**Milestones and Deliverables**

Within 5 years, we expect to deliver an XYZ platform with reduced and quantified uncertainties that learns adaptively from diverse data sources. We will develop the platform in an agile and evolutionary process, confronting it with observations and rigorous computational tests from the outset. We envision the following milestones:

1. System engineering of a new XYZ architecture, including software architecture and incorporation of observational data streams (year 1).

2. Development of scalable algorithms, including uncertainty quantification and optimal targeting of high-resolution simulations (years 1-2).

3. Testing and optimization of algorithms with synthetic data (years 2-3).

4. Comparison of high-resolution simulations with observations to test the fidelity of the models (years 1-3).

5. Demonstration of simulations with the coupled model that reproduce observed statistics and statistics of year-to-year reporting.

6. Outreach to the community to operationalize XYZ platform and establish institutional structure for long-term viability (year 5).

**Long-Term Operation**

The 5-year goal of this project is to develop a next-generation XYZ platform that will enable accurate projections of XXXXX. This will provide the back end for applications tailored to stakeholder needs. We will provide an application programming interface for specific applications such as XXXXXX. We will also provide some applications ourselves, for example, XXXXXX. The longer term (5-10 years) success of our effort will be measured by the value it provides to a broad community of stakeholders and their application needs. During the 5-year project, we will focus on developing several elements of the infrastructure that would facilitate community adoption, for example, through an ecosystem of front ends developed by stakeholders (e.g., XXXXX). As described below, we will assemble an external advisory board for the Center to ensure community buy-in and long-term viability of the platform. While operationalizing the XYZ platform is beyond the scope of this 5-year proposal, several options for its long-term operation are conceivable and will be pursued simultaneously:

• The ABC Institute may assume operational responsibility in the long term, given its experience with complex XXXXXXX projects and with XXXXX data. Discussions are underway about realizing this option.

• We will partner with another agency or laboratory that is already involved in this area.

• A consortium of paying public and private stakeholders will support an institute operating the XYZ platform long term.