North Yorkshire.

After the 2002 expeditions Andy began to share his role as leader with Ged Campion, a participant on some of the earlier expeditions. It is not the purpose of this short history of the China Caves Project to list individual contributions to the Project – either in the field or in other roles – as this would be an impossible task given the involvement over the years of several hundred people. It would, however, be inappropriate not to highlight the critical lead role played by Andy Eavis, who has devoted enormous amounts of time and effort to the expeditions, particularly prior to the early 2000s. We must also note the key role of Brian Judd, particularly over the period from 1994 to 2003. To return now to the early 2000s, Ged Campion has since organised 7 expeditions, leading them all except that in 2010. As Professor Zhu's retirement from full time employment at the Guilin Karst Institute coincided with a reduction in the amount of time devoted by Andy Eavis to the Project, the main contacts for the overseas teams after 2002 have been Zhang Hai, Chen Weihai and Huang Bao-jian, who have worked hard over many years to ensure that the teams visited potentially attractive areas and that all logistical and administrative issues were solved effectively.

In early 2004 a small team went first to Tian'e County in the north of Guangxi, exploring a wide range of different caves, some of significant depth. They then moved south to Fengshan County to discover the massive cave passages of the Jiang Zhou Cave System. Time ran out before even a small fraction of this system had been explored, and another expedition was hastily brought together for a return to Fengshan in October and November of the same year. At the end of this visit, Jiang Zhou had a surveyed length of 29km, with numerous leads still unexplored (Bensley et al., 2005; Campion, 2008). A return to Fengshan in 2005 was inevitable, and this took place in October, after a short visit to Bama County. Effort was again concentrated on the Jiang Zhou System, which after a further 8 days of caving had yielded a total of 38.5km of surveyed passages. The team also spent a considerable time looking at other caves in the area, particularly to the north of Jiang Zhou, as the rivers running under the system are believed to resurge to the north at Sanmenhei Cave, implying that a truly massive cave system exists under the southern part of Fengshan County (Bensley et al., 2007; Campion, 2006, 2008).

In 2006, at the suggestion of the Guilin Karst Institute, the Project moved north to Lichuan in Hubei Province. This county was new territory to the Project but in 1987-1988 had been visited by a large Belgian expedition that had discovered and explored the massive Teng Long Dong cave system, thought (in early 2006) to be the third longest in China. The 2006 expedition discovered several more sections of Teng Long Dong's underground river cave and related relict segments, but much more exploration is needed before the cave sections explored in 1987-1988 and

2006 can be linked together to form a continuous, traversable cave system. The 2006 team also explored an additional 15 or so caves in the area, adding to knowledge of the hydrology of the county. A small group from the expedition also spent a short time reconnoitring the karst area of Jianshi County, adjacent to Lichuan, and at the end of the time in Hubei another small team moved on to Wannian County in Jiangxi Province to extend the existing knowledge of the Shennong Gong show-cave (Bensley et al., 2008; Campion, 2011).

There was no expedition in 2007, but in late **2008** a China Caves Project team returned to Guizhou Province. The original plan was to explore the caves of Bijie County in the west of the province, but at the last moment the Guilin Karst Institute suggested a change of venue to Yanhe County in the northeast, which borders Chongqing Municipality. Previously unvisited by a caving expedition, this proved to be a fascinating area, with numerous extensive unexplored caves.

Almost continuous rainfall hampered many of the expedition's plans. Nevertheless more than 50 caves were located throughout the county, and over 20 caves (ranging from a few hundred metres to 6.5km in length) were fully or partially surveyed (Bensley *et al.,* 2010).

In **2009** the Project returned to Guangxi Province, to Huanjiang County in the north of the province, adjacent to Libo County in Guizhou Province. In the northwest of Huanjiang is the Mulun Karst National Nature Reserve, an almost uninhabited area of about 100km^2 of dramatic fengcong scenery. As part of the conservation work in this reserve, numerous cave entrances had been identified but very few had been explored; this was the planned role of the expedition. The team visited and surveyed about 20 caves, most of which were deep shafts with little horizontal development (Bensley *et al.,* 2012).

