

# Historical Analysis using YUNNAN Province Chronicles

Toward Developing Time-space integrated Archives  
for Analysis and Presentation of Cultural Resources

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# Time-space integrated archives

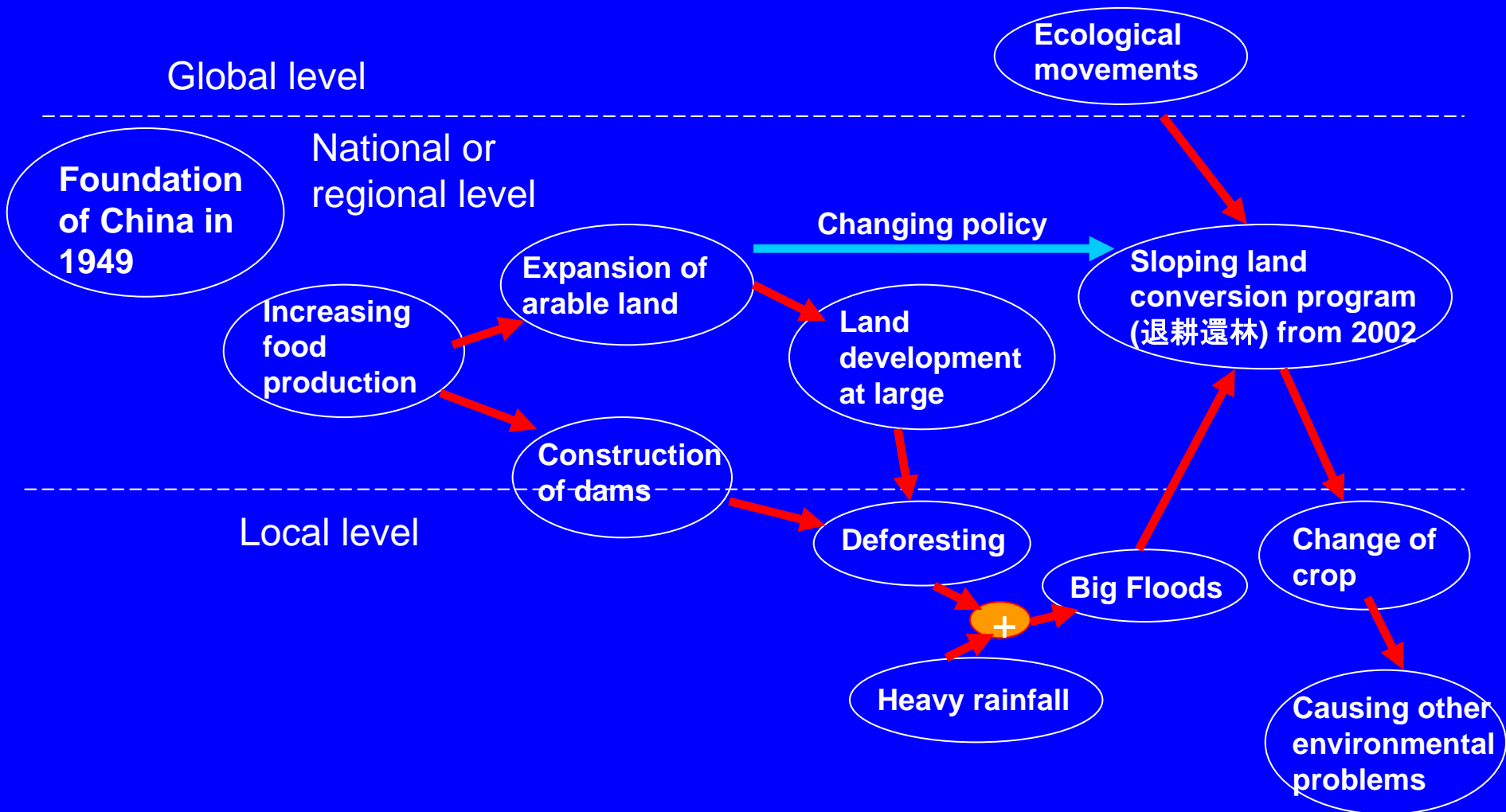
## Objective

- Tool for *not only presentation but also analysis and discovery*
- To *understand cultural dynamism* in complex system composed by political, social, economical, environmental network in time and space context.

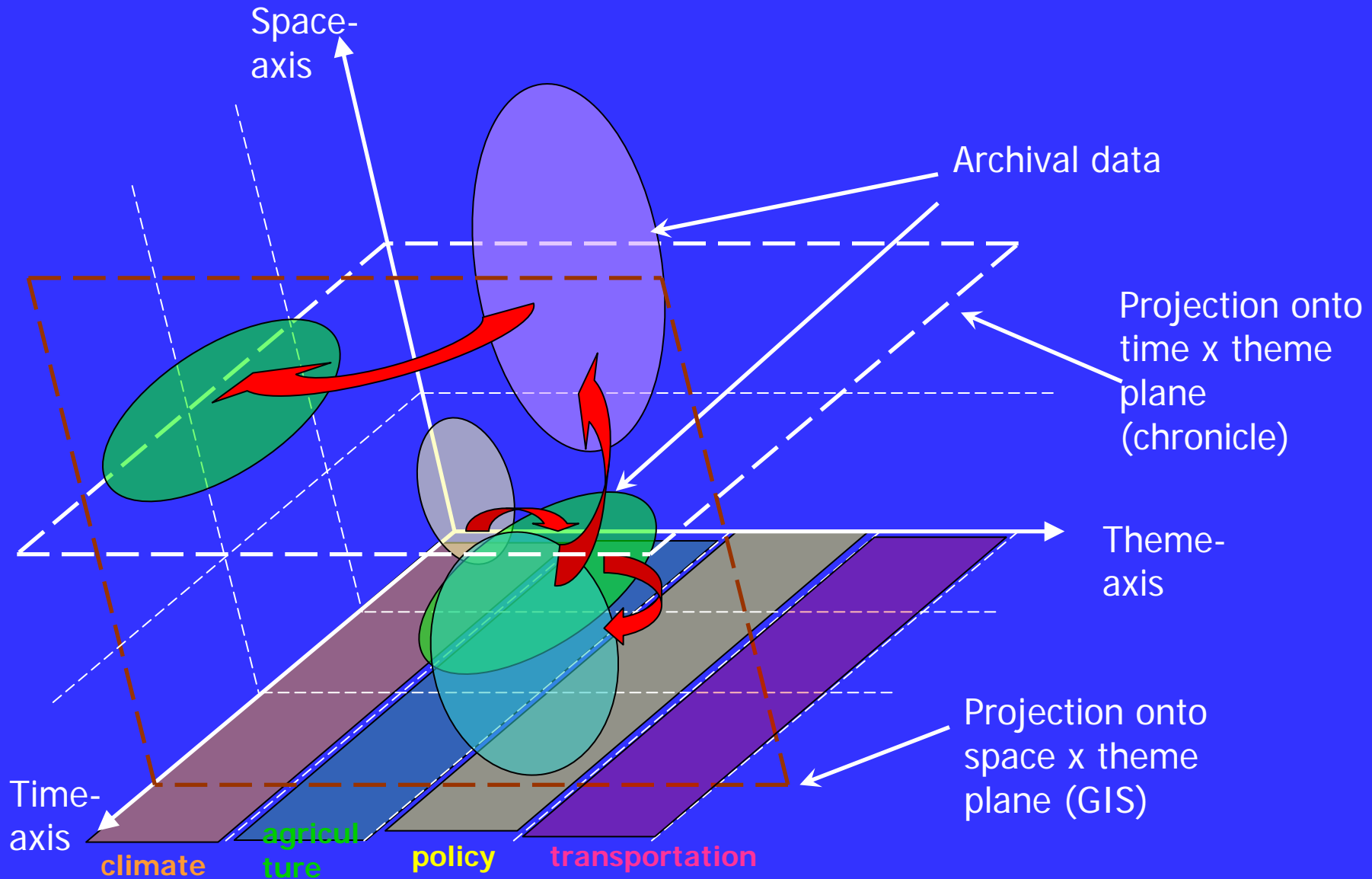
## Method

- By attaching every data, triplet (time, space, theme values), and interrelation link, and introducing mechanism to make it easier discovery and representation of interrelation among data.
- visualization in space (GIS) and in time (chronicle or time-line)
- zoom into micro – zoom out to macro mechanism
- commons or forum-type collaborative creation and sharing

