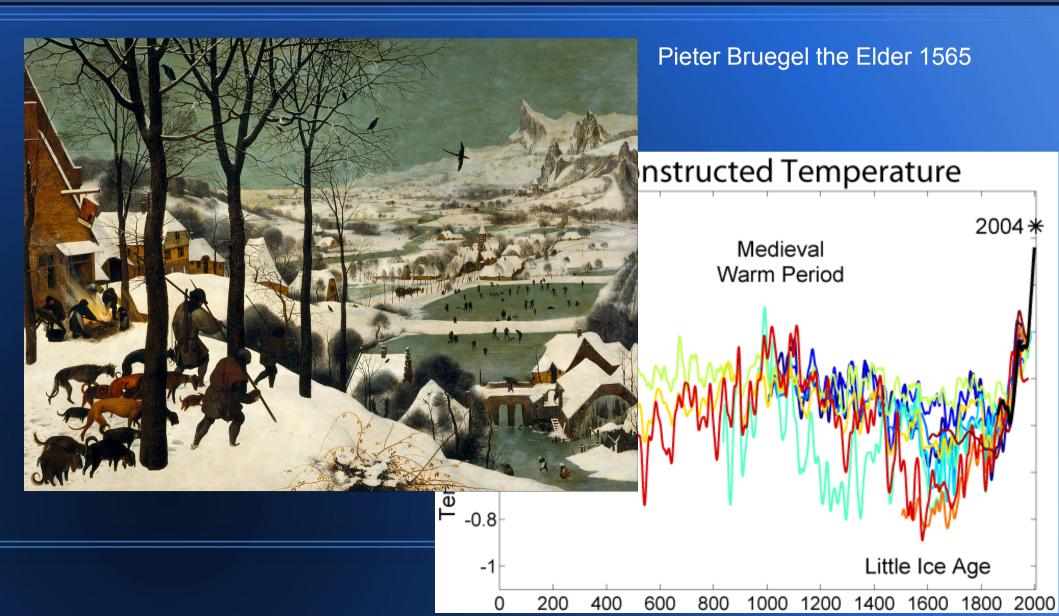
# Little Ice age (1250-1600) to 1800?

