

Making Craters

Activity Summary:

During this activity you will be simulating the effect of a meteorite impact on the Earth. You can change the physical character of both the meteorite and type of ground that it hits and see what happens. The simulated results can be compared to existing Earth craters at various locations across the globe.

Objectives:

The aim of this activity is to study the effect of changing different impact parameters on the size of crater and energy of the impact.

Impact Calculator:

Go to <http://simulator.down2earth.eu/>

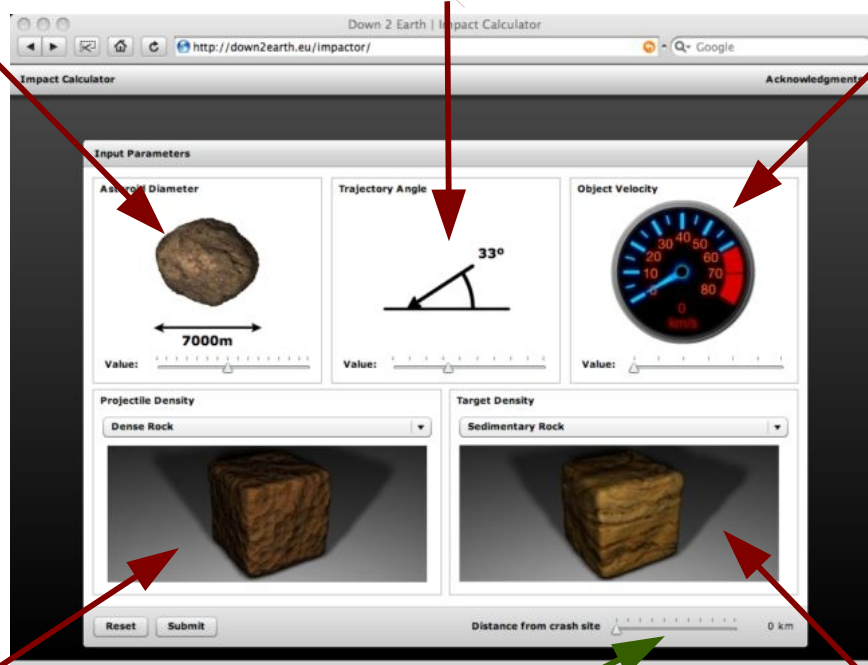
After selecting the language you want to use click start.

You will be presented with the page shown below. There are 6 parameters you need to set before you can simulate an impact (the **distance** you are from the crash site is an optional setting). These are:

Asteroid diameter

Trajectory of the asteroid

Asteroid velocity (speed)



Asteroid density

Distance from crash site

Target density (where it will land)

Research Questions:

Choose *one* of the following sample questions to research, or write your own:

- How does the size of the projectile affect crater depth?
- How does the size of the projectile affect crater width?
- How does the the velocity of the projectile affect the crater depth?
- How does the angle of the projectile affect the crater width?
- How does the _____ affect _____?

Question: Which variable will you be changing? (*Circle one or write your own*)

Asteroid diameter Trajectory angle Asteroid velocity

Question: What will you be monitoring for change? (*Circle one or write your own*)

Crater depth Crater width Wind velocity Richter magnitude

Hypothesis:

Choose the hypothesis that matches your question and fill in the missing information:

- If the size of the projectile increases, the crater will be (deeper/shallower).
- If the size of the projectile increases, the crater will be (wider/narrower).
- If the velocity of the projectile increases, the crater will be (deeper/shallower).
- If the angle of the projectile increases, the crater will be (wider/narrower).
- Your own hypothesis if you wrote your own question: _____

Procedure:

Now that you know which variable you will change, you need to set all the other variables to a value of your choice, then leave them **constant**. Use the table below to check which values will be your control variables, and what you have set them to.

✓ each control variable	Variables	Value (remember units: m, °, km/s, etc.)
	Asteroid diameter	
	Trajectory angle	
	Asteroid velocity	
	Asteroid density	
	Target density	

Conclusion:

Look at your data and your graph and answer the following:

1. Do the results you got support your hypothesis?
2. Did any of the results you got surprise you?
3. If you were to do the experiment again, what other variables would you like to change?