

Scientific Capabilities

- The community will have a range of modeling objectives – modeling for knowledge, prediction, policy, education
- CHyMP needs to be flexible and address the scientific capabilities for a variety of modeling objectives.

- Provide physically based models of the terrestrial water cycle
- Couple to ocean, estuary, atmospheric models
- Couple with models water quality-carbon-nutrient, sediment transport, geomorphology/landscape evolution, ecology/vegetation
- Important to include coupling with human/social system
- ‘model’ includes all data, parameters,..
Need data integration and assimilation

- Need to couple processes at a wide range of spatial and temporal scales
- Natural to start at national to regional scale problems of water availability, energy, carbon, nutrients. This is consistent with the scale of national observation networks, and may be appealing to a variety of federal, state agencies.

- Scientific capabilities should include protocols/standards to enable model coupling, data sharing, code development/modification, collaboration
- Framework should include ‘cyber-collaboratory’ to enable sharing of models, data, modeling practices, model testing and benchmarking; reproducible workflow of entire model process
- Framework should be an open system that is adaptable and flexible. Must evolve