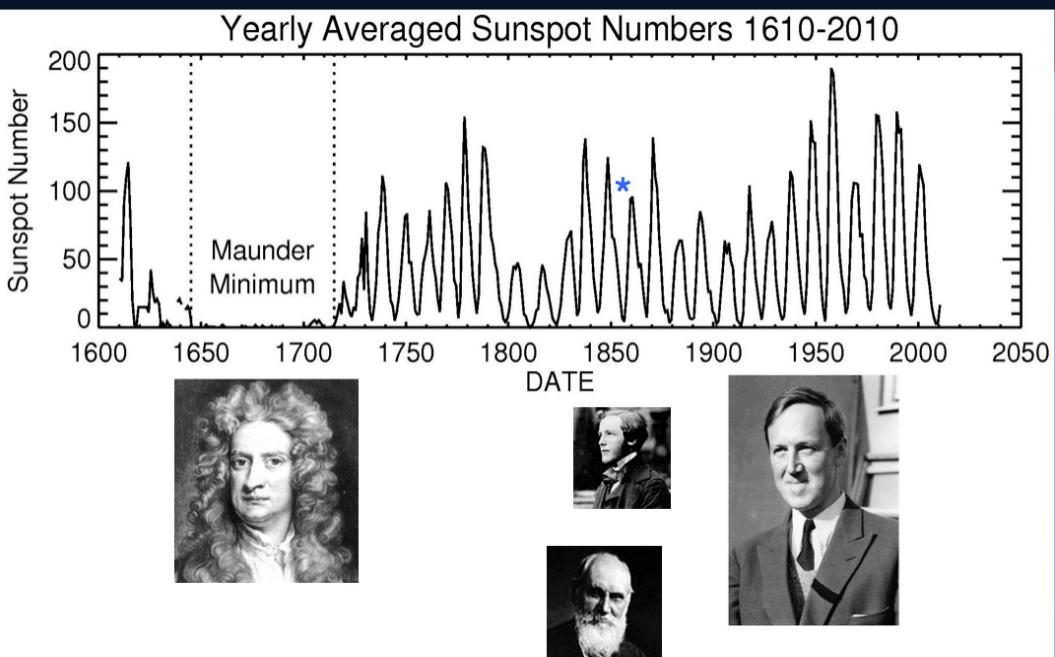


# **River Thames 1677**



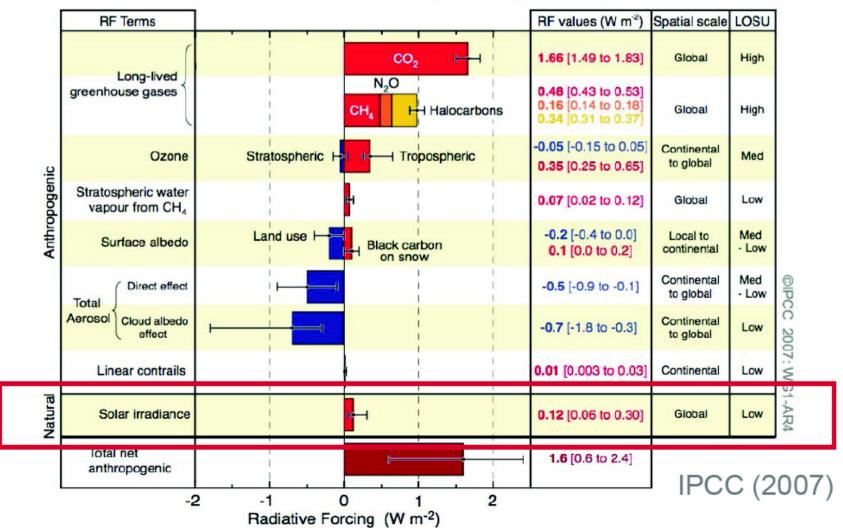
The first River Thames frost fair was in 1607 and the last in 1814

