**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**NASA DATA on GLOBAL CLIMATE CHANGE**

Use the NASA global climate change website, <http://climate.nasa.gov/> to answer the following questions.

**VITAL SIGNS OF THE PLANET**Use the left/right arrows to scroll through the information tabs at the bottom of the page.
CLICK TO EXPAND on each tab to explore more information.

**CARBON DIOXIDE**• Carbon dioxide parts per million in the atmosphere is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

• Carbon dioxide levels in the atmosphere are at their HIGHEST in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ years.
• Tell two human activities that result in the release of CO2 into the atmosphere.

 1.

 2.

**GLOBAL TEMPERATURE**• 17 of the 18 warmest years on record have occurred since \_\_\_\_\_\_\_\_\_\_\_\_, the exception of 1998.

• The year \_\_\_\_\_\_\_\_\_ ranks as the warmest on record.

**ARCTIC ICE**• September Sea ice is now declining at a rate of \_\_\_\_\_\_\_ percent per decade.

**LAND ICE**

 • Tell one fact about how arctic land ice is changing on the planet.

**SEA LEVEL** • Tell **TWO (2)** things that cause sea levels to rise.
 1.

 2.
**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**LOOK IN THE FACTS tab at the top of the page and choose CAUSES.**
**CAUSES OF CLIMATE CHANGE**

• List 5 gases that contribute to the greenhouse effect.
 1. 4.

 2. 5.

 3.

• What is the Intergovernmental Panel on Climate Change?

• This group has concluded that there is more than a \_\_\_\_\_\_ percent probability that human activities over the past \_\_\_\_\_\_\_ years have warmed our planet.

• A change in the sun’s energy (solar irradiance) has played a role in past climate changes. Tell one piece of evidence which shows that current global warming can NOT be explained by changes in energy from the sun.

**LOOK IN THE FACTS tab at the top of the page and choose EFFECTS.**DESCRIBE 5 consequences of climate change
 1.

 2.

 3.

 4.

 5.

Pick one region in the United States and list impacts of climate change to that region.

 REGION; \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**LOOK IN THE FACTS tab at the top of the page and choose EVIDENCE.
EVIDENCE OF CLIMATE CHANGE

LOOK AT THE GRAPH.**For centuries, the level of CO2 has never been above \_\_\_\_\_\_\_\_ parts per million (ppm) until recently.

GLOBAL TEMPERATURE RISE:
The planet’s average surface temperature has risen about \_\_\_\_\_\_ degrees Fahrenheit since the late 19th century.

SHRINKING ICE SHEETS:
Greenland has lost \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cubic MILES of ice per year between 2002-2006 while Antarctica lost about \_\_\_\_\_\_\_\_\_\_ cubic MILES between 2002-2005.

DECREASED SNOW COVER:
Satellite observations reveal that the amount of spring snow cover in the Northern hemisphere has
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ over the past five decades and the snow is melting \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

SEA LEVEL RISE:
Global sea level rose about \_\_\_\_\_\_\_\_\_\_\_ inches in the last century.

DECLINING ARCTIC SEA ICE:
Both the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of Arctic sea ice has declined rapidly over the last several decades.

EXTREME EVENTS
The number of record high temperature events in the United States has been \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and
the number of record low temperature events has been \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ since 1950.

OCEAN ACIDIFICATION

Since the beginning of the Industrial Revolution the acidity of surface ocean waters has increased by \_\_\_\_\_\_\_\_ percent. The amount of CO2 absorbed by the upper layer of the oceans is increasing by about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ tons per year.

**LOOK IN THE FACTS tab at the top of the page and choose QUESTIONS (FAQ)**

1. Explain the difference between Global Warming and Global Climate Change.

1. How do we know what greenhouse gas and temperature levels were in the distant past?

1. Read the answer to “Is it too late to prevent climate change?” and write a sentence or two on your thoughts/reaction to the answer.

1. Responding to climate change will involve a two-tier approach including mitigation and adaptation.
EXPLAIN THE FOLLOWING TERMS
 MITIGATION:

 ADAPTATION

1. What’s NASA got to do with climate change? Tell 2 facts you learned from the answer to this FAQ.
2. If all of the Earth’s ice melts and flows into the oceans, what would happen to the rotation of the planet?