Mapping Rivers in Modern Chinese History

A curriculum integrated collaboration between GIS librarian and subject librarian

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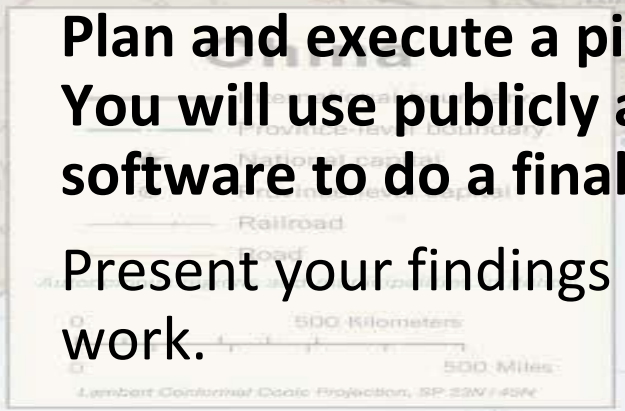
Course: Mapping Rivers in Recent Chinese History: 1824 - 2017

Learning Objectives

1. Understand the relationships between rivers and China's recent ecological, economic, social, and military history
2. Use evidence to make arguments about the relationship between societies and their environment.
3. **Evaluate data from textual and quantitative sources: what can we do with it, and where should we be cautious?**
4. **Plan and execute a piece of original research to answer a question that interests you. You will use publicly available data and ArcGIS Geographic Information Systems software to do a final project about China's rivers and society.**
5. Present your findings both orally and in writing, and critically evaluate a colleague's work.



