

Strategy for rescuing historic data of cryosphere research

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Outline

- A brief introduction of data center
- The status of historic data rescuing
 - ❧ Historic dataset list
 - ❧ Key problem in historic data rescuing
- Strategy for data rescuing and data manage
 - ❧ Data rescuing based “open source” idea
 - ❧ Data integration and knowledge discovery
- Summary



1. A brief introduction of data center

- World Data Center (WDC) for Glaciology and Geocryology at Lanzhou was established in 1988 as one of the nine World Data Centers in China.
- Its main objective is to collecting, managing and distributing data of the cryosphere, particularly to maintain information about glaciers, permafrost, ground ice, snow cover, freshwater ice, ice core, and other cold region science and engineering activities in China.
- The data center is sponsored by the Cold and Arid Regions Environmental and Engineering Research Institute (CAREERI), Chinese Academic of Sciences (CAS) and is funded at the project level by MOST (Ministry of Science and Technology of China) and NSFC (National Science Foundation of China) as well.

[Snow](#) | [Glacier](#) | [Frozen Soil](#) | [CCREIS](#) | [GAME-TIBET](#) | [Meteorology](#) | [Remote sensing](#)

[Snow Data](#)

Snow depth, snow cover

[Glacier Data](#)

Chinese Spatial Glacier Inventory
Data and Yaluzangbu River
Glacier Inventory

[CCREIS](#) NEW

Chinese Cryospheric Resource
and Environment Information
System

[Pumqu Basin, China](#)

[Himalaya](#) NEW

Inventory of Glaciers and Glacial
lakes and the Identification of
potential Glacial
Lake Outburst Floods(GLOFs)
Affected by Global Warming in the
Mountains
of Himalayan Region Pumqu
Basin, China Himalaya

[Frozen Soil Data](#)



WDC for Glaciology and Geocryology, Lanzhou

WDC for Glaciology and Geocryology, Lanzhou, is the main part of the [World Data Centre](#). It is also one of the professional databases of Chinese scientific Database. The aims are the collection, saving, management and analysis on Chinese Cryosphere Database which includes the Polar Regions and high Asia Regions.

This data center also can promote the sharing of the cryosphere data in the earth science. It would contribute to the research of the global change, the protection of the cold and arid regions, the exploitation of the natural resource, the construction of the projects and the work to forefend and reduce the disaster.

Citing Data

In order that we might broaden awareness of our services, WDC for Glaciology and Geocryology, at Lanzhou requests that you acknowledge use of our data sets. Please refer to the information about data acknowledgment, or contact our User Services for further information via wcdgg@lzb.ac.cn We also request that you send us one reprint or PDF file of any publication that cites the use of data received from our Center. This helps us to determine the level of use of the data we distribute. Thank you.

The information about data acknowledgment:

<http://wcdgg.westgis.ac.cn>

2.The status of historic data rescuing

- Rescued some historic dataset of cryosphere by ourself or collected from other data center
- Project requirement->hard copy-> digitization->database->distribute
- Created metadata for the dataset
- Most rescued data are come from published maps,books and archives
- Data quality control



3. The historic data list

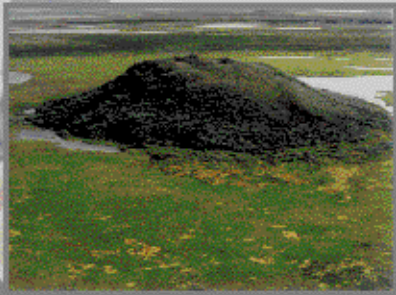
- Chinese cryosphere information system
- Chinese glacier inventory
- Snow dataset: observations
- Frozen soil data: Permafrost distribution map of China and borehole ground temperature observations
- GAME-Tibet observations (mirror site)
- Remote sensing data: SSM/I Brightness temperature data, NOAA AVHRR, ASTER, and TM
- Other dataset: landcover, soil, vegetation...



