

Planet Earth

The Power of Perspective

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NASA Chief Scientist

GLOBE Annual Partners Meeting
July 18, 2011



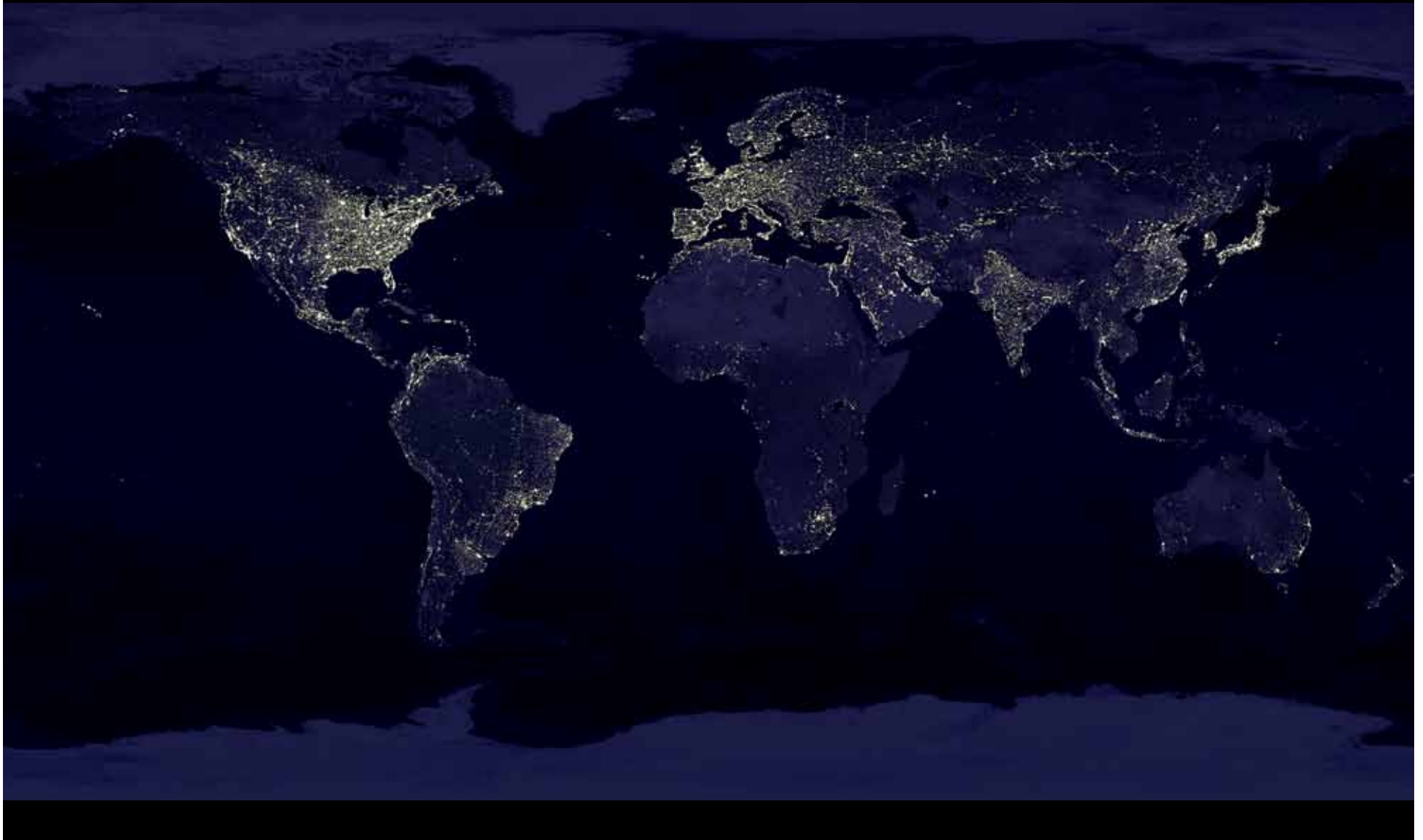


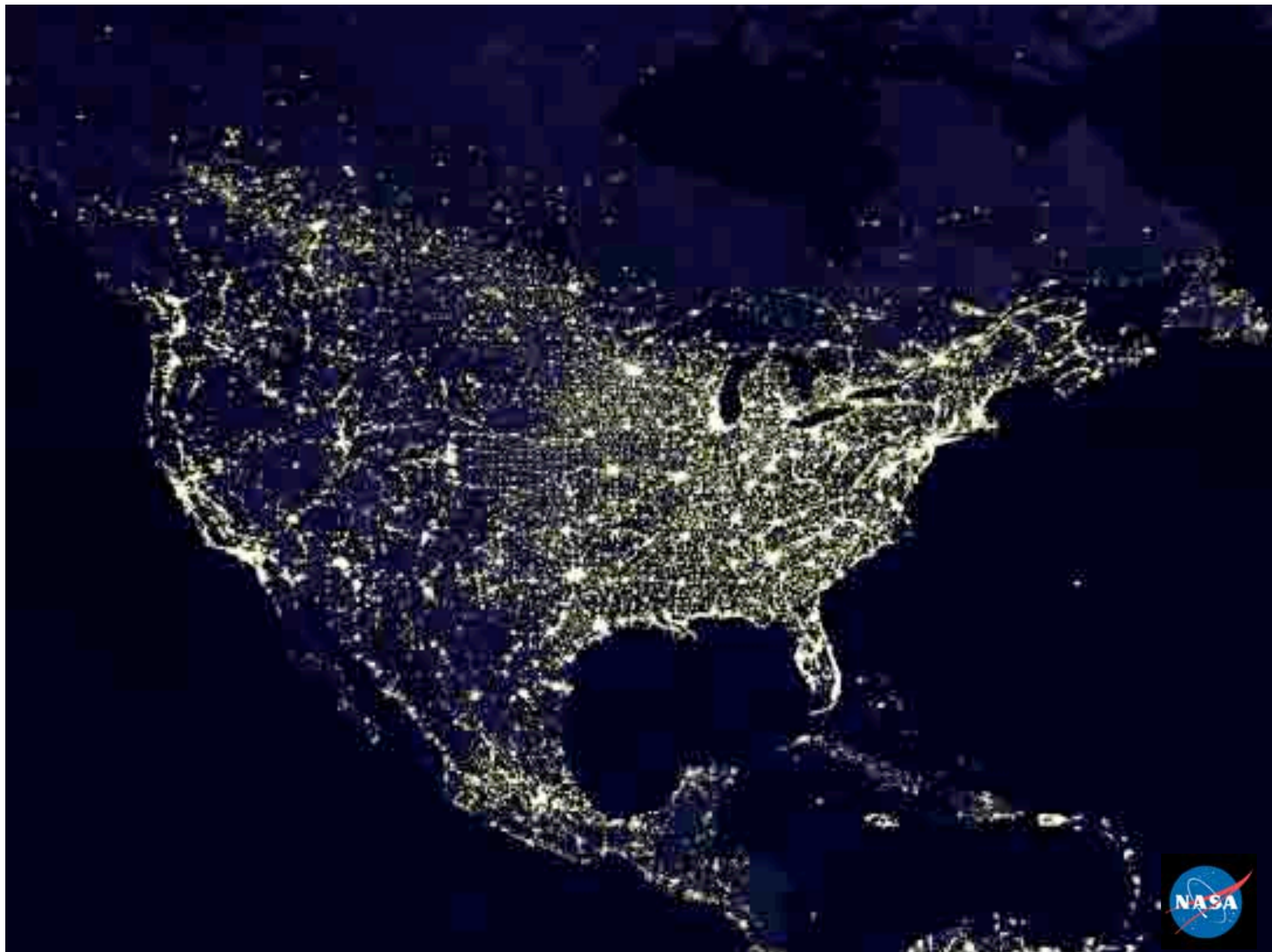
“From this distant vantage point, the Earth might not seem of any particular interest. But for us, it's different...”



“That's here, that's home, that's us.”

