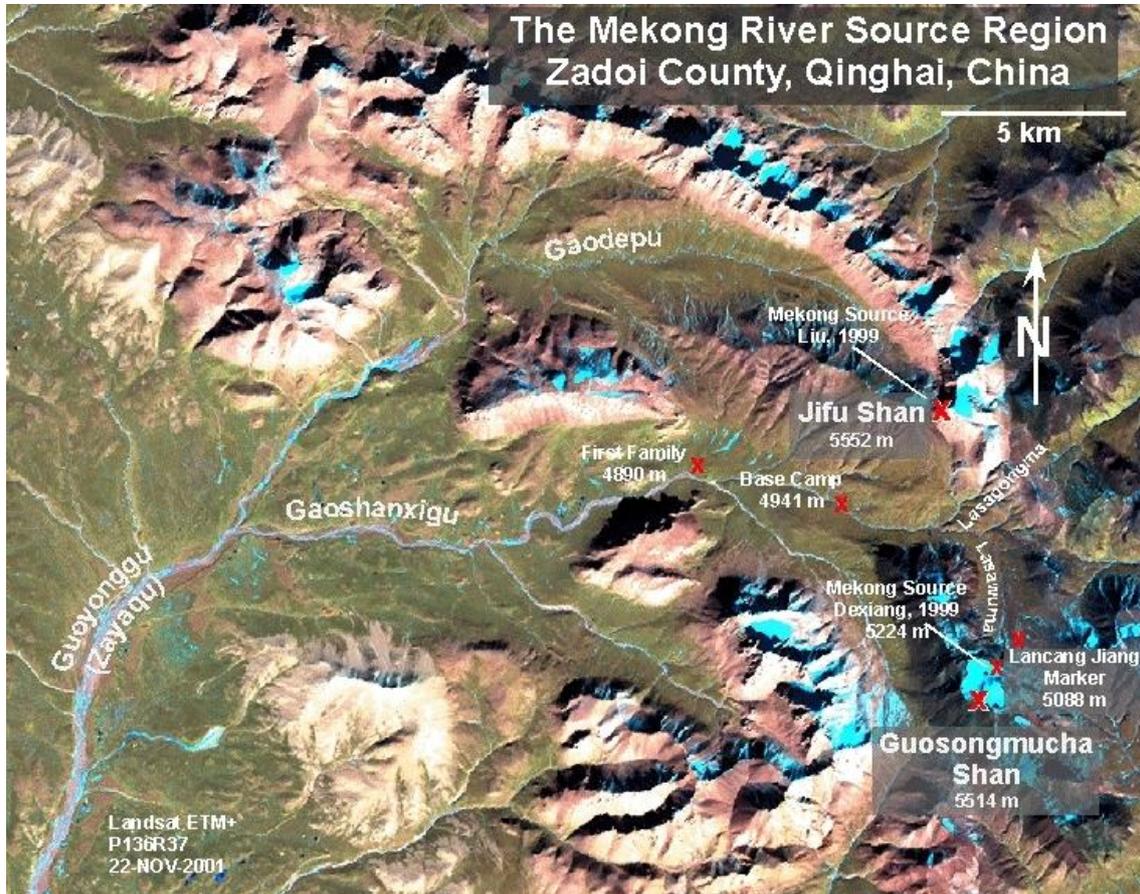


# ASIAN ALPINE E-NEWS

Issue No. 48 March 2019



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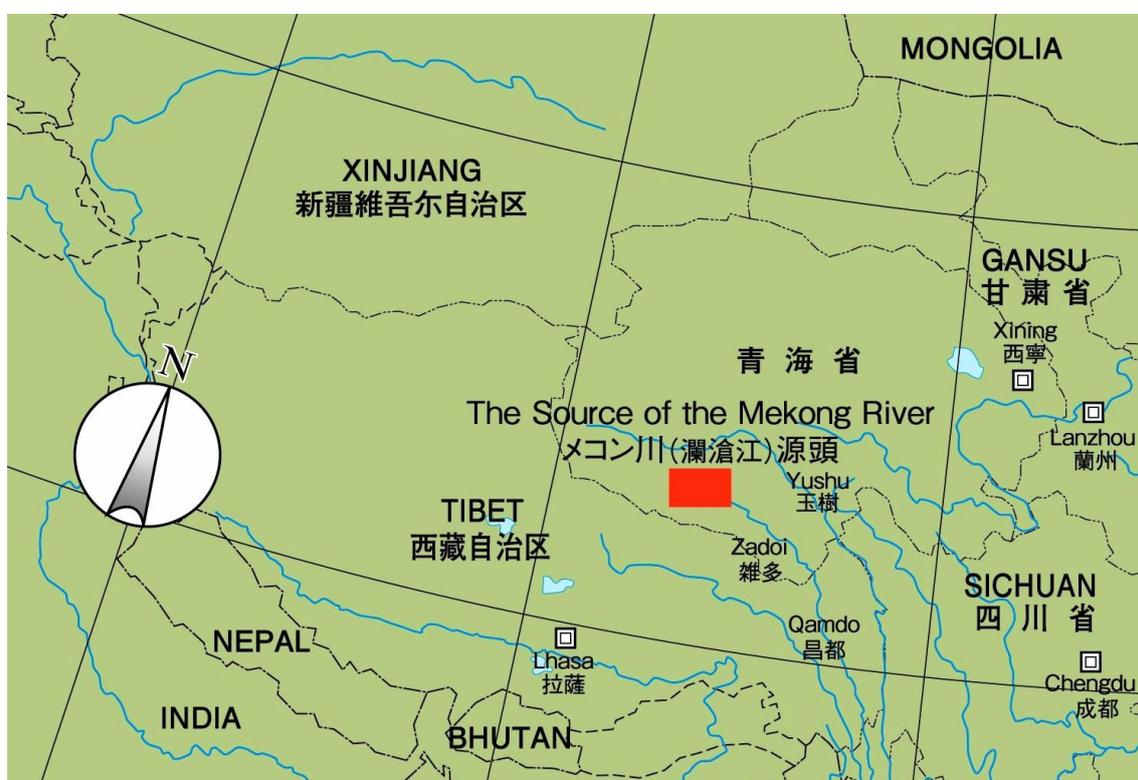
“The Mekong River - Descents and Explorations of Headwaters”

