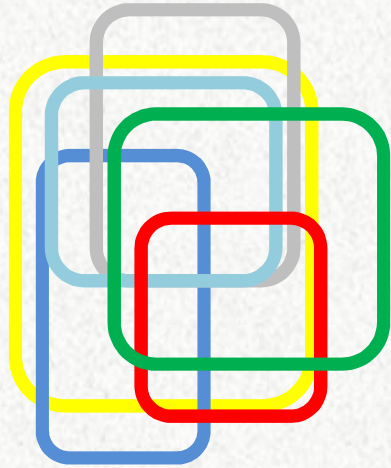


Overview and Background of the Multi-scale Integrated Model of Ecosystem Services (MIMES)

Roelof Boumans - AFORDable Futures, LLC
[http: www.afordablefutures.com](http://www.afordablefutures.com)
ESP Wageningen The Netherlands.

October 4 2011



The Goal of MIMES:

D3

Create a modeling tool which can incorporate stakeholder input and biophysical data sets for valuation of ecosystem services and decision-making:

- **Simulate ecosystems and Socio-Economic systems in space**
- **Simulate these systems over time**
- **Simulate the interactions between these systems through coupling**

D4

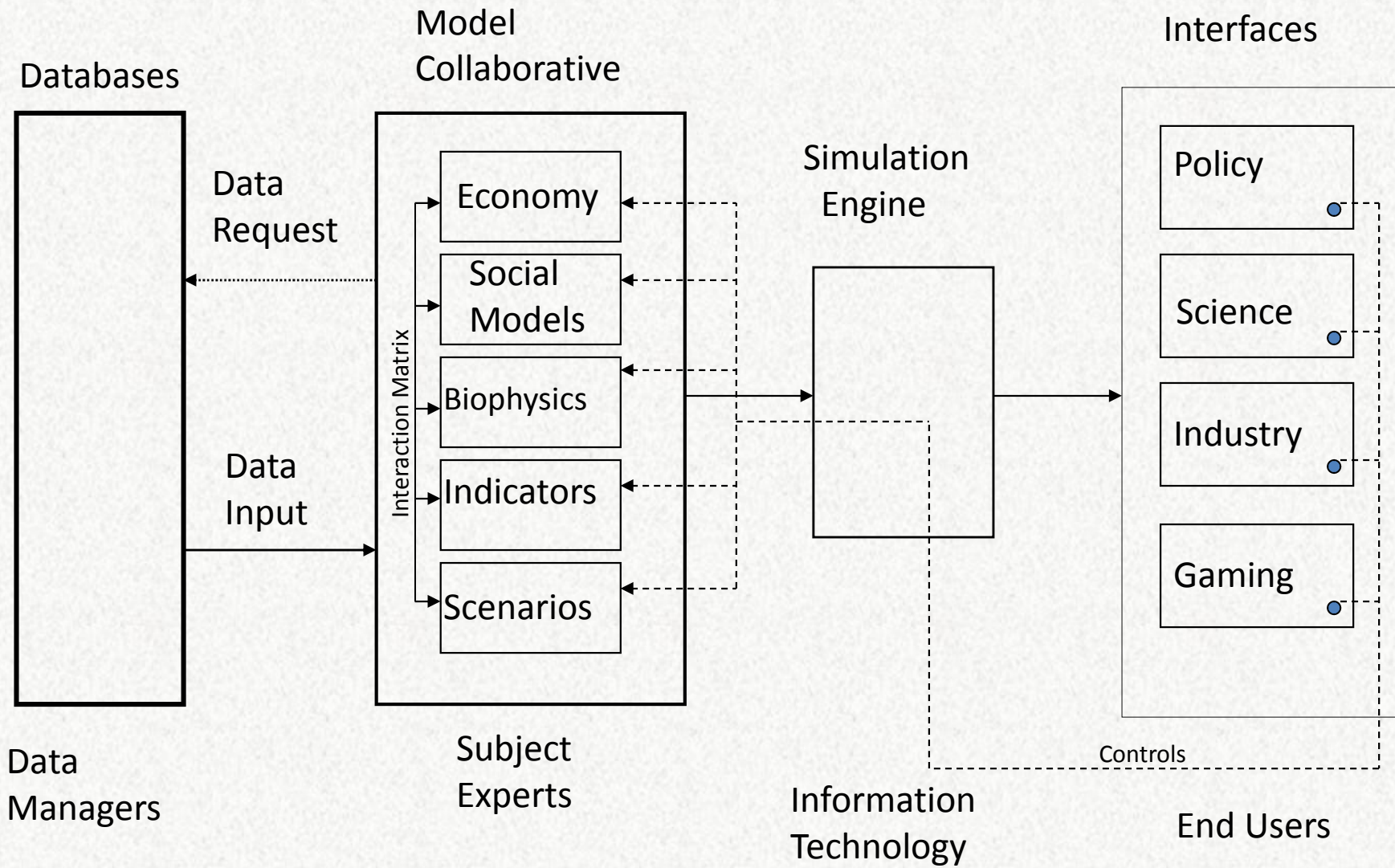
D3 REDUNDANT? "dynamic, systems" and "Spatial Dynamic"
Dave; 30/07/2010