- Carl Sagan

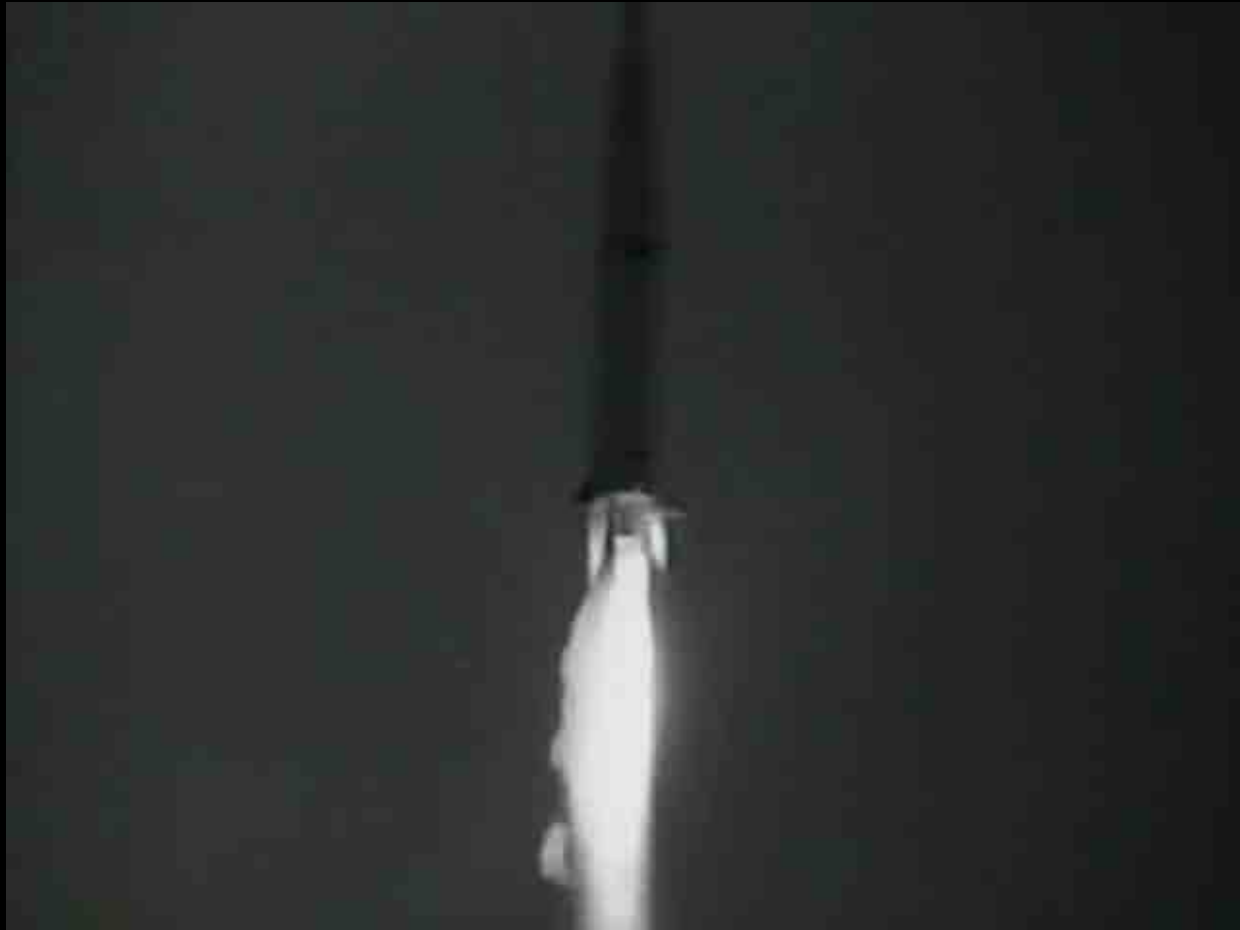








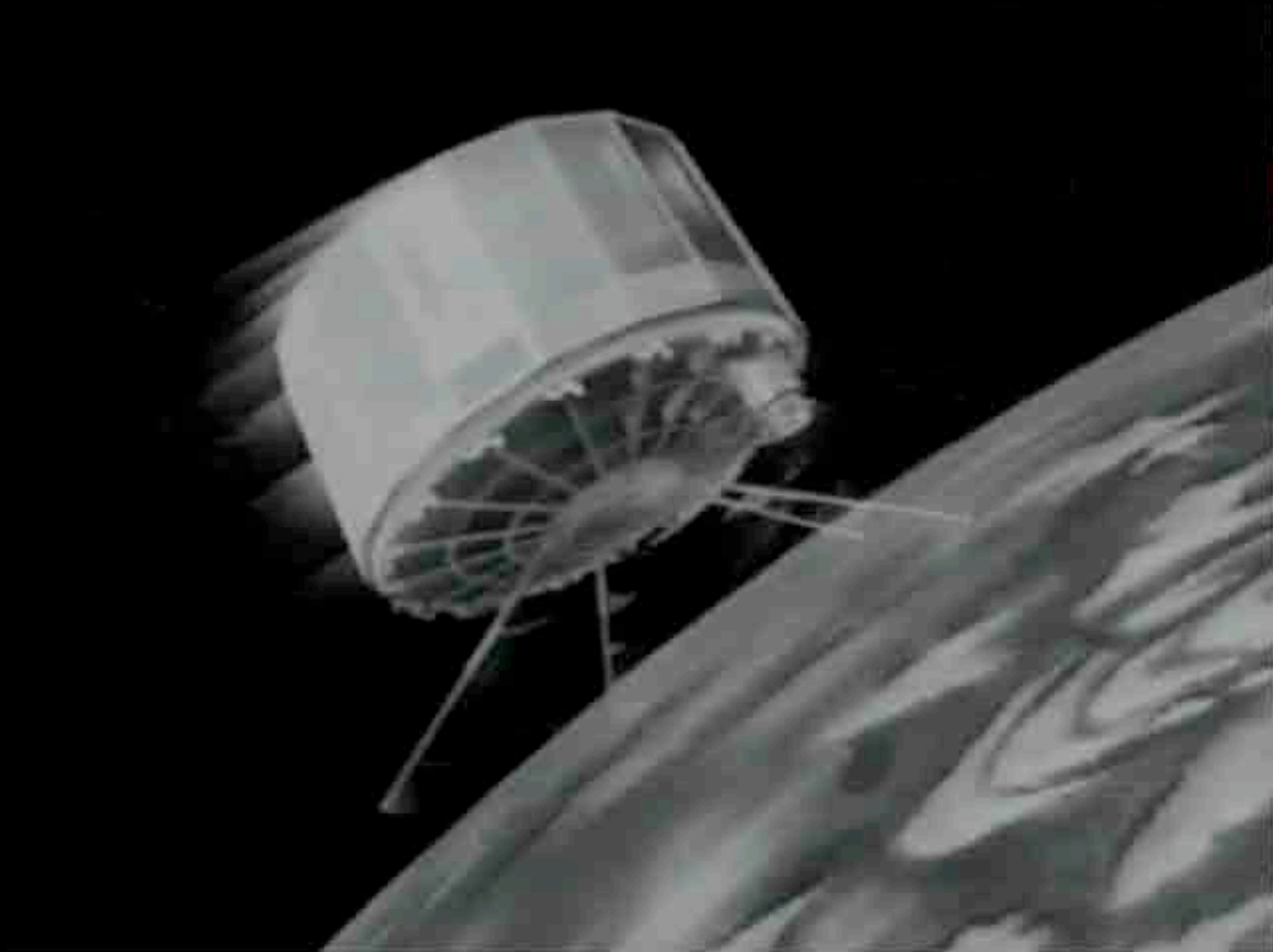