# An example of interrelation among eco-historical events in Yunnan

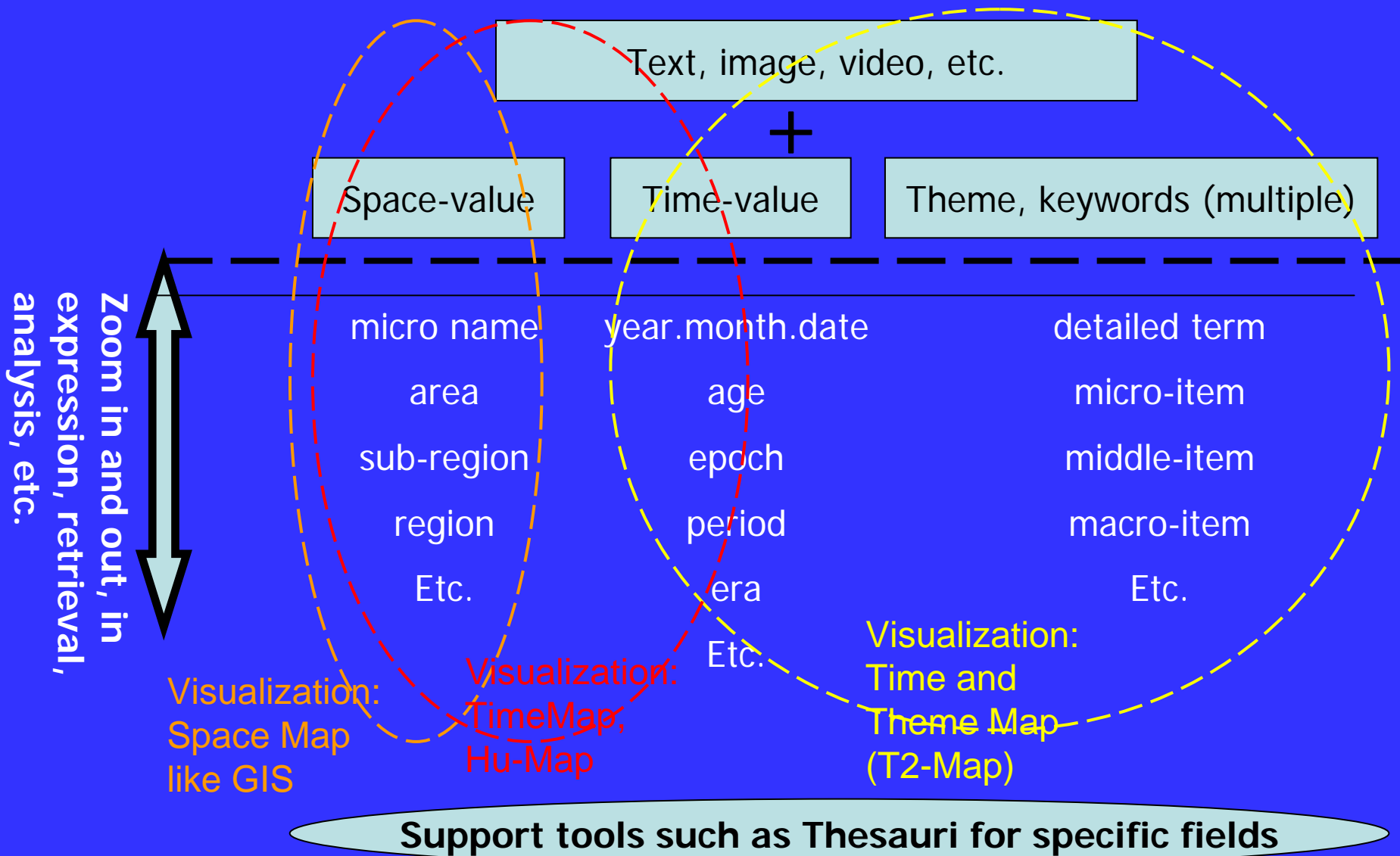


# Interrelation or “chain-reaction” among time-space representation



# Idea of zooming into micro and out to macro

Any data must be represented



# Yunnan Province Chronicles Database Project

- Sub-project of the Project “A Trans-disciplinary Study on the Regional Eco-History in Tropical Monsoon Asia: 1945—2005” (Leader: Dr. Tomoya Akimichi, Research Institute for Humanity and Nature Research Institute for Humanity and Nature)
- A collection of Historical Record in each County of Yunnan Province is adopted as a base for making eco-chronicle; see below (<http://www.chikyu.ac.jp/ecohistory/annualreport2004/9chronicle2004pr.pdf> )

## Chinese National Project of Publishing Chronicle

<b>Governmental Unit</b>	<b>Number</b>	<b>Number of chronicles planned</b>	<b>Number of chronicles already published by 2000</b>
Province 省	34	2490	1583
Prefecture 市/地級	333	944	604
County 県	2861	2447	2100

Yunnan Province has 16 prefectures and 128 counties

# Yunnan Province Chronicles: for eco-historical analysis and description

- Important events in each hierarchical governmental unit (province, prefecture or city, county) are described in plain form in historical order.
- Time-Coverage: historic times, especially from 1949 of foundation of China, until 1990s.

Problem: Level of details, and selection of events are varied in each county depending on editorial policy.

However, when data in chronicles are verified by referring other documents and data, chronicles may be useful to get the global picture of dynamism in terms of eco-history.

So that, we tried to translate the “general summary part” of each chronicle into Japanese for the first stage, then archive it.

# Yunnan Province Chronicles



Purchase of County Chronicles at  
**Kunming, Jan. 2005**



County Chronicles at Research Institute for  
Humanity and Nature , Apr. 2005

# Normalized form of County Chronicles “of the General Summary Part”

County Name	Year	Month	Additional Date	Additional Date	Text	Begin Date	End Date	Date Displayed	
劍川県	1912	9		9	“重九”の蜂起のあと、11月初旬、大理の官、地方豪族、軍、民が一つになって反抗し、“迤西自治機関部”を成立し、趙藩出が総理に推薦される。	1912/01/01	1912/12/31	1912年	
劍川県	1912	12		9	劍川籍の昆明の学生、趙蠡象ら十数人が故郷に戻り、“辛亥革命”を宣伝し、県役所へ突入して刑具が燃やされ、無辜の数十人の住民が解放される。	1912/12/01	1912/12/31	1912年12月	
劍川県	1913	9		9	劍川州が劍川県に改称する。	1913/01/01	1913/12/31	1913年	
劍川県	1913	4		9	県蚕桑伝習所が設立され、湖桑【??】、ユーカリなどの種が県境に植えられる。	1913/04/01	1913/04/30	1913年4月	
劍川県	1913	5		9	県城に郵政代辦所が作られる。	1913/05/01	1913/05/31	1913年5月	
劍川県	1918	3		15	昼	県内の金華、沙溪などで強風が吹き、樹木や家屋が倒れ、砂埃が天を覆う。	1918/03/15	1918/03/15	1918年3月15日昼
劍川県	1918	冬	9	9		傷寒病【チフス】が大流行し、多数の死者が出る。	1918/12/01	1919/02/28	1918年冬
劍川県	1919	12		9		劍川ペー族青年の張伯簡が、広州からフランスへ苦学での留学へ行く。フランス滞在期間中、張伯簡は積極的に共産主義組織の活動に参加する。1922年に“旅欧中国少年共産党”が成立し、張伯簡は組織委員に選出される。	1919/12/01	1919/12/31	1919年12月