D4 WHAT DO WE MEAN BY "HUMAN SYSTEMS"?
Dave; 30/07/2010

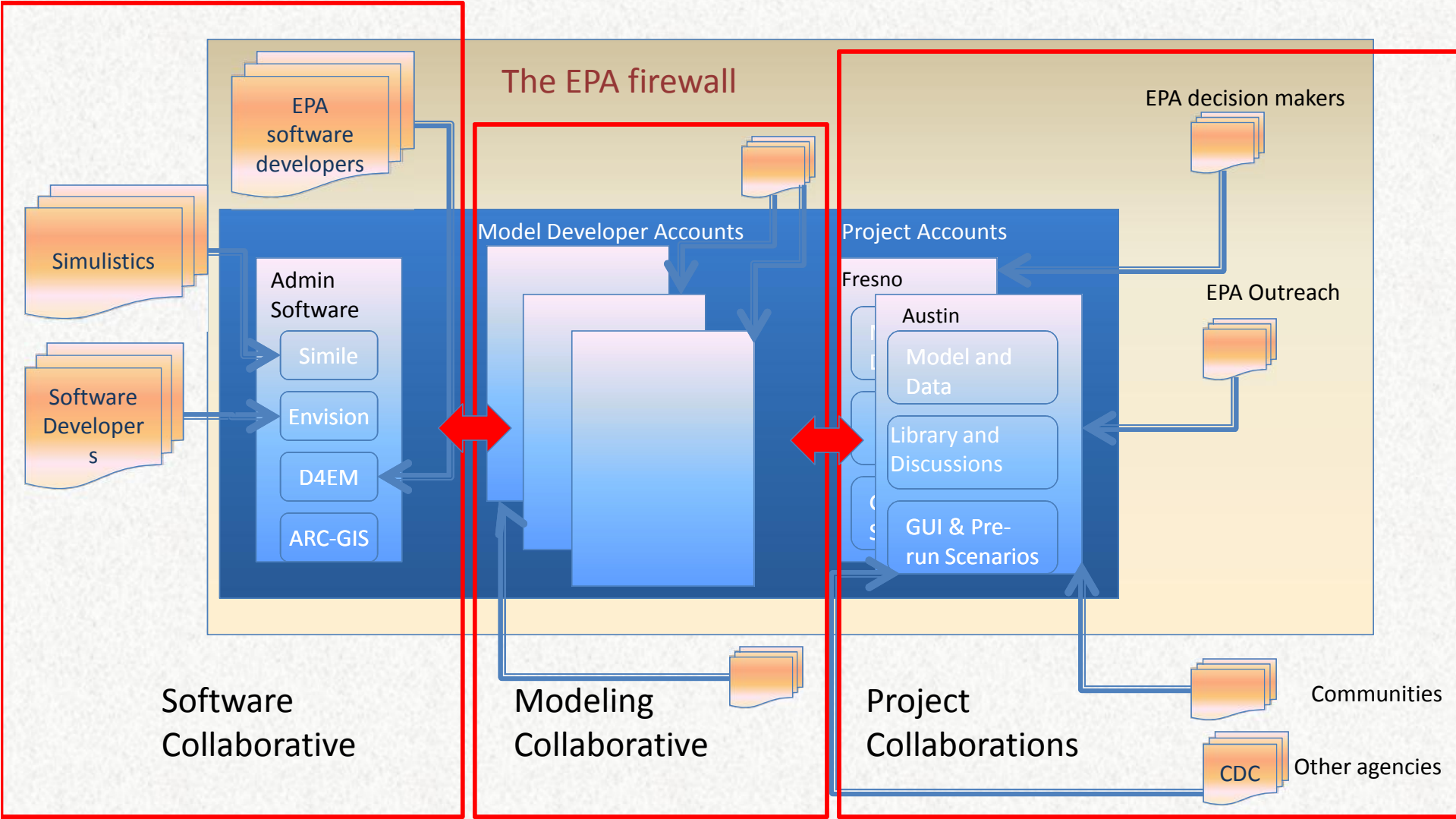
Acknowledgements



IT Project

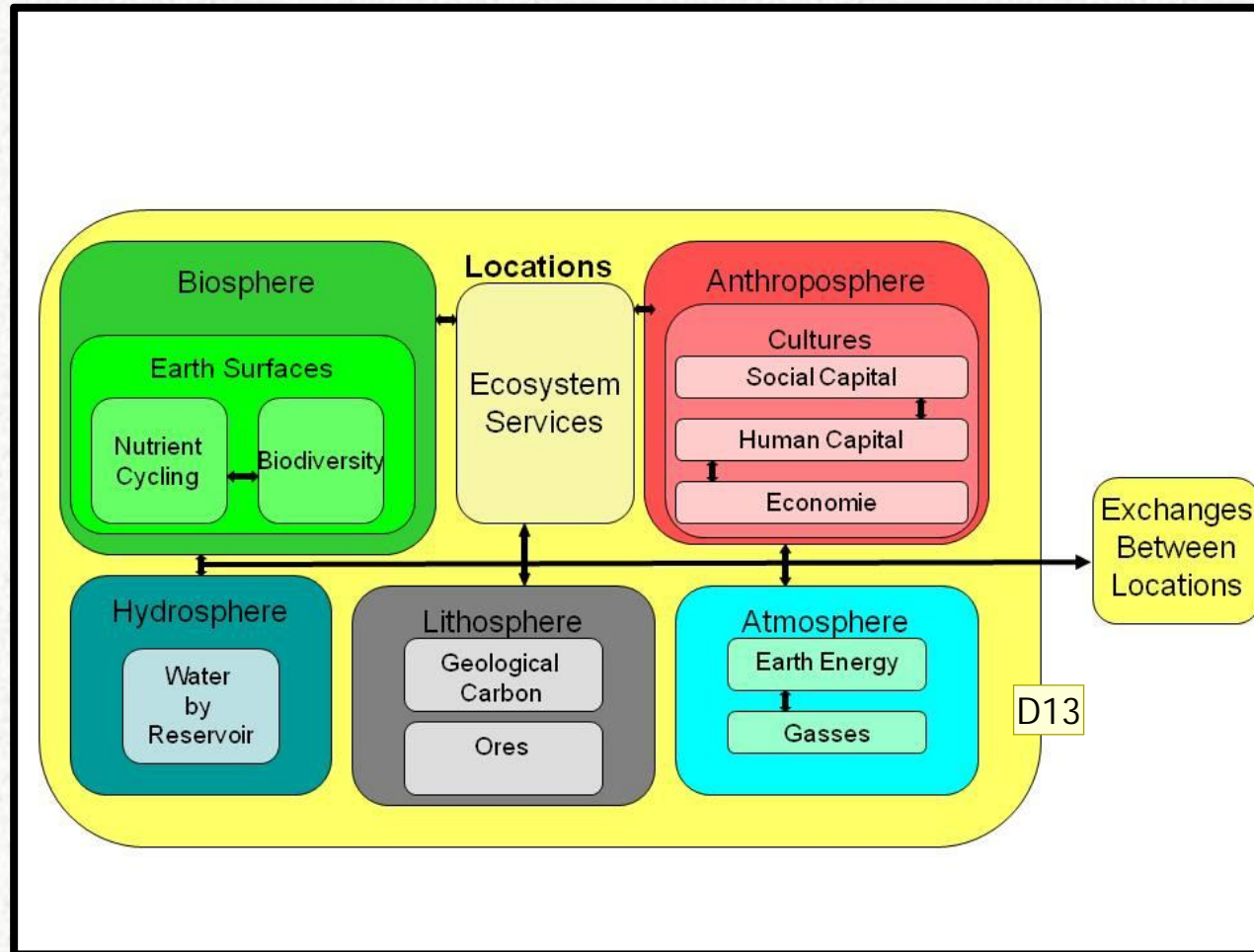


Collaborative work of a cloud server



MIMES

The Multi-Scale Integrated Model of Ecosystem Services



Slaid 6

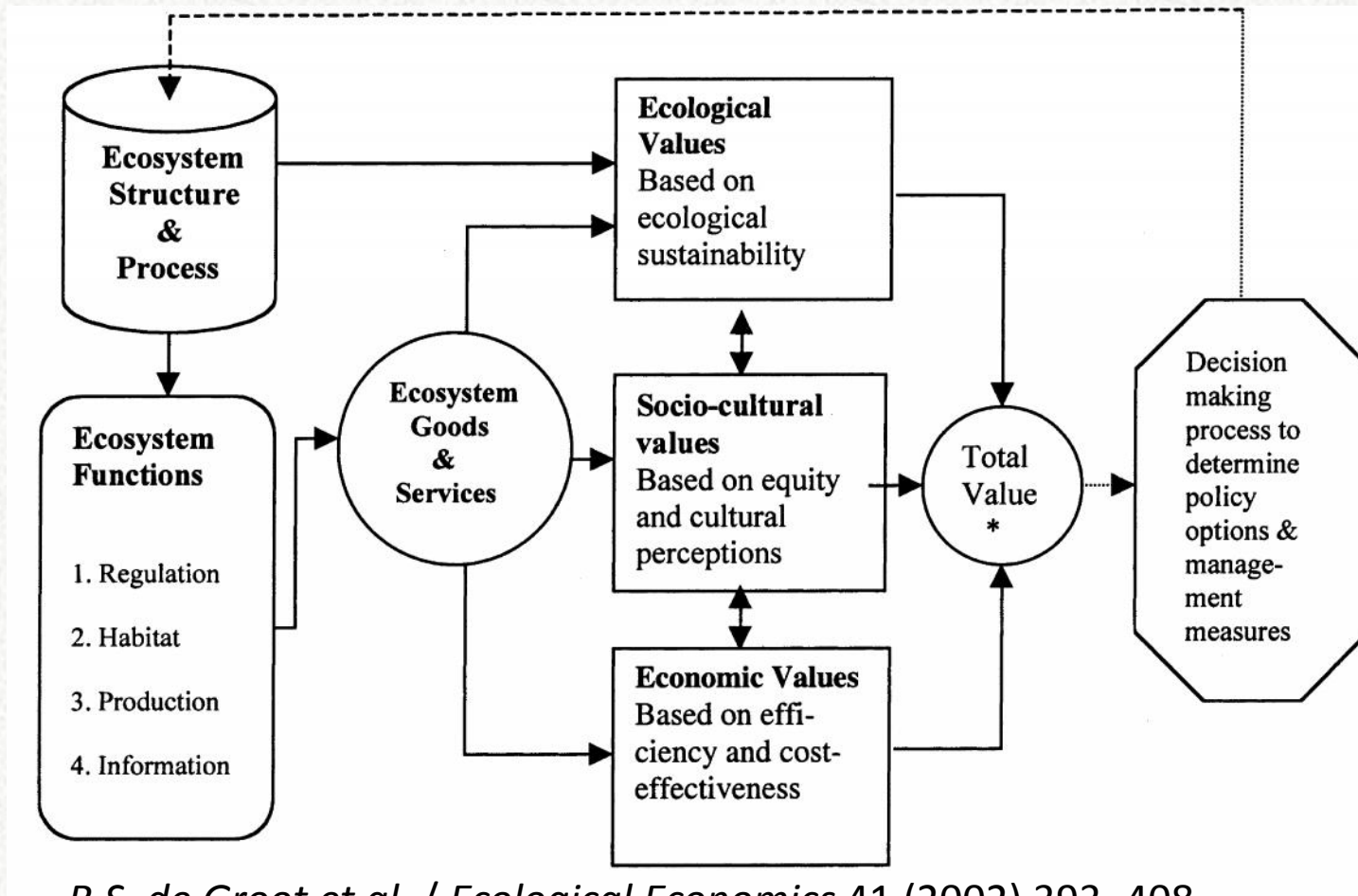
D13

WHAT IS "EARTH ENERGY"?





Dave; 30/07/2010