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Our objectives

Three approaches to support professor and course objectives

1. Professor support (meetings)
2. Embedded student instruction
3. Student consultations for group projects

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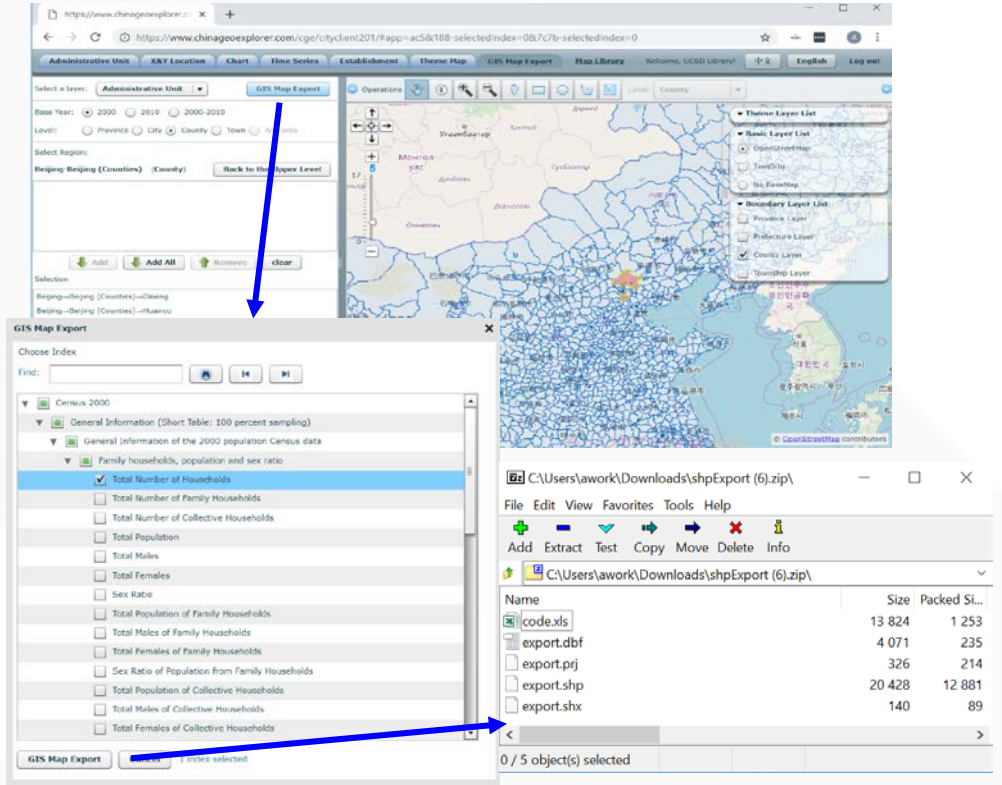
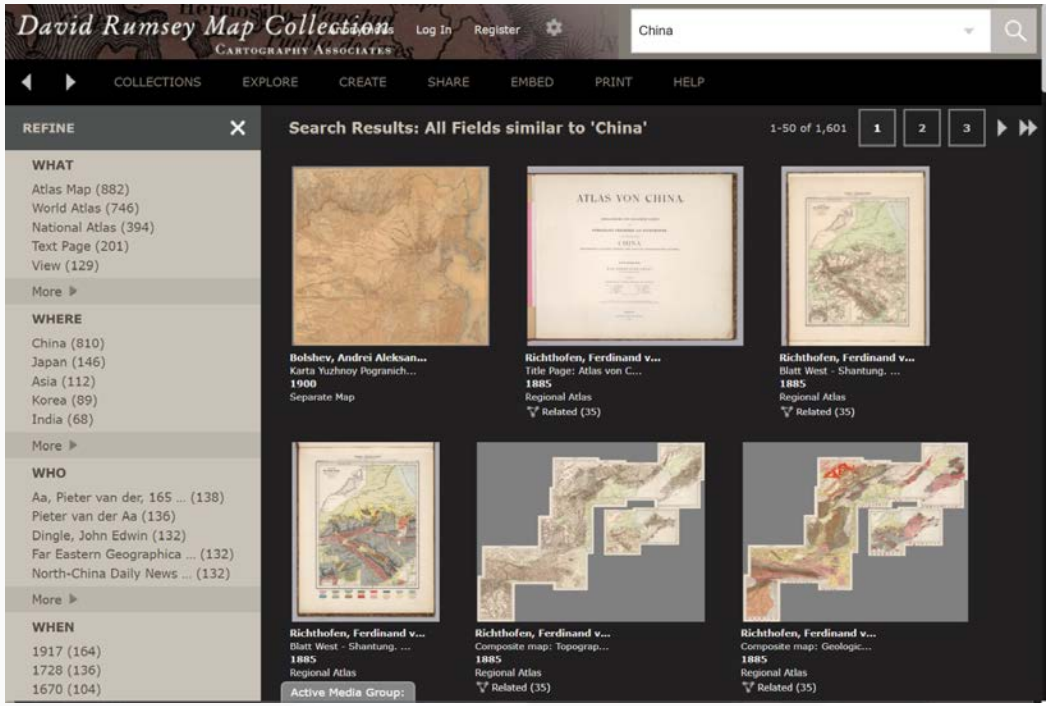
Embedded instruction: Co-teaching