# Two Ways of Viewing Chronicle

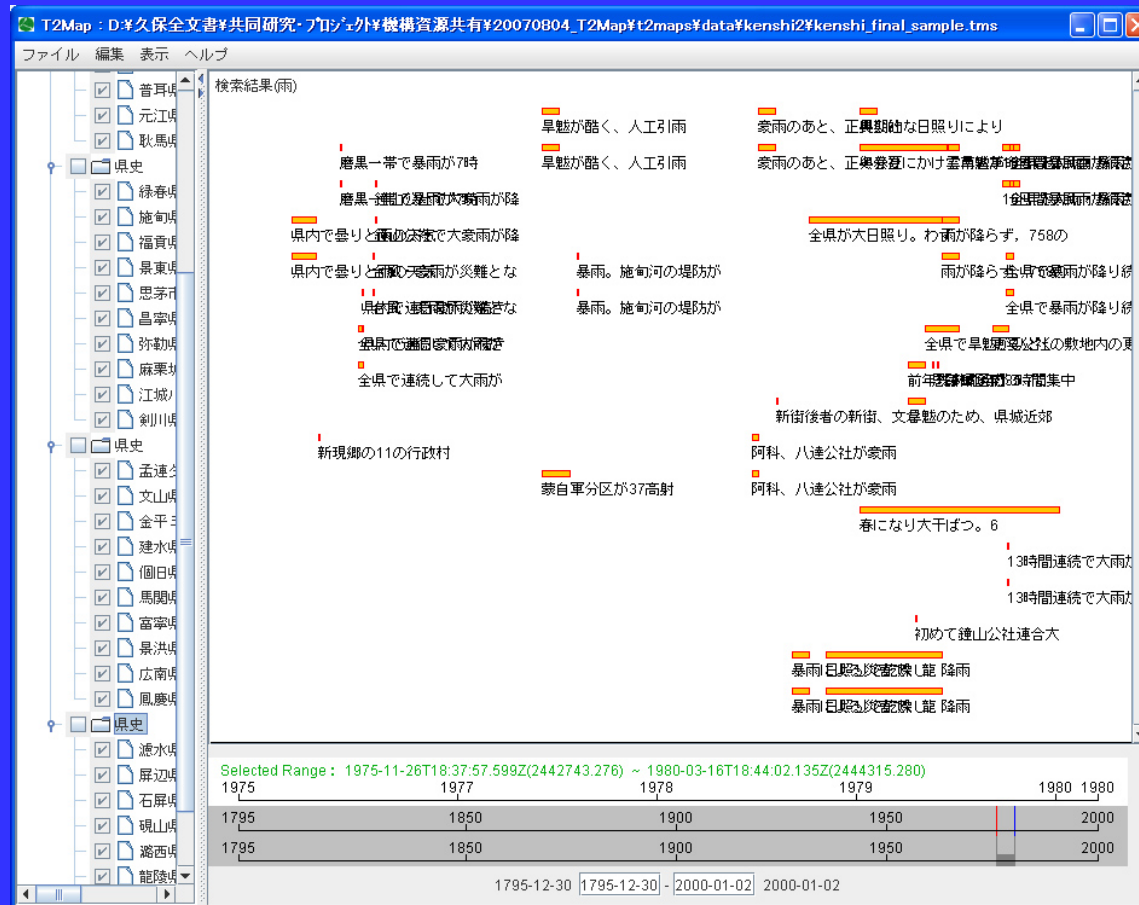
We have developing two ways to view the chronicle

1. View like ordinary chronicle using only the “Begin Date” of the Event

西暦年	月	日	河口県	開遠市	郎北県
1976	8	-			
1976	-	-			
1977	6	19		開遠で初めて人工降雨が実施される。7月10日まで、4公社の8つの砲座から、21回で189弾を発射。1ヶ所あたり平均64.8mmの降雨量をもたらす。	春、夏の早魃で、春収穫の作物が成長不良となり、 地が乾いて春播きの作物も季節通りに植えることができないので、中国人民解放軍平遠駐屯高射砲隊に要請して、人工的に雨を降らせる。
1977	6	-			
1977	7	28		大庄河流域で夜、激しい雨が降る。29日5時、河が氾濫して流量は毎秒154立方メートルに達し、鉄道の石橋を破壊。3479ムーの田畑が水浸しになり、400平方メートルの家屋が倒壊する。水午34頭、大庄炭鉱の坑木200立方メートル、石炭1000tが流される。	
1977	8	5			

# Two Ways of Viewing Chronicle

## 2. View in time-line using both “Begin” and “End” date of the Event; Using T2-Map





# Idea of Creation and Representation of Interrelation Link among events or event groups in Time-space Representation

- Tools for recording hypothesis, hint, discovery, in Time-based view (chronicle), Space-based view (GIS)
- Such relations similar to RT (Related Terms) are conceivable
  - act / its tool
  - act / its result
  - act / its receiver
  - object or phenomenon / its origin
  - cause / effect
  - objects or phenomenon / its opposition
  - material / product
- Ontology-making tool like “TopicMap” may be applied. In TopicMap, interrelationship is called “association”.

▪ These sets of records and links are saved for each user.



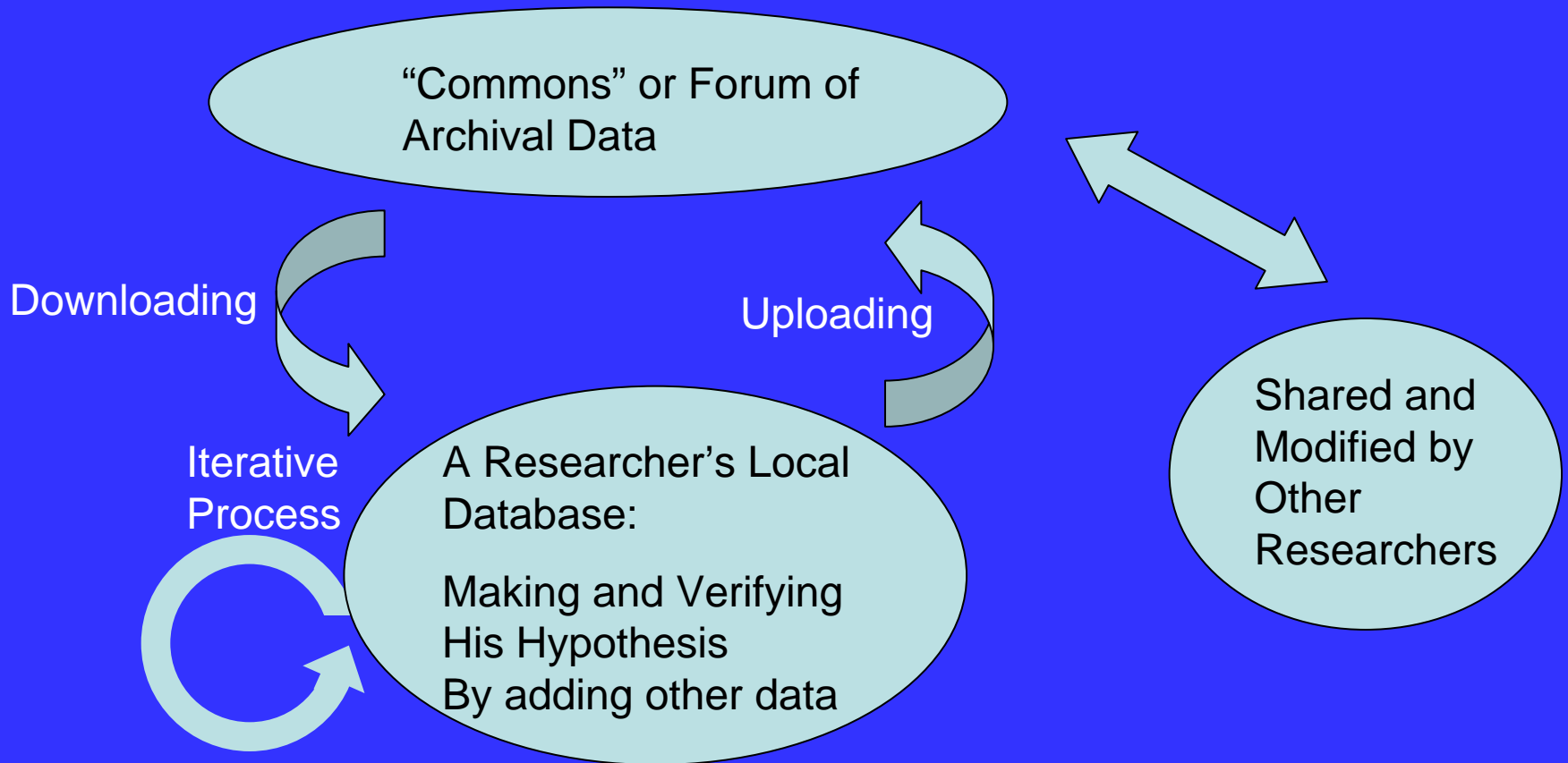
▪ The sets of records and links are shared and used for other researchers:

