

# Proposal

*Steven Shen*

## 1 Statement of the Problem

1. What is the global temperature pattern in the long term?
2. According to the pattern in  $Q_1$ , has there been periods with abnormal temperature?
3. Does the temperature now rise abnormally compared with the past cyclical temperature rising?
4. How is carbon dioxide concentration correlated to global temperature?
5. Will there be a pause in global warming?

## 2 Review of Previous Work

- *On the definition and identifiability of the alleged “hiatus” in global warming* by Stephan Lewandowsky, James S. Risbey & Naomi Oreskes, 2015, <https://www.nature.com/articles/srep16784>
- *Global temperature change* by James Hansen, Makiko Sato, Reto Ruedy, Ken Lo, David W. Lea, and Martin Medina-Elizade, 2006, <http://www.pnas.org/content/103/39/14288.abstract>
- *Prospects for a prolonged slowdown in global warming in the early 21st century* by Thomas R. Knutson, Rong Zhang & Larry W. Horowitz, 2016
- *Interdecadal Oscillations and the Warming Trend in Global Temperature Time Series* by Vautard, Nature; London 350.6316, 1991

## 3 Description of Data

Data Resource:

1. Global Temperature Data from NASA’ s GISS data: <http://data.giss.nasa.gov/gistemp/>, whose land-ocean version combines land temperature observations with sea surface temperature data.
2. UAH Data from satellite observations: <http://vortex.nsstc.uah.edu/data/msu>