

# Working Group 6

## Ecosystem Services

### Working group members:

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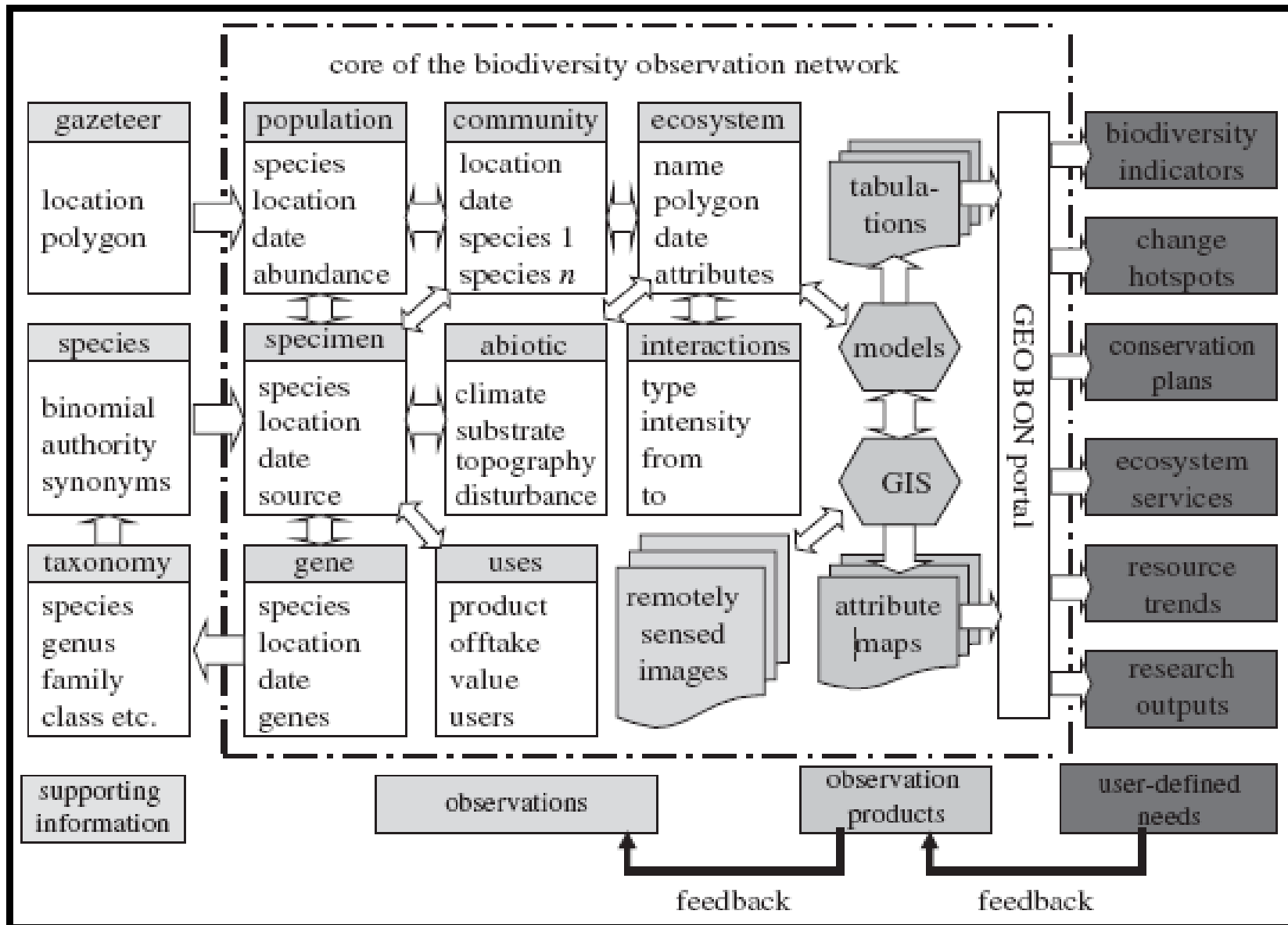
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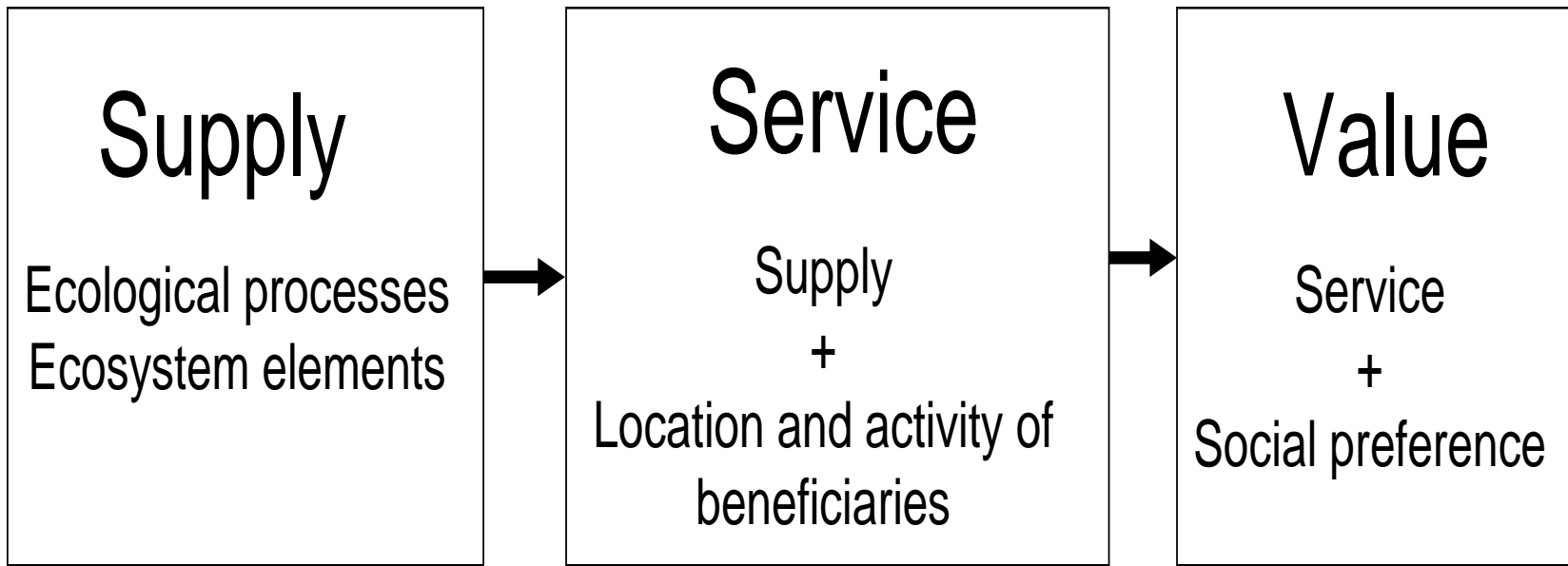
# The GeoBon Framework