*commons or forum for creation*

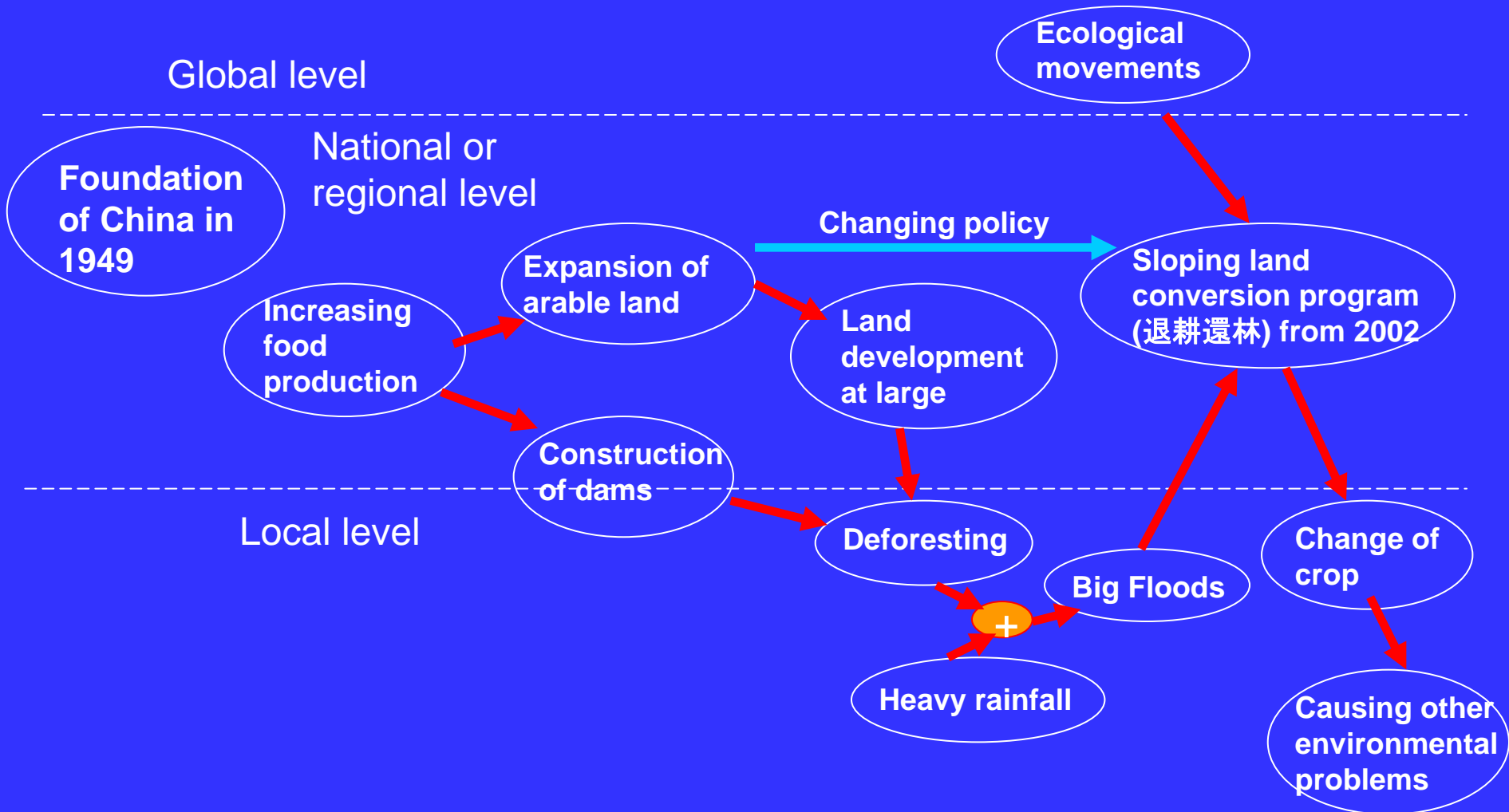


semantic network, ontology about  
cultural resources

# Archival Data Sharing with Iteration: among researchers for promoting academic research



# Interrelation among eco-historical events in Yunnan



# Idea of Creation and Representation of Interrelation Link on Chronicle

Hypothesis:

Cutting the forest for dam construction may cause;

- \* Fight about right of forest vs. water supply
- \* Drought and poor crop

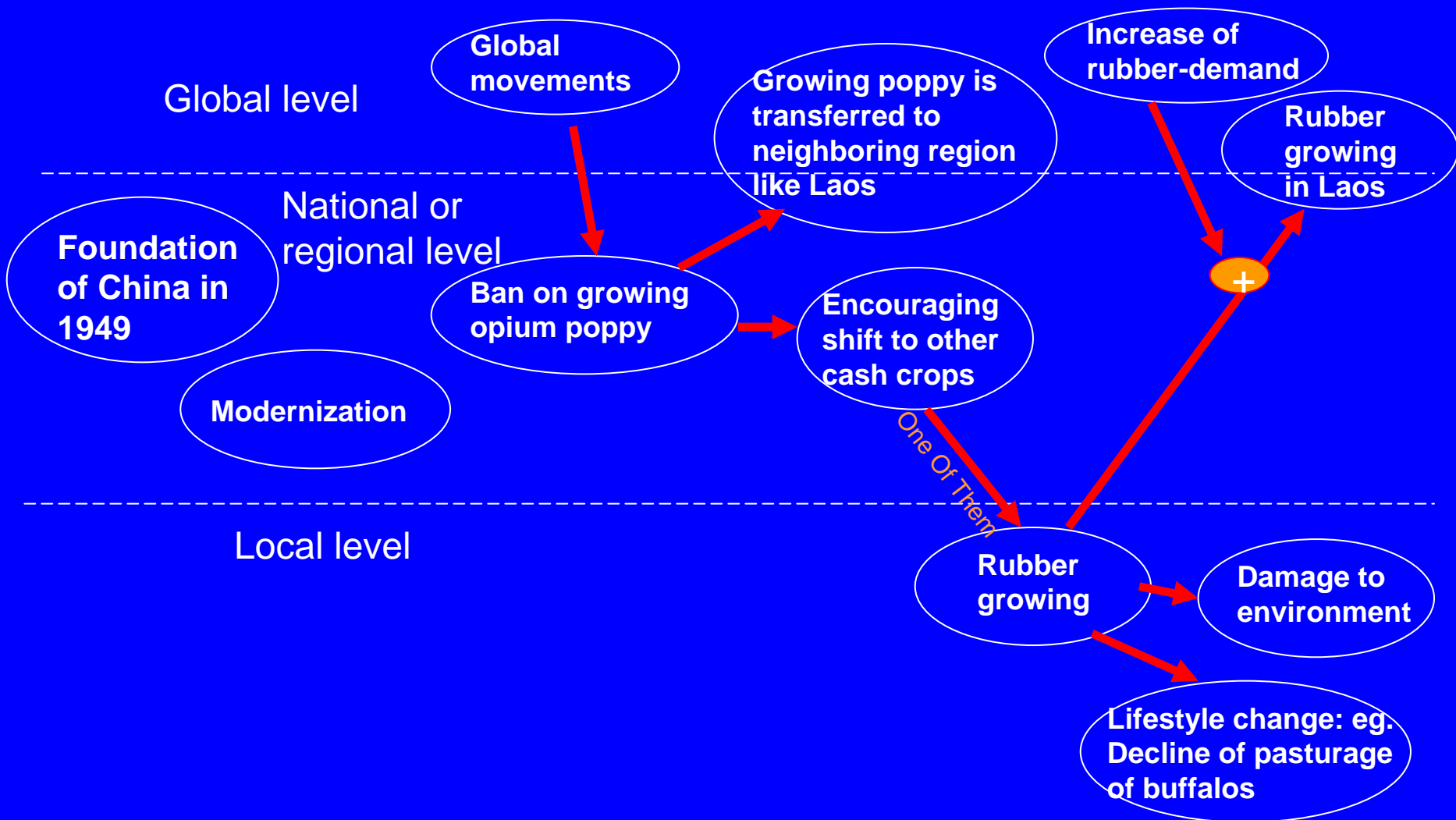
Could be represented as *Link* between events or *event group* in chronicle.