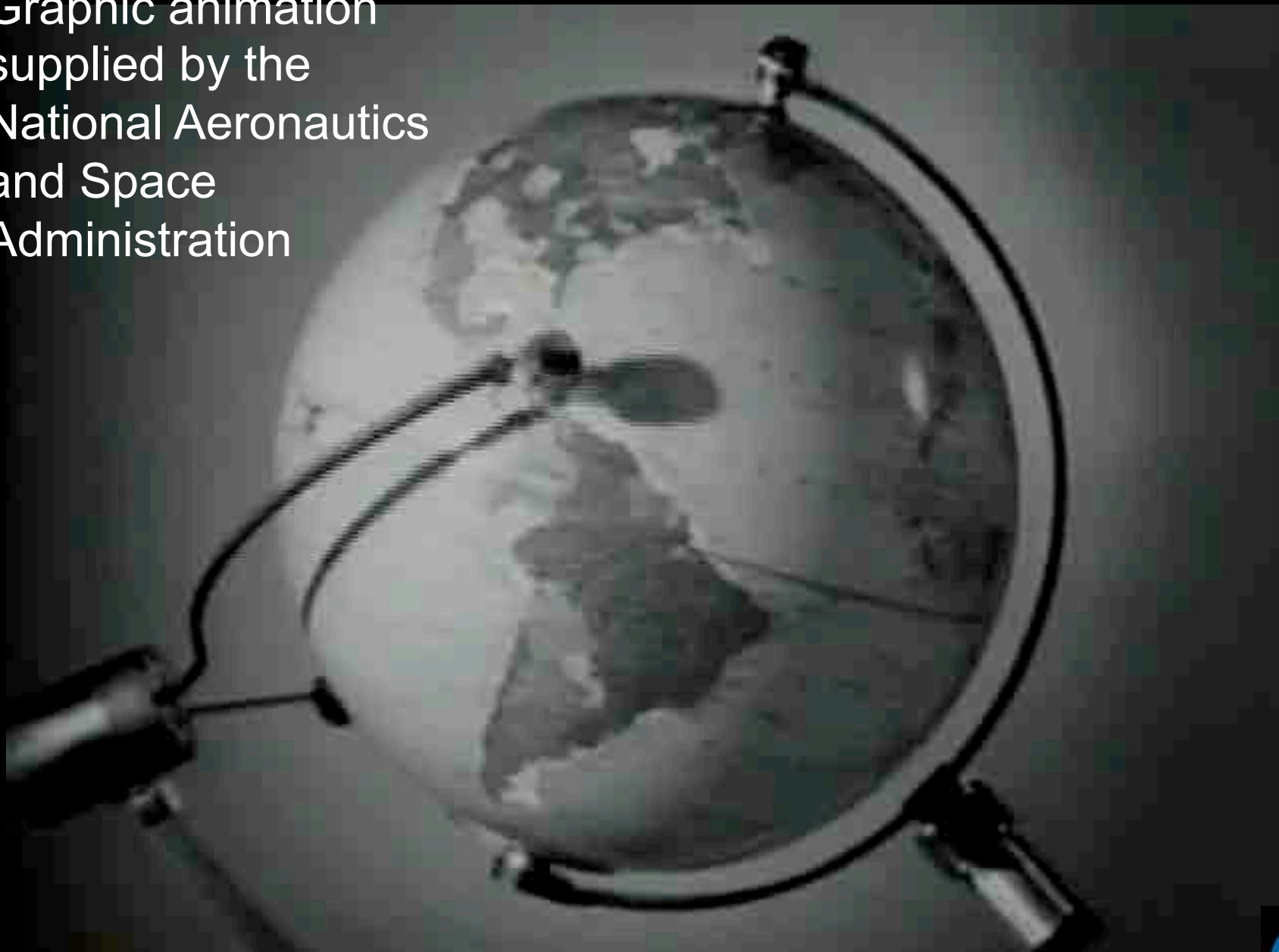




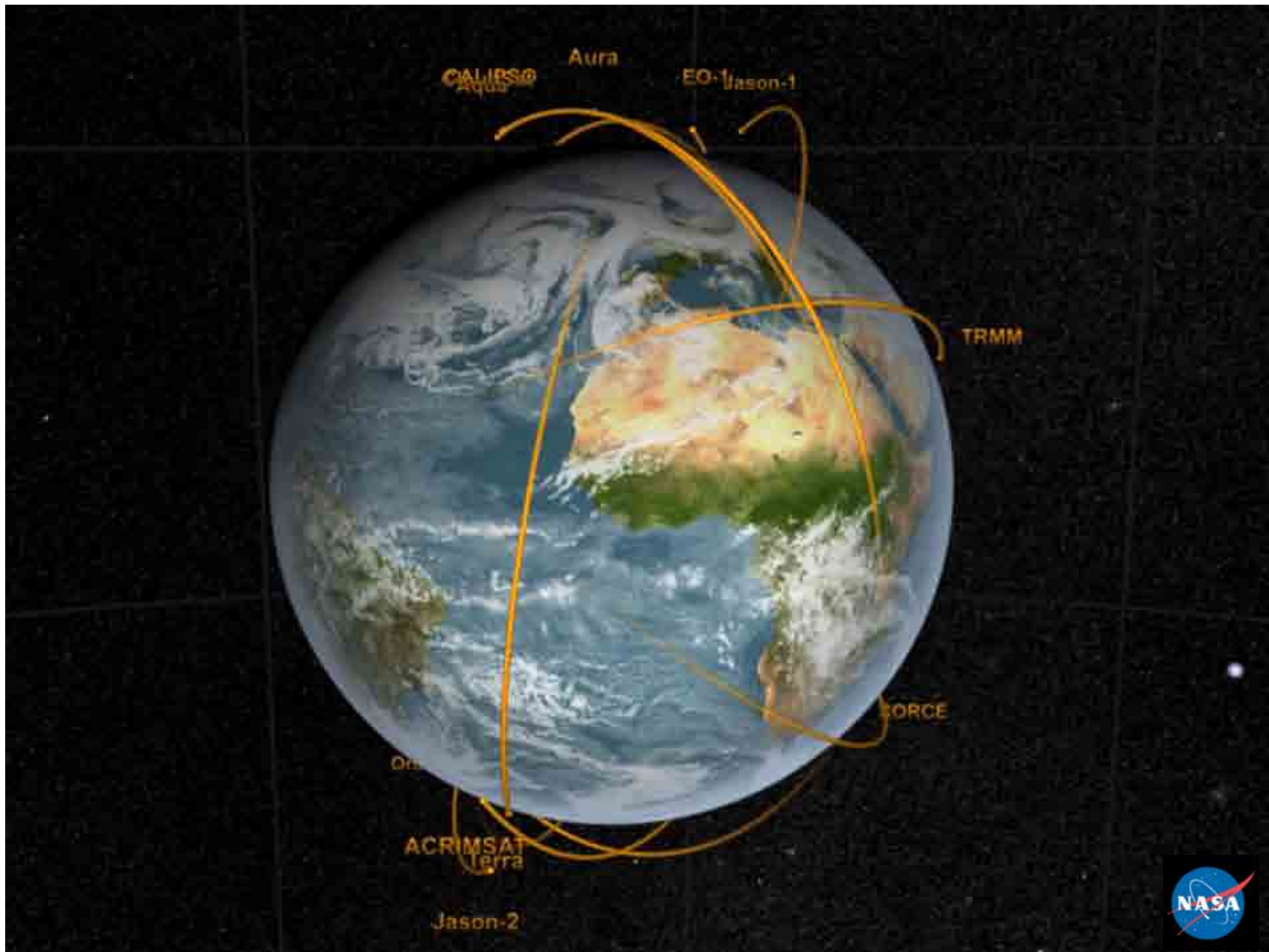
A flying ladies' hat box?