Ecosystem functions: The capacity of natural processes and components to provide goods and services that satisfy human needs. (de Groot, 1992)

Ecosystem Services: Valued Ecosystem Functions.

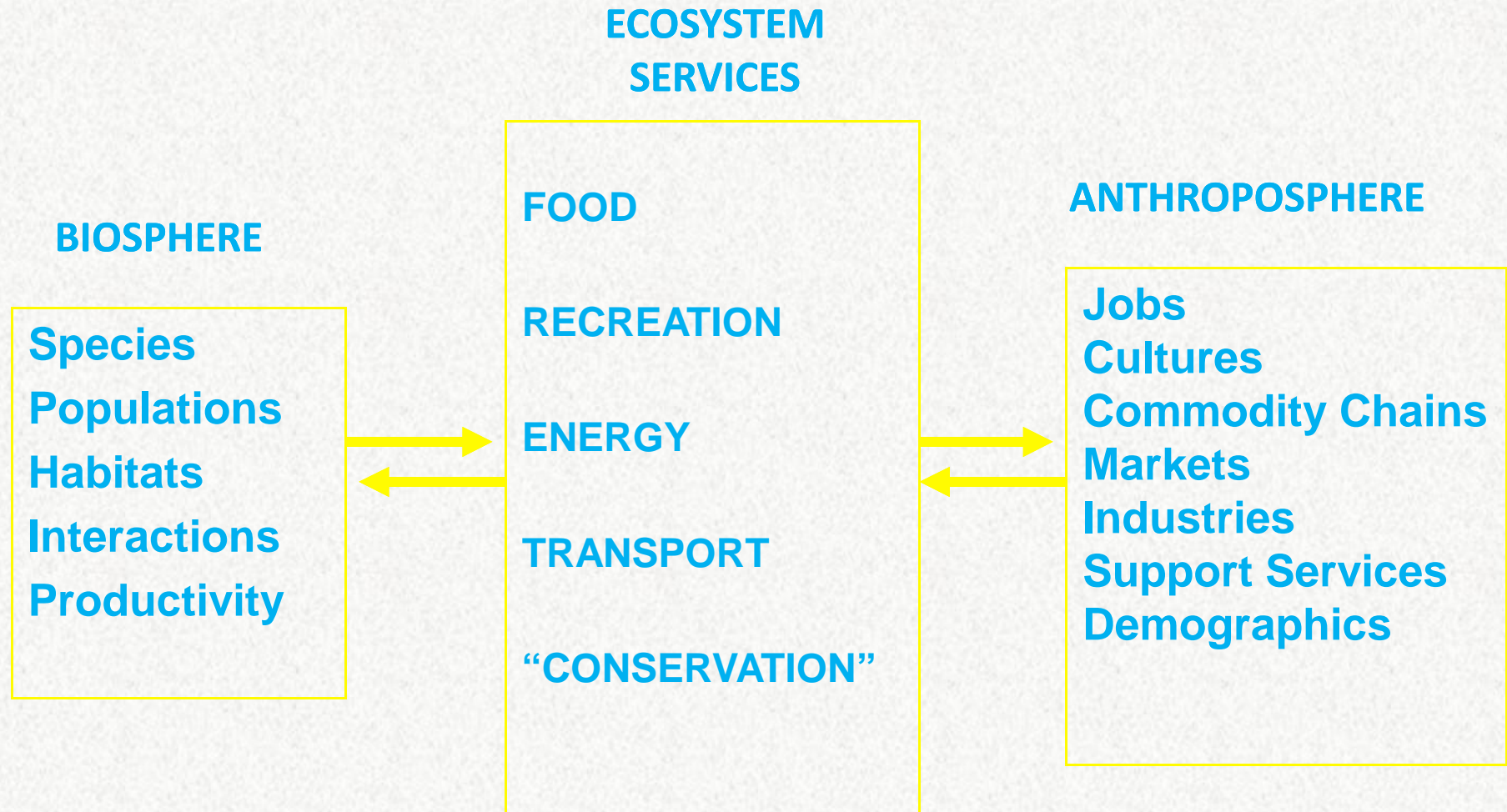


Accounting Framework For Modeling Ecosystem Services

	Economic “Use”	Ecosystem “Use”
Economic “production”	 Macro Economics	 Ecosystem Impacts
Ecosystem “production”	 Ecosystem Services	 Ecosystem Functions