This Hypothesis will be further verified using other data.

The screenshot shows a Microsoft Excel spreadsheet titled "Microsoft Excel - Trial\_雨&洪水.xls". The spreadsheet contains a table with columns for year, month, day, and event descriptions. Two red arrows labeled "Cause / Effect" indicate relationships between events. One arrow points from the event "清平Dam construction started" (row 205) to "Fight about water and forest management rights between respective groups" (row 206). Another arrow points from "清平Dam completed" (row 209) to "Drought in spring, summer, caused poor crops. Attempt of rainmaking." (row 211).

	A	B	C	D	E	F	G	H	I
1	西暦年	月	日	河口県	開遠市	邱北県	石屏県	施甸県	漾濞県
204	1970	4	11						
205	1970	4	25			清平Dam construction started			
206	1970	5	11					Fight about water and forest management rights between respective groups	
207	1971	-	-			Large scale forest cutting for 清平Dam construction			
208	1972	4	25						
209	1973	11	-			清平Dam completed			
210									
211	1977	6	19		First attempt of rainmaking at 開遠				
212	1977	6	-						
213	1977	7	28		Heavy rain in 大庄河 Basin, big flood				
214	1977	8	5					Big storm caused burst of 施甸河, damaged rice field	
215	1977	-	-						
216	1978	5	-						
217	1978	6	27						
218	1978	6	-						
219	1978	5	19			Burst of 清平Dam Flood caused poisonous flow from forest, fishes were killed.			

# Interrelation among eco-historical events in Yunnan

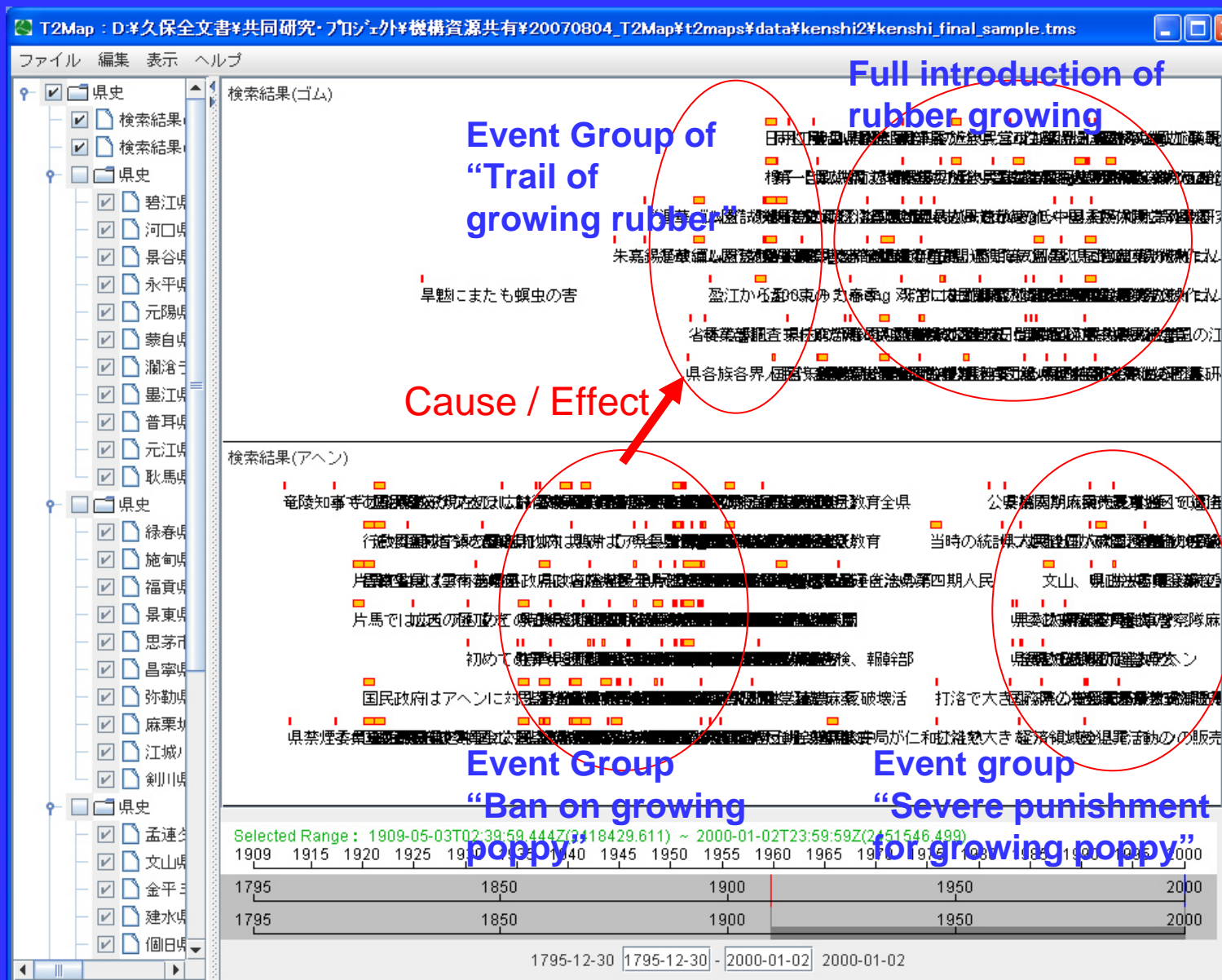


# Idea of Creation and Representation of Interrelation Link on Chronicle

Facts:

After the China was founded, growing opium poppy is banned, Instead, other cash crop like rubber growing was encouraged

Interrelation could be represented as Link on the chronicle, for verifying in detail and visualizing cause-effect relationship.



# Another Idea of *Cychronicle* ; “Cyclic chronicle”

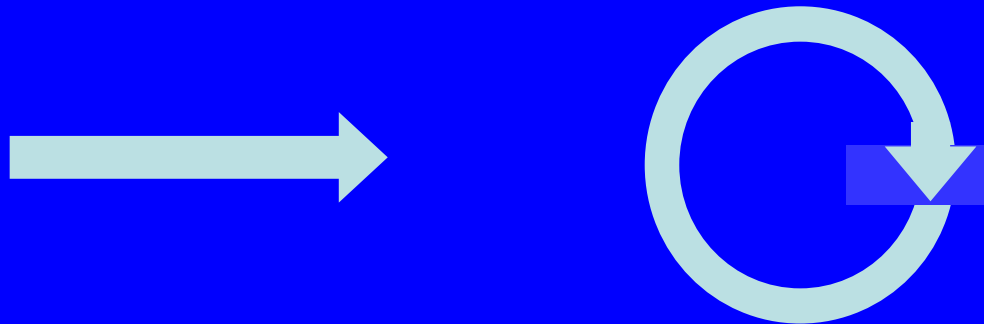
Is time-flow is conceptualized as linear or cyclic?