In late **2010** Guangxi Province was again the destination for the Project. This was a two-centre expedition to Leye and Fengshan counties, both of which had been visited earlier by China Caves Project teams. The visit in fact took place exactly 10 years after the Project first visited Leye, exploring its magnificent Dashiwei Tiankeng and many similar features nearby. A prime objective of the 2010 visit was to celebrate this anniversary and renew the strong links developed between the overseas visitors and many local people. As it happened, the visit also coincided with the announcement by UNESCO of the success of Leye and Fengshan in their application for the listing of their geo-park in the Global Geoparks Network – an announcement that led to even more celebrations. Nevertheless a reasonable amount of caving was also carried out, including the exploration of previously unvisited shafts to the south of Dashiwei Tiankeng and some modest extensions in and near to the Jiang Zhou Cave System in Fengshan (Harrison, 2011; Bensley and Harrison, 2012).

In early **2012**, the China Caves Project was involved in assisting the National Geographic organization and Anglia TV, who put together a team of cavers and scientists to make a film about the spectacular karst of Fengshan and Leye counties. The film focused partly on Dashiwei as an example of a mature tiankeng and Maoqi Dong as a tiankeng under development, and partly upon the Ma Wang Dong underground river system, the part of the filming project in which the China Caves members were involved.

One of the latest of the expeditions involving two members of the China Caves Project was initiated by the Fengshan County Tourism Department (Guangxi Province) and took place in March **2013**. Organised by Jean Bottazzi, a noted French caver then employed by the Department, the objective was again to search for links between the extensive Jiang Zhou cave system and the massive Ma Wang Dong cave a relatively short distance to the north. The team comprised only four Western cavers and over a dozen Chinese colleagues, most from Nanning or Fengshan itself. This pattern, of competent local cavers initially trained in speleological techniques by European friends but now exploring and recording their own underground environments, is one that will continue into the future.

The most recent (at the time of writing) China Caves Project expedition was a small, hastily organized trip in November **2013** to Yanjin County in the northeast of Yunnan Province, an area not previously visited by a caving expedition. Involving only 5 UK cavers and a few colleagues from the Guilin Karst Institute, and hampered by bad weather that caused the closure of many local roads, the achievements of the team were necessarily limited, but the expedition was nevertheless successful in assessing the caving potential of the area and exploring and surveying a few interesting cave systems.

Related organisations

Although the British-led China Caves Project has been one of the major overseas caving organisations to be involved in exploring China's karst regions in the 1980s, 1990s and 2000s, it would be wrong to imply that it is one of only a few Western speleological groups to make significant discoveries. Some very exciting finds have been made by visitors from many other nations, nearly always in close and cordial cooperation with Chinese scientists and local officials.

Indeed, the excellent French-maintained ***Grottes et Karsts de Chine*** website lists a total of 154 caving expeditions in China since the 1980s. Notable among them are those of the numerous Sino-French expeditions, particularly those involved in the exploration of Shuanghe Dongqun in Guizhou, currently by far the most extensive of China's caves and now some 138km long (see for example: Bottazzi, 2005; Chen and Zhang, 1994).

The large Sino-Belgian expedition to Lichuan in 1987–1988, which first explored and surveyed the vast and intimidating Teng Long Dong system, is another landmark in China's cave exploration (Masschelein and Zhang, 1988). Several expeditions have been made by an Italian group, including one (their fourth Chinese expedition) in 2003 to Fengshan County, close to many China Caves Project discoveries (Ruggieri, 2004), and impressive scientific studies of Chinese karst have been carried out by a group affiliated to the Slovenian Karst Research Institute at Postojna (Knez *et al.,* 2011).

A feature of the China Caves Project over the last decade or so has been its ability to absorb or generate other organisations and groups of cavers interested in the exploration of China's karst areas. An early example is the expedition of 2000, which was a highly successful joint enterprise between the China Caves Project and the Yorkshire Ramblers' Club (YRC), one of the UK's oldest and most prestigious outdoor organisations. Since then, YRC members have participated in every one of the Project's expeditions, and made numerous valuable contributions to the Project. Another example is the expedition in 2003 to Jingxi and Pingguo counties in the west of Guangxi Province by the Craven Pothole Club, another well-known caving club in the UK, an expedition that built on the contacts and data gathered by the Project in earlier years (Warren and Porter, 2004).

The Project's most significant spin-off venture, however, was the formation of the Hong Meigui Cave Exploration Society by Erin Lynch in 2001. Hong Meigui is an international society dedicated to exploring caves in China and, since its formation, driven by Erin, the Society has been outstanding in its exploration of China's underground world, having logged over 1000 cave entrances and mapped more than 273km of cave passage, including some of China's deepest caves. Their achievements, which could easily fill an historical miscellany similar to this, include the exploration of China's fourth and fifth longest caves and the second biggest natural underground vertical drop in the world (Lynch and Collis, 2003; Wade, 2007). Hong Meigui, which currently has more than 100 members from 13 countries, generously acknowledges the role played by the China Caves Project in stimulating its interest in China's karst scenery, and retains close links with the Project.

