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A8.4. Toolkit: Impact Simulator

Resource: FTP- Europlanet gUG
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Summary

Short Description: This document explains how to use the Down2Earth project's Impact Calculator to simulate impacts from space

Language: English

Suitable for age: 7-18 years

Key words: Impacts, data, impactor, kinetic energy

Format: .doc

Link: http://simulator.down2earth.eu/planet.html?lang=en-GB

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THE INTERFACE

PROJECTILE DIAMETER

Projectile diameter allows you to select the size of your object from within a range of 100m-15,000m diameter.

TRAJECTORY ANGLE

Here you can select the trajectory angle at which your object strikes the Earth's surface. This can be a value between 1 and 90 degrees above the horizon.

PROJECTILE VELOCITY

Here you may select the speed at which the object is travelling. This can be up to 60 km/s.

PROJECTILE DENSITY

Projectile density selects the composition of your body, ice, porous rock, dense rock or iron.

TARGET DENSITY

Here you can select the target material which the object will strike. This can be water, sedimentary rock or igneous rock.

If you select water you can also input a value for its depth.

DISTANCE FROM CRASH SITE

Here is where you can position your own location by selecting a distance from which you are standing away from the site of impact.

CALCULATION RESULTS – CRATER SIZE

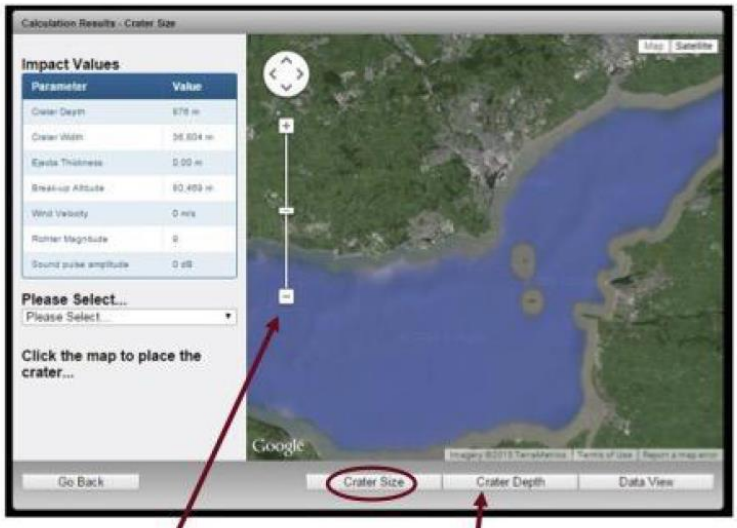
Once you have clicked 'Submit', the Crater Size page will load…

This table displays some of the parameters involved in the impact event of the object of your specifications.

Here you can select ***where*** you want your object to impact.

You can select a city of your choice from the drop down box and Google Earth will go to that location.

You can then specify where exactly you want to place your crater by clicking a region on the map.



Here you can move around on the map and ***zoom*** in and out to get a more detailed image of your impact crater.

After you have placed your crater, select the Crater Depth tab to take you to the following page…

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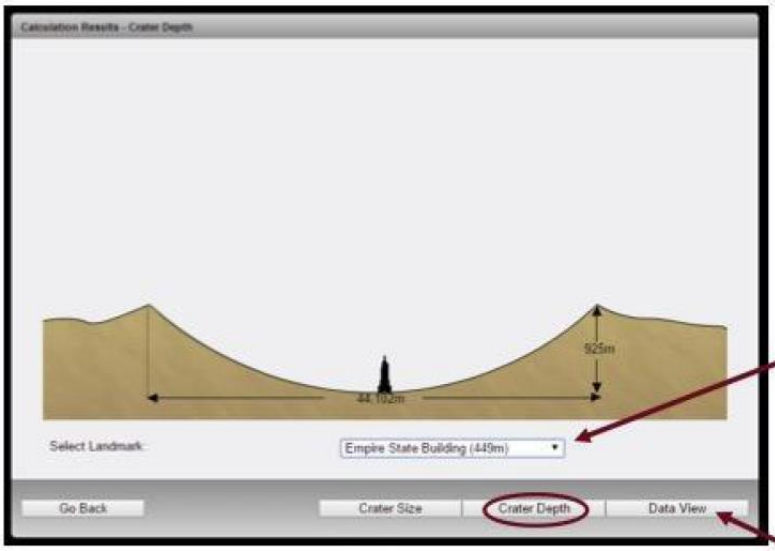
CALCULATION RESULTS – CRATER DEPTH



This page gives you a detailed view of the size of your impact crater in terms of its depth and width…

You can compare the ***size*** of your crater to famous landmarks by selecting one from the drop down menu.

Here the size of the crater is compared with the Empire State Building in New York.

Once you have grasped the scale of your impact crater, select the Data View tab to see a full summary of the parameters involved in the event…

CALCULATION RESULTS – DATA VIEW

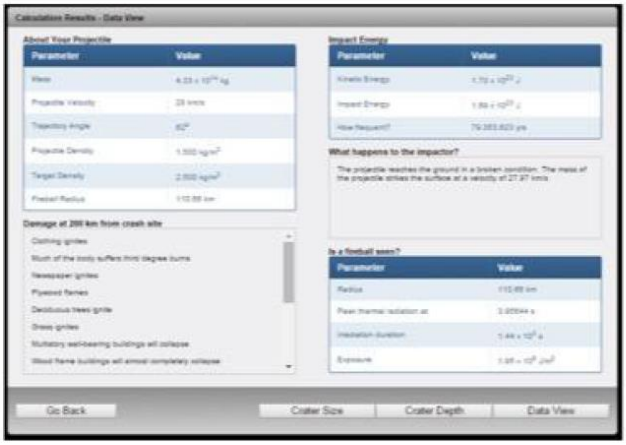
This page provides a summary of all the parameters involved in the impact of your chosen object…

IMPACT ENERGY

This box details the energy involved in the impact and how often events of this scale typically occur.

ABOUT YOUR PROJECTILE

These are the parameters associated with the object you created at the start.



WHAT HAPPENS TO THE IMPACTOR?

This box describes what happens to the projectile as it descends through Earth's atmosphere.

DAMAGE AT DISTANCE FROM CRASH SITE

Here the results of the impact are described at the distance location you selected when creating your object.

Here the ***consequences*** described are at a distance of 200km from the crash site.

IS A FIREBALL SEEN?

If your object is big enough to create a ***fireball*** as it descends through the Earth's atmosphere, its characteristics are detailed here.

Now that you have seen what can be done with the Impact Calculator, have a go at experimenting with the various parameters…

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