Masayuki Kitamura, Tokyo University of Agriculture *Page 2 ~31*

MASAYUKI KITAMURA

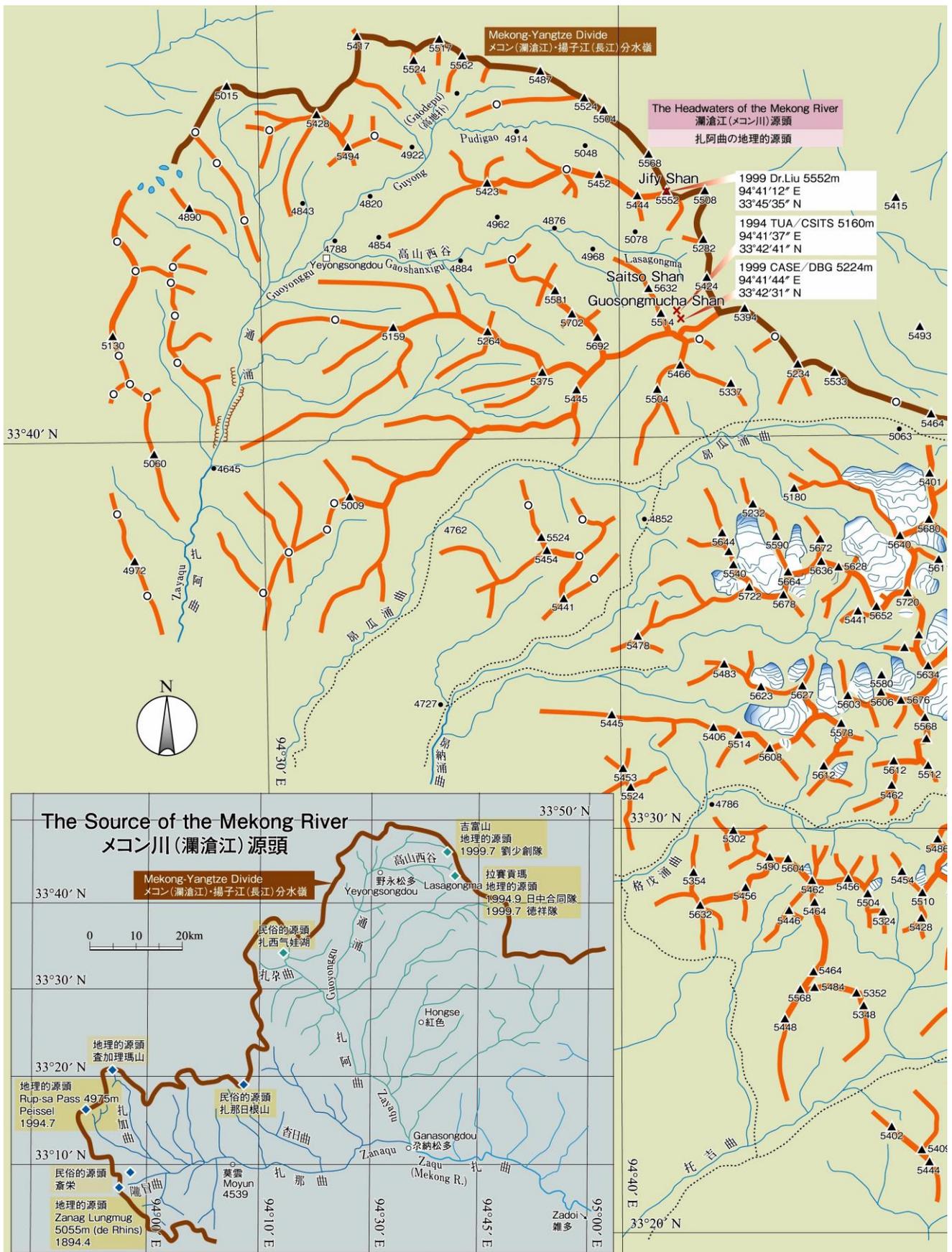
Translated, supplemented and edited by Tom Nakamura

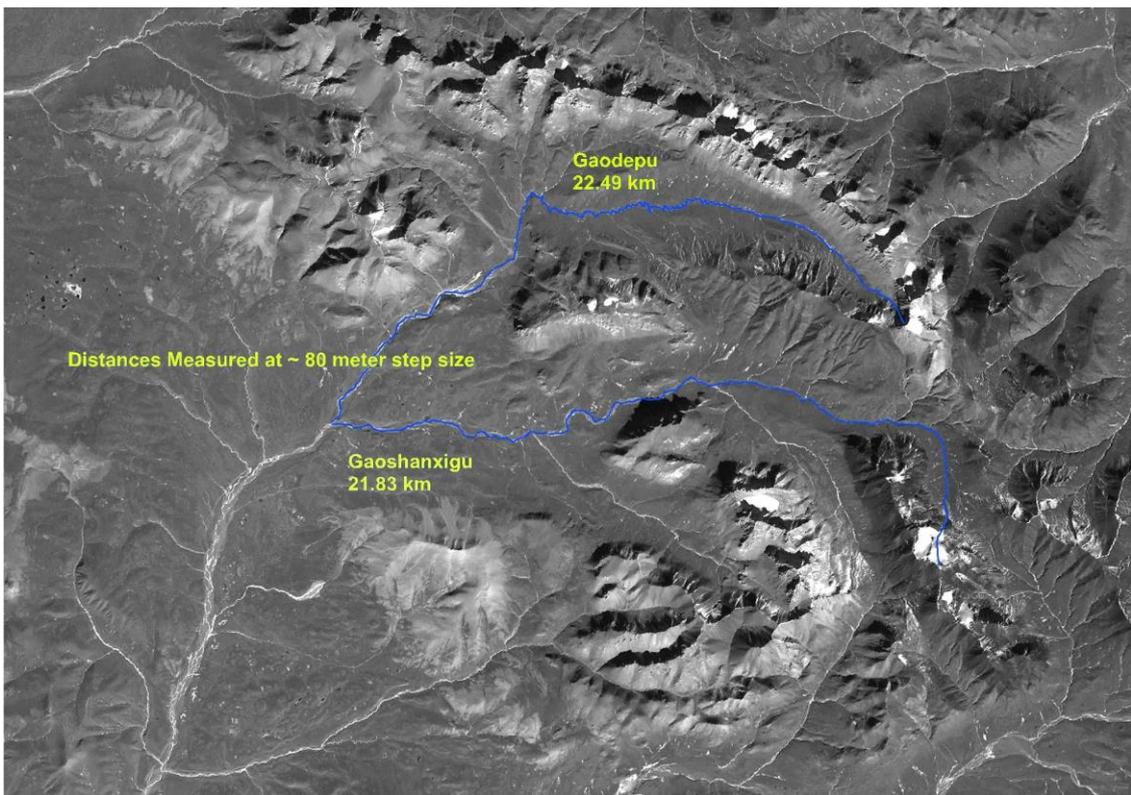
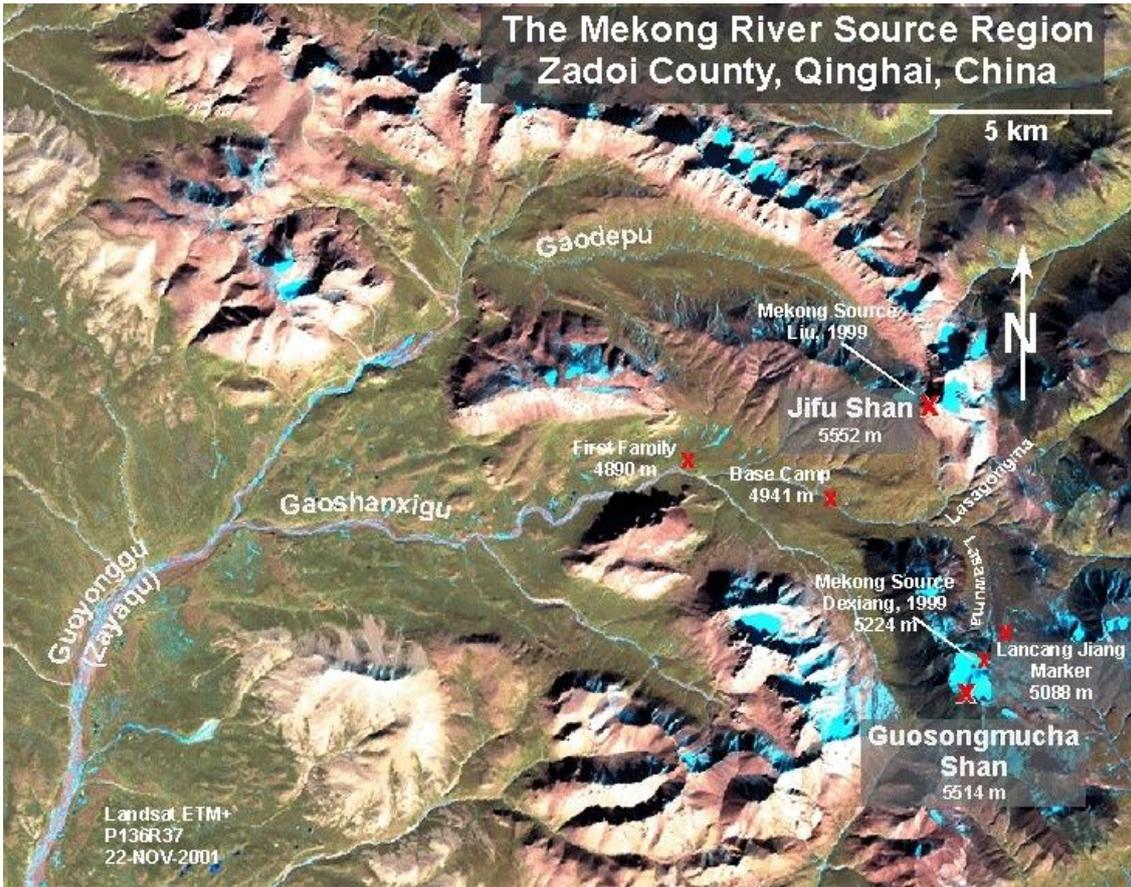
## The Mekong River – Descents and Explorations of Headwaters