Graphic animation
supplied by the
National Aeronautics
and Space
Administration





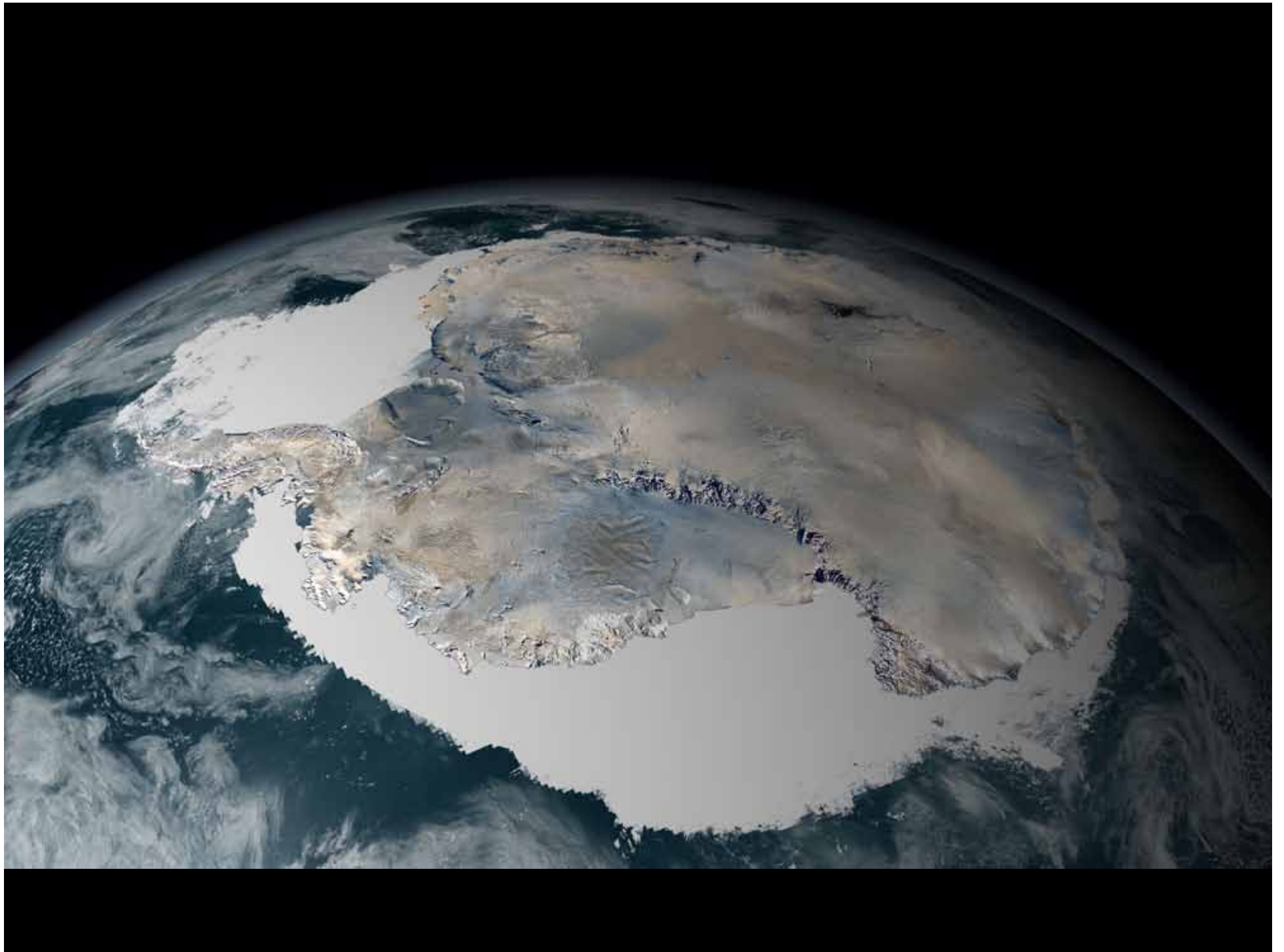












Global Impact of 1-m Sea Level Rise

Areas Affected by a
1-m Sea Level Rise

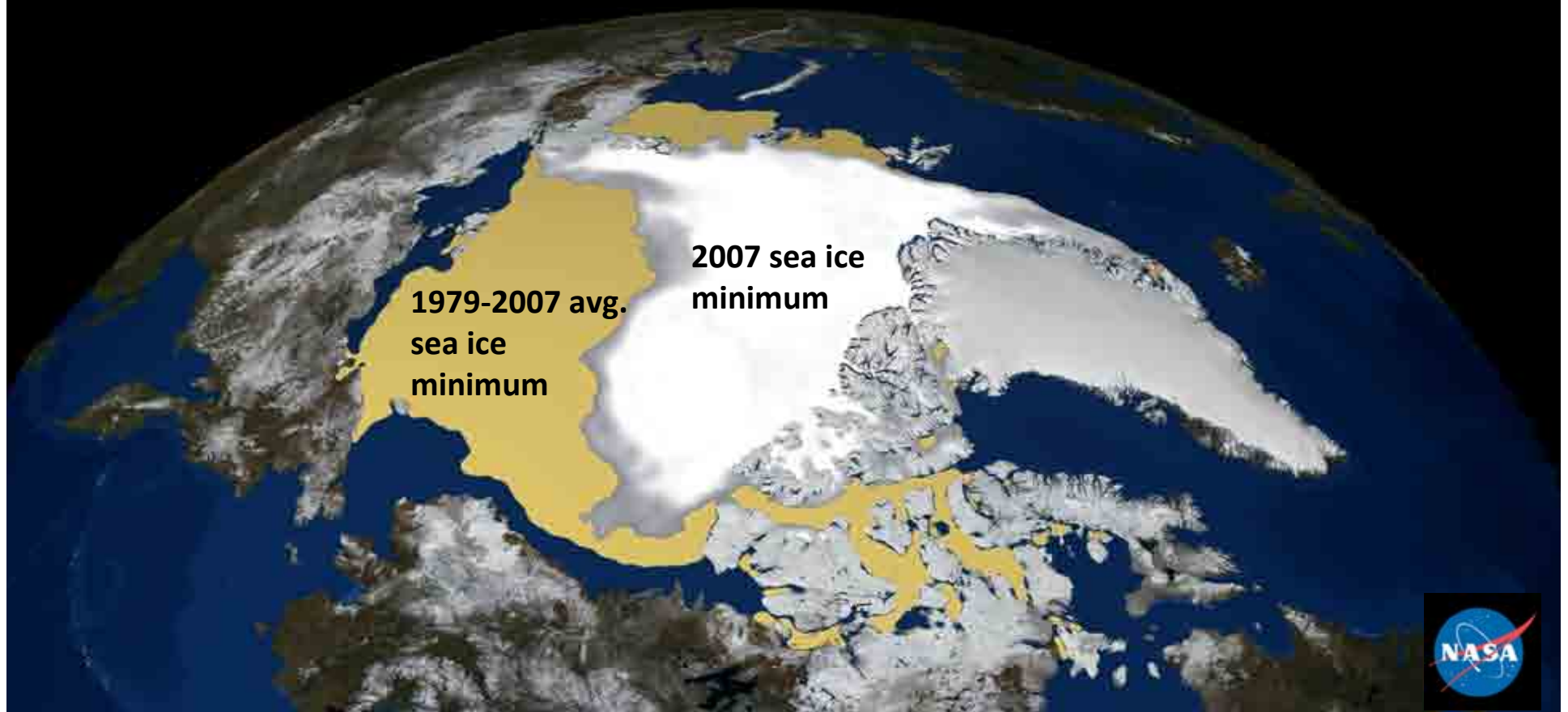
A world map with a dark blue background. The landmasses are outlined in a light blue color. The map shows the global distribution of areas that would be affected by a 1-meter sea level rise. The affected areas are highlighted in a light blue color, showing significant portions of coastal regions across all continents, including North America, South America, Europe, Africa, Asia, and Australia. The map is centered on the Atlantic Ocean, with the Americas on the left and Europe and Africa in the center.

1 meter of sea level rise can affect up to 145,000,000 people
at a cost of nearly 1,000,000,000,000 \$US (Anthoff et al., 2006)