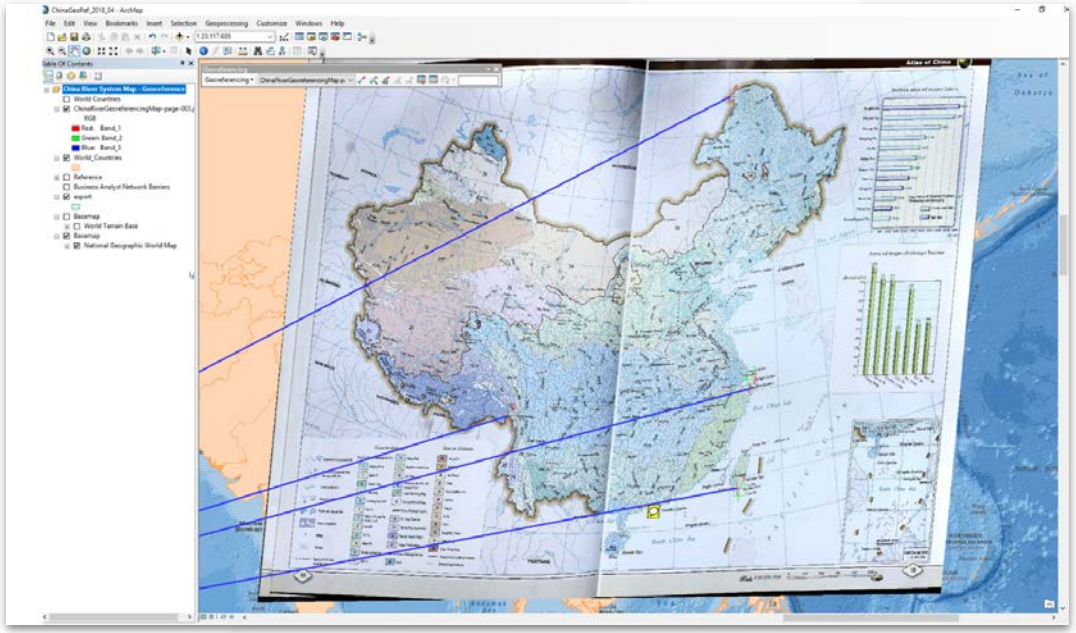
- Session 1: Intro to Chineses Stats resources and China Geo-Explorer Online
  - Statistical Resources - China Data Online, China EPS, CEIC
  - Download statistical data and Shapefiles from China Geo Explorer. Use ArcMap

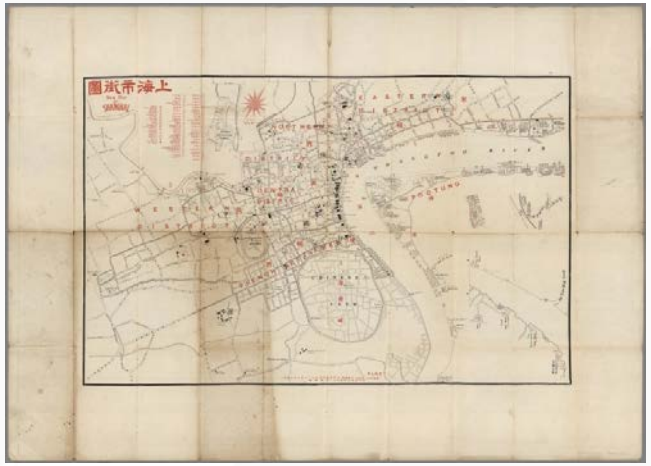


Embedded instruction: Co-teaching

- Session 2: Georeferencing of historical maps
  - David Rumsey Map Collection
  - ArcMap







New map of Shanghai. Published by K. Saito. Osaka Japan, 1909. David Rumsey Map Collection https://www.davidrumsey.com

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Embedded instruction: Co-teaching

- Session 3: Project Support
  - Open time for students to work on projects

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Group projects

- Students worked in groups of 2-6. They organized themselves in groups.
  - Formation and composition of the groups
- Example project topics
  - How did the construction of the Three Gorges Dam benefit crops yields in Hubei Province?
  - The influence of the change of Ice-breaking time (凌汛时间) to economy along upstream yellow river, particularly in inner Mongolia.

Outside of class consultations

- Nine groups
- How did we logistically manage this?
  - Both in the room at the same time?
    - Initially thought yes, then determined no.
  - Eventually structured two back to back 30 min sessions
  - Student questions determined who would meet first
  - Spontaneous meetings depending on our availabilities

** Organic process that led to this structure*

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HIEA 144 Mapping Rivers in Modern Chinese History Final Project

How did the construction of the Three Gorges Dam increase the crop yields in Hubei Province of China?