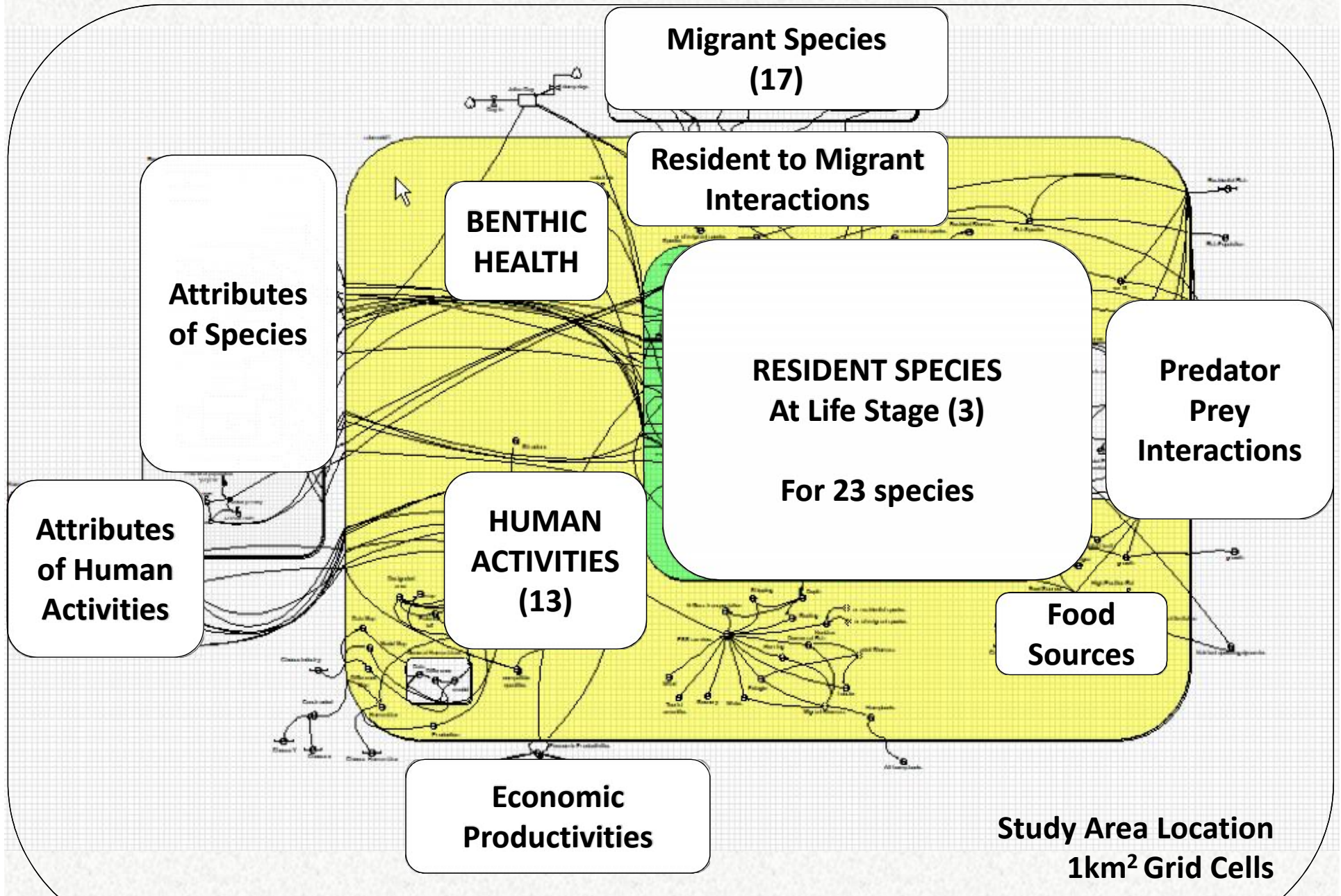
The MOP project

The Model Collaborative

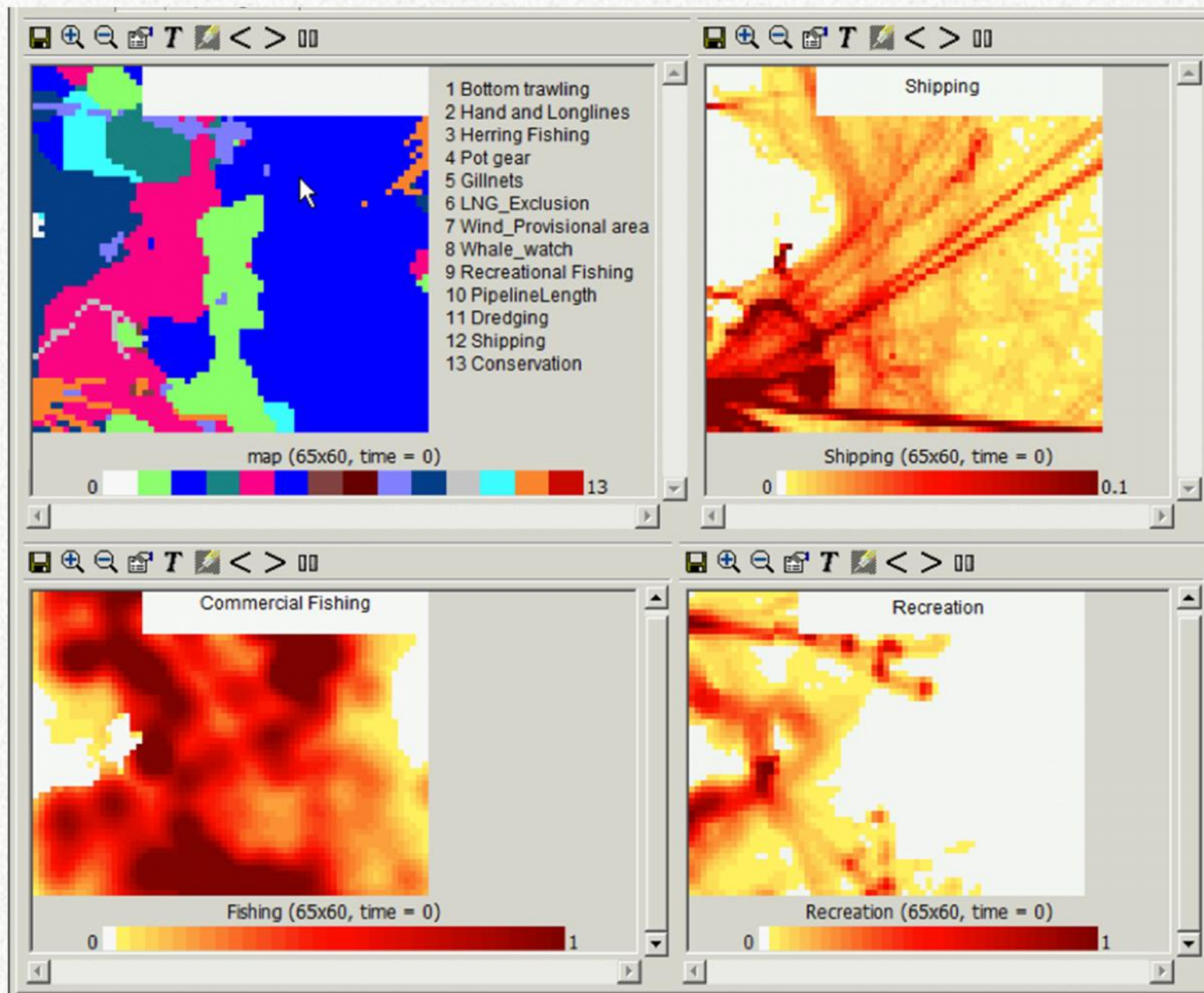


Dynamic, spatial, knowledge-driven

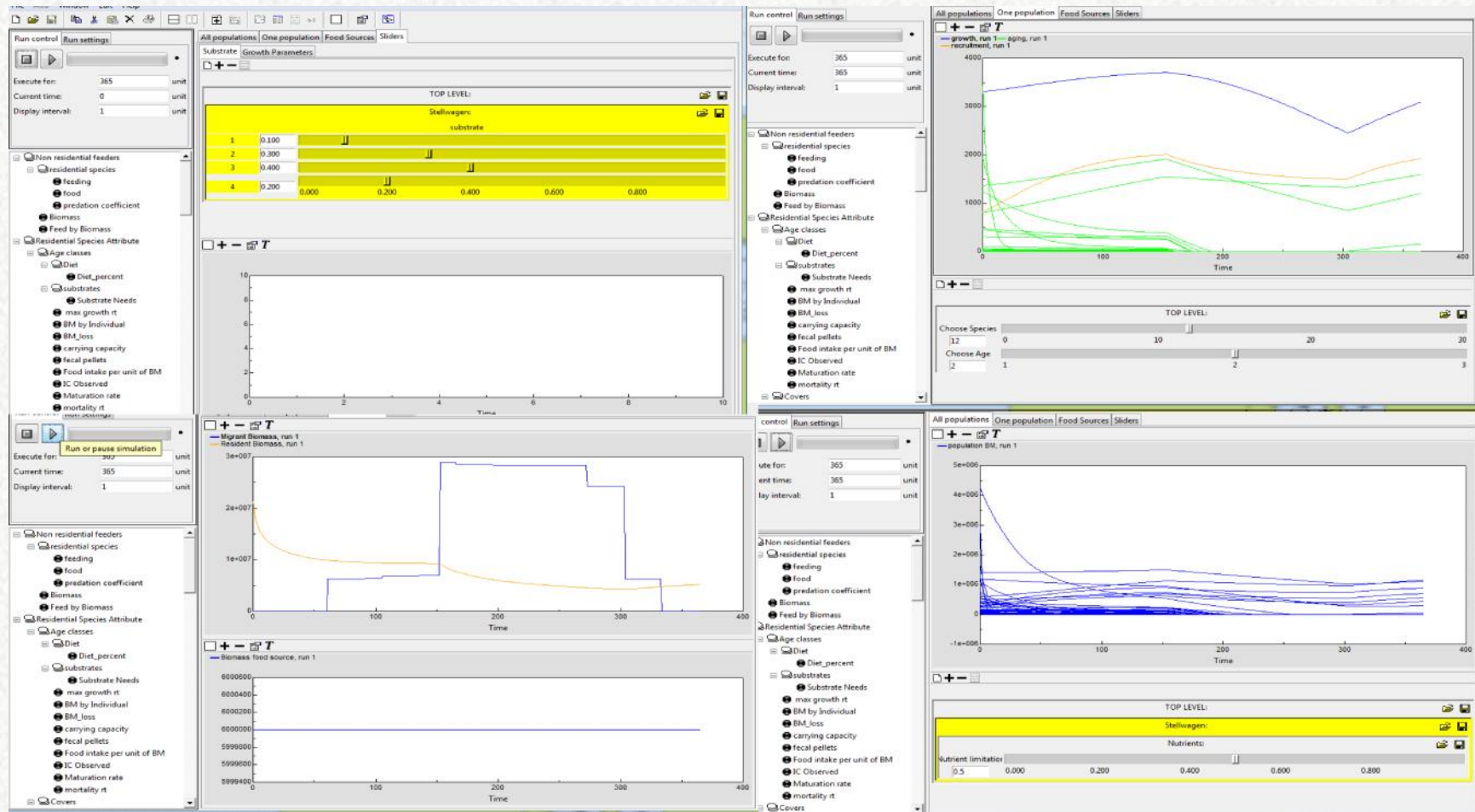
A little mind



Spatial Ecosystem Service Production Functions

