

Databases, managing data

For a region, there is the possibility to search for the data in global and regional databases

There is also the 'cloud' of global internet data but this can be tricky to negotiate

Assuming a region or study area and that we can get relevant data what are

Types of data

The form of these types of data

How can we link and analyze these disparate types of data?

1. A range of palaeo proxies describing various states of the biophysical environment
Sites represented as taxon by time/depth values

There are technical issues with uncertainty of values and assigned ages and there are different levels of temporal resolution.

Metadata are important

Do we add expert interpretation to a dataset? Do we use value added data?

Written and pictorial records of the environment

Written and oral accounts accounts (first hand, second hand, diaries, etc)

Written documents and oral histories are unique and have to be treated individually—again there is perhaps a need for expert interpretation; there is considerable uncertainty (memory error, personal interpretations before the story is delivered)

Formal talleys and records

Photos and paintings

Slightly more straightforward, but will still require metadata and we need to know changing contexts for the production of the data

At best, such records provide fully quantifiable data, in other cases the data may still be quantifiable, even just as presence-absence

Human records

1. Written and pictorial records of human wellbeing/socio-economic conditions/and of human actions
2. Non-written records
Archeological sites, artifacts, interpretations

Can we quantify human health? Accounts is one measure, forensics is another method – triangulate to get a better understanding

Snapshots in time – a photo series can be put together and become a record of single points of say, field system, village size

Then there is the individualistic element of human behaviour leading to “unpredictable” changes in societies and the ways in which humans interact with environment

Analyzing all this

1. Search for patterns in the data, e.g. periodicities or other cycles, or trends or tipping points
2. How much of the variability in the data can be explained? Will depend on resolution.
3. Is what we have a measure of (one or more time series) a result of interactions? [the perfect storm example, a tipping point due to interaction of factors]

Consider possibilities [scenarios] that may explain the observed patterns [perhaps using modelling]

Consider unlikely events [scenarios] that can explain the observed pattern [unpredictable human behaviour]

Consider the connectedness of the “system” – highly connected components will tend to be unstable, looser connections likely lead to more resilience

Employ the idea of sensitivity analysis – various biophysical models simulate a range of environmental interactions – vary or add/remove variables and assess the effect – for example, human drivers, climate drivers can be assessed

Employ group interpretations across a disparate range of data sources to create narratives of what happened