# Our principal goal and challenges

- Measuring the delivery of ecosystem services through time
  - Which services?
  - What scale?
  - What temporal period?
  - How to interpret metrics for differing clients?
  - How to integrate with other working groups
  - THANKS TO EEA FOR HOSTING INITIAL MEETING

# Conceptual model for ecosystem service monitoring



Total amount of process leading to service

Amount of supply enjoyed by people

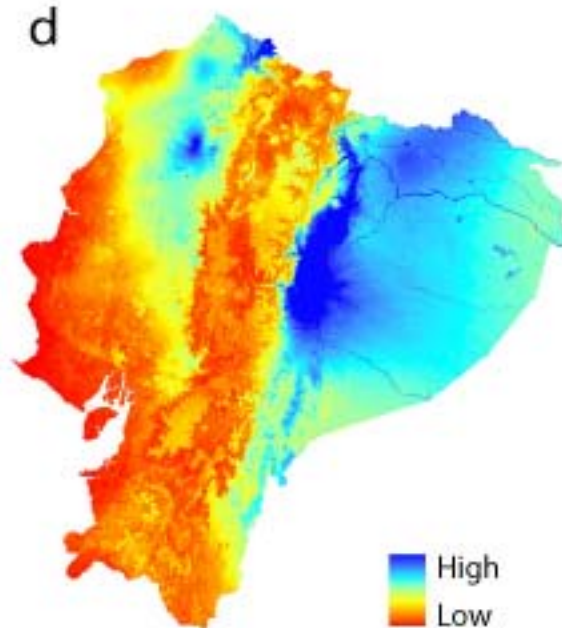
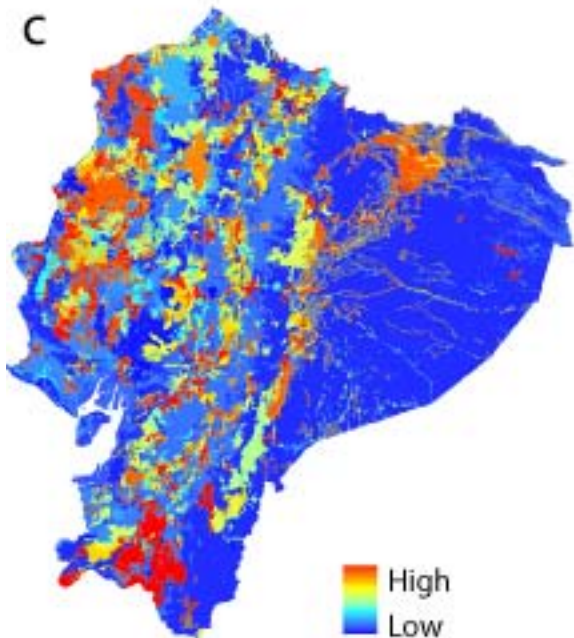
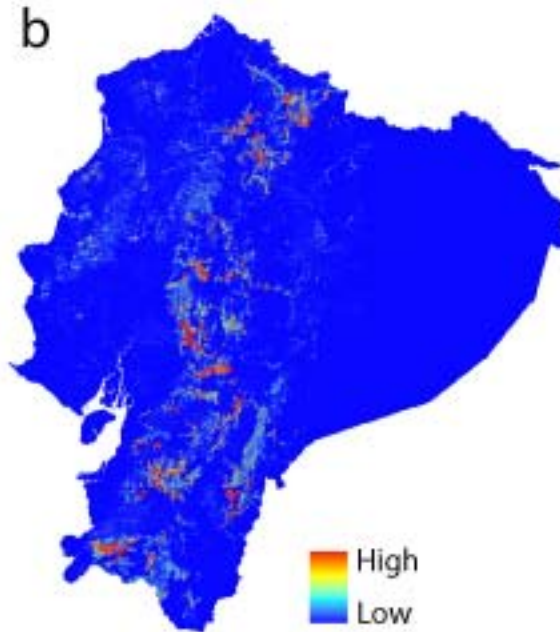
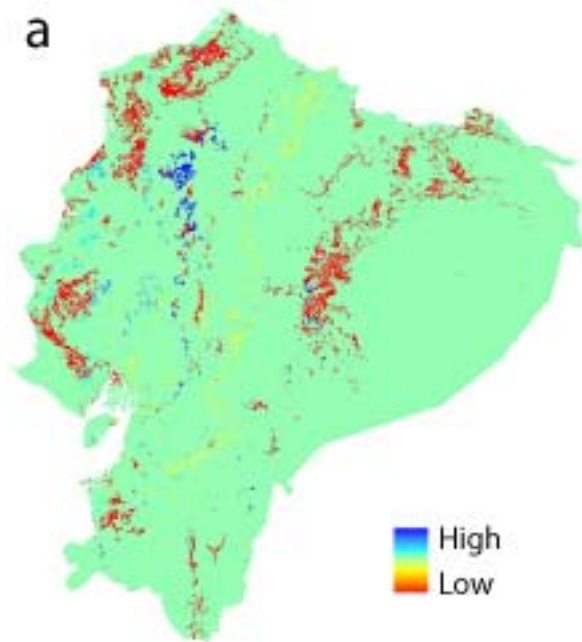
Society's preference for different levels of services delivered

# Initial Decisions

National Scale = fulcrum

- Useful to national, broader policy makers
- Good data base for many crucial model parameters (as opposed to ecosystem approach)
- Amenable to both top down (remote sensing) as well as bottom up inputs

Will use the Natural Capital Project—INVEST models to spatially map many services in addition to other approaches



*National-scale ecosystem service patterns in Ecuador, South America. a) carbon sequestration (service metric, metric tons C ha<sup>-1</sup>), b) annual average erosion rate (inverse supply metric, tons ha<sup>-1</sup> yr<sup>-1</sup>), c) pollination index (service metric, unitless index) and d) annual average water yield (supply metric, mm ha<sup>-1</sup> yr<sup>-1</sup>) (Natural Capital Project and The Nature Conservancy)*

# Annually reported (illustrative 1)

Carbon storage and sequestration (service, value)

Some very select non-timber forest products like wood fuel (supply, service?),

Agriculture crops (annual yield by crop type, annual value by crop type): derived from simple land cover/NPP models and from national level statistics (FAO)

Timber production (annual timber production and value): derived from simple land cover/NPP models and from national statistics (FAO)

Livestock. Take sub-national (state) resolution maps from FAO data.