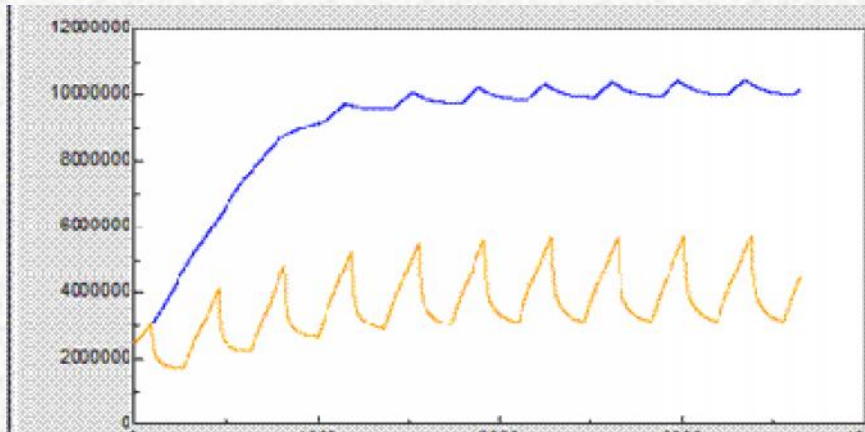


Generated outputs for the ecological non spatial model

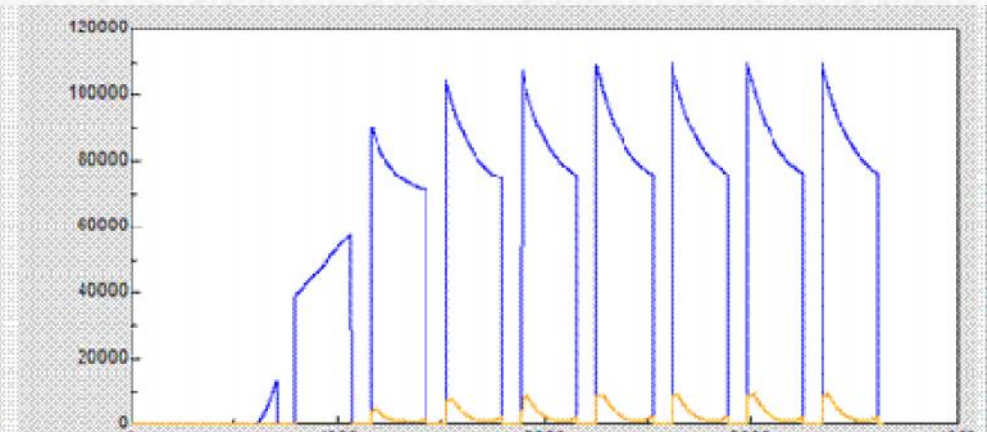


Scenario Analyses

Sand lance biomass

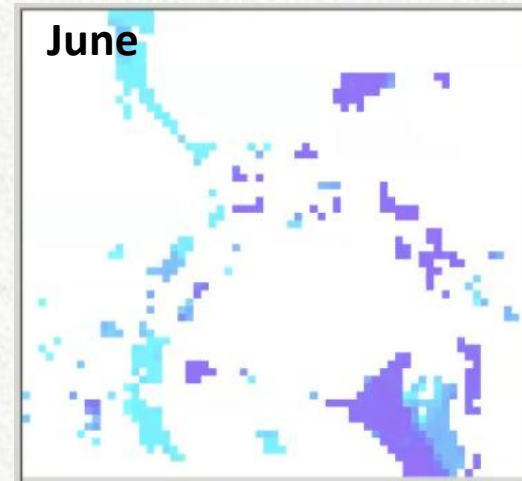
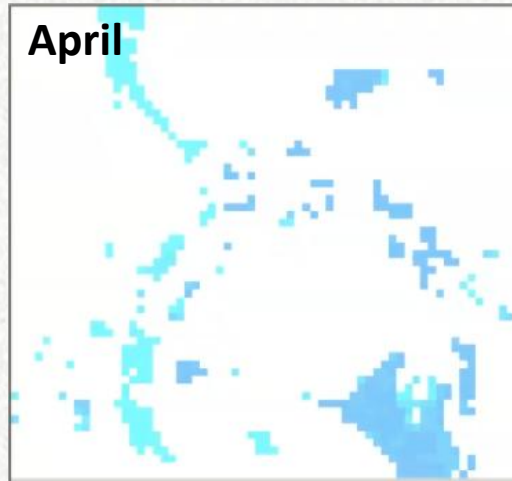
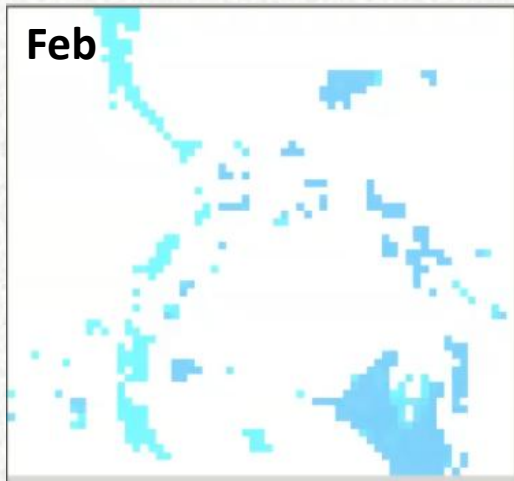