### Part 1 – The first descents

A history of the first descent of the Mekong River basin began with a record of the Earth Science Expedition led by Pete Winn, USA. A party of Pete Winn first descended the Yanbi River, a tributary of the Mekong River in Yunnan Province, to Man Wan in 1994. The Earth Science Expedition (hereinafter described as ESE) has extensively been exploring untrodden rivers and challenging first descents in west China under the leadership of a most potential member, Pete Winn. He is a geologist and also an expert of river rafting with years of experiences as a river guide in the Colorado River and other rivers. Pete and his colleagues planned and prepared descents in China since 1980s. For the purpose, in the beginning they chose a Chinese partner, The Center for International Science Exchanges, China Academy of Sciences (hereinafter described as CISE).





Even nowadays the same situation remains as before. Because of bureaucracy of Chinese administration in 1980s and 1990s, they requested much money and energy was spent for obtaining a permit for river descent in China as in case of a climbing permit for mountains. The reason is that the upper streams of the Asian great rivers such as Yangtze, Mekong and Salween flow through remote borderlands of Tibet which are not opened to foreigners. Presumably, therefore, ESE first attempted a river in Yunnan which was comparatively easy for access and required less permit fee. The highlight of the first descent is a moment to enter unknown and raging rapids where “how treacherous and dangerous” is unforeseeable. The thrilling excitement would strongly attract those who challenge the descent. Once the descent starts, it is impossible to return on the way. A blind curve of deep gorge where no scout can be made is particularly dreadful.

The most important items for planning are detailed topographical maps. The best one is a topographical map of 1:100,000 made by the mapping department of the Chinese People’s Liberation Army (hereinafter described as PLA map). However, they are strictly confidential to foreigners. Therefore, we availed ourselves of TPC 1:500,000 maps (USA Defense Mapping Agency) and 1: 1,500,000 geographical maps before the Russian topographical maps 1:200,000 made in 1970s appeared in the market in 1995. Currently Google Earth and Google maps are helpful and accumulated information kept from Google on the data base of the similar type of rivers suggests and gives us a hint as to possibility and location of rapids.

## **Section 1 – from the Headwaters to Qamdo (Qinghai Province to Tibetan Autonomous Region)**

1. In September, 1999, a joint party led by Masayuki Kitamura from Tokyo University of Agriculture (hereinafter described as TUA) and China Sciences International Travel Service, Chinese Academy of Sciences (hereinafter described as CSITS) succeeded in the first descent from Yeyonsongdou 4800m in the headwaters, the true source of the Mekong, to Qamdo 3200m by inflatable kayak and 4.8m rafting boat in 19 days. Distance of the descent was 560km and height difference was 1600m respectively.
2. ESE/CISE led by Pete Winn made the second descent from Yeyonsongdou to Zadoi only one day later. The both parties had no prior communication between them. Pete’s party discovered a 7m high water fall in the uppermost Mekong at a point 50km upstream from Zadoi (N33 03 30, E95 04 08). The American named “Snow Leopard

Fall” for this fall as they saw the animal there. TUA/CSITS discovered 12m high Jatarungga fall, the second highest fall in the Mekong, in the downstream from Nangchen (N33 07 20, E96 36 23).

3. In 2003, a Russian team, Moscow Institute of Technology led by Alexander Selvachev first descended about 250km of Dze Qu, a largest tributary to Za Qu by a 5m cataract. They reached Qamdo continuing the descent of the Za Qu after the confluence.

4. In 2004, Mekong First Descent Project (hereinafter described as MFDP) led by Michael O’shea descended the whole section upstream of Zadoi (third descent).

5. In 2005, a Japanese party of Yoshiharu Sekino and TV crew descended 150km from Yeyongsongdou by inflatable kayaks.

## **Section 2 – From Qamdo to Yanjing (Southern Tibetan Autonomous Region to the border with Yunnan Province)**

1. In April 2004, a joint expedition of four countries made the first descent of Section from Qamdo to Yanjing. The party comprised of the following team of 13 members:

USA-----ESE led by Pete Winn

Australia---ESE, Ralf Buckley

China-----China Scientific Exploration Association led by Liu Li

Japan-----TUA led by Masayuki Kitamura

This section is a most difficult part in the Mekong. In many places the river forms deep and formidable gorges, where it is scarcely possible to find an escape route. The Grade is Class V +. The original plan was finally reach Yanjing. But they encountered continuous rapids, fiercer than expected, near Xilong 2900m at about 136km downstream from Qamdo (N30 20.625 E97 46.835) and the plan was forcibly abandoned.

2. In 2004, MFDP led by Michael O’shea completed the first descent of this section to Yanjing by kayak.

3. In 2008, The Last Descent led by Travis Winn descended the same section by kayak. Travis joined the 2004 joint expedition. He is a son of Pete Winn. Based on descriptions by MFDF, the 2008 team is not convinced that O’shea kayaked this section of river.

### **Section 3 – From Yanjing to near Dali (Tibetan Autonomous Region to Yunnan Province)**

This section is easy to access as there is a vehicle road from Yanjing to Yong Bao Bridge (near Dali) along the Mekong River though the road is partly away from the river. There is a famous hot springs resort on the river bank in Yanjing. A road from Yanjing to Deqen is the Yunnan-Tibet Highway and many tourists visit Deqen to have a magnificent view of Meili Snow Mountains. The river Grade is mainly Class III – IV and this part must be the best section for commercial rafting.