3.1 GIS of Chinese Cryosphere

中国冰冻圈资源与环境信息系统

中国冰冻圈资源与环境信息系统



GIS of Qinghai-Tibet plateau



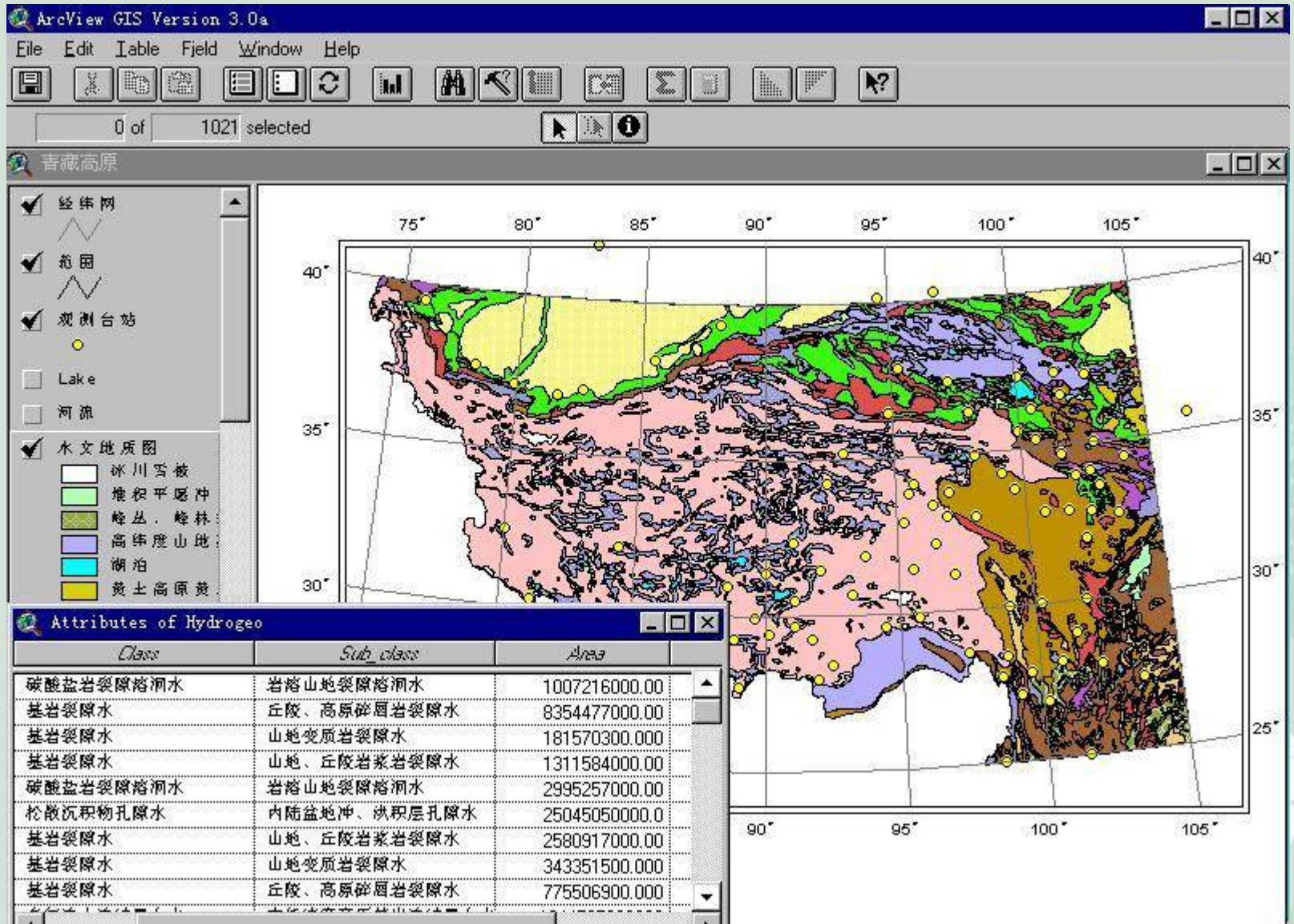
GIS of the Region along the Qinghai-Tibet highway