Other groups of cavers have also grown out of the activities of the China Caves Projects over the last decade or so – those comprising the Chinese themselves. As the country's prosperity has developed, allowing a section of Chinese society an increasing amount of leisure time, so has the interest of many Chinese in outdoor activities such as caving. Increasingly, since about 2000, the Project's expeditions have been joined by enthusiastic local Chinese cavers, many from Nanning and similar large southern cities, who have learned caving techniques such as SRT and surveying from the foreign visitors, and who now contribute as much or more to the exploration of their caves as do the cavers from abroad.

Of equal or greater importance in the development of speleology in China, of course, is the role of the university departments with whom the China Caves Project has had such a close and rewarding relationship. Over the entire life of the Project the bonds between western cavers and the Guilin Karst Institute have been critical, building on the close and enduring friendship of Andy Eavis and Professor Zhu Xuewen, and also those between other British cavers and Institute staff mentioned in this paper.

Professional and social relationships

One of the outstanding achievements of the China Caves Project has been the development of close and cordial links between the numerous professional (and indeed amateur) scientists involved in the expeditions.

This is clearly illustrated by the number of papers published over the years on various aspects of karst geology that have joint authors from China and from the west. Despite occasional language difficulties, vigorous debates between geologists individually eminent in their fields have helped to push forward the frontiers of this important branch of science. And geology is not the only science to have benefitted from cooperation initiated on China Caves Project expeditions, that of biology being a case in point. An example is the discussion between a biologist from the University of Tasmania and an associate professor at the Huazhong Agricultural University in Hubei, in about 2005 on whether cave dwelling keroplatid flies discovered in northwest Guangxi are a new genus or not (the debate is probably still ongoing). But it is not just the professionals who have developed lasting friendships from the expeditions. One of the delights of returning to China on a second or subsequent expedition is that of meeting old Chinese caving friends and looking forward to further joint underground explorations (and very sociable evenings). Perhaps the most impressive example of the degree of cooperation and friendship achieved on China Caves Project trips occurred as a result of the recent 2010 expedition to Guangxi County. The British expedition leader and the attractive female interpreter from Nanning city allocated to the expedition clearly had to work closely together, a task they fulfilled with remarkable success – less than 2 years later they were married in Nanning and now live together in the UK.

Other material

Details of the discoveries made by the expeditions, their achievements in **Geomorphology, Biology, Archaeology, Expedition Medicine, Conservation, Construction and Development** will be detailed in our next journal.

Acknowledgements

Inevitably a paper such as this, covering a broad span of caving activities over a long period, will suffer from inadvertent omissions and inaccuracies. Thus, we apologize to any cavers who feel that their exploits have not been reviewed effectively, or who think that they have been overlooked completely.

The paper would never have been written without the pioneering work of Andy Eavis and Tony Waltham in initiating the China Caves Project. They have also been supportive and helpful in checking and expanding drafts and in making available their extensive knowledge and literature on China's caves and karst. Tony Waltham is also thanked for his permission to reproduce Figure 2 and for his generous help reformatting Figures 1 and 2. All photographs used in the paper *(some of which may be included in our next journal)* are credited; all photographers are acknowledged with our thanks, but with particular thanks to Jerry Wooldridge and, again, Tony Waltham. Our thanks are also due to Mary Wilde, the BCRA Librarian, who kindly located many ancient and obscure reports and journals for the authors, and to one of the editors for his formatting skills. Many cavers on all expeditions not only performed tremendous feats of caving but, after returning home, devoted many hours to writing up details of their activities and drawing numerous cave surveys.

Without access to these detailed sources of information this paper would be much the poorer.

It would be churlish for the authors not to acknowledge their debt to the Project's many friends in China, particularly the scientists of the Guizhou Normal University and the Guilin Karst Institute. They carried out much groundwork before and during the expeditions, ensuring that all teams would visit interesting areas, and thus guaranteeing high levels of success for the expeditions. Also, their diligent work over many years, examining and mapping the karst areas of southern China, has ensured that the China Caves Project's cave reports and surveys have a solid geographical and geological basis.

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YRC Editors note -
In addition to Ged Campion numerous members of our club have participated in this project over the years and one such recounts on more humorous elements of their time there on page 39
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