1. In October 2002, TUA led by Masayuki Kitamura made the first descent from the border 2154m of Tibetan Autonomous Region and Yunnan Province to Baijixun 1678m by 4.8m cataraft and rafting boat. Distance of descent was 230km and height difference was 600m respectively. They made long and short portages eight times en route. They could successfully pass through the first half of “Moon Gorge”, which is one of the narrowest gorges in the Mekong and now a sightseeing spot because of its breathtaking landscape of natural wonder, but they had to make a portage for the remaining second half.
2. In December 2002, an American party of river guides led by Jim Norton made the complete descent of this section.
3. In 2004, MFDP led by Michael O’Shea made the first descent from Baijixun 1678m to Yong Bao Bridge 1255m by kayak. Distance of descent was 265km and height difference was 423m respectively.
4. In 2005, Mt Sobek led by Jim Norton, a commercial expedition company, organized a tour.
5. In 2005, TUA led by Masayuki Kitamura descended the same part as above from Baijixun to Yong Bao Bridge.

### **Section 4 – From near Dali to the Border (Southwest part of Yunnan Province)**

There is no vehicle road along the downstream from Yong Ping (west of Dali) in the southwest part of Yunnan Province. Therefore, Take-in and Take-out points are bridges or towns. In this section many dams have been being constructed in the main stream of the Mekong River. The dam first constructed is Man Wan Dam.

### **From Yong Bao Bridge to Man Wan:**

1. In October 1995, ESE and CISE made the first descent from Yong Bao Bridge to Man Wan by two 4.8m catarafts, a two man paddle cataraft and two kayaks. This section has rapids of four Grade Class V and many Grade Class III – IV located in the upstream of Jihong (Rainbow) Bridge, an oldest iron-bridge in China, which is told to have been crossed by Marco Polo. These Class V rapids were formed by a huge landslide in 1988 (or 1986?) delete - date known from other sources). Local people call these rapids as Mahuangou (means leech channel), but Pete Winn named as Dragon Teeth Rapids that is one of the most famous rapids in the Mekong River.
2. In 2004, MFDP made descent led by Michael O'shea.
3. In 2005, TUA made descent led by Masayuki Kitamura.
4. In 2006, The Last Descent made descent led by Travis Winn to Xiao Wan.

### **From Man Wan Dam to Jinggu-Lincang Bridge (Jinlinqiao)**

1. In April – May, 1997, ESE/CISE led by Pete Winn made the first ascent of this section. They are the only party to have descended this part before Dachaoshan Dam was constructed in 2001.
2. In 2004, MFDP made descent led by Michael O'shea.
3. In 2005, TUA made descent led by Masayuki Kitamura

### **From Jinggu-Lincang Bridge to a local port (N23 03 45, E100 08 41)**

1. In 2004, MFDP led by Michael O'shea made the first descent of this section. They met three rapids of Grade Class V + en route.
2. In 2005, TUA made descent led by Masayuki Kitamura

### **Chinese Rafters and Kayakers**

Reports on the first descents of the Yangtze River (Chang Jiang) and Yellow River (Huang He) made by Chinese in 1980s were published in Chinese. Since no records on descent of the Mekong River by Chinese were found, research was made to investigate the fact about the Chinese accomplishments. Questions and enquiries were sent to Chinese rafters, explorers and Chinese Academy of Science. With the result, certain reliable records were gathered.

Notable information that two Chinese rafters had already attempted on descent of the Mekong River in June of 1987 became available. One of them is Tai Su Bo who joined the TUA expedition to north Yunnan in 2002 and the other is Song Yipin who was a member of the international team in 2004. They took in at Man Wan using a bamboo raft of 2m x 9m size made by local villagers. They descended three days but their bamboo raft was broken at large rapids a bit upstream of Jinggu-Lincang Bridge and saved swimming to the river bank. The rapids are presumed to be “No Exit Rabbit” of Grade Class V. Regretfully no photos as evidence remained, but their explanations, severally reported, are considered to be trusted.

Song Yipin who operates a rafting company is reported to have made the following three descents of the Mekong before the above attempt by bamboo raft.

1. In 1990, his team descended 400km from Man Wan to Guanlei, a town in the border, by rubber boat in about seven days. (Seven days would be too short. It must have taken more than seven days, (or this account is not credible.)
2. In 1999, he planned and organized a tour to descend eight major rivers in Yunnan Province such as Nu Jiang (Upper Salween), Jinsha Jiang (River of Golden Sand, Upper Yangtze) and Hong Jiang. No detailed sections of the descents are unknown (Kita - he may have planned this, but did not complete them).
3. In November, 2001, a Chinese team of four members including Song Yiping made a descent from Yanjing of southeast Tibet to Gongguoqiao in west Yunnan by China-made rubber boat in 10 days. But their record was rather ambiguous in many parts. Song Yiping has not published any official report on his expeditions. (Kita, my Chinese friends do not believe he did this).

As for the tributaries, in August of 1997, a Chinese rafting team led by Na Ming Hui descended the Xiao Hei He in southwest Yunnan by paddle raft carrying eight persons. In 1998, they also descended the Zhu Jiang which is the largest river in southern Yunnan. In October, 2006, Na Ming Hui and Wang Dong Li descended the Wei Yuan Jiang near Puer, a famous place for Chinese tea “Pu’ercha”.

It is regrettable that many of Chinese rafters don’t write records and consequently they publish no reports of their expeditions. In future when their detailed records were issued, a chronicle of the first descents would have to be re-written

## **Part 2 – Explorations of Headwaters and True Source**

## **A brief history of the exploration—1866 to 1894**

After the death of Henri Mouhot, a discoverer of Angkor Wat, who had first led a French expedition to the Upper Mekong in 1866, Doudart de Lagree of French Navy took over Mouhot's post. The newly appointed leader crossed the border to Yunnan Province of China and further continued their march northeastward to the Upper Yangtze on the way to head for Tali Fu together with Francis Garnier, a famous explorer of Northwest Yunnan. The same tragedy fell on Lagree too. He died of a disease at Hui-tse in 1868, while Garnier could arrive at Tali Fu being helped by a missionary, M. Leiguilcher.

1868 was a notable year for the chronicle. In this year no less than three attempts from three points were made to penetrate the obscurities of the unknown region. One was by Lagree's party which had started from Saigon; a second was by Mr. T.T. Cooper from Sichuan to East Tibet; the third by an English party of Major Sladen from Bhamo (Burma) on the Irrawaddy River. A great effort of the Lagree's expedition had been the exploration of the Mekong, which they ascended and surveyed from the delta, as far as a point of latitude 22°00'. From there they traveled through Southern Yunnan and reached the provincial capital, Yunnan Fu (Kunming) at the end of 1867, the first time in my knowledge (this is optional) that any European traveler (not being a missionary priest) since Marco Polo visited in 1283.

