Lesson Plan
"Twister"
Tornadoes

Overview
Students view a short video clip from the film "Twister" in which the main characters are driving in a truck through tornadoes. The dialogue refers to various scientific terms and processes involving tornadoes, and at two points a mooing cow blows across the road in front of the truck. Students discuss and/or analyze in writing what was presented accurately about tornadoes and what was presented inaccurately or in a misleading way.

Curriculum Areas
- Earth Science
- Meteorology
- General Science
- Communications
- Media Studies

Grade Levels
- Middle School through College

Suggested Frameworks (Curriculum Context)
- Tornadoes/Meteorology
- Credibility/Accuracy of Scientific Content Shown in the Media
- Logical Thinking
- Media Production Techniques
- Assessment of Knowledge after Completion of a Unit

Learning Objectives
- Identify specific actions and vocabulary related to tornadoes
- Identify accurate, inaccurate and misleading information about tornadoes (and science in general) in popular media portrayals
- Practice detailed observation and giving evidence based answers
- Practice analyzing audiovisual media messages
- Build awareness of techniques used in film and television to create action sequences and portray the movement of things like tornadoes
- Develop understanding of and appreciation for different production techniques used in audiovisual messages (characters, dialogue, music, lighting, pace, camera angles, special visual and auditory effects, etc.)
- Reflect on the influence of popular fictional media portrayals on people's beliefs about science and scientific topics like tornadoes

Vocabulary
tornado, twister, sisters, the core, flanking line, waterspout, funnel

Preparation and Prerequisites
This exercise can either be used to begin a discussion of tornadoes, or as part of an assessment following a unit about tornadoes.

- If being used as an introduction to tornadoes, it would be helpful to have the students read some material (from their textbook or other source) about tornadoes prior to class.
- If being used as an assessment, it would be important to cover all of the information that the student will need to answer the questions about terminology and accuracy on the Student Assessment Sheet.

Time Needed
- 10 minutes (assessment)
- 15 minutes (introducing tornadoes, including terminology used in the video segment)

Materials
- Video clip from "Twister" on YouTube or DVD (or entire film on video or DVD); if using the actual film, this clip occurs at 58:25 minutes into the movie
- LCD Projector and Screen (or large TV set with VHS or DVD player)
- Student Response Sheet (for whole class discussions) or Student Assessment Sheet (if using as an individual assessment at the end of a unit on tornadoes)

Step-by-Step Procedures

1. Pass out the Student Response or Student Assessment sheets.

2. Explain to the students that they will be seeing a short clip from the popular movie "Twister" which came out in 1996. Ask them to note any scientific terms they hear, and what aspects of what they see and hear are <u>true</u> about tornadoes, and what aspects are <u>not</u> true.
   NOTE: If this is conducted as an assessment, tell the students how many terms, accuracies, and inaccuracies they will be expected to identify, and whether they need to define each of the terms they hear. The Student Assessment Sheet can be modified to fit your goals for assessment.

3. Show the 1-minute video clip.

> ### Dialogue
> *Jesus, Bill, I've never seen it clouded like this.*
> *I don't think anybody has.*
> *The angle's too high.*
> *Bill, we're in the core.*
> *OK, we got sisters.*
> *Oh my God. [phone rings] What? Yes? Julia, I can't talk to you right now.*
> *We're running into the flanking line.*
> *I realize that.*
> *We can't attack this thing from the south, we're going to get rolled.*
> *Watch me.*
> *Julia, I know you're upset, you just gotta breathe, we both just gotta breathe.*
> *Cow.*
> *I gotta go Julia, we've got cows.*

4. Give the students 3 or 4 minutes to write.

5. If being used as an assessment, show the film clip 2 or 3 times (with time to write between each showing). After the students have completed the assessment and turned it in, continue with the discussion about accuracy and misleading content that is described in steps 7-10.

6. If being used to introduce the topic or generate discussion, ask the students to describe the terms and images that they saw. Use this as an opportunity to clarify or introduce other terms and concepts, including the characteristics of tornadoes (size and funnel shape, the center or core), the types of tornadoes (e.g., "sisters," waterspouts, the different levels on the Fujita scale), and any other concepts that relate to the level of understanding appropriate for the class.