Humpback whale biomass

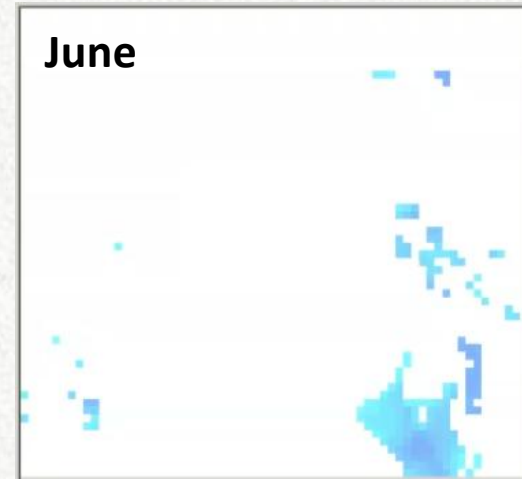
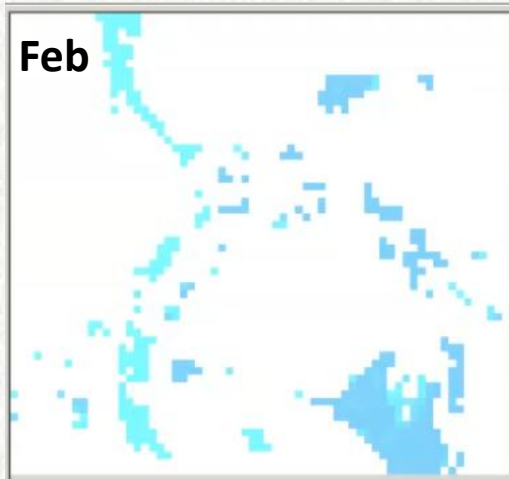


- Temporal and spatial tradeoff resulting in losses to whale watching revenues when SL fishing is allowed