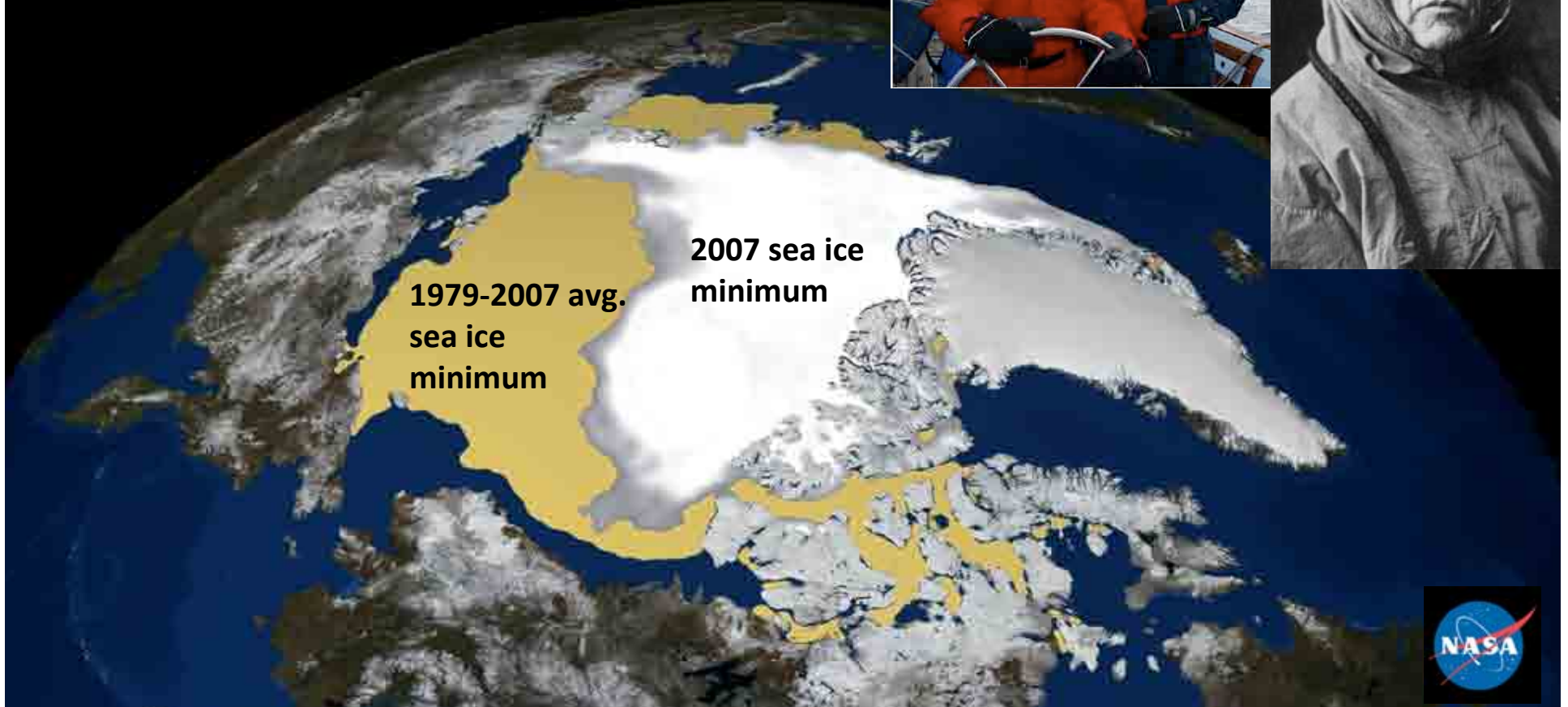




Annual Sea Ice Minimum Extent 1979-2009

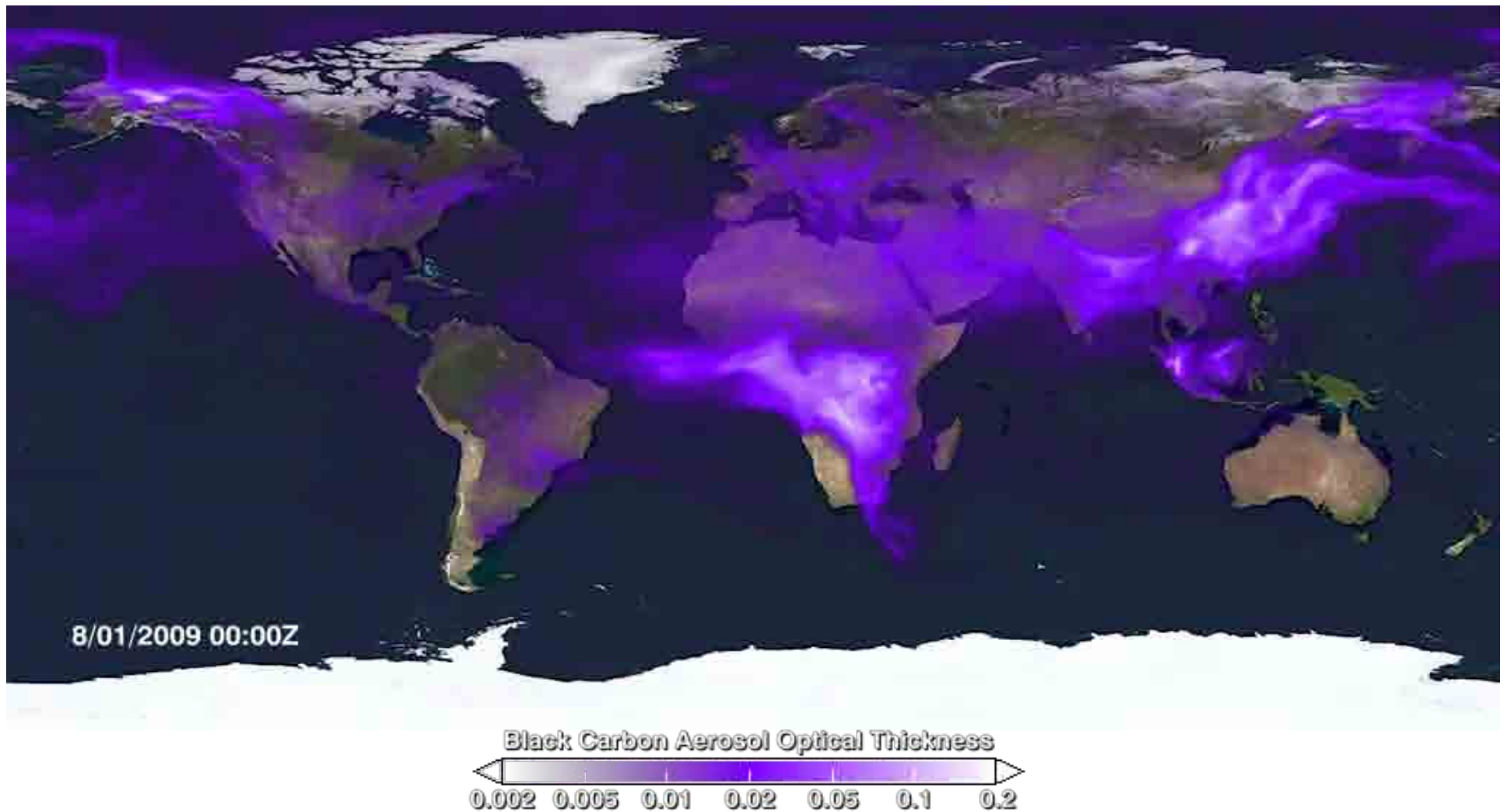


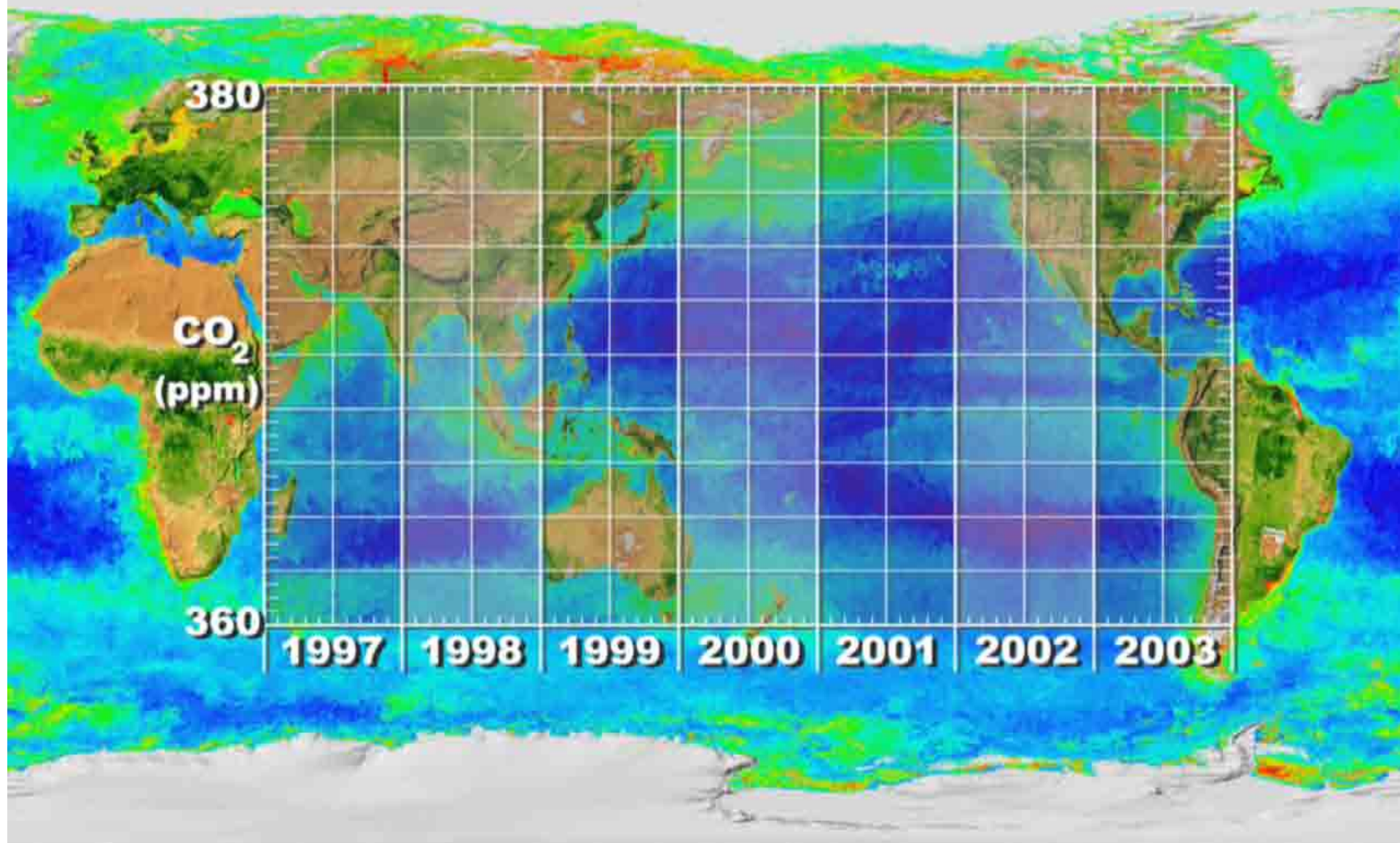
Annual Sea Ice Minimum Extent 1979-2010





Global Transport of Black Carbon





BR-364

—Rio Jaciparaná

Buritis

← to Nova Mamoré

40 km



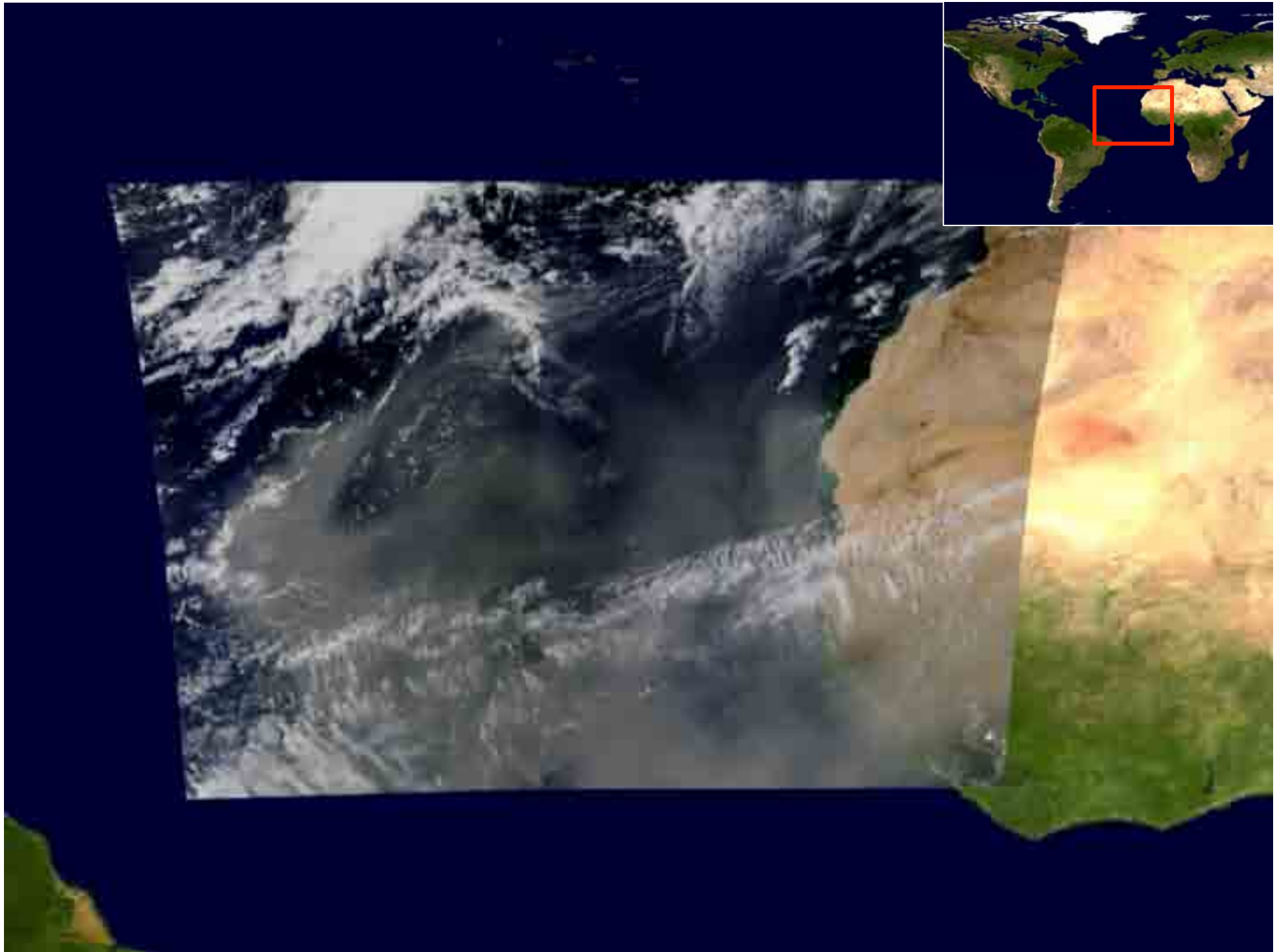


Oct 15 2005



Oct 15 2005







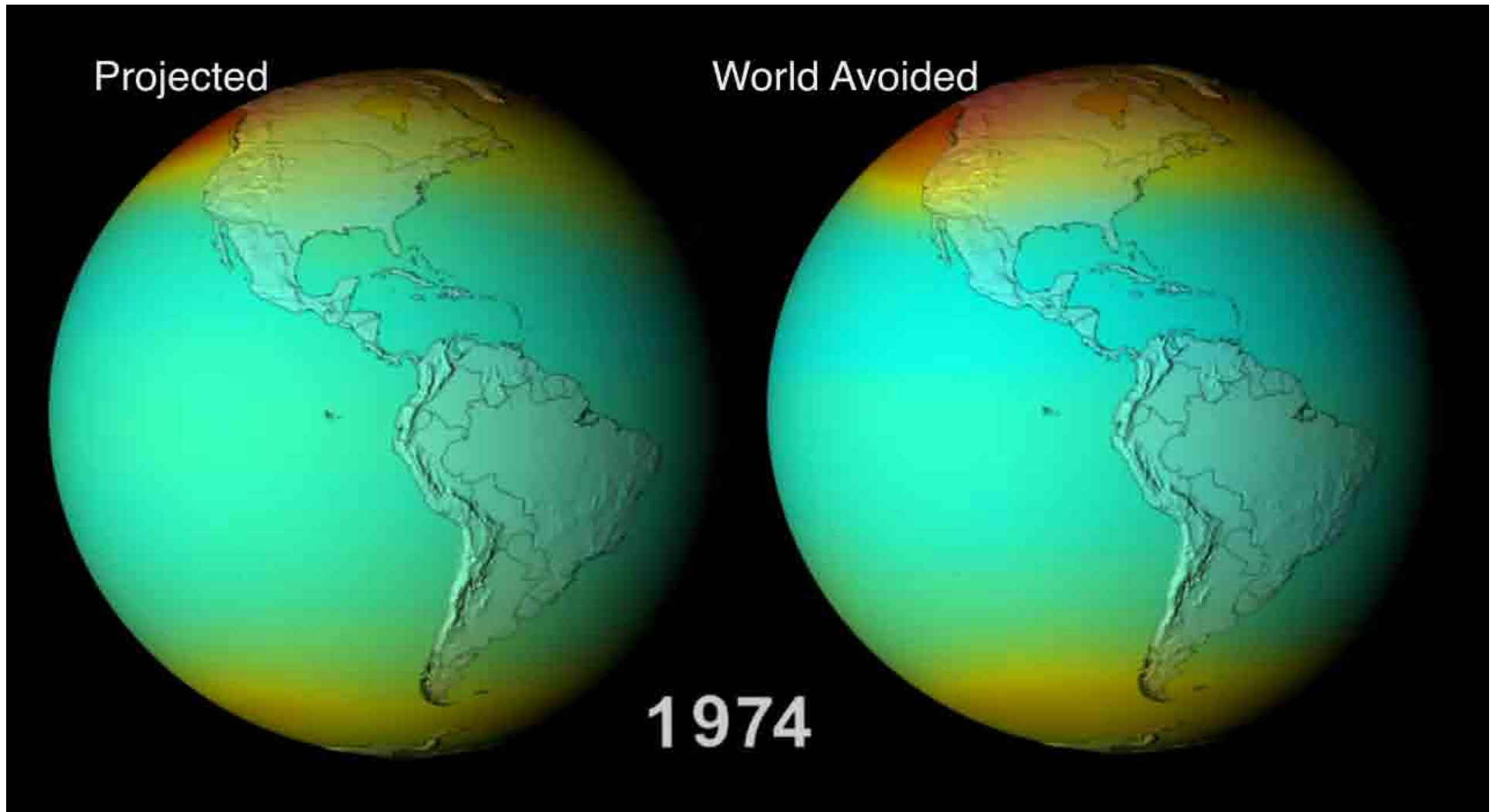
**Eruption of
Eyjafjallajökull
Volcano, Iceland**