In July 1890, the French Government entrusted Dutreuil de Rhins, who had been a distinguished explorer to Congo, Indo-China and Central Asia as well, with a scientific mission to Upper Asia. In October of the same year Fernand Grenard was appointed to the mission. The small party calmly left Paris on February 19, 1891. It was a start of the long journey over three years across the Caucasus, Russian Turkestan, Chinese Turkestan, Karakoram Pass to Ladakh, again back to Chinese Turkestan, Taklimakan Desert, Kun Lun and then desolate Changtang high plateau towards Lhasa of their destination from the northwest. Three months of the uninviting hardship to struggle against a desolate wilderness of the northern Tibet brought the travelers to Nam Co Lake (Tengri Nor), and here they were but a week's march to Lhasa. After Bonvalot, they were the first Europeans to touch the shores of the lake since the day of Huc. However the officials of the Lhasa deputation stopped them to further proceed to Lhasa. So they turned northward as Bower, Littledale, Rockhill, and Bonvalot had to turn, and as far as Nakchu-ka they were following the usual Mongol pilgrim and caravan route bound for the Chinese frontier at Sining Fu (Xining).

In early March of 1894, from Nagchu de Rhins and Grenard left the direct pilgrim road and struck into the northern trade route between Lhasa and Batang, eastward. But

subsequently they made a long detour to regain the direct route to Xining, on the way of which they traveled through the source of the Mekong River. They explored a part of the upper Salween River and, having crossed Tangglha range, they found themselves on a marshy plateau crossed by the Dam Chu, the longest branch of the Yangtze River. They made what was, from the geographical point of view, the most interesting discovery in their journey, but it resulted in the misfortune of a fatal accident that de Rhins was brutally murdered by local Khambas near Jyekundo.

On April 8 they entered from the Yangtze River basin into the Mekong River basin. Grenard described "At nine o'clock in the morning, we had the satisfaction, in crossing the Zanag Lungmug La, to achieve one of the objects which we had set ourselves to accomplish. From this pass, which is 16,760 feet high, runs the Lungmug Chu, westernmost of the source of the Mekong. The joys of discovery, which are enough to make any good explorer forget the sufferings of a journey were increased two-fold for us by the fact that this humble stream of water, now motionless under ice, but soon to flow over mountains and plains to French territory, -----." in his book *TIBET; The Country and Inhabitants* (Hutchinson, London 1904). They followed the Lungmug Chu down to Zanag (Current Chinese name: Zanaqu river), one of the two main headwaters of the Upper Mekong and rather hastily congratulated themselves for having discovered the source of the great river. The head of Lungmug Chu which, they claimed, they had reached first was not exactly the true source of the Mekong. (This part was written by Tamotsu Nakamura)

### **The Mekong River and Chinese attempts**

The Mekong River originates in the Tangglha mountains of the Qinghai-Tibet Plateau, and flows down from north to south through Qinghai Province, Tibetan Autonomous Region, Myanmar, Laos, Thailand, Cambodia and Vietnam to the South China Sea west of Ho Chi Minh City. The Mekong is the largest international river in the Indo-China Peninsula. According to the latest definition of the Chinese Academy of Sciences, the name of the Mekong River varies in the four stages as under:

- (1) Mekong----- The lower stream in Myanmar, Laos, Cambodia, Thailand and Vietnam to the river mouth.
- (2) Lancang Jiang-----The middle and lower stream from Qamdo (Chamdo) to the border between China and Myanmar/Laos.
- (3) Za Qu (Dza Chu)-----The upper stream- the upper Mekong - from the river sources

to Qamdo.

(4) Zayaqu (Dza Kar)-----The upper stream of the northernmost source to Ganasongdou which is a confluence with Zanaqu.

(5) Zanaqu (Dza Nak)-----The upper stream of the westernmost source to Ganasongdou.

“Za” of Za Qu means rock piece, rock wall and rocky mountain in Tibetan language, and “Qu” means river. In English “Rock River” is sometimes used for Za Qu. A specialist of The Heritage Conservator of Yushu Tibetan Autonomous Prefecture explains that Za Qu means “river coming from rocky mountain or river flowing through rocky mountain”. As Za Qu separates into many tributaries in the upstream of Zadoi, Chinese geographers call this area as “Source Area”. In farther upstream Za Qu separates into two major tributaries of Zayaqu (white rock river in Tibetan) and Zanaqu (black rock river).

The source of the Mekong River was first reported to the western countries on February 1993 issue of National Geographic (Vol. 183 No. 2) after the Peoples Republic of China had started. Michael Yamashita and Thomas O’nell sent their article to the National Geographic. However the source which they reached was not geographical true source, but “Spiritual Source” that was worshiped by local Tibetan people. They themselves recognized this and wrote to the said journal.

In those days, the geographical true source had not been yet discovered. The Chinese Academy of Sciences (hereinafter described as CAS) organized a professional task force “The Comprehensive Scientific Expedition to the Qinghai-Xizang (Tibet) Plateau” in 1973 – 1980 to make an overall scientific research mainly in the Tibetan Autonomous Region. However research was scarcely conducted in the headwaters basin of the Mekong River. After new China was born, the only following research was made in Zadoi County where there are the headwaters.

1964/67: The Northwest Plateau Institute of Biology, CAS, undertook the first research of grassland.

1969: The provincial (Qinghai) government and Zadoi County government conducted survey of grassland.

1970: The Northwest Plateau Institute of Biology surveyed grassland of Yushu Tibetan Autonomous Prefecture, Qinghai, to which Zadoi County belonged.

1986: The government of Yushu Tibetan Autonomous Prefecture, Qinghai, conducted research of agricultural resources in Zadoi County.

1987: A Tibetan, Ga Ma Tu Ga, an officer of the Heritage Conservator of Yushu Tibetan Autonomous Prefecture, Qinghai, surveyed on foot from the headwaters of Zana Qu to the border.

### **In search of the true source – 1994**

In summer of 1994, TUA and CSITS jointly organized a team “Expedition to the Headwaters” to discover the true geographical source of the Mekong River. Before the expedition started, a joint partner Zhou Changjin of the Commission for Integrated Survey of Natural Resources, CAS (hereinafter described as CISNR) measured both the Zayaqu and Zanaqu on the PLA map 1: 100,000 in advance and estimated as follows.

Zayaqu-----River length: 93.3km and area of river basin: 2,560km<sup>2</sup>

Zanaqu-----River length: 91.7km and area of river basin: 1,983km<sup>2</sup>

The length of the two rivers was almost the same. No significant difference was seen from the topographical map. Therefore flowing water volume must have a key factor for comparison of the two rivers. On September 2, 1994, the expedition team started a caravan from Moyun, the remotest village in the upper Mekong. They measured flowing water volume of the two rivers on September 4. The result was as follows.

Zayaqu-----Average current speed: 1.089m/sec Average water depth: 0.72m

Average water flow: 54.6m<sup>3</sup>/sec

Zanaqu-----Average current speed: 1.067m/sec Average water depth: 0.33m

Average water flow: 10.49m<sup>3</sup>/sec

This implied and proved that the Zayaqu was the main stream of the Mekong River, and they marched up the Zayaqu. On September 12 they reached a terminus of glacier at 5160m (N33 42 41, E94 41 37) which fed water to Lasagongma, the geographical source of the longest headwaters. They got to know, for the first time, the name of Lasagongma at the meeting with research workers of CAS after they had returned to Beijing.

Also in 1994, before TUA party entered Moyun, a Japanese photographer, Kenji Aoyagi, had visited a spiritual source of Zanaqu called Zhanahuohuo Zhouchi. Thereafter many Japanese photographers, mountaineers and explorers have entered the source of the Menkong River.

