Towards the integration of Asia 2K paleoclimate data

1. Available data and gaps in knowledge
2. Database management
3. Data integration
4. Current timeline

1. Available data and gaps in knowledge

'Monsoon Asia Drought Atlas' (MADA) on the tree-ring database must be the most comprehensive Asia 2K climate reconstruction now. However, the data coverage of MADA has some gaps such as southern/central Japan or eastern/southern China, resulting in low scores of verification for the reconstruction there.

On the other hand, there are various kinds of newly developed paleoclimate data sets in the uncovered areas of MADA, including tree ring, stalagmite, document records, marine archives etc, which should be incorporated into the grid-scale database of paleoclimate such as MADA.

Q. Is it possible to reconstruct past "temperature" fields in Asia using available data sets as well as "PDSI" ?

Q. Are there any "key-transition periods or events" to be focused all over Asia, such as MCA or LIA ?

2. Database management

1) Purpose of Asia 2K database

* To promote data synthesis by all interested researchers.

2) Examples of current database

* NOAA World Data Center for Paleoclimatology
* PAGES data archive.
* Tree Ring database.

3) Asia 2K database (if necessary…)

* Actual database or Meta database (list of data) ?
* Where is it stored ? (PAGES website…etc)
* Only Published data or including Non-Published data ?

→How to manage it…

3. Data integration

1) Purpose of data integration

* Data/Model comparison to verify climate model prediction.

2) Goal of data integration

* Gridded databases of temperature and precipitation etc, with yearly (or seasonal) time resolutions, reflecting all available paleoclimate data sets.

3) Strategy of data integration

…a possible scenario…(continued…)

3) Possible scenario of data integration

Step1 : Starting point: existing gridded data and its strategy such as *'Monsoon Asia Drought Atlas' (MADA)*

Step2 : Incorporation of other tree-ring data, including ring width, density and isotope ratios, from less covered areas.

Step3 : Incorporation of yearly resolutions of different proxy data such as coral ring, stalagmite, ice core, varved sediment etc.

Step4 : Incorporation of different time scale of proxy data such as document record, marine sediment etc.

★Point to note : How? Who? When?

ex. How to control data quality ?

How to manage data in case of unpublished data ?

4. Current timeline of 2K network

2010: Individual Regional Group Meetings
(Asia 2K : 26-27 Aug. etc)

2011: 2nd 2k Regional Network meeting
(July 2011, alongside INQUA in Bern, Switzerland).

2012: Publication of the "2K synthesis book"

Possible contents of "Synthesis Book"

★Conceptual structure of "each regional chapter"

1. **Introduction**: - Actual climate of the corresponding region
   - Dynamical characteristics
   - Its sensitivity to anomalies
2. Discussion of **long-term timeseries**
3. Discussion of **high-resolution data** related to **key periods (see below)**
4. **Spatial reconstructions** and their **dynamical interpretation**
5. **Comparison with model data**: - Dynamical discussion of model results
   - Statistical data-model comparison
   - How do models and data respond to forcings?
6. **Synthesis** and **conclusions**

★References

Possible key periods to discuss in the single chapters (open to discussion):

- Early "normal" period (Roman warm period in Europe) **150-200 AD**
- First cooling, tropical precipitation changes
  (Dark Ages or Migration Period pessimum in Europe) **600-700 AD**
- Medieval Climate Anomaly (MCA) **1100-1200 AD**
- MCA – Little Ice Age transition **1200-1300 AD**
- Maunder Minimum **1645-1715 AD**
- LIA warm to cold transition (tropical precipitation?) **1750-1850 AD**
- Early modern period **1850-1950 AD**
- What about the most recent warming? **1990-2010 AD**