acquired May 11,
2010
Terra/MODIS
image.



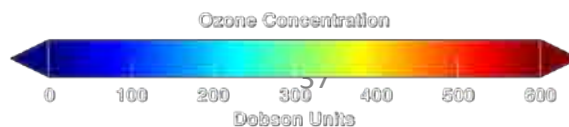




What Would have Happened to the Ozone Layer if Chlorofluorocarbons (CFCs) had not been Regulated?



GLOBE Annual Partner Meeting



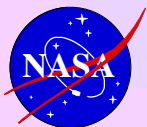
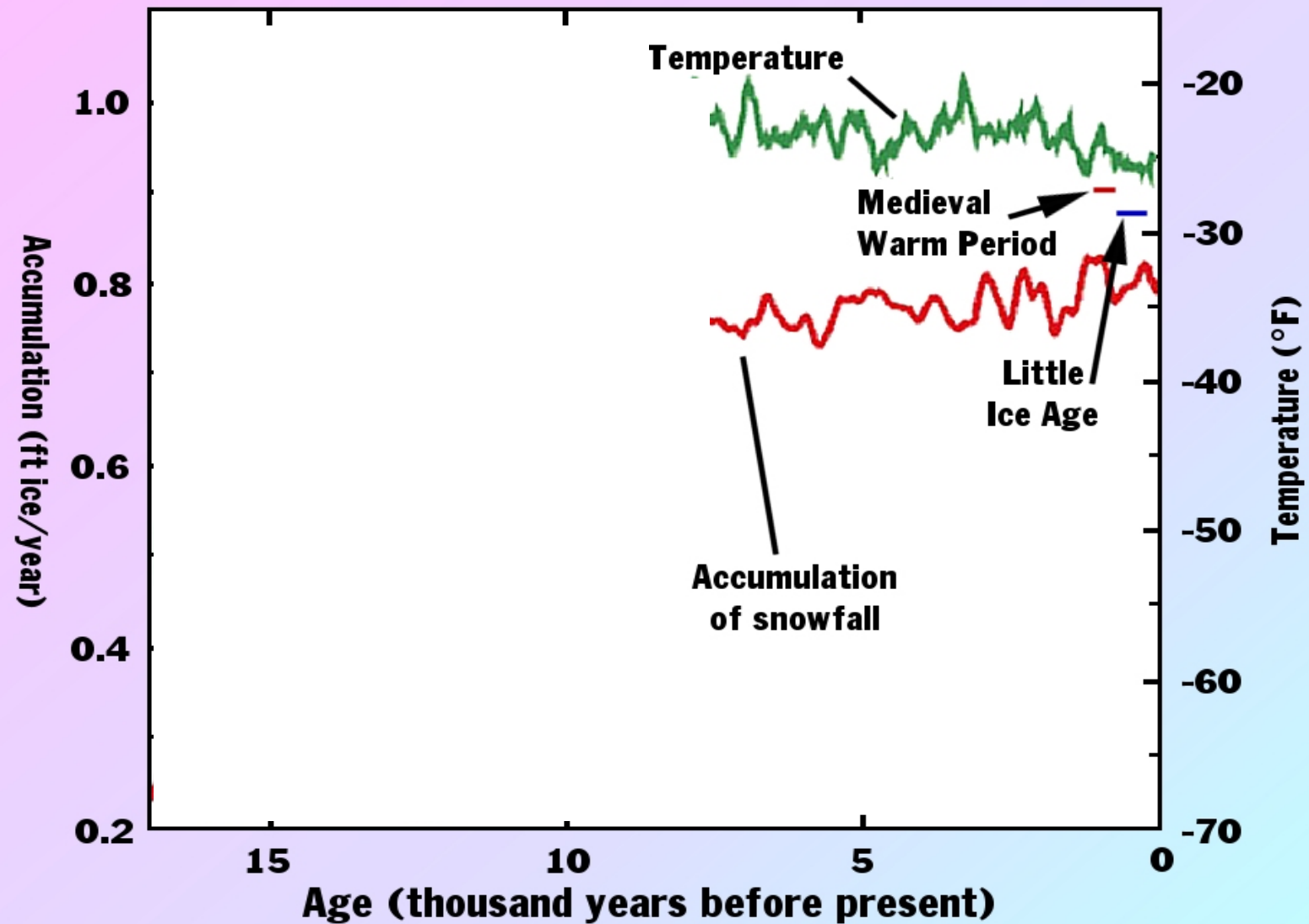
The Temporal Perspective: Lessons from our Past

**Ice cores hold
tremendous
climate record**

- Air bubbles
- Chemical content
- Information on precipitation temperature, and transport