## **Franco – British expedition**

Coincidentally in the same year when TUA and CSITS joint party reached the geographical source, the Franco-British expedition led by a Michel Peissel discovered a river source (N33 16 32, E93 52 56) 4795m at Rupsa-La Pass, one of the headwaters of Zanaqu. An explorer – Tibetologist Michel Peissel FRGS accompanied by DR. Jaques Falck and the Hon. Sebastian Guinness reached the source on September 17, 1994. (Peissel's book: *The Barbarians – Discovery of the Source of the Mekong in Tibet, also a video: The Source of The Mekong (Smithsonian Expeditions)*. The Rup-sa Pass is on a saddle which links the Drug-di and Sag-ri ranges which frame the last 40km of the course of the Zaq. The Rup-sa Pass marks the watershed between the Mekong and the Yangste River system. The Royal Geographical Society (RGS) recognized Peissel's expedition (The Geographical Journal, Vol. 161, Part 2, page 235-236 The Record, July 1995). The RGS recognition caused confusion.

Over the past century a dozen expeditions failed to reach source of the Mekong. 1894 the French explorer Dutireuil de Rhins was assassinated by Tibetan Khambas just two months after having erroneously recorded the source of the Mekong to be that of the Lung-Mog (Lungmug of Grenard) river, a tributary on the right bank of the Zanaqu. There is no other record or claim of the source having been reached by other foreigners. Of the early explorers who traveled the region, Kozloff, Teichman and Rockhill never reached the source.

The source of the Mekong is located in the very inner heartland of the highest and most inhospitable portion of the central Asian highlands, hundreds of kilometres from any settlement. The region was part of the far-flung realm of the kings of Nangchen, the home of 200,000 Khamba nomads who still live today a life very similar to that of their earliest ancestors. Nomadic mounted warriors, these Nangchen Khambas are divided into 25 semi-independent tribes who ferociously opposed the Chinese takeover. (This part was written by Tamotsu Nakamura)

## **Surveys and explorations in 1999**

In 1999, the following two Chinese parties entered the headwaters to confirm and decide the true source of the Mekong River.

**Dr. Liu Shaochuang (Institute of Remote Sensing Applications, CAS) party**

With sponsorship and financial support of the CAS and other institutions they made survey of the headwaters of the Mekong making use of remote sensing and geographic information systems. Dr. Liu arrived at Zadoi County on June 15, 1999 and surveyed Zhanahuohuo Zhouchi, Zhanarigen of the Zanaqu river system and Zaxiqiwa, Jufu Shan, Lasagongma, etc. of the Zayaqu river system. Dr. Liu published reports such as “Interpretation of Headwaters of Lancang Jiang (Mekong) River by 3S Integration Technique, p68 – 70, No. 2, 1999 GEOINFORMATION SCIENCE. His conclusion was as follows.

“The headwaters of Zayaqu are those of the Mekong River. The headwaters are in Jify Shan 5552m (N33 45 35, E94 41 12) which is on the boundary of Zhidoi County and Zadoi County. Water supply source to the headwaters is one of snow basins in Zhidoi County. This source is located 6km away from a glacier terminus (N33 42 39, E94 41 37) in the headwaters of Lasagongma, which many surveyors recognize to be the headwaters of the Mekong. China People’s Daily of October 27, 2002 reported that the overall river length of the Mekong measured by remote sensing is 4,909km and that of Lancang Jiang in the Chinese territory is 2,198km”.

#### **China Association for Scientific Expedition party (hereinafter described as CASE)**

A team to quest for the headwaters was organized by seven members of CISNR, eight members from China Central Television and other media companies, etc. Total members were 18. Zhou Changjin who joined the 1994 TUA/CAS team was a potential member and played most important role in the expedition. This team was financially supported by Dexiang Business Group of Tianjin Municipality (the team hereinafter described as CASE/DBG). They worked hard to decide the true source and headwaters of the Mekong River taking advantages of study and observation of water system, geological features, glaciers and GPS, GIS and remote sensing system. Their extensive study and survey led to the conclusion that the Zayaqu was the true source of the Mekong from a view point of river length, area of river basin and volume of flowing water, etc. and it originated at Guozongmucha Shan 5514m of Lasagongma in Zaqing Cheng, Zadoi County, Yushu Tibetan Autonomous Prefecture, Qinghai Province, China. A glacier terminus of Guozongmucha Shan was located at 5224m (N33 42 31 and E94 41 44) in Lasagongma and glacier surface area was 0.67km<sup>2</sup>.

#### **Which is the correct true source, after all?**

Kitamura's 1994 TUA/CSITS expedition recorded a location of the geographical source in Lasagongma as N33 42 41 and E94 41 37 at 5160m, which is a little bit different from that of the above 1999 CASE/DBG survey. A point decided by two parties for the true source is in a terminus of the same glacier as it is evident on the photos. Presumably one of the reasons of the difference is due to an accuracy of GPS (in five years accuracy of GPS must be improved). The other reason would be the difference of a point for measurement. Glaciers in Qinghai-Tibet Plateau have been receding and wilting every year. A glacier terminus has been affected accordingly. If a location of glacier terminus had not been uniform, a point of the measurement must have been changed. In 2007, Kitamura raised this question to his old friend, Zhou Changjin, in Beijing. He replied frankly as follows.

“As Mr. Kitamura points out, GPS and receding of glacier might explain the contradiction in records of the two expeditions in 1994 and 1999. For the record in 1999, however, Guan Zhihua, a deputy leader, used GPS not in a glacier terminus but in a source of small stream flowing near the glacier. Therefore a point of his measurement was slightly away from the glacier terminus, although to my personal understanding, the location of the true source must be at the glacier terminus.”

The next question was the different conclusions between the two expeditions of Dr. Liu Shaochuang and CASE/DBG in 1999. The main factor rested with difference in river length to the headwaters. Dr. Liu measured river length of the two tributaries from confluence, Yeyonsongdou, to the headwaters, as follows.

1. Yeyonsongdou to Jify Shan: Guyong and Pudigao valleys-----23.64km
2. Yeyonsongdou to Guozongmucha Shan (Lasagongma): Gaoshanguxi-----21.5km

The above figure showed that river length of the headwaters to Jify Shan was longer by 2.1km than that of the headwaters to Guozongmucha Shan. This was a base for Dr. Liu to conclude Jify Shan to be the true source of the Mekong River.

On the other hand, Zhou Changjin group's measurement was different from Dr. Liu, as follows.

1. Yeyonsongdou to Jify Shan: Guyong – Pudigao-----21.6km
2. Yeyonsongdou to Guozongmucha Shan: Lasagongma – Gaoshanguxi-----22.57km

On the contrary to Dr. Liu's survey, Zhou's figure told the former was shorter by 0.97km than the latter.

## Criteria for determination and Controversy

The both teams analyzed satellite imagery making of remote sensing technology, but no same figures were obtained. Kitamura questioned the reason to Zhou Changjin, who responded that “time of photographing of satellite images and measurement system/method must have resulted in the difference.” Kitamura further questioned to both of Zhou Changjin and Dr. Liu about the basis and criteria for their determination of the [True Source].

