

GUIDE TO CASCADIA VOLCANOES AND VOLCANIC HAZARDS

Outline of TOTLE resources; an alternative way to locate educational resources on the web site.

Cascadia Volcanoes and Volcanic Hazards

The [Cascade Volcanoes and Volcanic Hazards PowerPoint Presentation](#) provides a basic introduction to volcanic processes with applications to Cascade volcanoes and associated hazards. We recommend that you download and view this presentation to examine TOTLE resources in their logical sequence. TOTLE teaching resources are tailored for a middle school audience but can be adapted to other levels of K-14 education.

Resources Featured in this PowerPoint Presentation by Topic:

TOPIC: Magma formation and intrusion

COMPUTER ANIMATIONS:

[Generation of Magma in a Subduction Zone](#) (external link).

CLASSROOM ACTIVITIES:

The [Gelatin model of magma intrusion](#) helps students visualize magma intruding Earth's crust.

VIDEO LECTURES:

[Gelatin model video](#) demonstrates the construction and operation of the model.

TOPIC: Lava viscosity and kinds of volcanoes

COMPUTER ANIMATIONS:

[Cascadia subduction zone](#).

CLASSROOM ACTIVITIES:

[Lava viscosity classroom activity](#) shows how chemistry controls lava viscosity.

[Table of Volcanic Eruption Styles](#).

[Table of Volcanic Eruption Styles – Answers](#).

[Flour box volcano](#) models formation of a volcanic caldera.

[Flour Box Volcano – Background Information](#).

TOPIC: Volcanic hazards and volcano monitoring

COMPUTER ANIMATIONS:

[Measuring Volcanic Gas with UV Spectrometer](#).

[Seismic Monitoring of Volcanic Activity](#).

[Tiltmeter and GPS Monitoring of Volcano Deformation](#).

CLASSROOM ACTIVITIES:

[CO₂ and Candles Lesson Plan](#) highlights the hazards of volcanic gas emissions.

UNAVCO [Will it Blow? Lesson Plan](#) (external link).

VIDEO LECTURES:

[Poisonous volcanic gas](#) demonstrates the CO₂ and Candles lesson.

TOTLE RESOURCES ON CASCADE VOLCANOES

POWERPOINT PRESENTATIONS:

Cascade Volcanoes and Volcanic Hazards PowerPoint Presentation

<http://multimedia2.up.edu/Physics/TOLE/CascadeVolcanoes/PowerPoints/CascadeVolcanoesHazards.ppt>

COMPUTER ANIMATIONS:

Generation of Magma in a Subduction Zone (external link)

http://emvc.geol.ucsb.edu/2_infopgs/IP1GTect/cSubduction.html

Cascadia Subduction Zone

<http://multimedia2.up.edu/Physics/TOLE/CascadeVolcanoes/Animations/SubductionPacificNorthwest.mov>

Measuring Volcanic Gas with UV Spectrometer

http://multimedia2.up.edu/Physics/TOLE/CascadeVolcanoes/Animations/VolcanoMonitoring_Gas.mov

Seismic Monitoring of Volcanic Activity

http://multimedia2.up.edu/Physics/TOLE/CascadeVolcanoes/Animations/VolcanoMonitoring_Seismic.mov

Subduction Zone Processes

http://multimedia2.up.edu/Physics/TOLE/CascadeVolcanoes/Animations/Subduction_EMVC_v2008sm.mov

Tiltmeter and GPS Monitoring of Volcano Deformation

http://multimedia2.up.edu/Physics/TOLE/CascadeVolcanoes/Animations/VolcanoMonitoring_Deformation_Tilt_GPS.mov

LESSON PLANS:

CO₂ and Candles Lesson Plan

http://multimedia2.up.edu/Physics/TOLE/CascadeVolcanoes/LessonPlans/CO2Gas_Candle_Lesson_VVP.pdf

Flour Box Volcano – Background on Monitoring Deformation, Seismicity, and Volcanic Gas

http://multimedia2.up.edu/Physics/TOLE/CascadeVolcanoes/LessonPlans/VolcanoMonitoring_Background.pdf

Flour Box Volcano Lesson Plan

http://multimedia2.up.edu/Physics/TOLE/CascadeVolcanoes/LessonPlans/FlourBoxVolcano_LessonPlan_VVP.pdf

Gelatin Model of Magma Intrusion Lesson Plan

http://multimedia2.up.edu/Physics/TOLE/CascadeVolcanoes/LessonPlans/GelatinModelOfMagmaIntrusion_LessonPlan_TOTLE.pdf

Modeling Lava Viscosity Demonstration

http://multimedia2.up.edu/Physics/TOLE/CascadeVolcanoes/LessonPlans/ModelingLavaViscosity_LessonPlan_TOTLE.pdf

Modeling Lava Viscosity – Table of Volcanic Eruption Styles

http://multimedia2.up.edu/Physics/TOLE/CascadeVolcanoes/LessonPlans/LavaViscosity_TABLE4Students-blank.doc

Modeling Lava Viscosity – Table of Volcanic Eruption Styles - Answers

http://multimedia2.up.edu/Physics/TOLE/CascadeVolcanoes/LessonPlans/LavaViscosity_Demo_Table4TEACHERS.doc

VIDEO LECTURES:

Gelatin Model of Magma Intrusion Demo

http://multimedia2.up.edu/Physics/TOLE/CascadeVolcanoes/Videos/GelatinVolcano_GroomDEMO.mov

Poisonous Volcanic Gas Demo

http://multimedia2.up.edu/Physics/TOLE/CascadeVolcanoes/Videos/PoisonGas_Demo.mov

VIRTUAL FIELD TRIPS:

TOTLE Virtual Field Experiences

<http://multimedia2.up.edu/Physics/TOLE/VFEs/>