



Users' Manual and Installation Guide for the EverVIEW Slice and Dice Tool (Version 1.0 Beta)

By Dustin Roszell, Craig Conzelmann, Sumani Chimmula, Anuradha Chandrasekaran, and Christina Hunnicut

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By Dustin Roszell¹, Craig Conzelmann², Sumani Chimmula³, Anuradha Chandrasekaran⁴, and Christina Hunnicut¹

Abstract

Network Common Data Form (NetCDF) is a self-describing, machine-independent file format for storing array-oriented scientific data. Over the past few years, there has been a growing movement within the community of natural resource managers in The Everglades, Fla., to use NetCDF as the standard data container for datasets based on multidimensional arrays. As a consequence, a need arose for additional tools to view and manipulate NetCDF datasets, specifically to create subsets of large NetCDF files. To address this need, we created the EverVIEW Slice and Dice Tool to allow users to create subsets of grid-based NetCDF files. The major functions of this tool are (1) to subset NetCDF files both spatially and temporally; (2) to view the NetCDF data in table form; and (3) to export filtered data to a comma-separated value file format.

Introduction

Network Common Data Form (NetCDF) is a self-describing, machine-independent file format for storing array-oriented scientific data. It was created by the Unidata Program Center at the University

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Corporation for Atmospheric Research (UCAR), in conjunction with the National Aeronautics and Space Administration (NASA) and other organizations, to provide a common interface between applications and real-time meteorological and other scientific data. (Unidata Program Center, 2009).

Over the past few years, there has been a growing movement within the community of natural resource managers in The Everglades, Fla., to use NetCDF as the standard data container for datasets based on multidimensional arrays. As a consequence, a need arose for additional tools to view and manipulate NetCDF datasets, specifically to create subsets of large NetCDF files. To address this need, we created the EverVIEW Slice and Dice Tool to allow users to create subsets of grid-based NetCDF files. The major functions of this tool are (1) to subset NetCDF files both spatially and temporally; (2) to view the NetCDF data in table form; and (3) to export filtered data to a comma-separated value (CSV) file format.

System Requirements

The EverVIEW Slice and Dice Tool requires that Java Runtime Environment (JRE) 5 (Sun Microsystems, Inc., Santa Clara, Calif.) or higher be installed. The JRE 5 software can be downloaded from <http://java.sun.com/javase/downloads/index.jsp>. The slice and dice tool has been tested on the following operating systems (OS): Windows XP Service Pack 2 (Microsoft Corporation, Redmond, Wash.), Mac OS X 10.5 (Apple, Cupertino, Calif.), and Ubuntu 8.10 (Canonical Ltd., Douglas, Isle of Man)

Data

This tool has been tested extensively with NetCDF data containing water surfaces from the Everglades Depth Estimation Network (EDEN). Limited testing has been done with multigrid datasets and other datasets that are compliant with the climate and forecast (CF) metadata standards (version1.0)

for NetCDF files, but there are no guarantees as to what does and does not work. The tool should subset most 3-dimensional grids based on time and two coordinates. The tool will not subset NetCDF files containing variables that define the grid-cell boundaries of coordinate variables (<http://cf-pcmdi.llnl.gov/documents/cf-conventions/1.0/cf-conventions.html#cell-boundaries>), two-dimensional coordinate variables (<http://cf-pcmdi.llnl.gov/documents/cf-conventions/1.0/cf-conventions.html#id2888361>), or any other nongrid variables dependent upon the subsetted dimensions.

Windows XP Service Pack 2

Installation

The software is available for download at <http://jem.cr.usgs.gov/everview.aspx>. Extract the zip file into a folder on your local machine and run the executable file. This software requires write permission to the installation directory in order to function properly.

User Instructions

1. Run the application. To do this, navigate to the folder where the tool is installed and double click on EverVIEW_NetCDFSDTool.exe. The application can only be run from this directory, because it depends on other files and folders in the installation directory.