## Cyclic time-flow versus Linear time-flow

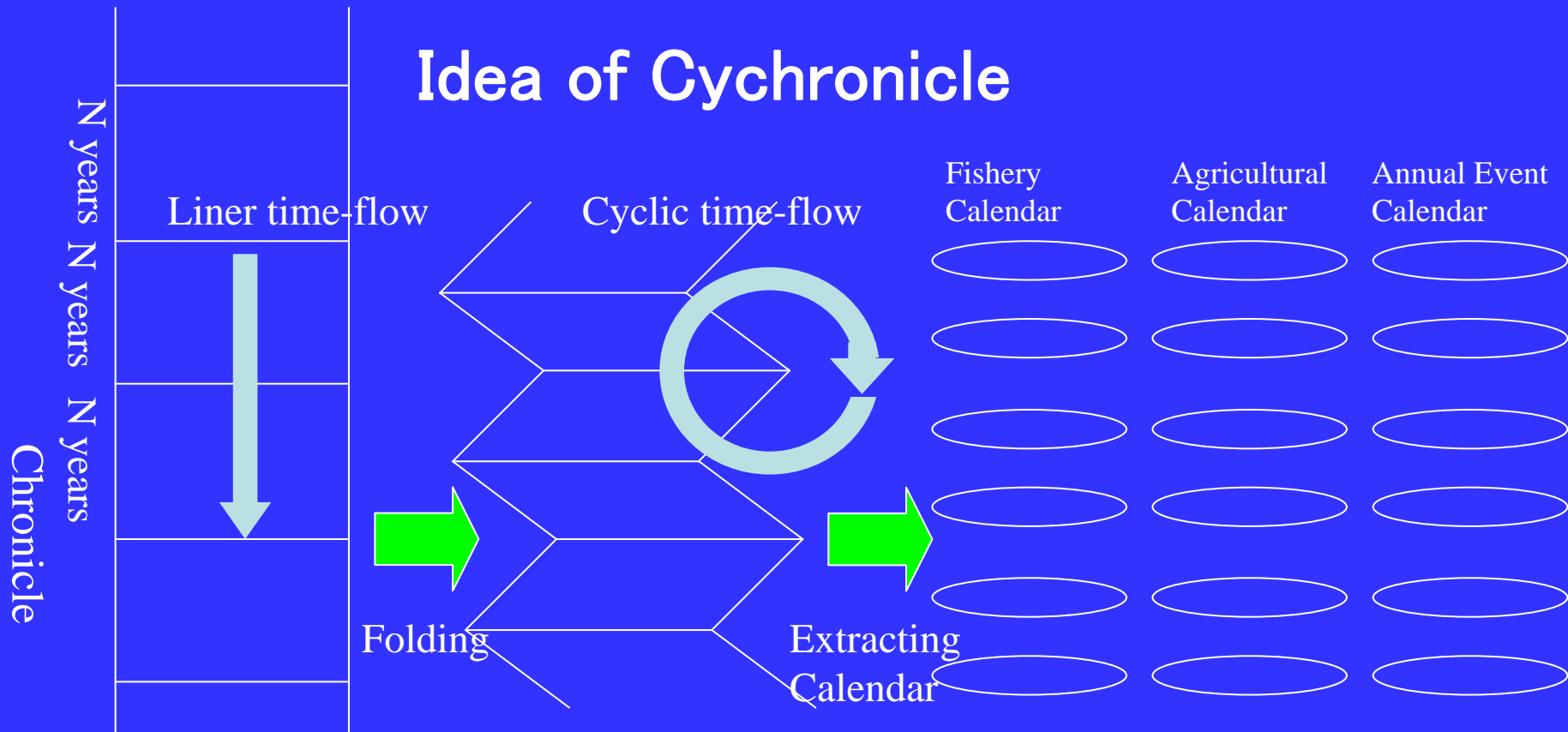
reincarnation, cyclic calendar  
linear transmigration,  
Etc.

“Cycle” may be a **key** to manage and analyze culture in  
**Monsoon Asia**.

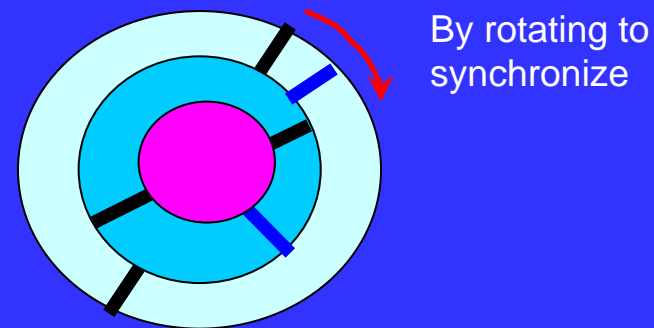
For this reason, conversion of linear chronicle into cyclic  
chronicle, “Cyclonicle”, may help to analyze cultural events.



# Idea of Cychronicle



- $N = 1$  is the case of annual calendar
- when  $N$  is set longer, long-term change may be treated
- special event like “the beginning of rainy season”, “the ritual for seeding rice”, could be chosen for the indices
- inversely, analysis of chronicle may lead to discovery a hidden “cycle”.



To find out time-oriented, or space-oriented changes from the viewpoints of *cycle*

# Idea of Cychronicle

## Extension of T2-map to *Cychronicle*

Secondary step for analysis; re-organization by time and space

Chronological data with (time, space, theme (keywords, or category terms)) are archived.

Make T2-map, or chronicle: make layers with space, theme, or (space X theme).

Further retrieval by specified term like the beginning of rainy season, water flood, ritual for seeding rice, or condition of numerical value, etc.

Clip-out layers into pieces by a “Mask”, which may correspond to year-cycle, or fixed period like from July to next June, etc.

For making a seasonal calendar

(1) To find out space-oriented change in a period;

Select with a fixed period

Then heap pieces in the space-order

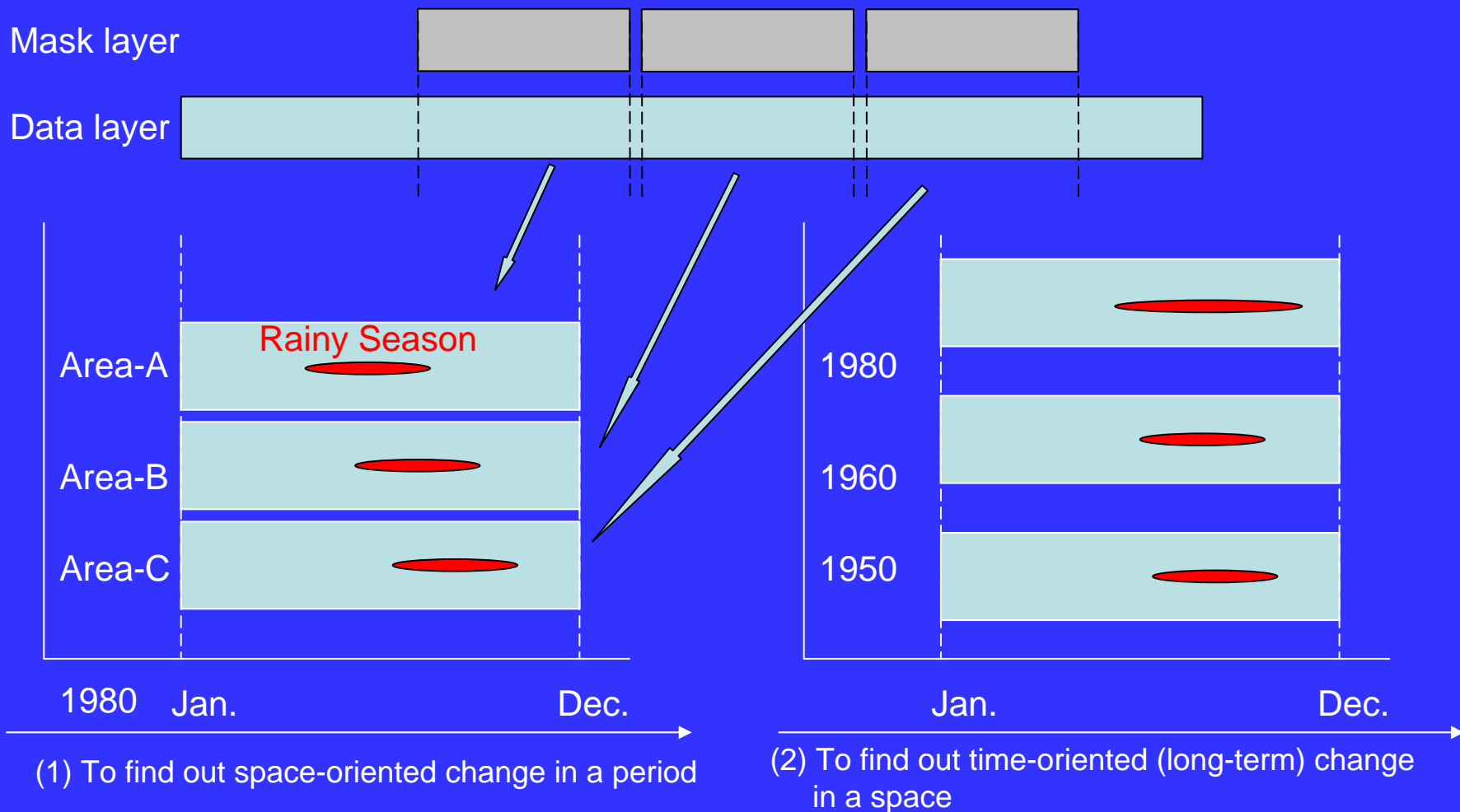
(2) To find out time-oriented (long-term) change in a space;