7. Ask the students to give examples of other content they saw or heard that they believed to be accurate about tornadoes. For each one, ask the rest of the class if they agree, and then discuss in terms of the material the class has already learned. If the class is unsure, ask how they could find out whether something they saw or heard in the movie was true or not. Some good sources to check about this specific movie include:
  Stormtrack: http://www.stormtrack.org/forum/showthread.php?t=2364
  Ohio University Star: http://www.cimms.ou.edu/~stumpf/twistint.html
  The Internet Movie Database: http://www.imdb.com/title/tt0117998/goofs

8. Ask the students to give examples of other content they saw or heard that they believed to be inaccurate or misleading about tornadoes. For each one, ask the rest of the class if they agree, and then discuss in terms of the material the class has already learned, if possible. Students are very likely to raise the issue of whether or not a cow could go flying past the car while still alive and mooing; this is an example of a portrayal that is partially true (cows and other animals have been known to be lifted up by tornadoes and dropped a distance away without being harmed), but also partially untrue (if they were really in the core of the tornado then the winds wouldn't blow the cow so close to the car, but if the cow did blow past then the roar of the tornado would mask the mooing sound and the truck would also be blowing off the road). Again, ask how they could find out whether something they saw or heard in the movie was true or not, and review good sources for checking on accuracy of scientific information such as this.

9. Discuss why the filmmakers presented this kind of inaccurate or misleading information about tornadoes, and how it might influence viewers' beliefs about actual tornadoes.

10. Summarize the "facts" and the misleading/inaccurate information presented in this fictional film.

Extensions and Adaptations

- Teachers may want to use a longer segment or other segments from the movie "Twister" to get at different meteorological concepts or other inaccuracies about tornadoes shown in the film. If so, it may be useful to search the script for scientific concepts and information, which is currently available at: http://corky.net/scripts/twister.html

  For example, at an earlier point in the movie, the dialogue is:
  > *Rotation is increasing. Sheer is 90 knots. 50 outbound, 40 inbound. Good southeast gusts at 40 miles an hour, approaching 150 in the funnel. The storm motion is 225 degrees, coming straight out of the southwest.*

  At several points, there are discussions about different classifications of tornadoes (F2 through F5) on the Fujita scale. Other concepts that are mentioned include horizontal rain, rain bands, backbuilding, the caps, dry line, debris, NSSL

- Several website sources explore tornadoes using different activities, including this excellent website created by Education World:

  http://www.educationworld.com/a_lesson/lesson116.shtml

  Among the activities included on this website, they suggest analyzing newspaper and magazine articles that highlight the danger, death and destruction resulting from tornadoes (which is often exaggerated, making readers feel that they are more at risk than is actually the case). As part of this discussion, it's important to include why enhanced fear would attract people to news. The concept of the "F.U.D. Factor" (Brooks & Hall-Jamieson, 2007) could be introduced here, which refers to the tendency of the news media to emphasize (or even create) fear, uncertainty and doubt as a way of attracting an audience who will come to them for information. The same has been found to be true of advertising.

- It's often insightful – especially for students in communications, media studies, and film classes – to "peek behind the curtain" and see how a film was made. In the case of "Twister," it's particularly interesting to see how they created the various weather phenomena that occurred in the film and to see the film cast and crew's experience with actual tornadoes and storms occurring nearby their shoot location. A documentary called "The Making of *Twister*" is available on YouTube (broken into several sections), that shows how the director and crew used newsreel footage and newspaper pictures as resources for creating their own visuals and action.

- The same week that the movie "Twister" was released by Warner Brothers (May, 1996), the cover of *Time* magazine featured a story about tornadoes in the Midwest. Since Warner Brothers and *Time* magazine are both owned by the same parent company (Time-Warner), this raises the question of the extent to which the *Time* cover story was designed primarily as advertising for the movie. The issue of media consolidation is an important one to explore, especially in the context of journalism and the implications for who controls what gets reported as "news" and how information is reported in the popular press.