1. Criteria of Zhou Changjin and CASE/DBG team: Overall study on river length, flowing water volume, area of river basin and river flowing direction, etc. led to the determination of the true source.
2. Criteria of Dr. Liu, an expert of remote sensing: Only river length was taken into consideration.

Dr. Liu explained his view as a scientist. “The reason why he applied only river length for determining the true source was that accuracy of the satellite imagery has improved prominently. A decade ago it was difficult to measure river length exactly, and therefore they must take into account such factors as flowing water volume and area of river basin for the determination. Now as we can measure accurate river length, we should apply only river length. I insist on [length], as I am an expert of survey work and mapping.” He further responded to Kitamura’s question. “Errors of the current remote sensing are about 5/1,000, that is to say, 3 – 5km for 1,000km. An error of the total river length 6,300km of Chang Jiang (the Yangtze River) would be 15 – 20km and in case of the 4049m Mekong River an error would be 5 – 10km. Errors are attributed to software, mode and system of analysis, time of photographing and photographers’ skill.”

A monograph of Dr. Liu’s work including field research in 1999 and 2002 was published on the following journals in English.

- 1) Pinpointing Source of Mekong and Measuring its Length through Analysis of Satellite Imagery and Field Investigations, *Geo-spatial Information Science* 10 (1): 51-56.
- 2) A journal of Mekong River Commission: *Catch and Culture* Volume 13, No. 1.

Kitamura had an interview also with Tao Baoxiang, who was a key person to have established the conservation area of the sources of three rivers: Chang Jiang (Yangtze), Lancang Jiang (Mekong) and Huang He (Yellow River). He was a deputy leader of the CASE/DBG expedition in 1994 and joined in many expeditions. He formerly belonged

to Commission for Integrated Survey of Natural Resources, CAS and at present he is working in CISE.

Tao Baoxing mentioned “Guozongmucha Shan is a name of this mountain called by local Tibetan. Name in Chinese letter was applied and appeared on the map after the 1999 expedition. The state mapping agency and local government jointly discuss and then decide name of place in China. Guozongmucha Shan was officially named after such go-through procedure and formality. This name will often appear on the map from now on. Regarding the true source of the Mekong, many scientists recognized Guozongmucha Shan as the true source. Overall judgments are essential for taking any decision on an important issue. Glaciers of our true source of the Mekong, Guozongmucha Shan, are located in the water system of the Mekong River. On the contrary,

Almost all glaciers of Dr. Liu’s true source, Jify Shan, belong to the water system of Chang Jiang (Yangtze) and only some of them cross the watershed to the Mekong side. From this view point, specialists of water system geography are negative for the true source of Jify Shan. Since these glaciers are of small surface area, they would be soon wilted and faded out because of global warming.”

If a monograph on the true source, Guozongmucha Shan, being authorized by the Chinese Government had been written in English and dispatched to the international institutions such as the Mekong River Commission for the Mekong, Guozongmucha Shan would have been widely recognized as the true headwaters in foreign countries. It is regrettable that information solely on Jify Shan was sent abroad in English and Jify Shan became known as the true source of the Mekong.

### **Parties having reached the headwaters after 1999**

Many adventurers and explorers had an eye on the headwaters of Zayaqu even after 1999. The new comers recorded new discoveries. The previous rrevious parties started their caravans from Moyun in Zanaqu, a remotest town in the upper Mekong. But in August, 2003, John Pilkington from United Kingdom made an approach via Zaqen to the upper stream passing newly finished road, and afterwards this route has been beingused for access to the headwaters.

John Pilkington visited two headwaters, Jify Shan and Guozongmucha Shan and found some mistakes in the names given by the previous expeditions in 1994 and 1999. He pointed out that a creek [Lasagongma] which was named by Chinese researchers according to local herdsmen must be [Lasaawuma] and [Lasagongma] was a tributary

coming down from the east face of Jify Shan. However, the PLA topographical map of 1:100,000 describes [Lasagongma] for [Lasawuma]. Therefore, no amendment of the name will be paid an attention for the time being.

In April 2004, two groups entered Guozongmuchu Shan. One was Team Kiwi-SPARK Hillary Expedition led by Rosalind Wood from New Zealand to descend from the headwaters to Indo-China Sea on foot and by mountain bikes and rafting. The other was a team of Mekong First Descent led Michael O'shea from Australia to trace from the headwaters to Indo-China Sea by kayaks. In the same year, a mountaineering party led by Shinichi Abe from Niigata Mountaineering Federation of Japan made the first ascent of Qiajajima I 5930m on July 31. This peak was the highest unclimbed peak in the headwaters of the Mekong.

In August 2006, Yoshiharu Sekino, a Japanese explorer accompanied by TV crews made an attempt on descending from the headwaters to the sea on foot, by mountain bikes and canoes, etc. They stood atop the summit 5514m of Guozongmuchu Shan above a glacier of Lasagongma at 11:30am on August 23 and descended a part of Za Qu.

### **The last challenge to the true source**

In May, 2007, China Exploration and Research Society, Hong Kong, led by Wang How Man sent their team to locate and determine the true source, whether Guozongmuchu Shan or Jify Shan. Prior to the departure, by using remote sensing technology Martin Ruzek, an earth system scientist from USA, measured the river length of both tributaries to the headwaters of Guozongmuchu Shan and Jify Shan, which had remained a most controversial issue on the true source of the Mekong. A record of new measurement of the river length was as follow.

#### **First record**

1. Yeyonsongdou to Jify Shan: Guyong – Pudigao -----19.39km
  2. Yeyonsongdou to Guozongmuchu Shan: Lasagongma – Gaoshanguxi-----21.7km
- This record disproved Dr. Liu's conclusion as it showed that the river length to Guozongmuha Shan was longer by 2.31km than that to Jify (Jifu) Shan.

Carrying the above record for reference, they reached the headwaters of Guozongmuchu Shan. After finishing the expedition, Martin Ruzek again measured the location making use of higher resolution satellite image, as follows.

#### **Second record**

1. Yeyonsongdou to Jify Shan: Guyong – Pudigao-----22.49km
2. Yeyonsongdou to Guozongmucha Shan: Lasagongma – Gaoshanguxi-----21.83km

On the contrary to the first record, the river length to the headwaters of Guozongmucha was shorter by 0.66km than that to Jify Shan. This second measurement proved Dr. Liu's conclusion.

Difference in measurement appeared because the higher resolution of satellite imagery made it possible to see more details of many Q-shaped meandering small streams from Yeyonzongdou to Jify San: Guyon – Pudigao, which resulted in counting the longer river length. On the other hand, river streams from Yeyonsongduo to Guozongmucha Shan: Lasagongma – Gaoshanzuxi had less meandering, and the second record remained the same as the first record. According to their observation streams from Yeyonsongdou to Guozongmucha had more flowing water volume, was wider and straight. Streams from Yeyonsongdou to Jify Shan had less flowing water volume and was meandering.

In general, a river incline becomes the smaller and flowing water volume is the less, river would be the longer as its stream becomes the more meandering. Therefore, to simply apply only river length for criteria to determine the true river source would hardly be accepted. In 2009, China Exploration and Research Society has a plan to send again an expedition for further investigation.