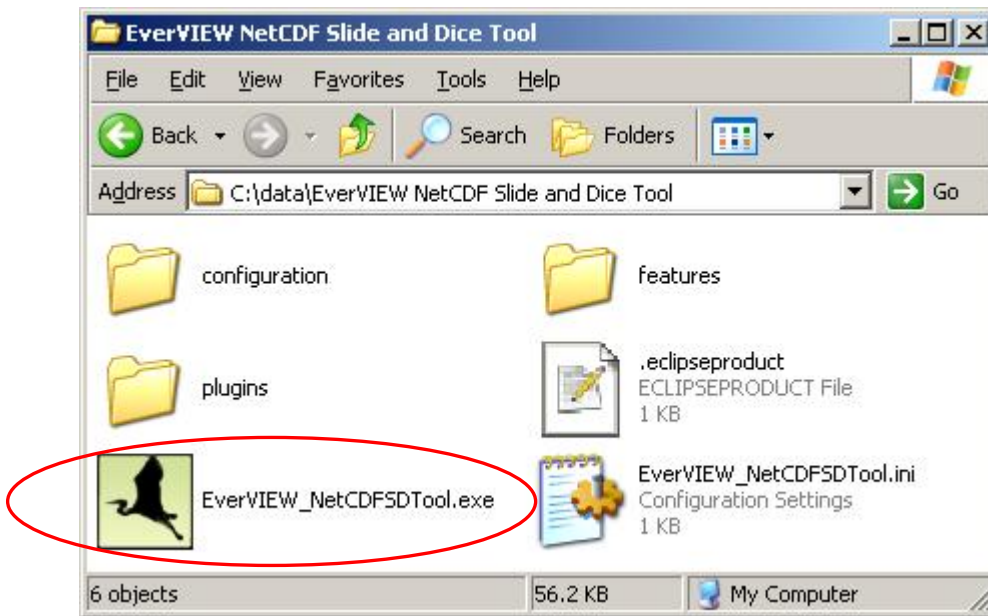


Figure 1. Windows XP Service Pack 2: Installation folder showing EverVIEW_NetCDFSDTool.exe.

2. The EverVIEW NetCDF Slice and Dice Tool will open and check to see if any updates are available. If updates are available, you will be prompted to install them.

