

# THE SPACE AGE

In the new thriller, **Gravity**, opening on October 4, 2013, Sandra Bullock and George Clooney play Dr. Ryan Stone and Lt. Matt Kowalski, astronauts stranded in orbit with no hope of rescue. As they struggle to survive and find a way back to Earth, we discover the spectacular beauty and extraordinary dangers of a world just a few hundred miles away — space.

## ENVIRONMENTAL RESOURCES

**Gravity** is not set in some science fiction future. It shows us the Space Age we live in today. The technologies that we use to chat, visit, and share with friends around the globe have made space part of our environment. Your everyday life depends as much on astronauts, engineers, and space satellites as it does on smartphones, TVs, and the Internet for communication, travel, entertainment, and even safety.

To see just how much you “live” in space, check off the boxes below for activities you enjoy on a regular basis. Then brainstorm in class other ways we depend on the resources we have built in space.

- Calls and messages to friends and family across the world
- Surfing the web on a mobile device
- Catching your favorite show using satellite TV or radio
- Checking the weather before you leave for school in the morning
- Tuning in to live sports events on distant continents
- Turn-by-turn map directions to visit new friends
- Checking in on social media sites, or tagging photos with a location
- Video conferences with your classmates to complete group projects
- Taking a peek at what your house looks like from space on Google Earth
- Backing up your music and pictures to the Cloud



This year, World Space Week looks at Mars. What new resources might we find there? What can we learn from the red planet's ecology? Visit [worldspaceweek.org](http://worldspaceweek.org) to learn more.

## ENVIRONMENTAL HAZARDS

**Gravity** also shows us a dangerous side-effect of our dependence on space when orbital debris destroys the Space Shuttle, leaving Stone and Kowalski stranded. Orbital debris is what's left over from the thousands of satellites and spacecraft we have launched into space since the first satellite left Earth in 1957. NASA estimates that there are now more than 100 million pieces of debris in orbit, with more than 21,000 pieces about the size of a DVD.

Use the online resources listed here to find out more about space debris and the danger it poses. Start by finding answers to the following questions. Then brainstorm your own solution to this Space Age challenge.

## RESEARCH QUESTIONS

- Where is the space debris and how do space agencies track it?
- What is the Kessler effect? What other dangers might be caused by space debris?
- What are some of the solutions NASA and other agencies have devised to try and clean up our trash in space?

## RESEARCH RESOURCES

- NASA Orbital Debris Program Office: <http://orbitaldebris.jsc.nasa.gov>
- European Space Agency Orbital Debris Program: [www.esa.int/Our\\_Activities/Operations/Space\\_Debris](http://www.esa.int/Our_Activities/Operations/Space_Debris)
- Inter-Agency Space Debris Coordination Committee: [www.iadc-online.org/index.cgi](http://www.iadc-online.org/index.cgi)



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EXPERIENCE THE CHALLENGES OF SPACE WHEN **GRAVITY**  
OPENS AT THEATRES ON OCTOBER 4, 2013.