Forage for livestock. Supply from NPP, land cover

Annually reported (illustrative 2)

Water supply for any beneficiary

Water supply for hydropower production,

Erosion control (supply),

Avoided reservoir sedimentation (supply, service, value?),

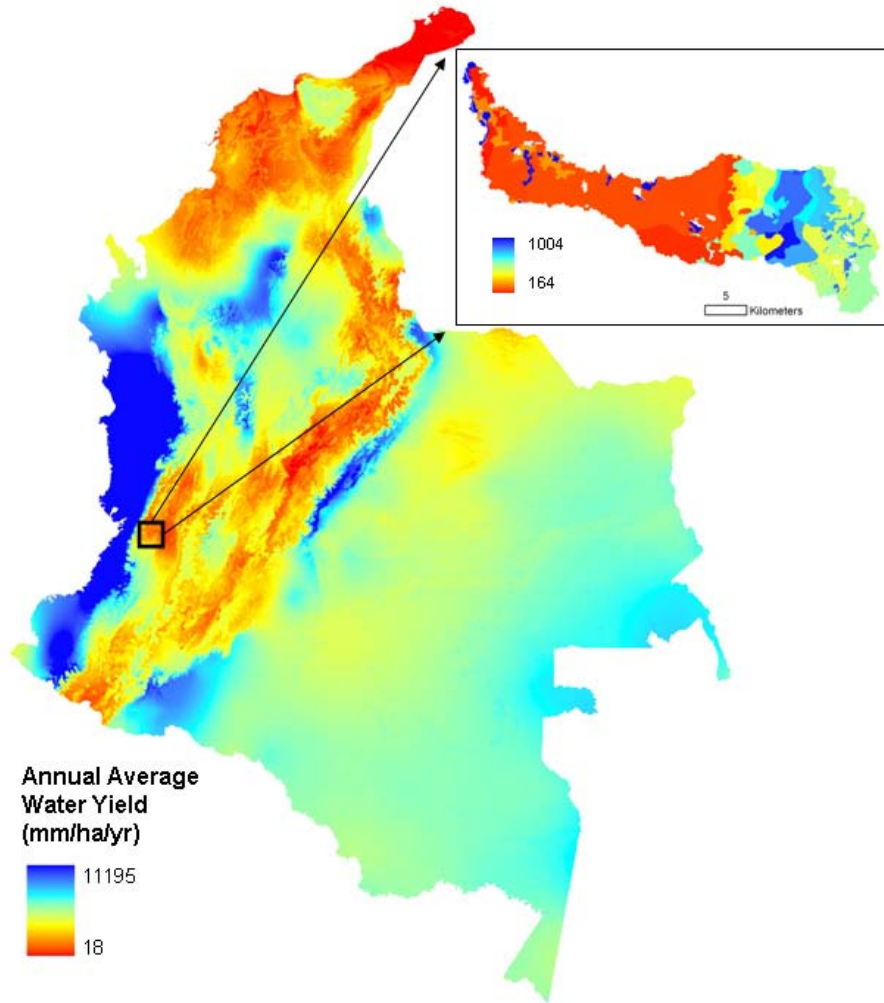
Water purification-nutrient retention (supply, service, value),

Fisheries. Within EEZ and freshwater fisheries species.