### **Acknowledgment**

I would like to express my foremost thanks Pete Winn (USA), Dr. Martin Ruzek (USA), Michael O'shea (Australia), Dr. Kaaren Mathias (New Zealand), Tao Baoxiang (China), Zhou Changjin (China), Dr.Liu Shaochuang (China), Na Ming Hui (China), Wang How Man (Hong Kong), John Pilkington (United Kingdom), Ian Walker (United Kingdom), Alexander Selvachev (Russia), Tamotsu Nakamura (Japan) for supporting my expeditions, providing information and images collection, and helping enhancement of this article. .

### **Reference on the Japanese Alpine News**

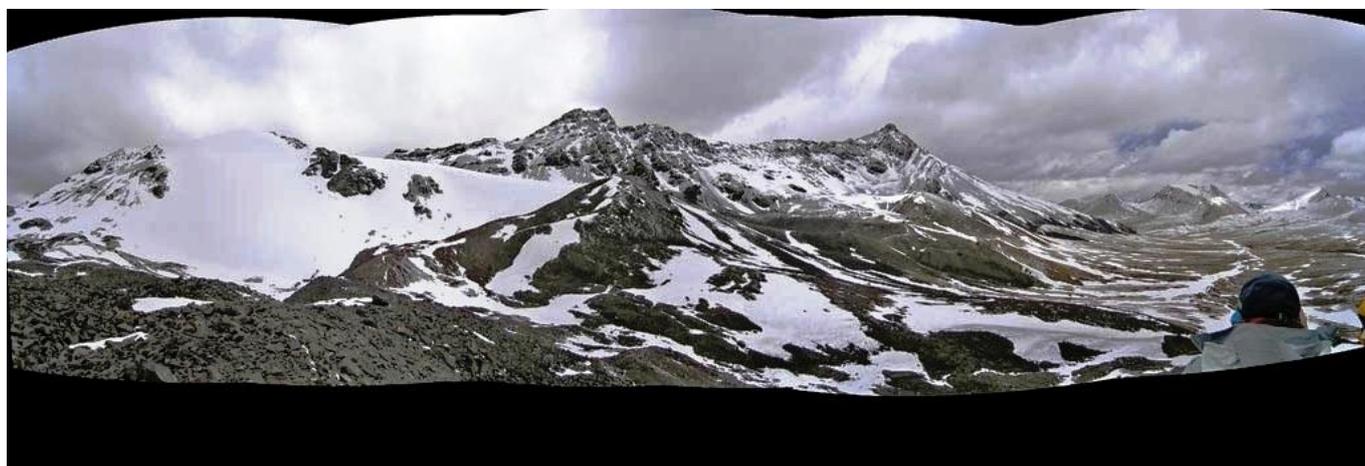
1. Vol. 1 October 2001 Masayuki Kitamura *Discovery & First Descent of Mekong Headwaters*
2. Vol. 2 April 2002 Pete Winn *Final Determination of the Source of the Mekong River*

3. Vol. 3 May 2003 Masayuki Kitamura *First Descent of the Upper Mekong River*
4. Vol. 6 May 2005 Masayuki Kitamura and Pete Winn *First Descent of the Mekong*
5. Vol. 7 May 2006 Masayuki Kitamura *The Descent of the Mekong River*

## Photo Gallery



Guozongmuchu Shan glacier of Lasagongma, Qinghai Province (TUA/CSITS, 1994)



A view of the source area of Mekong River (Martin Ruzek, CERS, 2007)



**Guozongmucha Shan glacier of Lasagongma, Qinghai Province (TUA/CSITS, 1994)**



**TUA/CSITS measuring flowing water volume in Ganasonduo (TUA/CSITS, 1994)**



**Jify Shan 5552m (N33 45 35), Qinghai Province (Liu Shaochuang, 1999)**



**Searching for the longest tributary, Qinghai Province (Liu Shaochuang, 1999)**



The first descent of upper Mekong river in Qinghai Province (TUA/CSITS, 1996)



The first descent of upper Mekong river, in Qinghai Province (TUA/CSITS, 1996)



**The first descent of upper Mekong river in Qinghai Province (TUA/CSITS, 1996)**



**The second biggest fall in Mekong river, Qinghai Province (TUA/CSITS, 1996)**



**The descent of upper Mekong river in Tibetan Autonomous Region (The Last Descent, 2008)**



**The first descent of Mekong river in Northwest Yunnan (TUA/CSITS, 2002)**



The first descent of Moon Gorge in Northwest Yunnan (TUA/CSITS, 2002)



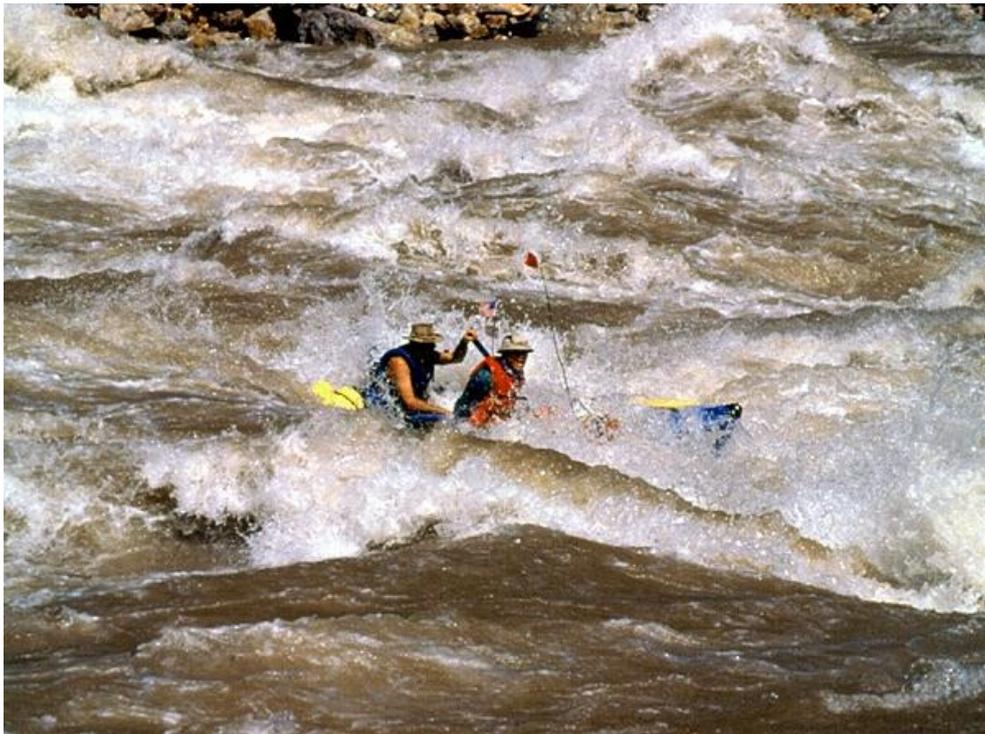
The descent of upper Mekong river in West Yunnan (TUA, 2005)



The descent of upper Mekong river in Southwest Yunnan (TUA, 2005)



**The first descent of Ganbei Rapids in West Yunnan (ESE, 1995)**



**The first descent of Dragons Teeth Rapids in West Yunnan (ESE, 1995)**



The first descent of No Exit Rapids in West Yunnan (ESE, 1997)



The first descent of No Exit Rapids in West Yunnan (ESE, 1997)



The first descent – School pupils visited camp – in West Yunnan (ESE, 1997)