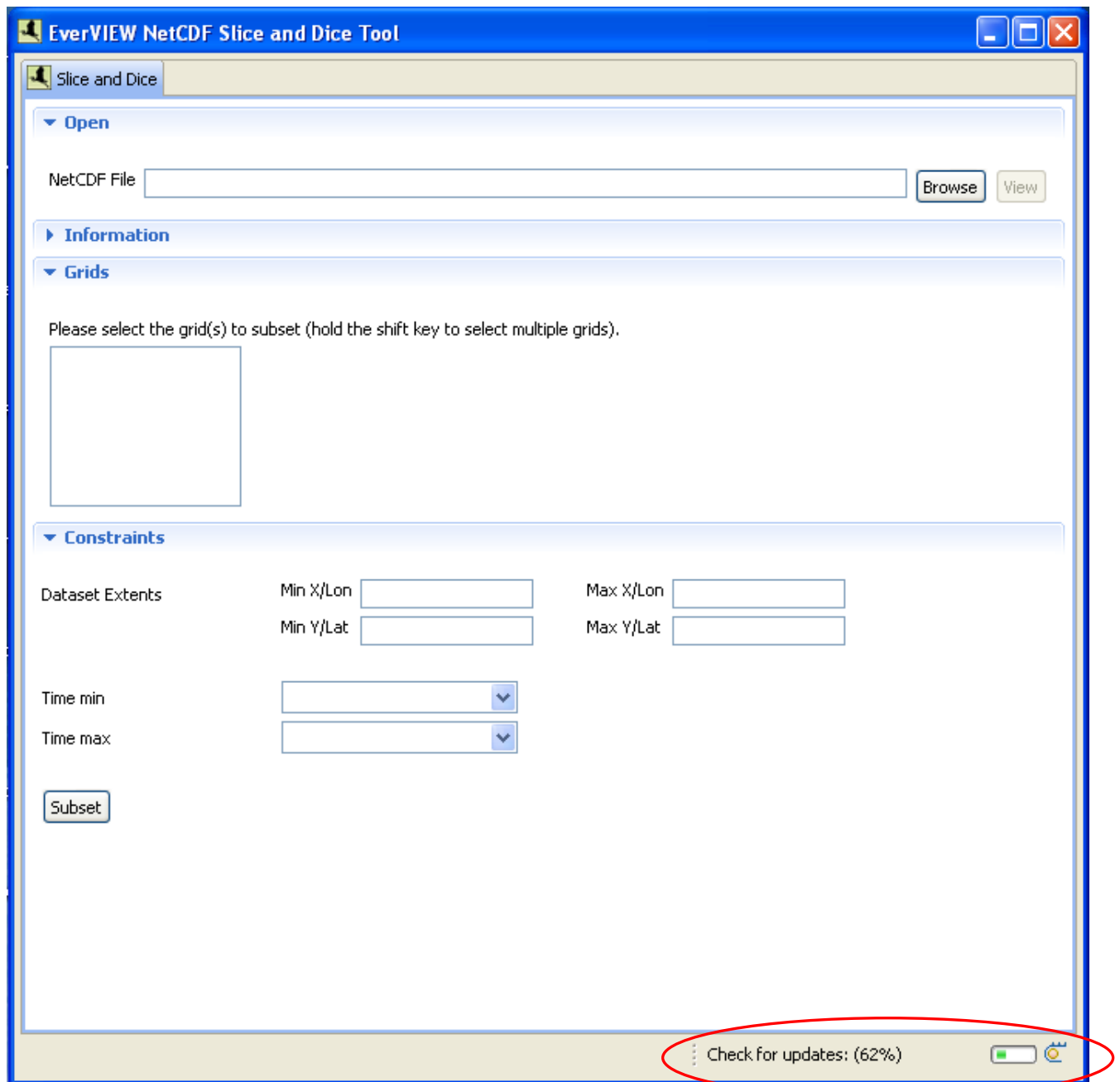


Figure 2. Windows XP Service Pack 2: Automatic updates.

3. Click the “Browse” button and select the NetCDF file to subset.

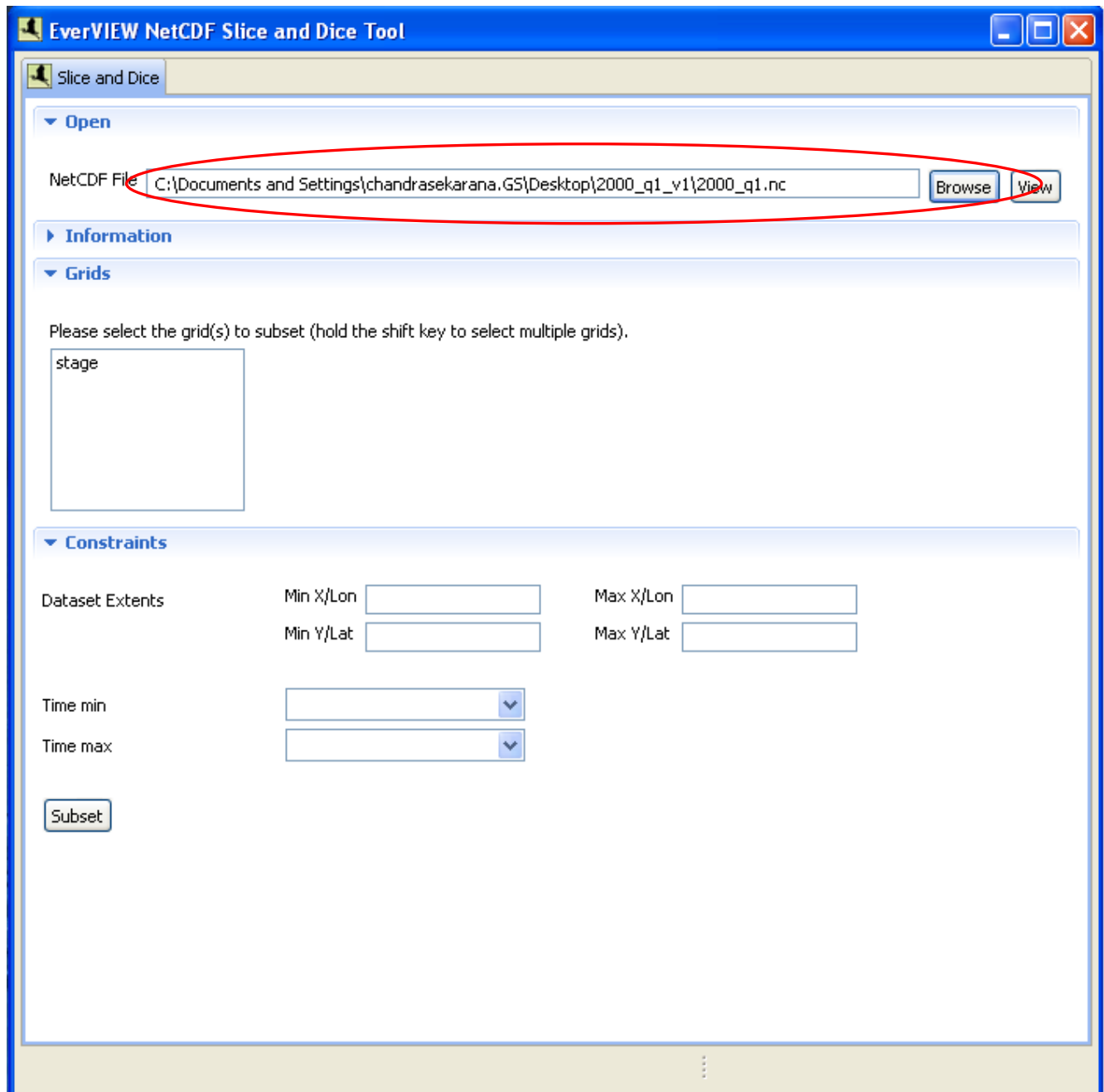


Figure 3. Windows XP Service Pack 2: Opening a Network Common Data Form (NetCDF) file in the EverVIEW NetCDF Slice and Dice Tool.