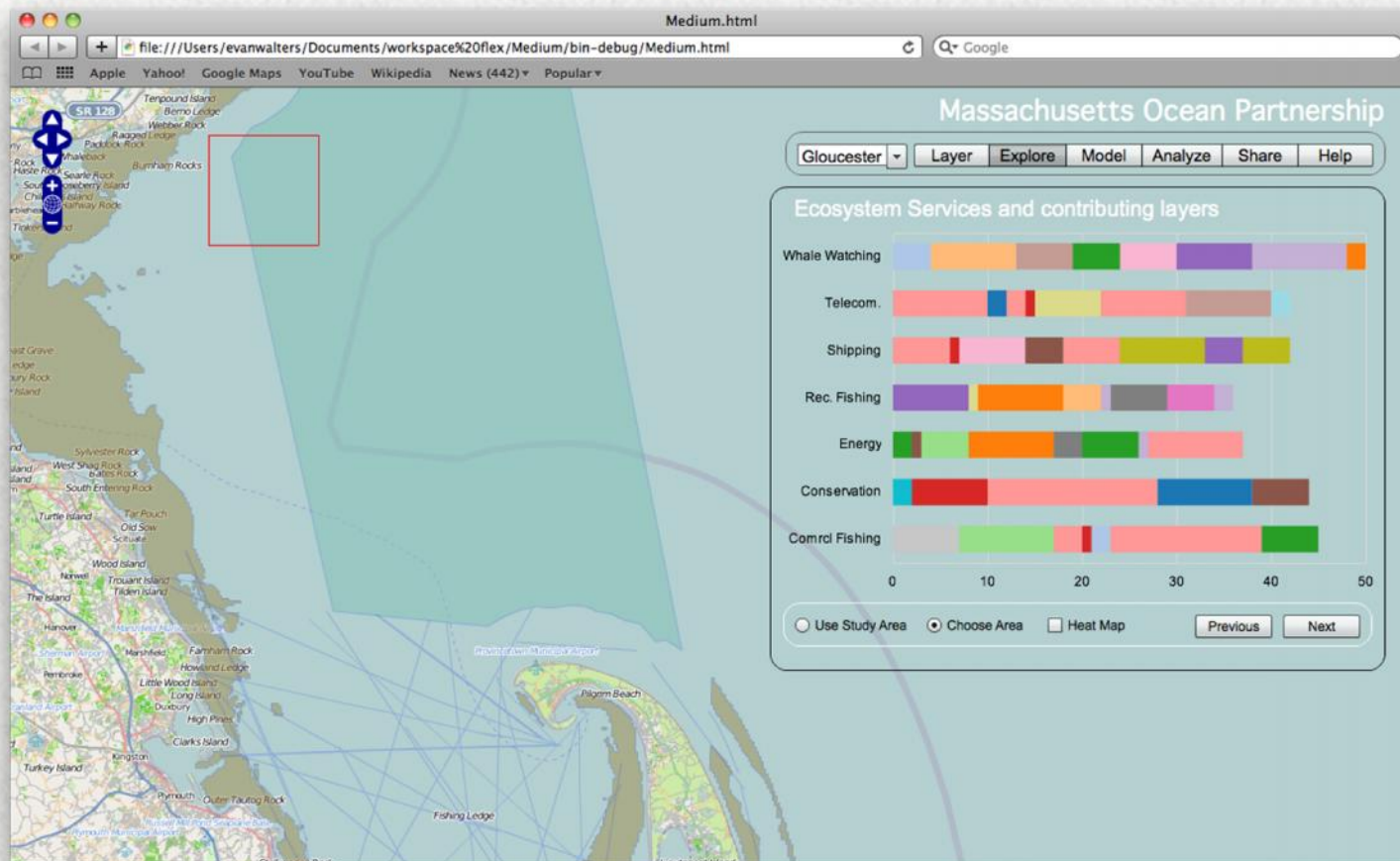
No sand lance fishing



Sand lance fishing turned on



The MIDAS User Interface



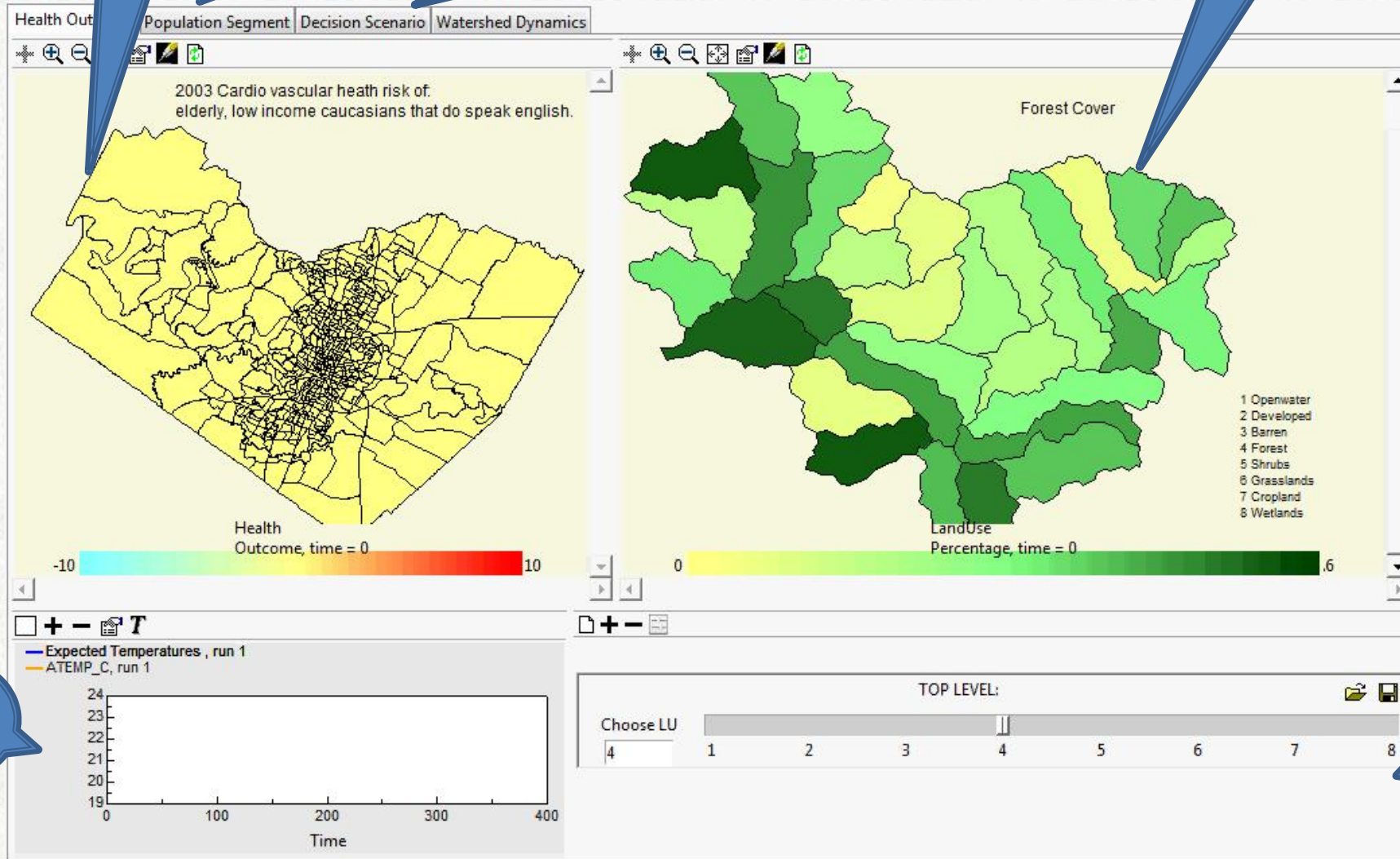
The EPA Human Health project

Cardiovascular risk map

f (population demographics)

f (decision Scenarios)

f (Land use & ecosystem services)



