

# CORE PROTOCOL and Data Requirements to enable within site and between site comparisons (Draft)

Penn State HERO / HEROINE Team, 10/26/2001

## INTRODUCTION

Undaunted by an impossible task, a very finite time and the threat of having all our ramblings recorded and held against us forever, we met, ruminated, debated and produced a set of initial data variables and a very useful framework.

## ANALYSIS FRAMEWORK

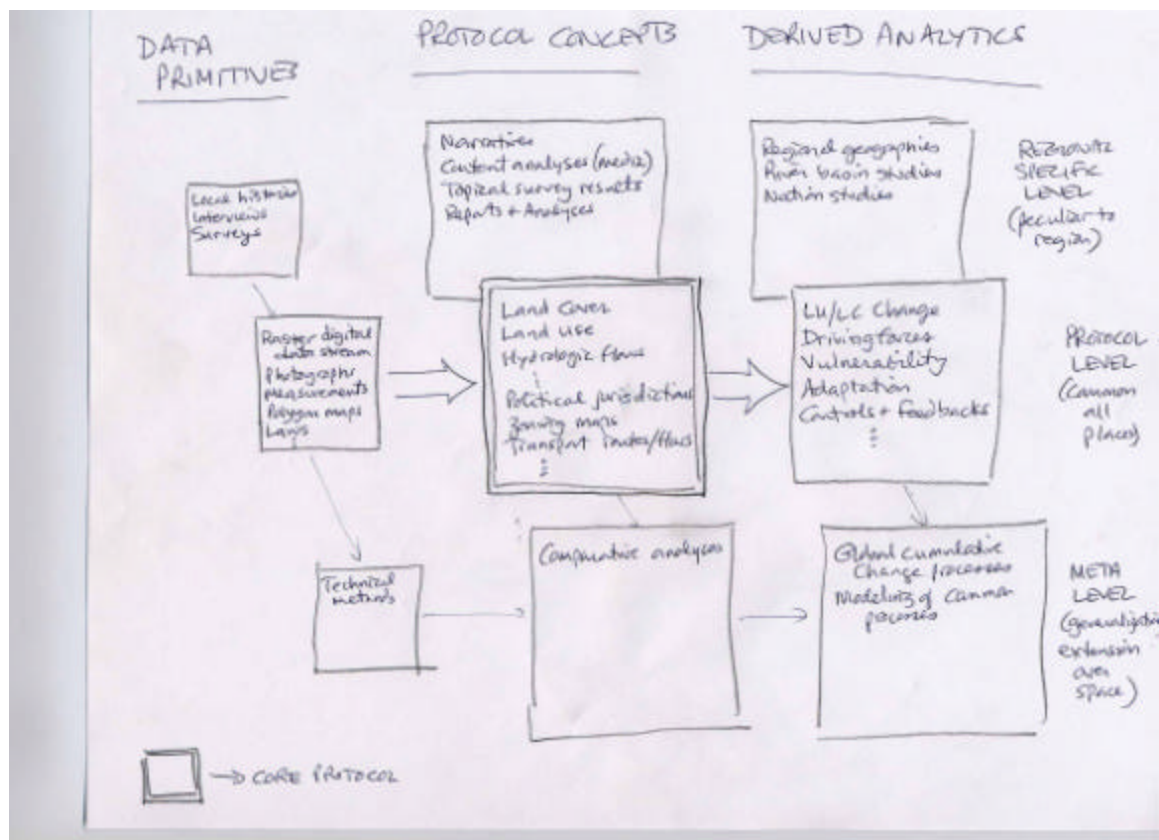


Figure 1. Proposed Analysis Framework (scribbled by Knight).

Figure 1 shows the design of a framework by which to structure our data exploration, analyses and protocol development. It consists of three levels:

1. The REGIONAL SPECIFIC LEVEL addresses all local and regional concerns, and represents the gathering, analysis and synthesis of all local and regional

sources of data. Many such datasets will be available at each site, and this level recognizes the fact that this data may be vital, and indeed more useful than that of the CORE PROTOCOL, in understanding each site/region.