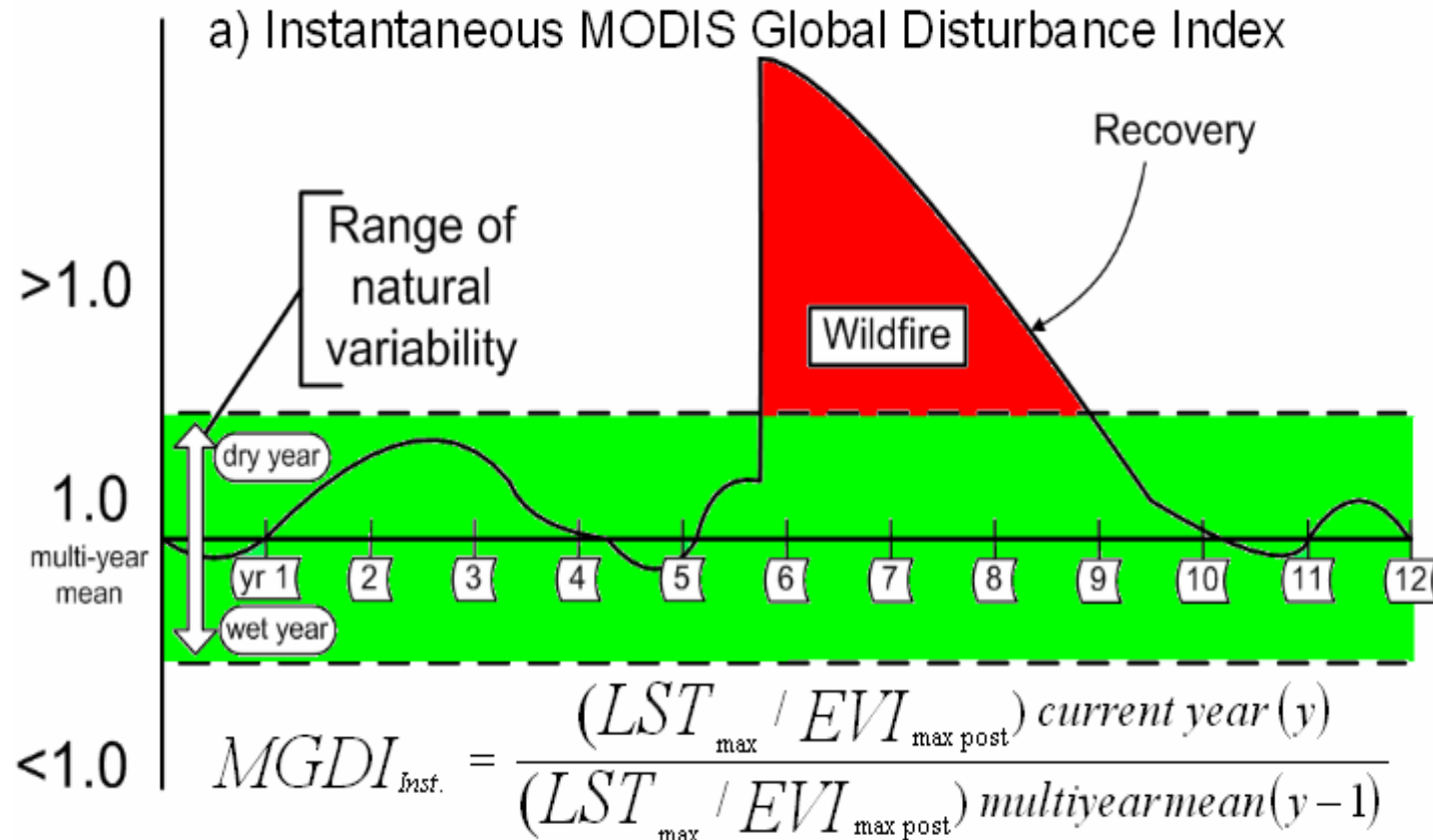
Coastal inundation regulation.

Using same approaches will be able to bore down to the local level also where local patch distribution is vital local communities.

Additionally---and a point of our discussions now is how to incorporate bottom up measurements into our overall scheme



Service delivery is dependent on *interannual climate variability* which is part of service delivery models. We can also capture *decadal changes* in ecosystem state using the MODIS Global Disturbance Index



# **The observational component of the plan is augmented by three support components:**

- B. Interpreting observational data complexity for policy decisions—
  - tradeoffs and ecosystem service bundles
- C. Toolbox and data base for users
  - to adapt basic data to diverse applications at differing scales
- D. State of Science Reports.  
Global overview of the state of the art in ecosystem service analyses, models, tools, scenarios and applications reported on a biannual basis would require broad community input.