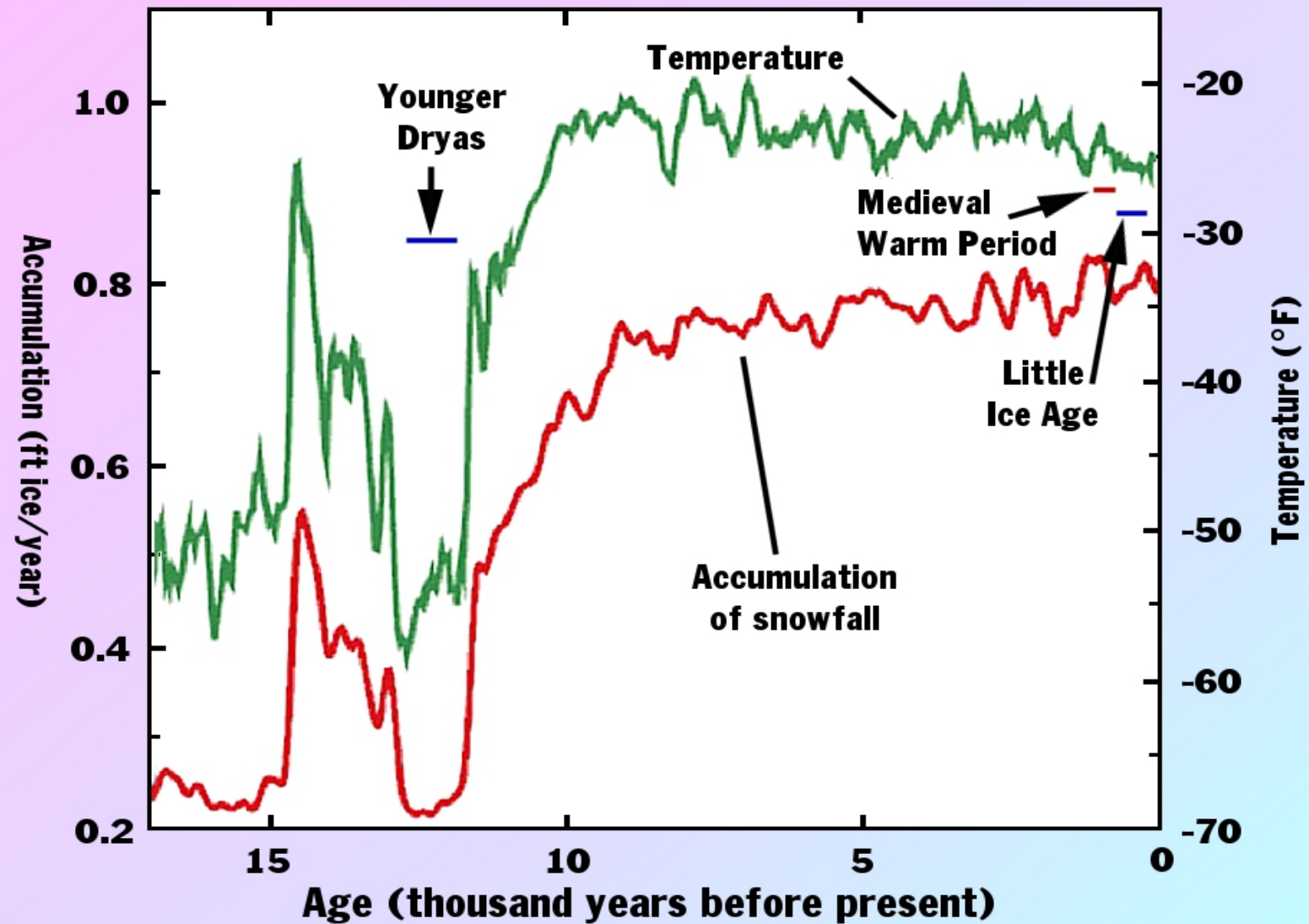


Climate Record Stored in Ice

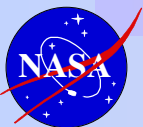
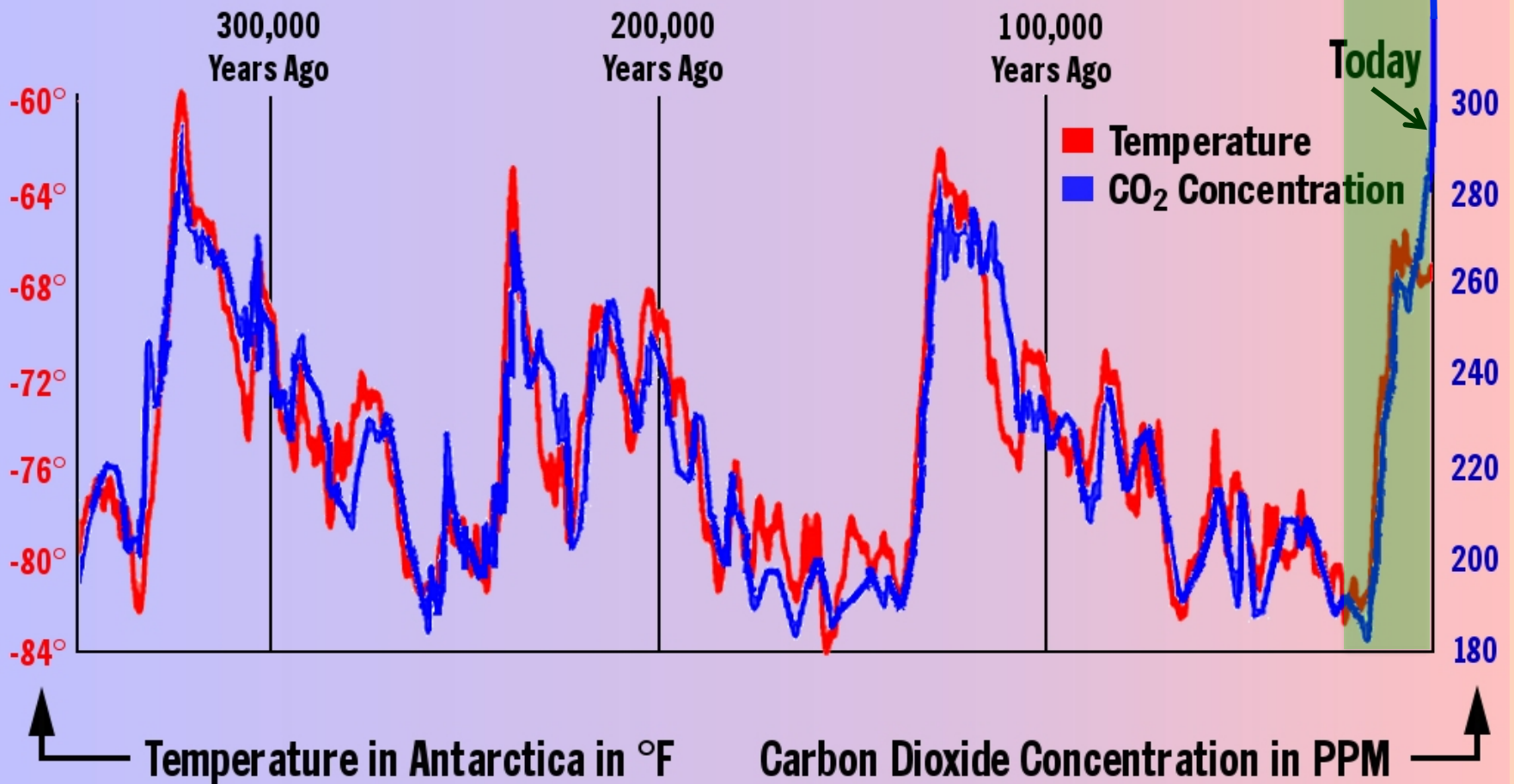
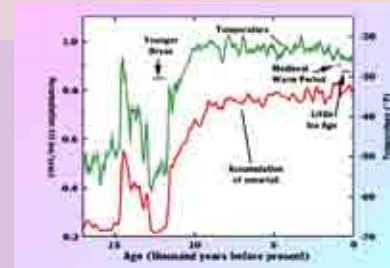



Alley et al., 1993; Cuttrey & Clow, 1997

Climate Record Stored in Ice

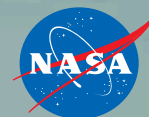


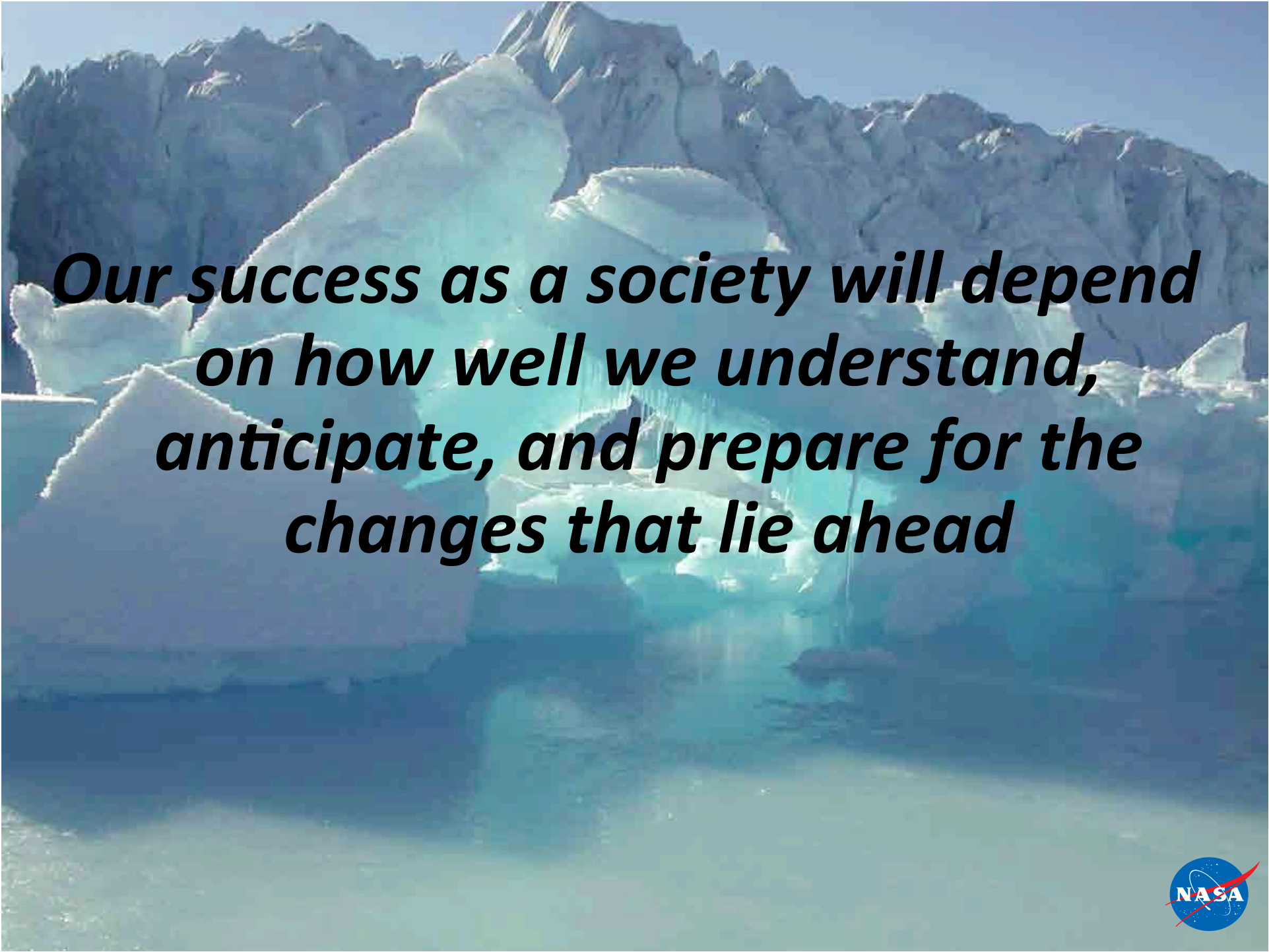
Alley et al., 1993; Cuffey & Clow, 1997



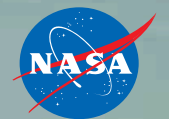
A photograph of a large iceberg floating in the ocean. The iceberg is white and jagged, with some smaller ice chunks nearby. In the background, there are steep, rocky mountains covered in snow under a clear blue sky. The water is a deep blue.