[redacted]

The Three Gorges Dam is ranked today as the world's largest hydroelectric dam with installed electricity capacity of 22,500 megawatts (Yardley, Nov 1997) located in Hubei of Chir forms the middle basin of Yangtze River. Fully function in 2012, the dam body was co after start of the construction in 2004. Upon such big-scale construction, resettlement municipalities [that were expected to be] partially or completely submerged, including municipalities, 11 county seats, 140 tons, 325 townships and 1351 villages" (Boning, in total expecting more than 1.15 million people to be relocated. Before the project be expected that 23,800 hectares of arable land, 110,700 mou (15 mou = 1 hectare) rice p mou of dry land were to be inundated (Boning, 575). This huge flooding of residential meant many were living in poverty with little economic investment from the governm for flood prevention and poor education level. Out of 18 million people in the Three G million people were suffering poverty (Boning, 575-6) from resettlement and flooding resettlement remained as one of the biggest concerns for the Three Gorges Project criti construction of the dam were intended for useful purposes: to produce electricity to m

Output Value of Farming,Forestry, (yuan)	3,543.0	10,582.8
Area of Irrigated Land (th hectare)	2,305.8	2,242.4

Table 3. Hubei Provincial Data Before and After the Three Gorges Construction. While number of townships and people in farming decreased, number of paddy fields and yields of grain crops and oil-bearing crops increased. The yield of cotton and sugarcane crops decreased after the construction but the output value of farming and forestry increased by threefold. Data were collected from China Data Online and CEIC Data.

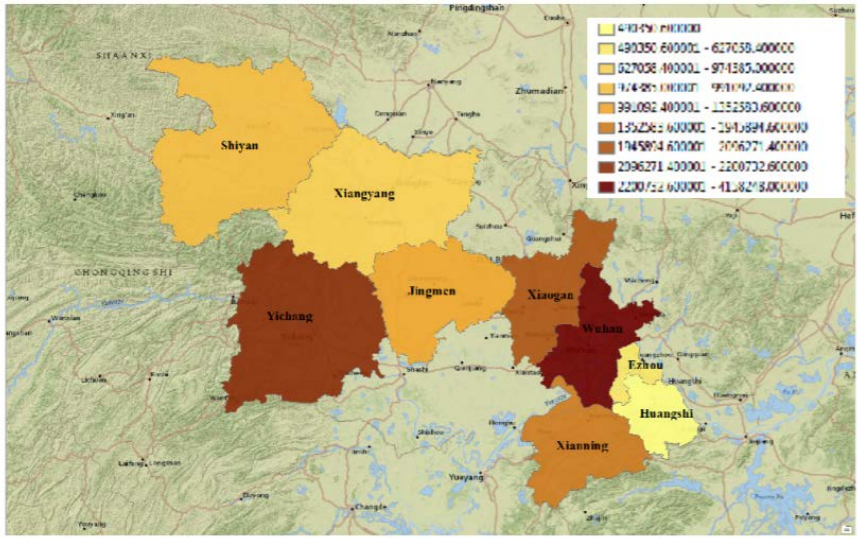


Figure 1. Growth in Vegetable Yield in 9 Prefecture Cities of Hubei Province after Construction of Three Gorges Dam. Map was generated with ArcMAP with data above.

Figure 1 displays the difference of average vegetable yields (tons) before (1990-1994) and after (2006-2010) the dam construction, mapped regionally for nine prefecture cities in Hubei with ArcMap. For all nine cities, the data shows a significant increase in the vegetable output over time. Our map analysis on ArcMap has also showed how smaller the distance between the city and Yangtze River meant

increase or decrease over time. The goal was to do this analysis county-level, there being 22 s in Hubei, but only prefecture city data could be found. However, out of the 12 prefecture cities n, Huangshi, Shiyan, Yichang, Xiangyang, Ezhou, Jingmen, Xiaogan, Xianning, Huangguang, u and Jingzhou), there were no data for the desired time periods for Huanggang, Suizhou and ou so the analysis was done on 9 cities in the province for respective cotton output and vegetable, vn in Table 2. This data was found from EPS China Data. It was our goal to compare the yield of wheat and rice outputs but not sufficient data could be found for wheat and rice. Shown in Table 3, t provincial data were gathered for cotton yields, sugarcane crops yields, the area of irrigated and hese were collected from China Data Online and CEIC Data.