Select with a fixed space

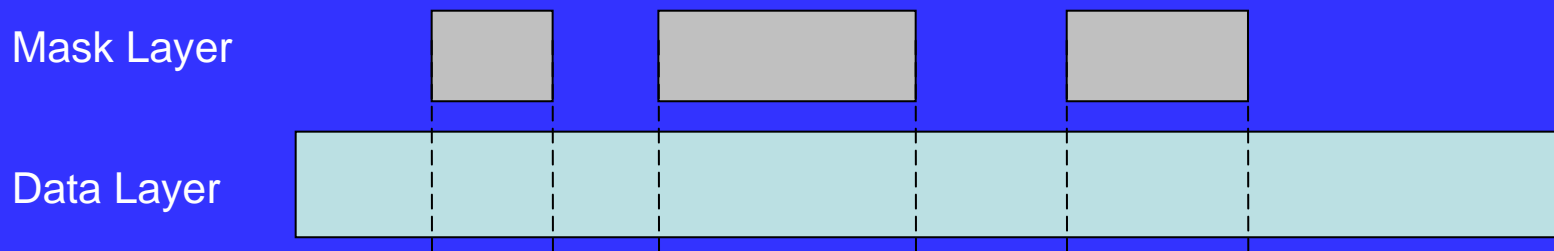
Then heap pieces in the period-order

# Cychronicle: clip by mask, heap to compare

Clip-out layers into pieces by a “Mask”, which may correspond to year-cycle, or fixed period like fiscal year, etc.



# Cychronicle: clip by more general mask, heap to compare



MASK Layer will be made by several conditions like

Keyword-type

eg. From: “sowing”

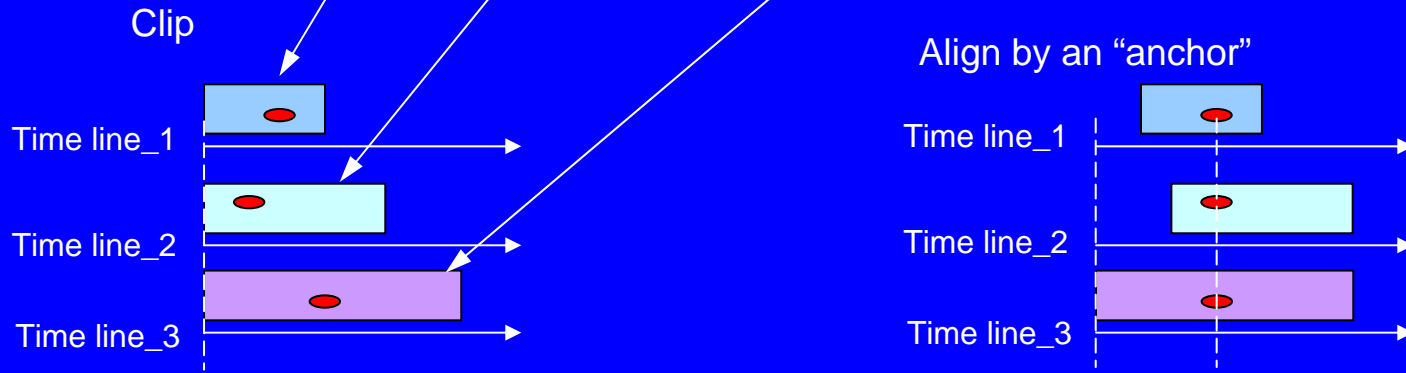
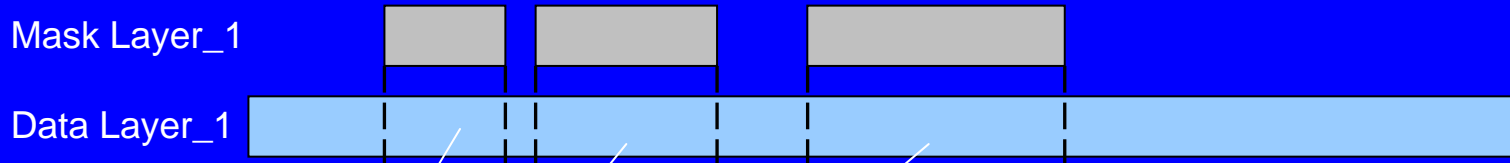
To: “harvest”

Value-type

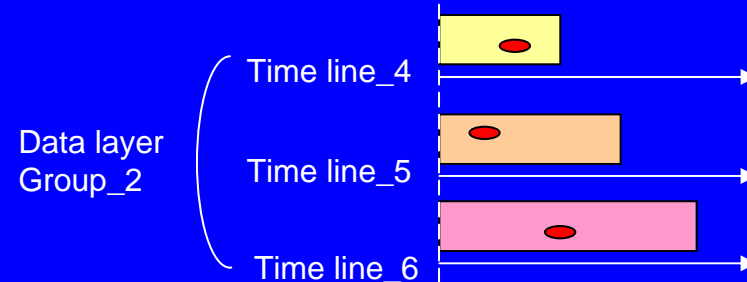
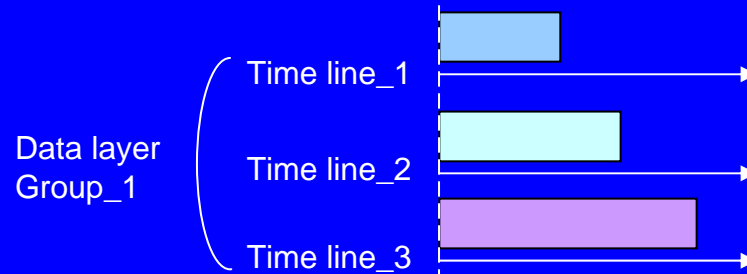
eg. From: the value of X exceeds A,