2. The PROTOCOL LEVEL provides a framework within which regions can be *compared and contrasted*. It deals with the fusion of a digital data stream into a series of concepts that themselves then form the basis of analysis of Delphi target concepts such as LU/LC change and Vulnerability.
3. The META LEVEL generalizes analyses to new spaces and times, via Technical Methods (including database, metadata, analysis and visualization methods), Meta Protocol and comparative procedures and synthesis of derived analysis outcomes into models of cumulative change, region interaction, and so forth.

## **CORE PROTOCOL DATA**

The CORE PROTOCOL formed the central box and the focus of our attention at this planning meeting. Specifically, we concentrated on the Digital Data Stream and its relationship to this CORE PROTOCOL.

From the description above, the two most important aspects of the CORE PROTOCOL are:

1. Captures important aspects that will support the various Delphi themes
2. Provides means to compare concepts across all sites

When pressed with issues of compatibility, we erred on the side of safety, resorting to established data products that should allow some direct site-to-site comparisons to be made. It is not our intention to suggest that the datasets listed below are more suitable than other alternatives, but simply that they provide a degree of commonality between sites that is desirable for some of our exploratory and analysis work.

*(The Delphi Concepts that are most directly addressed by each dataset are shown as bracketed numbers—See Table 1 below)*

### **Climate: (2)**

Precipitation  
Temperature  
Elevation  
Evapo-Transpiration

### **BioDiversity: (6)**

Birds,  
Mammals

Plants

**Landcover:** (1)

Landsat TM national landcover 1982, 1992

**Population Census, 1990, 2000 + agricultural and commercial census :**

Population + ? (5, 6)

Housing + ? (5, 6)

Migration + ? (7)

Agricultural + ? (7)

Manufacturing + ? (7)

Commercial + ? (7)

**Soils:** (8)

**Geology:** (8)

**Ownership:** (2)

Protected land

**Zoning:** (7)

**Water:** (9, 2)

Availability (groundwater, surface water, rivers)?

Table 1: Summary of Delphi Outcomes

**Delphi Exercise 1: Summary**

1	<p><b>Land use/land cover change</b>          ? Spatial and temporal changes in LULC patterns; the drivers of these changes          .....          ? Intersection of LULC with land ownership/locus of decisionmaking          .....</p>
2	<p><b>Natural resources</b>          ? Quantity, use, ownership, and spatial distribution of resource types, resource flows, and changes due to human activities          ? Ecological relationships, ecological carrying capacity, flows of ecological stock          .....          ? Access to resources          .....          ? Ecology of energy and materials flows into and out of a system          .....</p>
3	<p><b>Environmental governance</b>          ? Decision-making, policy, power relations          .....          Changing roles of legislative, bureaucratic, judicial, and economic components          Scale: federal, state, local, community stakeholders, financial institutions, entrepreneurial activity, consumer behavior          ? Measuring attitudes about choices, constraints, appropriate locus of control          .....</p>
4	<p><b>Extreme events and conditions</b>          Natural and technological hazards          How humans, human systems, and natural systems respond</p>
5	<p><b>Vulnerability</b>          ? Projections of changes in vulnerability due to future environmental change          .....          ? Differential impacts of environmental and social change on individuals and social groups          .....</p>
6	<p><b>Population and demographic change</b>          Spatial patterns: density, distribution and concentration of demographic characteristics          Temporal changes over 50 to 100 years</p>
7	<p><b>Economic activities</b>          Spatial and temporal changes          Role as drivers of environmental and socio-economic change          Links to the use of local resources</p>
8	<p><b>Environmental history</b>          Natural shifts: climate, resource location          Changes due to past human-environment interactions</p>
9	<p><b>Hydrology and water resource change</b>          Drivers</p>