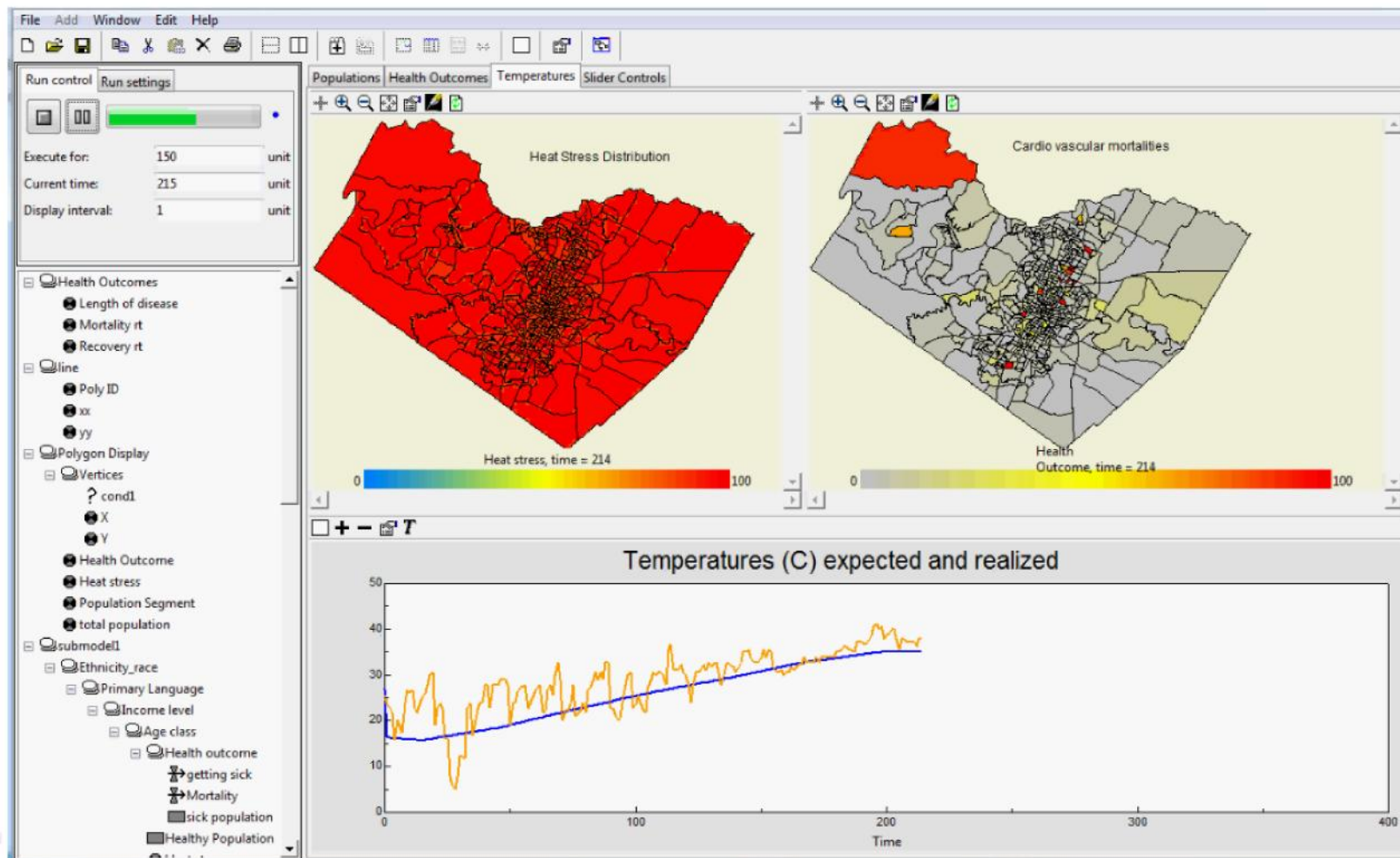
mp

Land use slider

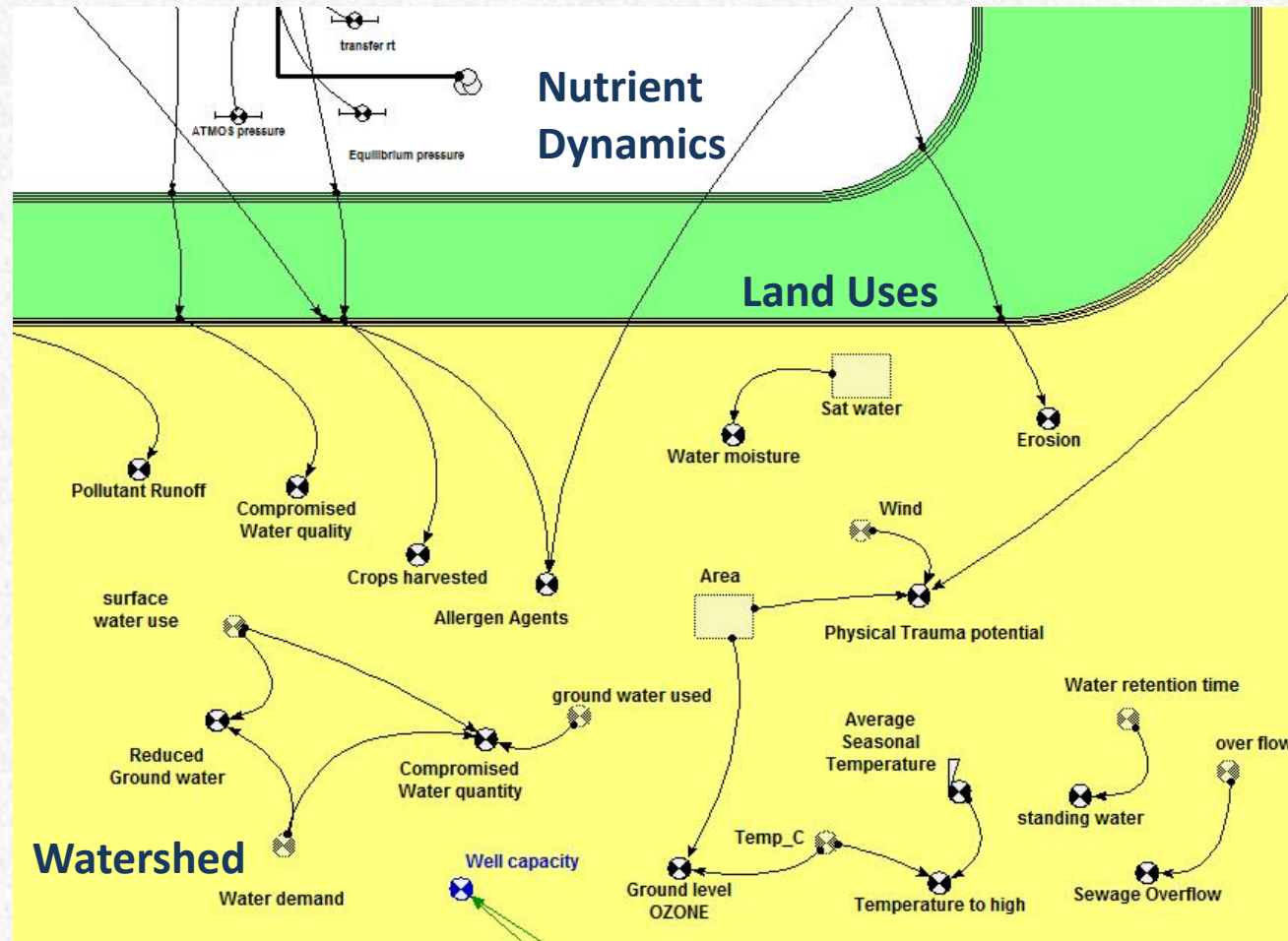
Coupling stressors with Human Health

Stressor_ID	stressors	Disease_ID	Disease_name
1	heat waves	1	Cardiovascular diseases
1	heat waves	2	Infectious and parasitic diseases
1	heat waves	3	Malignant neoplasm (cancers
1	heat waves	4	Respiratory
1	heat waves	5	Unintentional injuries
1	heat waves	6	Digestive diseases
1	heat waves	7	Intente injuries (suicide, war)
1	heat waves	8	Neuropsychiatric disorders
1	heat waves	9	Diseases of the genitourinary system
1	heat waves	10	Nutritional deficiency
1	heat waves	11	Perinatal conditions
1	heat waves	12	Diabetes mellitus
1	heat waves	13	Maternal conditions
1	heat waves	14	Congenital abnormalities
1	heat waves	15	Endocrine/nutritional disorders
1	heat waves	16	Neoplasms other than Malignant
1	heat waves	17	Musculoskeletal diseases
1	heat waves	18	Skin diseases
2	floods		
3	droughts		
4	air pollution		
5	aero-allergens		
6	vector-borne diseases		
7	food shortage		

Simulating the effect of a heat wave on the dynamics in cardio vascular mortalities

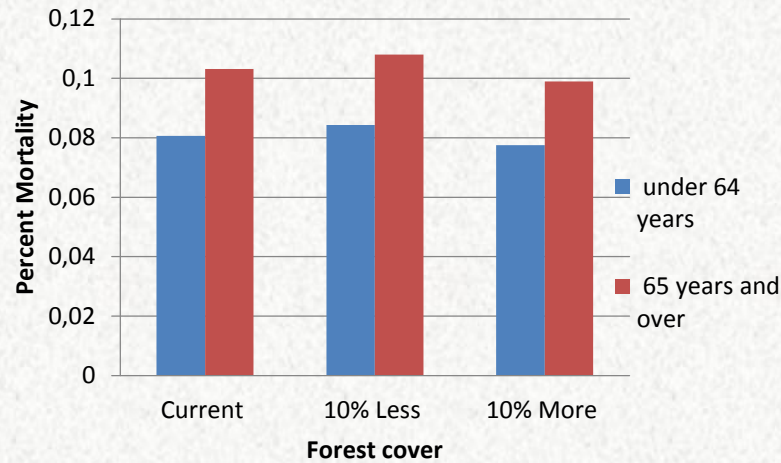


Framework is ready for additional links that affect human health and well being

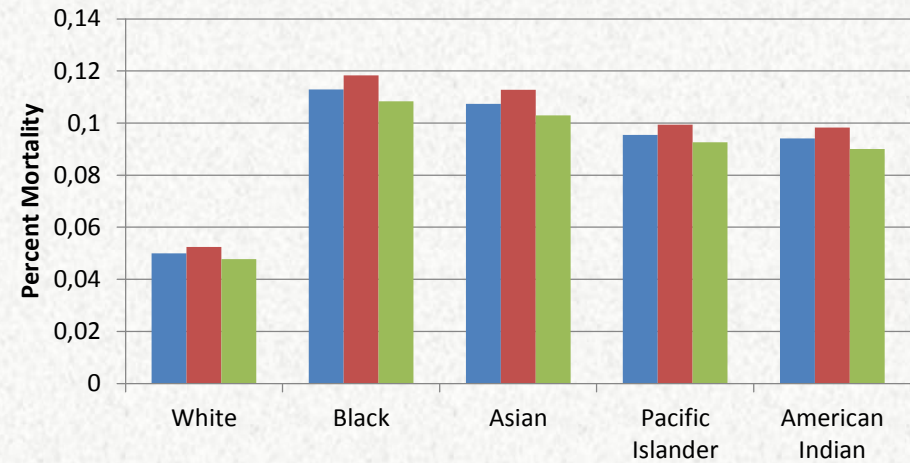


Tools for evaluating alternatives & tradeoffs

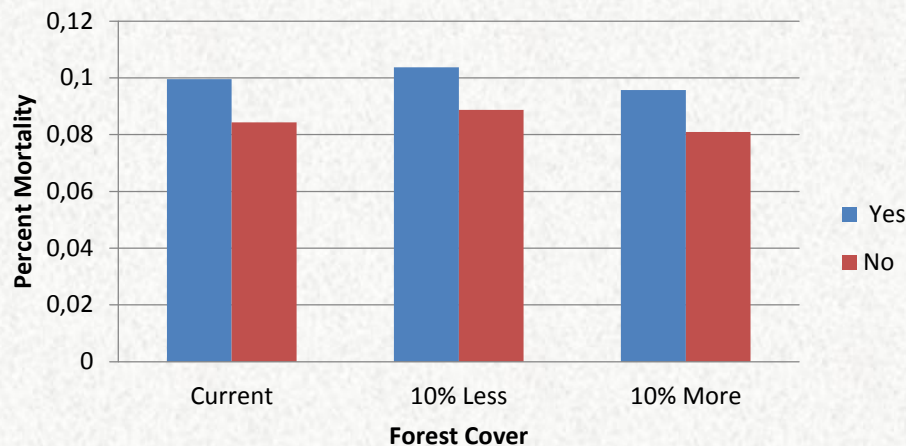
Age groups



Ethnicity



Ability to Speak English



Income group

