Breakout IV #3

CC&E Contributions Towards Analyzing Impacts and Consequences of Global Change:

Impacts on Organisms and Communities

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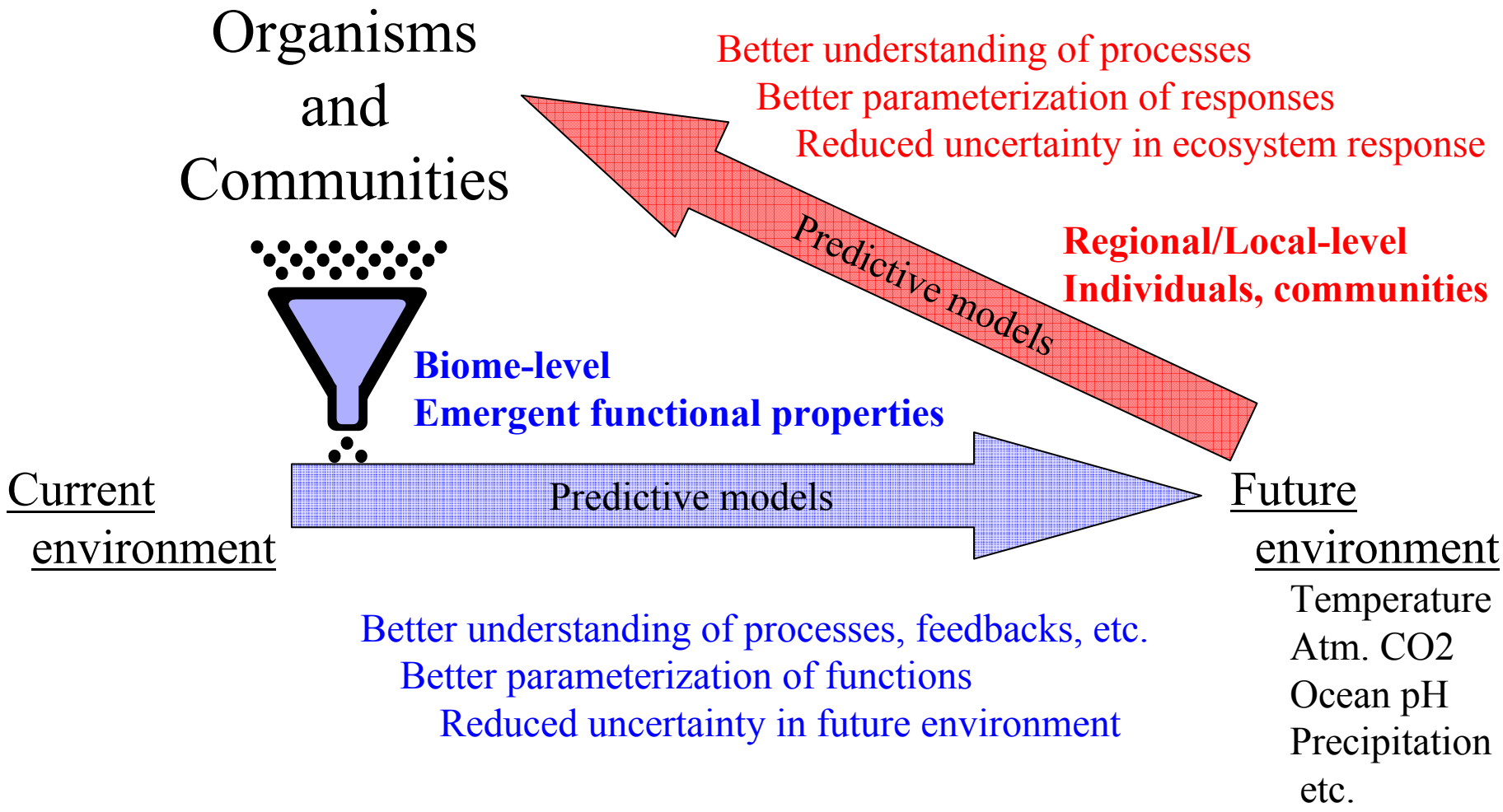

Scale (biological and environmental) of interest may be quite different for the two arrows.

Consequently, models and observations may be different.

1. What research can we conduct to better address the impacts and consequences of global change?

- Identify links between species, communities, functional types, and biogeochemical processes
  - Requires collaboration among organismal biologists, ecologists, and geochemists (ecosystem ecologists)
- Develop models appropriate to assessing impacts
  - Requires new basic research

1. What research can we conduct to better address the impacts and consequences of global change?

- Characterize relevant fluxes through process studies and link to remote sensing observations
- Address scale issues (space and time) both for observations (to understand processes) and for prediction
- Understand and characterize the consequences of disturbance

2. What actions would be most useful to or supportive of future assessments?

- Make immediate use of existing resources, especially airborne sensors
  - Decadal survey sensors will take longer than we may want for the next IPCC report
- Support research at multiple scales
  - Knowledge needed for broad scale modeling requires understanding at fine scales
  - Importance of field studies

2. What actions would be most useful to or supportive of future assessments?

- Leverage other programs and observational capabilities
  - IOOS, OOI, NEON, etc.
  - Importance of direct NASA community input to these programs
- Support continuity of time series
  - Remote sensing
    - Not just ONE mission (LDCM, Ocean Color)
  - *In situ* studies
- Use research priorities to motivate future sensors now

3. What are the greatest challenges and opportunities?

- Scaling
  - Spatial, temporal, and biological (species→ecosystems)
  - Applies to models, observations
  - Feedbacks across scales
- Consequences of possible evolution of organisms
- Prioritization
  - Balance societal needs with exploration/discovery
- Data
  - Access/centralization of data
- International collaboration and integration

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