***Climatologically we are in
unfamiliar territory and
experiencing some dramatic
changes in the Earth System***



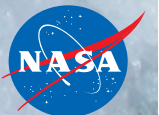


***Our success as a society will depend
on how well we understand,
anticipate, and prepare for the
changes that lie ahead***





Insert your own joke here









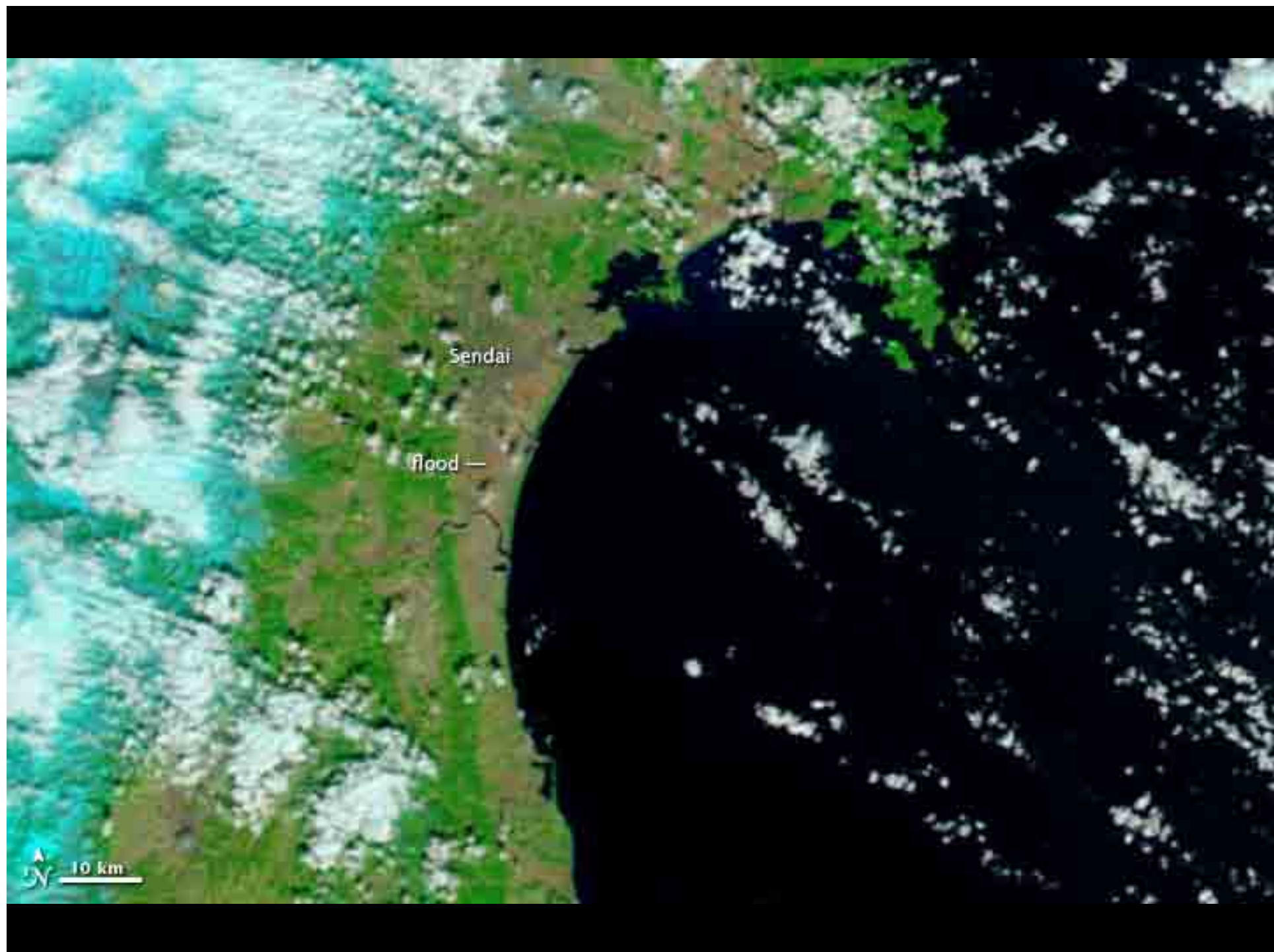


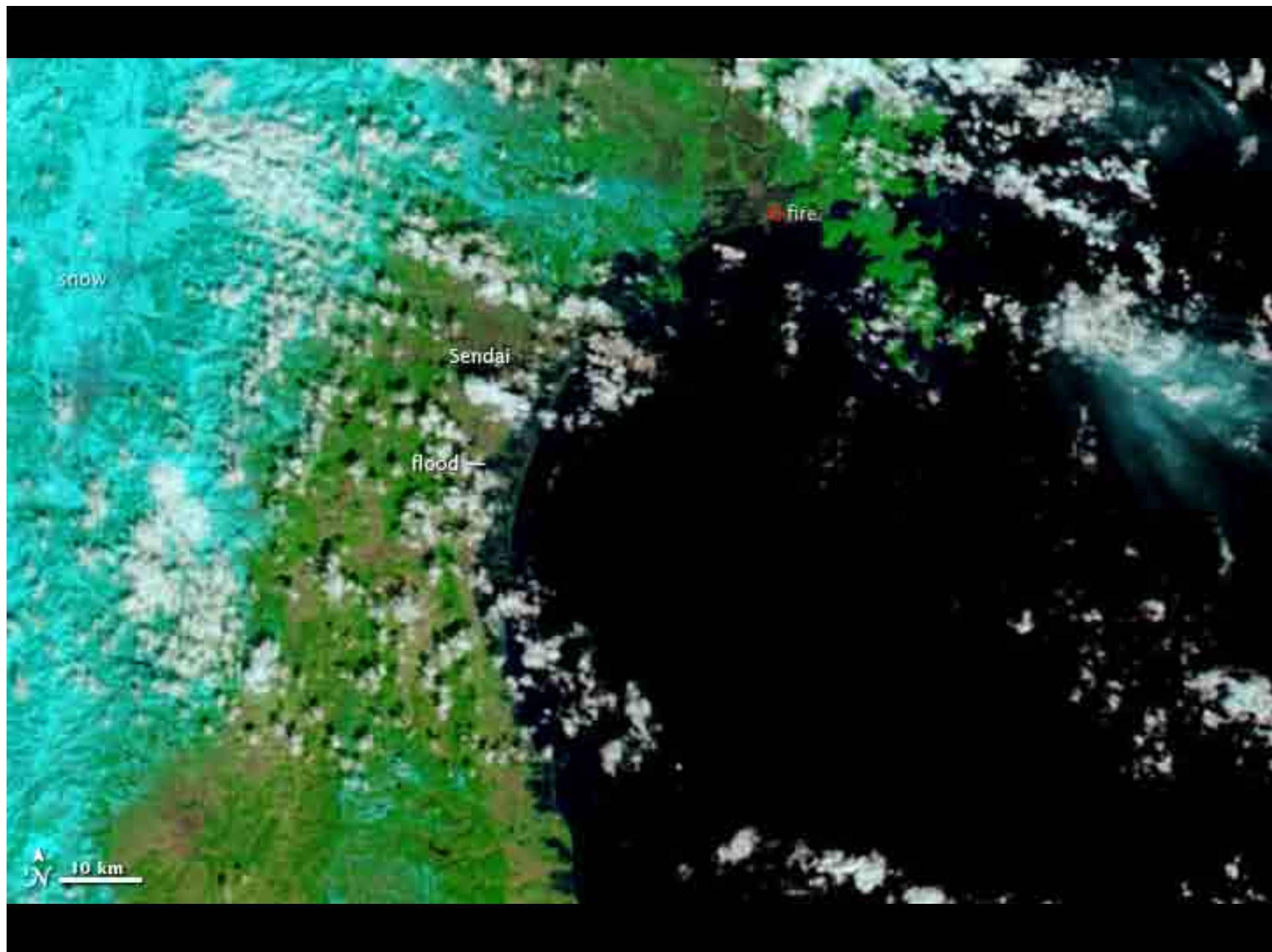












Lake Powell 1999



Lake Powell 2010













“I may say that this is the greatest factor — the way in which the expedition is equipped — the way in which every difficulty is foreseen, and precautions taken for meeting or avoiding it. Victory awaits him who has everything in order — luck, people call it. Defeat is certain for him who has neglected to take the necessary precautions in time; this is called bad luck.”

Roald Amundsen, 1912



“Man must rise above the Earth – to the top of the atmosphere and beyond – for only thus will he fully understand the world in which he lives.”

–Socrates (ca. 400 BC)