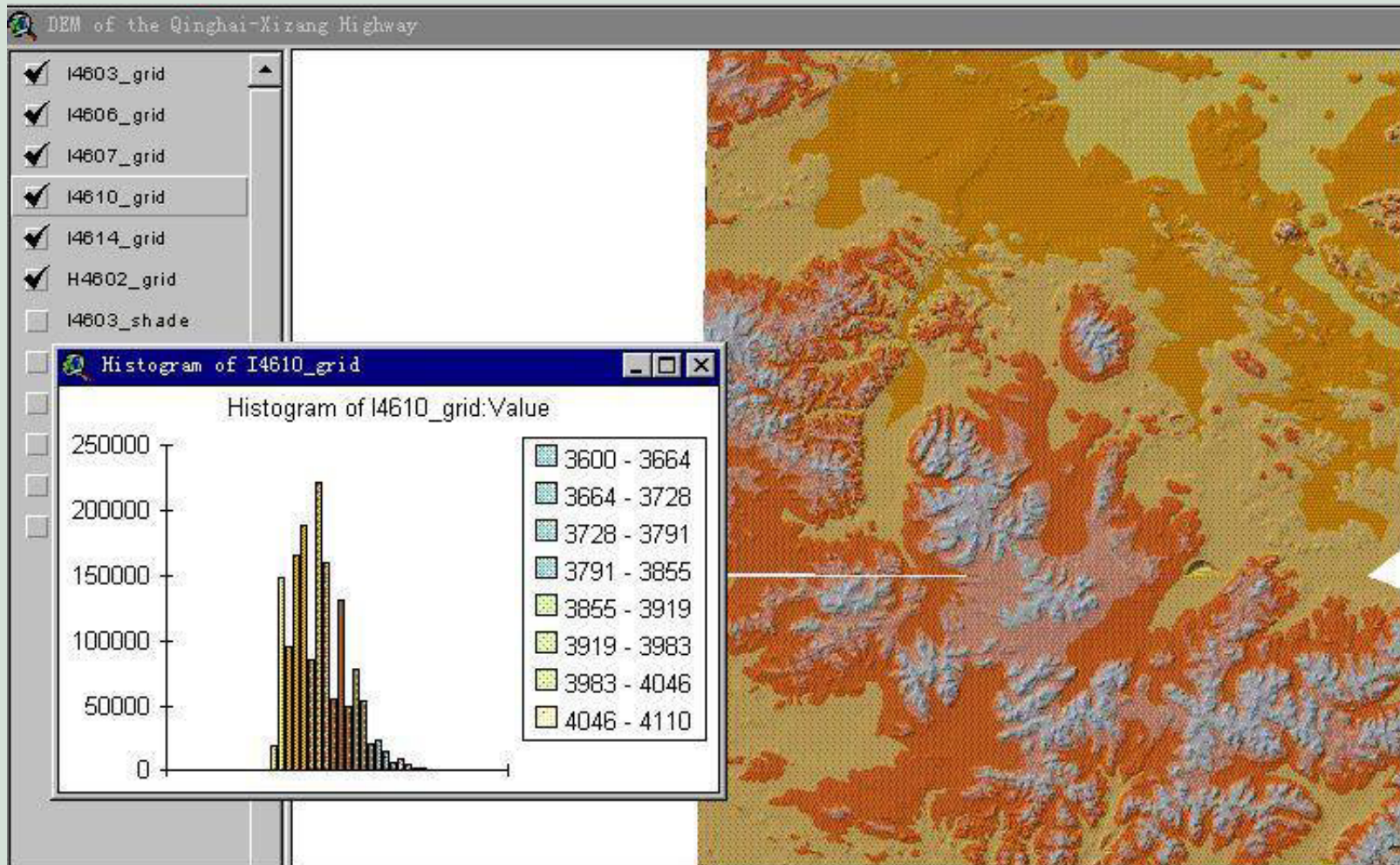
Urumqi River Basin in the Tianshan Mountains



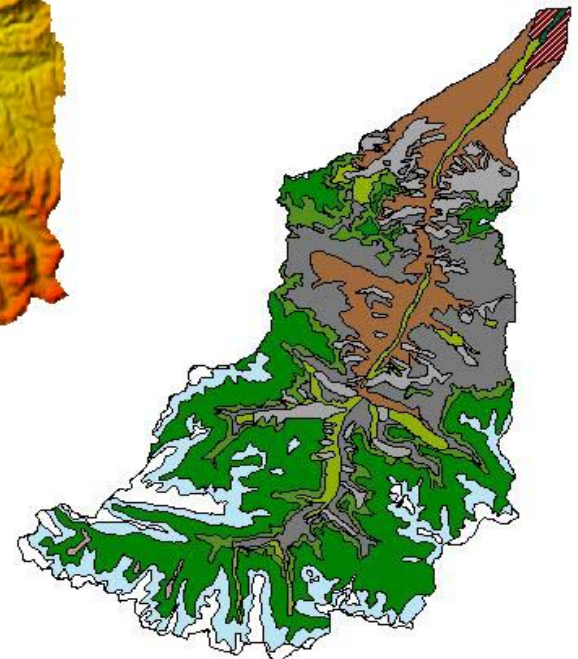
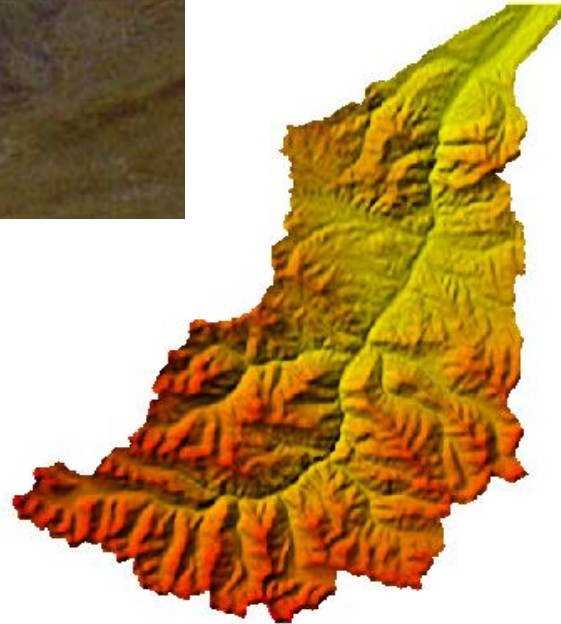
GIS of Qinghai-Tibet Plateau



