

## **Developing and Visualizing Community Seismic Velocity Models**

Tuesday, April 23 1-4:30 PM

SSA 2019, Seattle, WA

*In this workshop, attendees will explore a variety of currently available community velocity models, and work with Southern California Earthquake Center (SCEC) and Incorporated Research Institutions for Seismology (IRIS) software tools to investigate properties of the models. In order to use this time efficiently, we are asking all workshop participants to complete the following instructions before attending the workshop. Please remember to bring your laptop with you to the workshop.*

### **IRIS Earth Model Collaboration ParaView Visualization Plugins:**

Attendees will participate in hands-on tutorials using the IRIS Earth Model Collaboration (EMC) ParaView Visualization Plugins. Workshop time is limited and therefore we ask all workshop participants to download and install EMC Plugins and associated software prior to the workshop. Detailed installation instructions are included in the EMC ParaView Plugins bundle. Please download the latest release of the plugins from the following link and unpack the bundle where you want to install it (<https://github.com/iris-edu/EMC-ParaView/releases>). Installation instructions are included as a text file (INSTALL.txt) under the root directory of the bundle and also as a PDF file (IRIS\_EMC\_ParaView\_Plugins\_Installation\_Guide.pdf) under the documents directory. We also encourage all to review other documents included under the documents directory. If you have any questions regarding the EMC bundle or its installation, please contact Manoch via [manoch@iris.washington.edu](mailto:manoch@iris.washington.edu).

### **SCEC Unified Community Velocity Model Software Framework:**

The SCEC Unified Community Velocity Model (UCVM) software framework is designed primarily for use on computers running the Linux operating system. To get the most out of the UCVM portion of this workshop, attendees should be comfortable working at a Linux command line and issuing basic Linux commands such as pwd (print working directory), cd (change directories), ls (list files), mv (move files), and rm (remove files). Workshop attendees will be able to run the software on their Windows, Mac, or Linux laptops (or other computers) by installing the free VirtualBox software on their computers, and then importing a UCVM image file (called an appliance) into VirtualBox. Running UCVM in VirtualBox provides several advantages including: (a) UCVM will run on Windows, Mac (called OS X hosts by VirtualBox), and Linux computers, and (b) Users do not have to install UCVM on their systems. More detailed UCVM VirtualBox installation instructions are available at:

[http://hypocenter.usc.edu/research/SSA/SCEC\\_UCVM\\_VirtualBox\\_Installation\\_Guide.pdf](http://hypocenter.usc.edu/research/SSA/SCEC_UCVM_VirtualBox_Installation_Guide.pdf)

### **Computer Requirements for Running UCVM VirtualBox Software:**

- (1) To install and run the UCVM VirtualBox software, the target laptop (or other computer) should have minimum of 8GB RAM and 60GB disk storage available.

### Overview of UCVM VirtualBox Installation Process on a Local Computer:

- (1) Retrieve the appropriate (Windows, Mac, or Linux) version of VirtualBox 6.0 or later, from Oracle at: <https://www.virtualbox.org/wiki/Downloads>
- (2) Install the VirtualBox software on the laptop.
- (3) Retrieve the UCVM image file (called *ucvm\_ssa\_2019.ova* (~18GB)) from a link on this SCEC wiki page: [http://scec.usc.edu/scecpedia/SSA\\_Velocity\\_Model\\_Workshop\\_2019](http://scec.usc.edu/scecpedia/SSA_Velocity_Model_Workshop_2019)
- (4) Start VirtualBox on the laptop
- (5) Import the UCVM image file (aka appliance file) into the VirtualBox.
- (6) Start the *ucvm\_ssa\_2019* image in VirtualBox.
- (7) (Optional) Run the *unittest* script in the VirtualBox to confirm the installation is operating properly. See the detailed instruction guide (above) for a description of how to do this.

As the *ucvm\_ssa\_2019* image starts, the screen will show a Linux system booting up. It will reach a login screen and display username: SCEC Researcher. Select that user, and the user will be logged into the UCVM account, and VirtualBox will display a Linux (gnome) desktop. The UCVM software has been installed in this account, and is ready for the user to run the UCVM examples prepared for the workshop.

UCVM supports multiple Velocity Models. To keep the UCVM image a manageable size, the workshop version of UCVM contains four California velocity models. The velocity models installed in the *ucvm\_ssa\_2019.ova* image include: CVM-S4, CVM-H, CCA06, and USGS Bay Area model. There is a description of these models on the UCVM wiki page at: <https://github.com/SCECcode/UCVMC/wiki/Registered-CVMs>

The process of retrieving VirtualBox, downloading the UCVM image file, and importing UCVM into VirtualBox can take 30 minutes or more. We strongly recommend you perform the installation on the laptop you will bring to the workshop before you arrive at the workshop, so that the workshop time can be spent working with the UCVM software. We will bring the UCVM image file to the workshop on a USB drive, and you can install it once you arrive, if it takes too long to download over your network connection. If you have any questions regarding the VirtualBox or UCVM image file (aka appliance file), or its installation, please contact Phil Maechling at [maechlin@usc.edu](mailto:maechlin@usc.edu)