**TENTATIVE: Building a Cyberinfrastructure for High Dimensional Earth Science Data Analysis and Understanding**

**TENTATIVE: Utilizing a Multi-Institutional Cyberinfrastructure for High Dimensional Earth Science Data Analysis and Understanding**

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Journal: ?

**Motivation:** To support, record, and publish research on the PRP/CONNECT pilot project to encourage future earth sciences research. The project used the Pacific Research Platform’s advanced cyberinfrastructure for sharing and transferring multi-institutional sources of earth science data and processing CONNected objECT (CONNECT) algorithm workflow. The project enabled mulit-institutional objectives with the goals of enabling Big Data sharing, producing faster processing of scientific research and expanding the scale and scope of the CONNECT algorithm.

**Outline:**

**Abstract**

**1. Introduction**

* Cyberinfrastructure Advances
  + State-of-the-art cyber
* Multi-InstitutionalComputational Earth Sciences Possibilities
  + High dimensional earth science data sharing
  + Physical based modeling in the earth sciences
  + Statistical based modeling in the earth sciences
* Construction of time and space statistical objects enhances understanding of Earth science Big Data
  + Importance of strong Multi-Institutionalcyberinfrastructure

**2 Preliminaries/Background**

* State-of-the-art Cyberinfrastructure
  + Pacific Research Platform
    - FIONAs
    - THREDDS
    - Researcher data access via PRP
      * UCI/SIO
* Sources and State of Earth Science Data
* CONNected objECT (CONNECT)
  + Object-oriented perspective background
  + Workflow
    - Computational limitations
  + Big Data challenges
* Related work (PRP)

**3 Data Management**

* Data variety and velocity
  + Types of earth science variables/data
* Data transfer
* Data storage
* Data processing

**4. PRP/CONNECT Framework**

* FIONA placement (locations) and capabilities
* THREDDS
* CONNECT adaptation
* Network usage

**5. Experimental Results and Analysis**

* CONNECT results via PRP/CONNECT framework
  + Network results
    - Comparison of pre-adapted algorithm
  + Object archive description and characteristics
    - Variables and Statistics

**6. Conclusions**

* Summary of motivation
* Challenges
* Next steps