GIS of the Region along the Qinghai-Tibet highway and rail

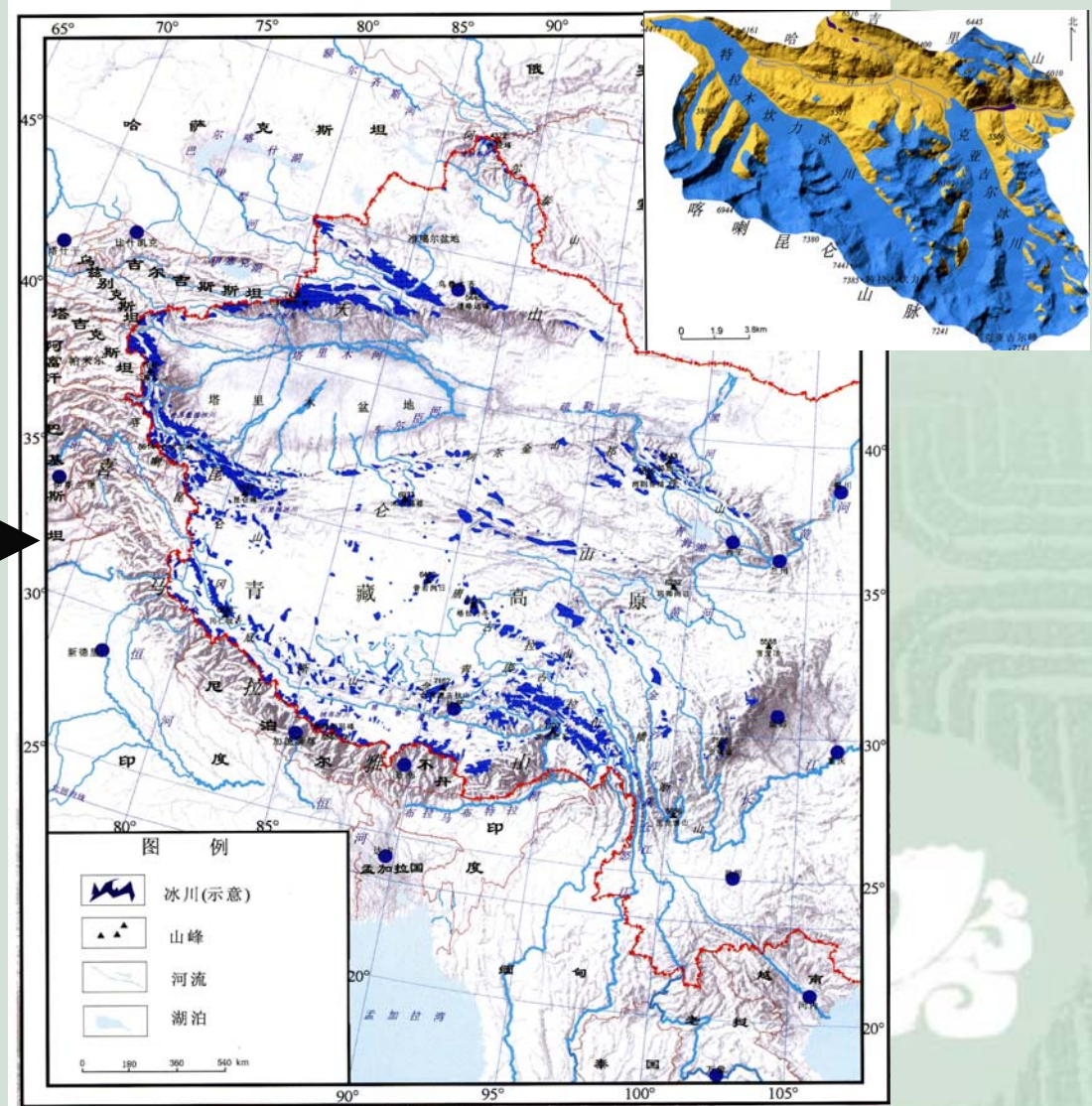


CCIS: Urumqi River Basin in the Tianshan Mountains

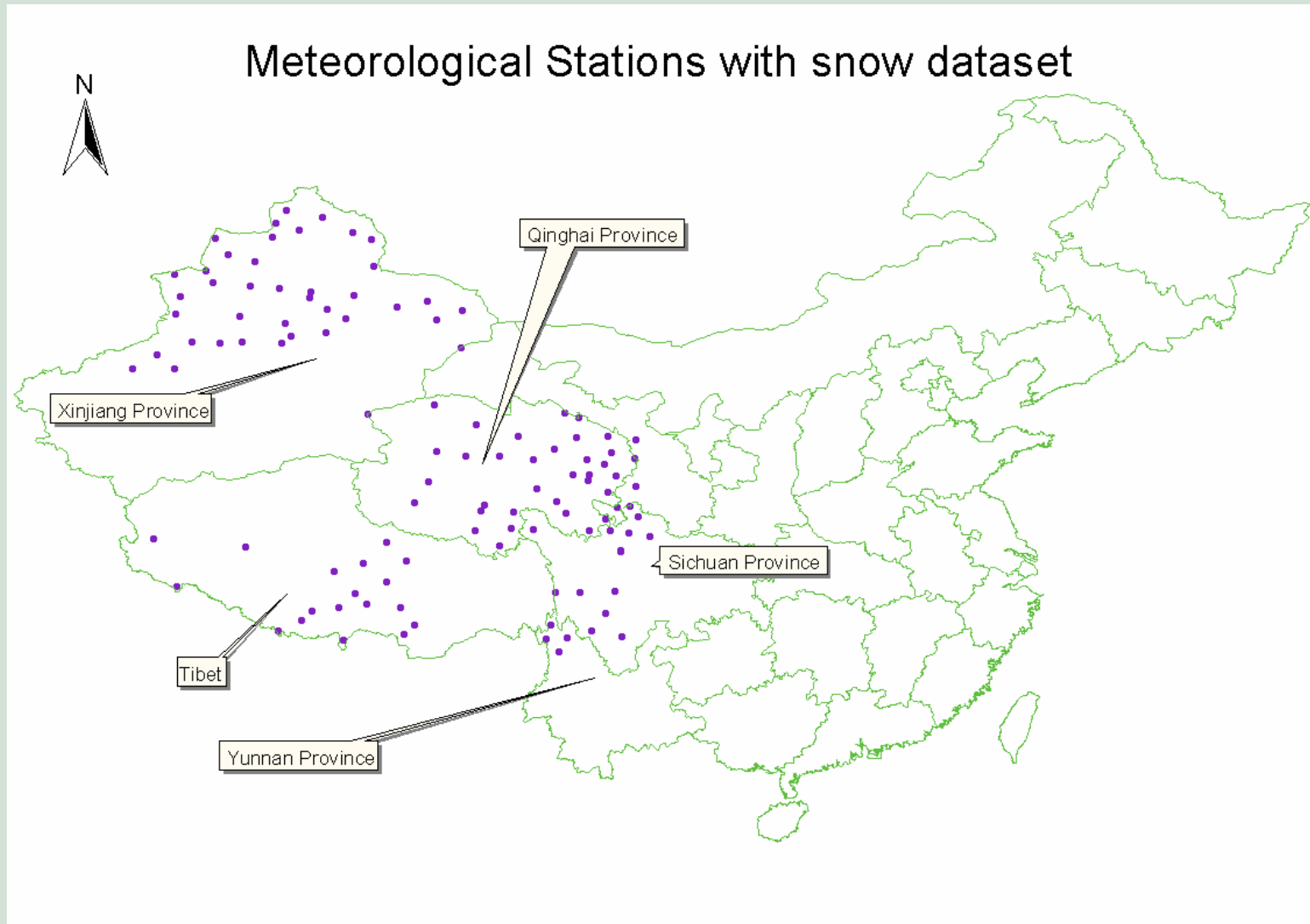


| Type | Area |
|--------|----------------|
| 栗钙土 | 8420971.00000 |
| 潮土 | 1449957.00000 |
| 栗钙土 | 3470574.00000 |