To: the value of X falls below B

# Clip and Heap to discover a hidden “cycle-like” change from chronicle

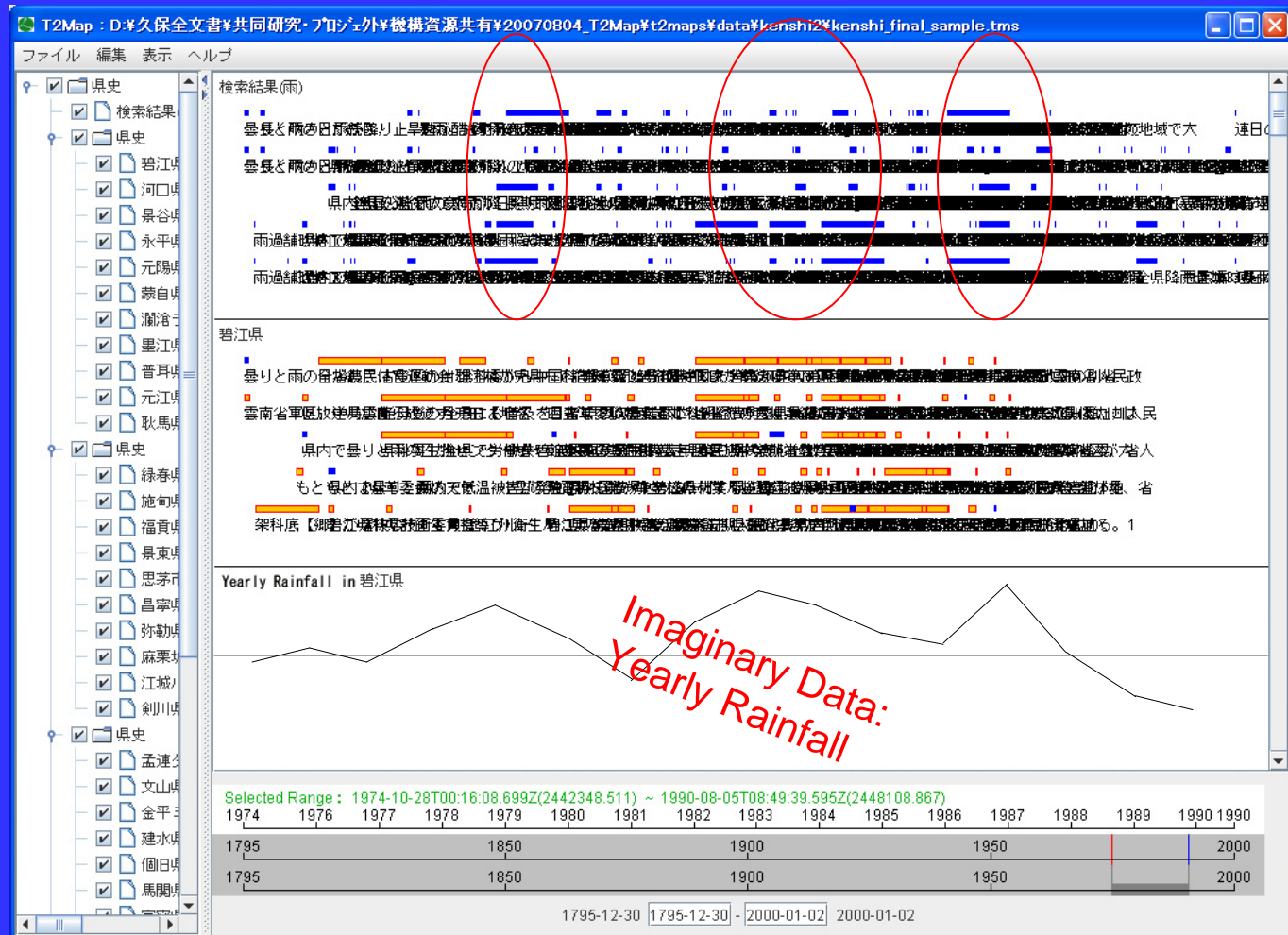
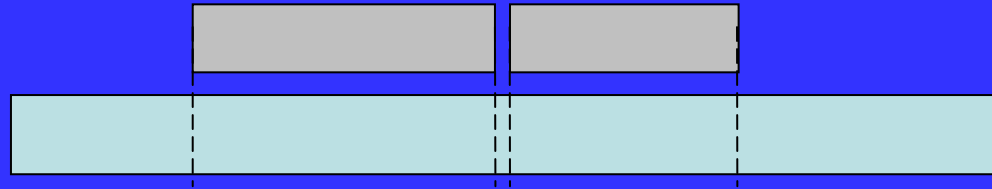


## Heap group of data layer

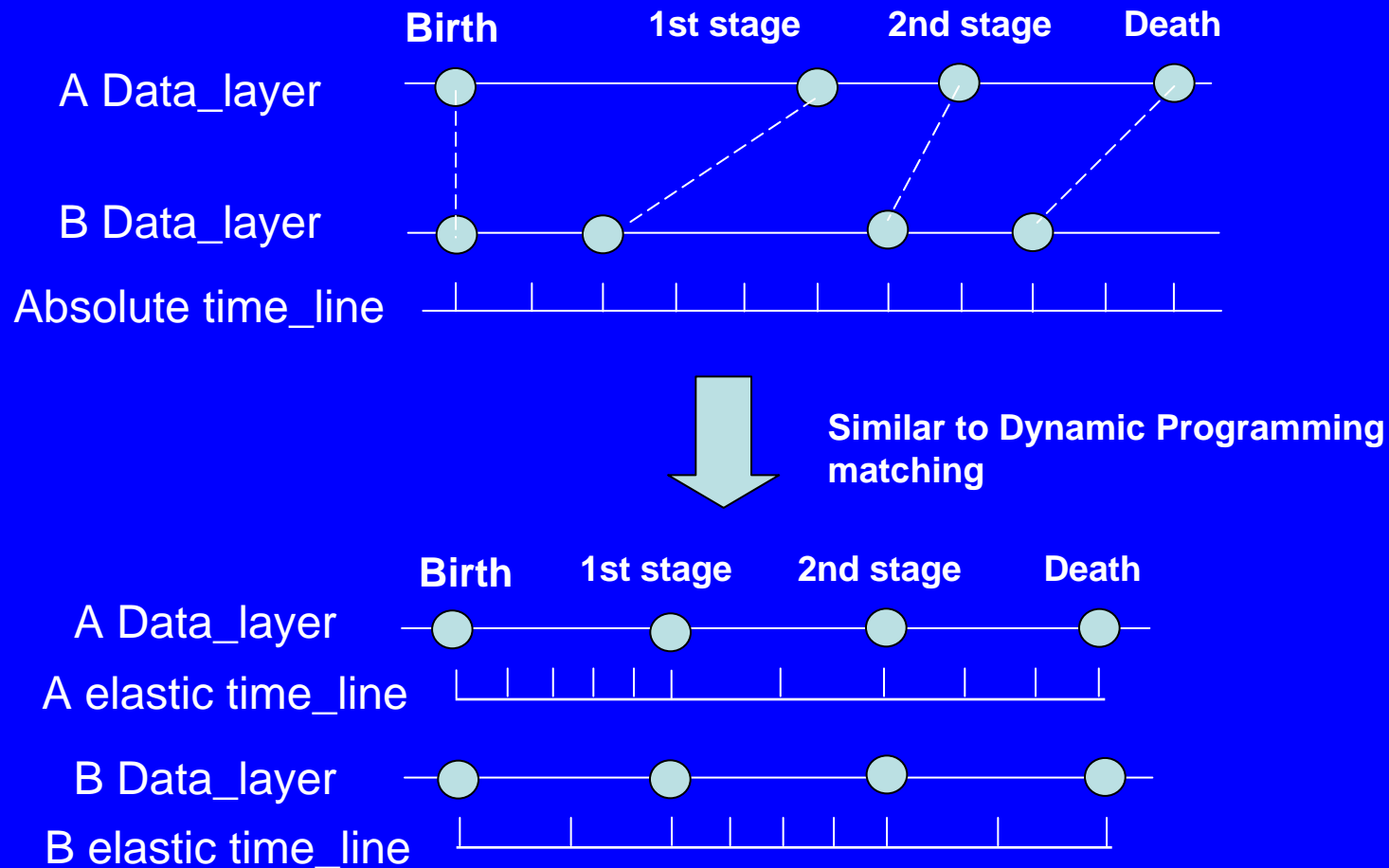


# To discover a hidden “cycle-like” change from chronicle

Mask



# Idea of Adjusting and Comparing Events using Elastic Time Line



Ex.1 Lifecycle of living thing

Ex2: Agricultural calendar, Fishery calendar

# Future task

- The ideas given today is still in the experimental and conceptual level only.

The future task is;

- To implement basic and essential part of time-space integrated archives system.
- To discuss and verify whether it is worthy to introduce and implement the ideas of recording interrelation link and cychronicle, into time-space integrated archives system.
- Collect actual data for several specific areas, and themes, then apply them to the basic system, for presenting and analyzing purpose.
- Together with the above, open the basic system to the researchers, for enhancing the research activity, to get more fruitful results.