	Average Cotton Output Before Construction, 1990-1994 (10,000 tons)	Average Cotton Output After Construction, 2006-2010 (10,000 tons)
Wuhan City	3.94	3.0542
Yellowshi City	0.078	0.43584
Shiyan City	N/A	0.00784
Yichang City	2.8	2.931
Xiangyang City	6.56	4.04748
Ezhou City	0.95	0.53212
Jingmen City	1.12	4.41372
Xiaogan City	1.79	3.25648
Xianning City	0.00235	0.25332

Table 2. Average Cotton Output of 9 Prefecture Cities in Hubei Province Before and After the Construction of Three Gorges Dam. The average data for first time period lacks information from 1992 and 1993 and were collected from EPS China Data,

The Exploitation of Water in the Tibetan Plateau 2000-2011

Abstract

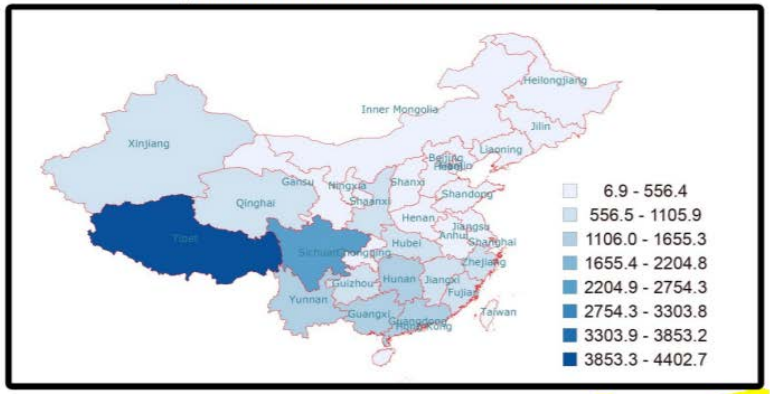
The Tibetan Plateau, which encompasses the Himalayan Mountains and provides an abundance of natural resources, faces an environmental and social dilemma. Wat desperately needed resource to meet increasing population and industry demands regions, has rendered it the target of the larger and much more powerful nation of addition to global warming which has already accelerated the melting rate of glac Tibetan Plateau, the proportion of surface water volume to population in the regi while the amount of water available to the population in China has remained cons

Historical Background

Tibet, with its abundant natural resources and strategically important bord historically been the target of other nations. Most notably, in 1949, the People's I of the the newly established Communist regime in China invaded Tibet, occupyir dividing it to be incorporated into neighboring Chinese provinces. China's illegal Tibet continued until 1951 when it was made official (Norbu, 2001).

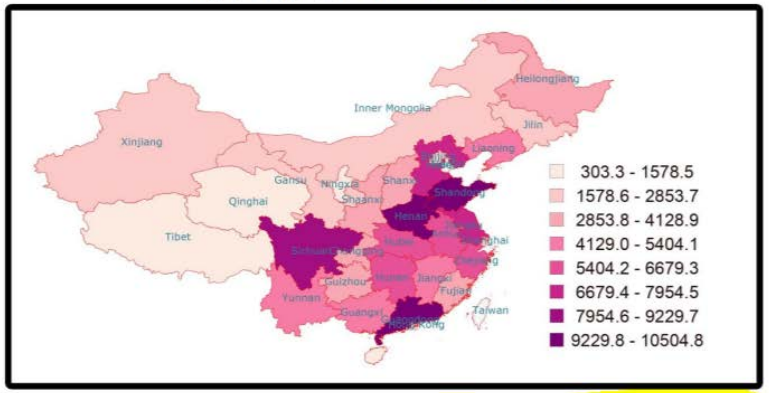
Long before the official occupation of the Tibet province, China had cons

Figure 1: Surface Water Volume 2011 in China's Provinces



The legend measures in units of 10 million cubic meters of water. Data from China Data Online, Atlas of Chinese Statistics by Province. Map shows surface water volume data of each of China's provinces from the most recent year available.