| 山地栗钙土 | 139387600.0000 |
| 山地草甸土 | 8793613.00000 |
| 山地栗钙土 | 6920.820000 |
| 山地灰褐土 | 12814650.0000 |
| 山地栗钙土 | 945045.700000 |
| 山地灰褐土 | 2007496.00000 |
| 山地栗钙土 | 794303.100000 |
| 山地灰褐土 | 17603200.0000 |
| 亚高山草甸土 | 13803810.0000 |

3.2 Chinese glacier inventory



3.3 Snow dataset

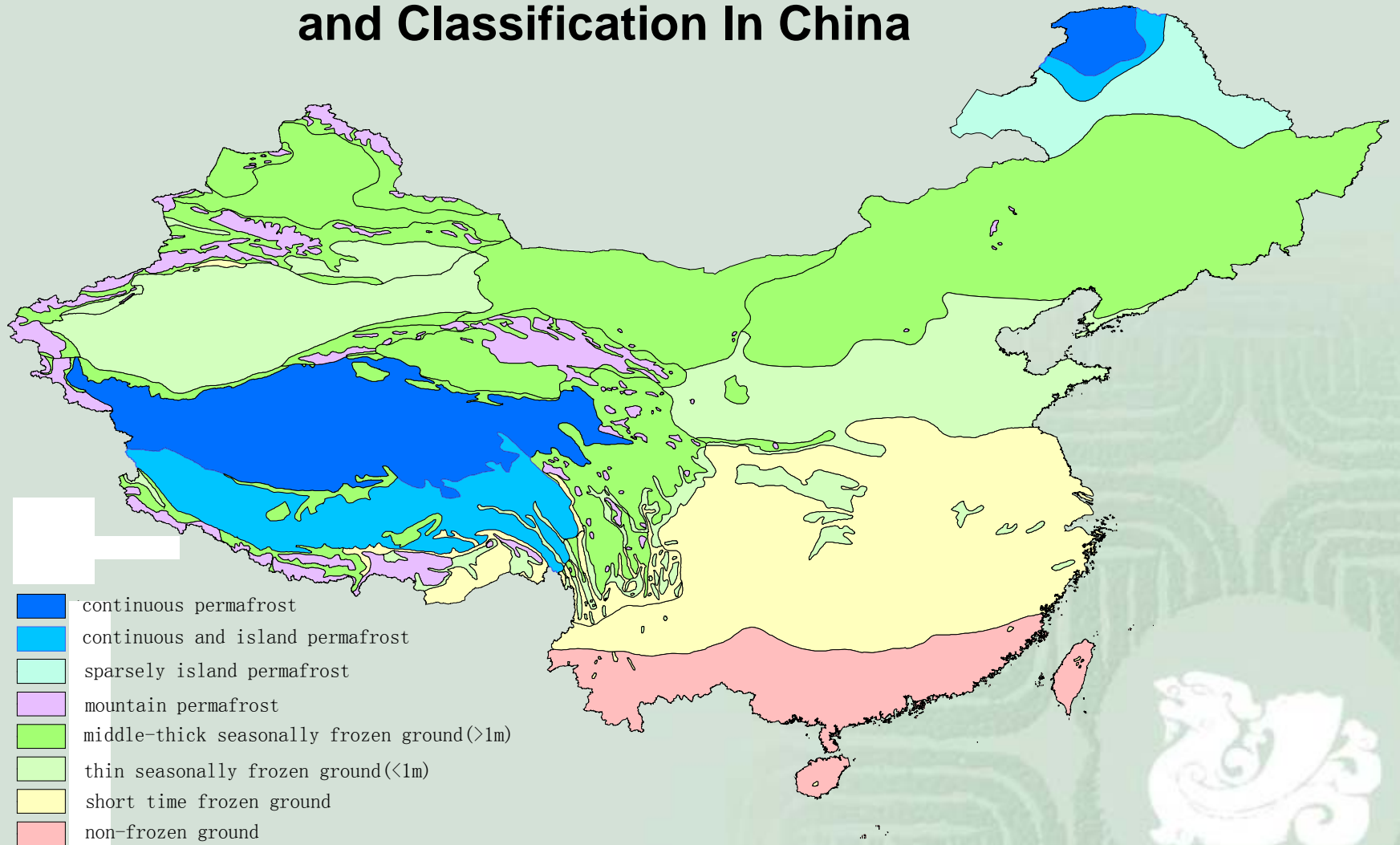


3.4 Frozen soil data

- Borehole ground temperature observations
 - ☞ In 1960s and 1970s, data center measured more than one hundred boreholes along the Qinghai-Tibet highway
- Frozen soil map
 - ☞ Data center digitized the frozen soil map edited by early scientist
 - ☞ Different scale, author and create date