# Sunspots, MM, little ice age



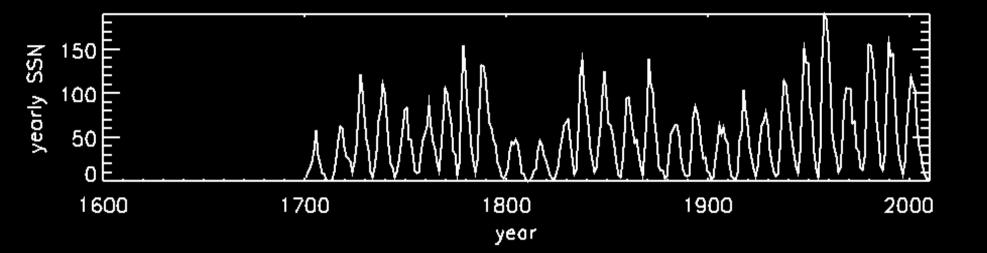
## **Climate drivers**

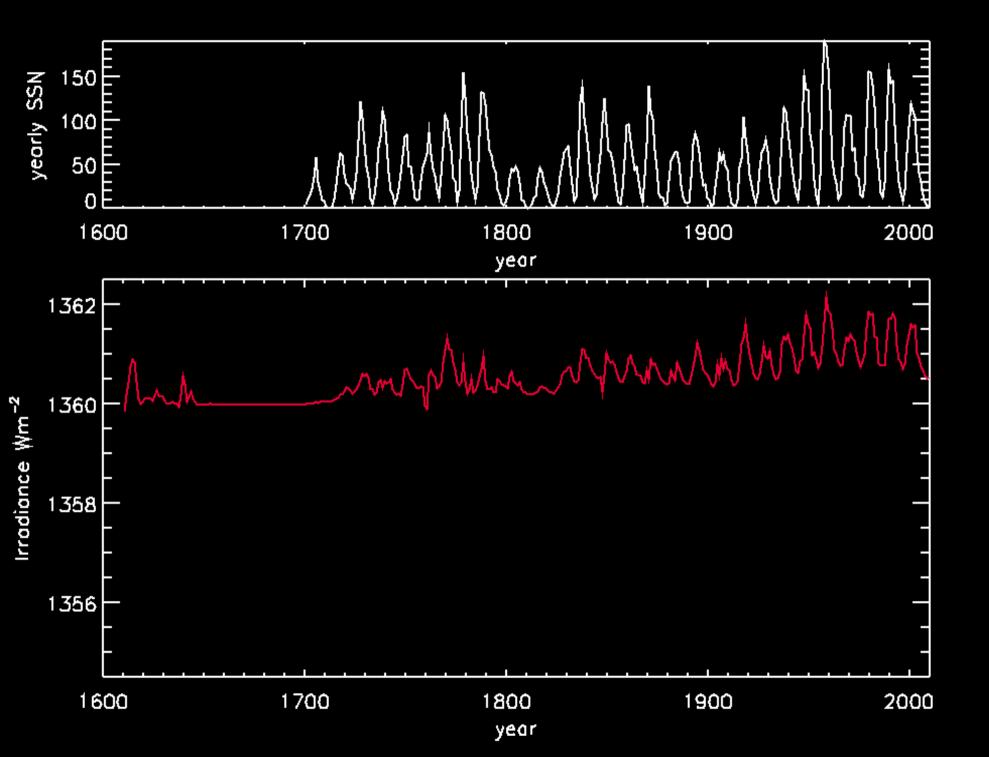
#### **Radiative Forcing Components**

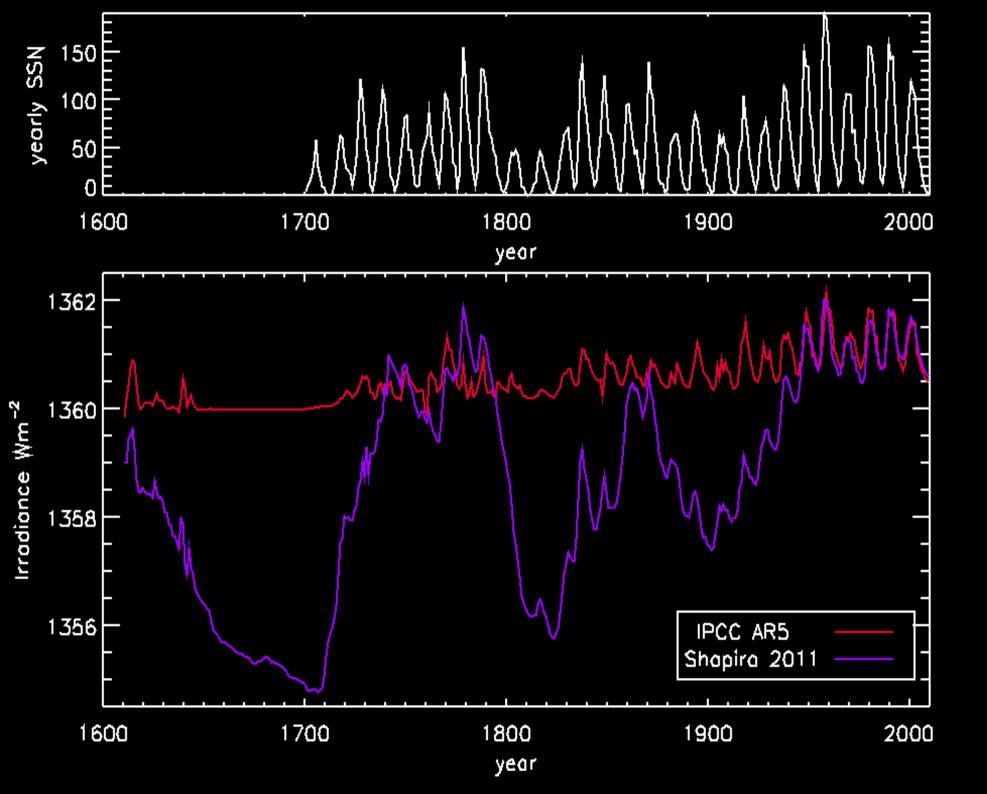


## **Climate drivers**

#### So the Sun's variations are negligible.... or are they?







### Errmm.....

GEOPHYSICAL RESEARCH LETTERS, VOL. 39, L02708, doi:10.1029/2011GL050168, 2012

#### Abrupt onset of the Little Ice Age triggered by volcanism and sustained by sea-ice/ocean feedbacks

Gifford H. Miller,<sup>1,2</sup> Áslaug Geirsdóttir,<sup>2</sup> Yafang Zhong,<sup>1</sup> Darren J. Larsen,<sup>1,2</sup> Bette L. Otto-Bliesner,<sup>3</sup> Marika M. Holland,<sup>3</sup> David A. Bailey,<sup>3</sup> Kurt A. Refsnider,<sup>1</sup> Scott J. Lehman,<sup>1</sup> John R. Southon,<sup>4</sup> Chance Anderson,<sup>1</sup> Helgi Björnsson,<sup>2</sup> and Thorvaldur Thordarson<sup>5</sup>

#### purpose

- Bring interested parties together to discuss solar and stellar variability data 1960s-present
- Identify fruitful directions for research (incl. PhD research)
- Write a report / white paper for NSF

- New line of funding for this research?