Figure 2: Population 2011 in China's Provinces



The legend measures people in units of 10,000. Data from China Data Online, Atlas of Chinese Statistics by Province. Map shows population data of each of China's provinces from the most recent year available.

References

Albert, E. "Water Clouds on the Tibetan Plateau." *The New Geopolitics of China, India, and Pakistan.* (2016, May 9).

CEIC China Data. Utilities Data.

EPS China Data. Water Conservancy Statistics.

Horier, S., Daigo, I., Matsuno, Y., Adachi, Y. *Comparison of Water Footprint for Industrial Products in Japan, China and USA*. In Finkbeiner, M. (ed.) Towards Life Cycle Sustainability Management, Springer.

Horner, Charles. "The Yuan Dynasty and the Pax Mongolica." *In Rising China and Postmodern Fate*, pages 22-33. Athens, GA: University of Georgia Press, 2009.

Needham, Joseph. *Science and Civilization in China*: Volume 4, Part 2. Taipei: Caves Books, Ltd. (1986).

Norbu, Dawa. "China's Tibet Policy." *Psychology Press*, pages 300-301. (2001).

The Editors of Encyclopedia Britannica. "Plateau of Tibet." *Encyclopedia Britannica*. (2011, November 14).

"South-North Water Transfer Project." *International Rivers.* (n.d.).

Wanpo, Huang. "Early Homo and associated artefacts from Asia." Nature Volume 378, pages 275–278. (16 November 1995).

"Water." *International Center for Integrated Mountain Development (ICIMOD).* (n.d.).

Takeaways - Collaboration

- Collaboration is key. Willingness to collaboration.
- Leverage the domain knowledge expertise of the other
- Can both talk about surface level concepts about the other's domain

- Communication essential for all (Instructor, Xi, and Amy)
- Maintaining good relationships with patrons will lead to new opportunities.
  - We will come to the minds of them when they need help, but aren't sure where to go / ask.

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Takeaways - Resources 1

- A plethora of resources
- There are free resources out there (may not give the full historical coverage)
- China Geo-Explorer Online
  - Used a trial version before this class (short trial that would not last the duration of the class).
  - Purchased the license for the class.
  - Other departments now use the database

Takeaways - Resources 2

- Resources
  - Found other resources in the Library that we didn’t immediately realize we had. CD.
    - Xi aware, but never used in consultation or class.
    - Revisiting of previously purchased resources
      - Based on the need of student questions, make sure that others are aware of this recourse.
    - CD now on Guide | CD now on local network data drive to improve accessibility

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Takeaways - For Next Time

- What would you do differently?
  - Extremely organic process - first time course taught, new professor
  - Documenting the process - just like designing the course, you have a syllabus.
  - Make a GIS tutorial a required homework assignment. Pts. Part of grade. Certificate of completion from the training. (use existing trainings)

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Takeaways - For Next Time

- What would **we** do differently to enhance our own collaborations
  - Subject Librarian desires to help a bit more with GIS questions

  - Increase the GIS capacity / competence of Subject Librarian
    - Focus on 2-3 specific commonly used functions that pertain to the discipline and course objectives.
    - This situation: Joining of tables and georeferencing
      - Joining of tables → statistics downloaded from databases to shapefiles
      - Georeferencing → stretching historical maps to match the “real world”.

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Takeaways

- What we've learned
  - Willingness to collaborate; Domain expertise
  - How does this relate to the "are you adequate enough to help your patrons"
  - Know your limitations and don't be afraid to reach out and ask (subject / functional librarians)
  - This isn't just limited to GIS, but applies to other modes of collaboration
    - Data science, digital scholarship, scholarly communication, research data management, digital media, data curation.

Questions?

What are your experiences?

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