The Map of Geocryological Regionalization and Classification In China

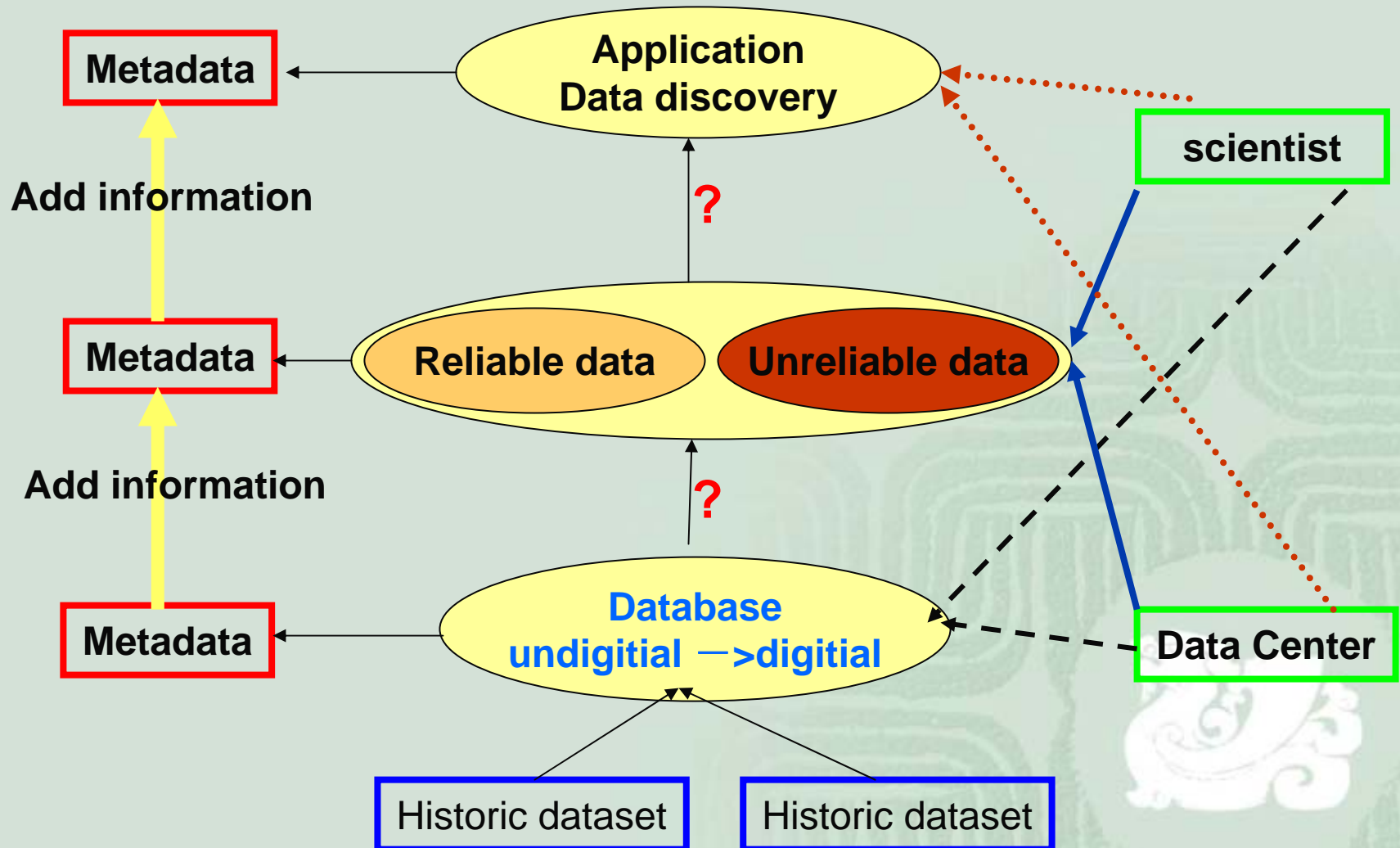


Key problem in historic scientific data rescuing

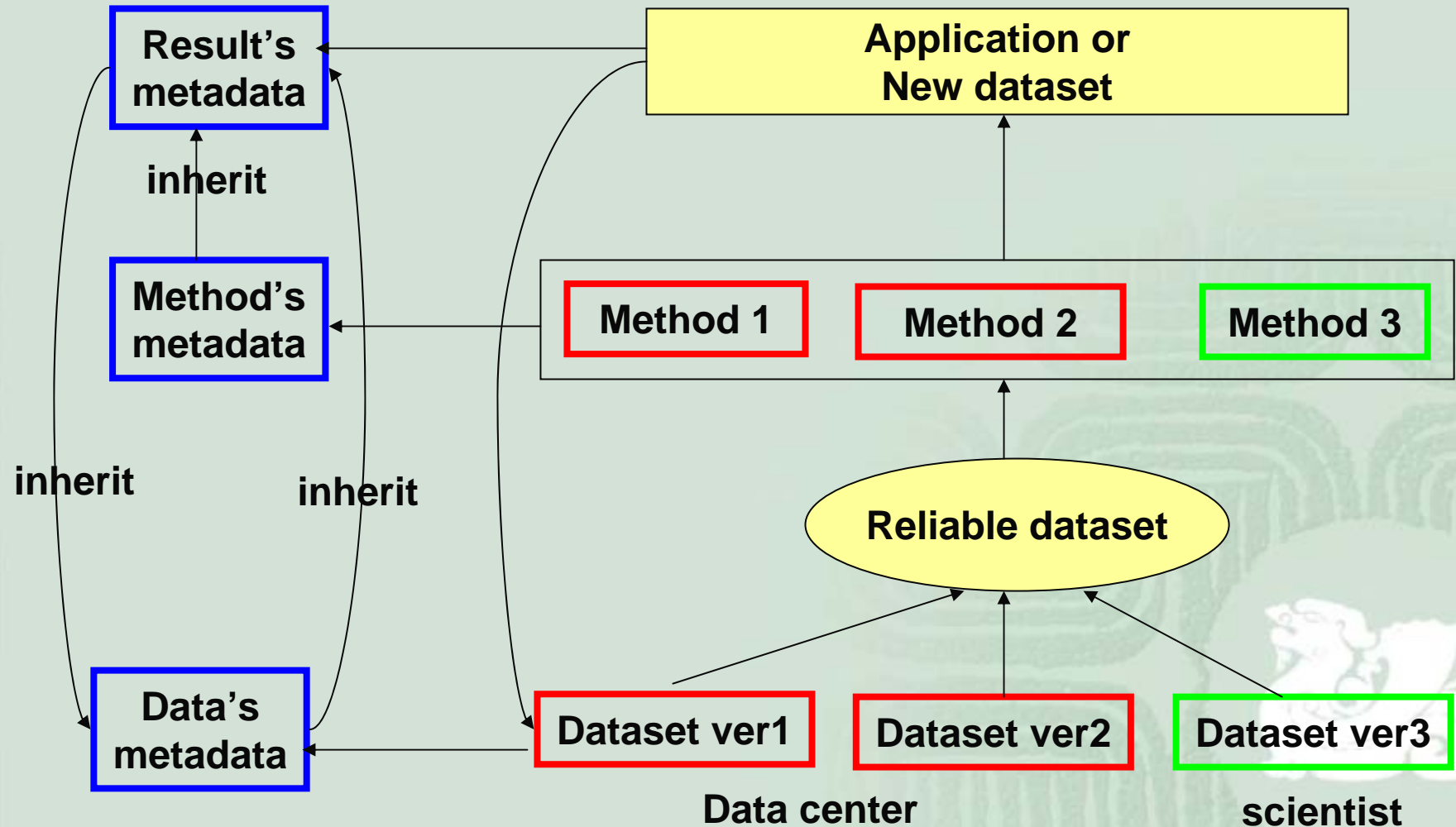
- The value of historic data vs the cost of data collecting
- Much rich value data are unpublished and keep by scientist themselves. How to attract?
- Gap between data collector and data users
 - ☞ Assumed user < actual user
 - ☞ Can't get enough information for metadata.
 - ☞ How to create a reliable database for different application
 - ☞ How to compare historic data with modern data.
 - ☞ Data manage
 - ☞ ...



Data rescuing based “open source” idea



Data integration and knowledge discovery



Summary

- Metadata or knowledge?
- How to collect metadata?
- Just a design now.
- Soil parameter mapping.



Thanks