4. If you would like to preview the original NetCDF file, click the “View” button.

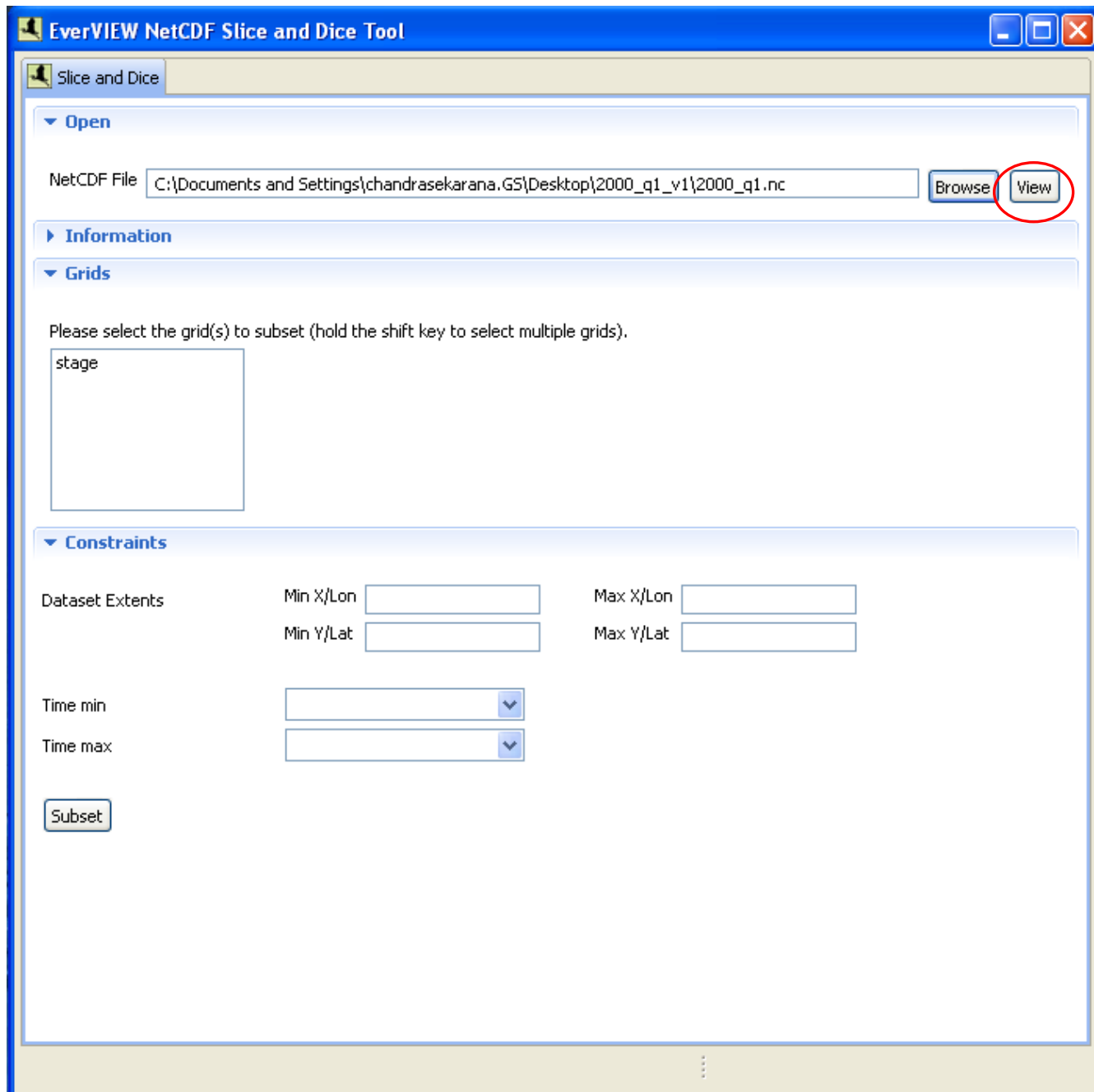


Figure 4. Windows XP Service Pack 2: Previewing a Network Common Data Form (NetCDF) file in the EverVIEW NetCDF Slice and Dice Tool.

- After clicking the “View” button, the NetCDF Table Viewer will be shown with the NetCDF file you selected.

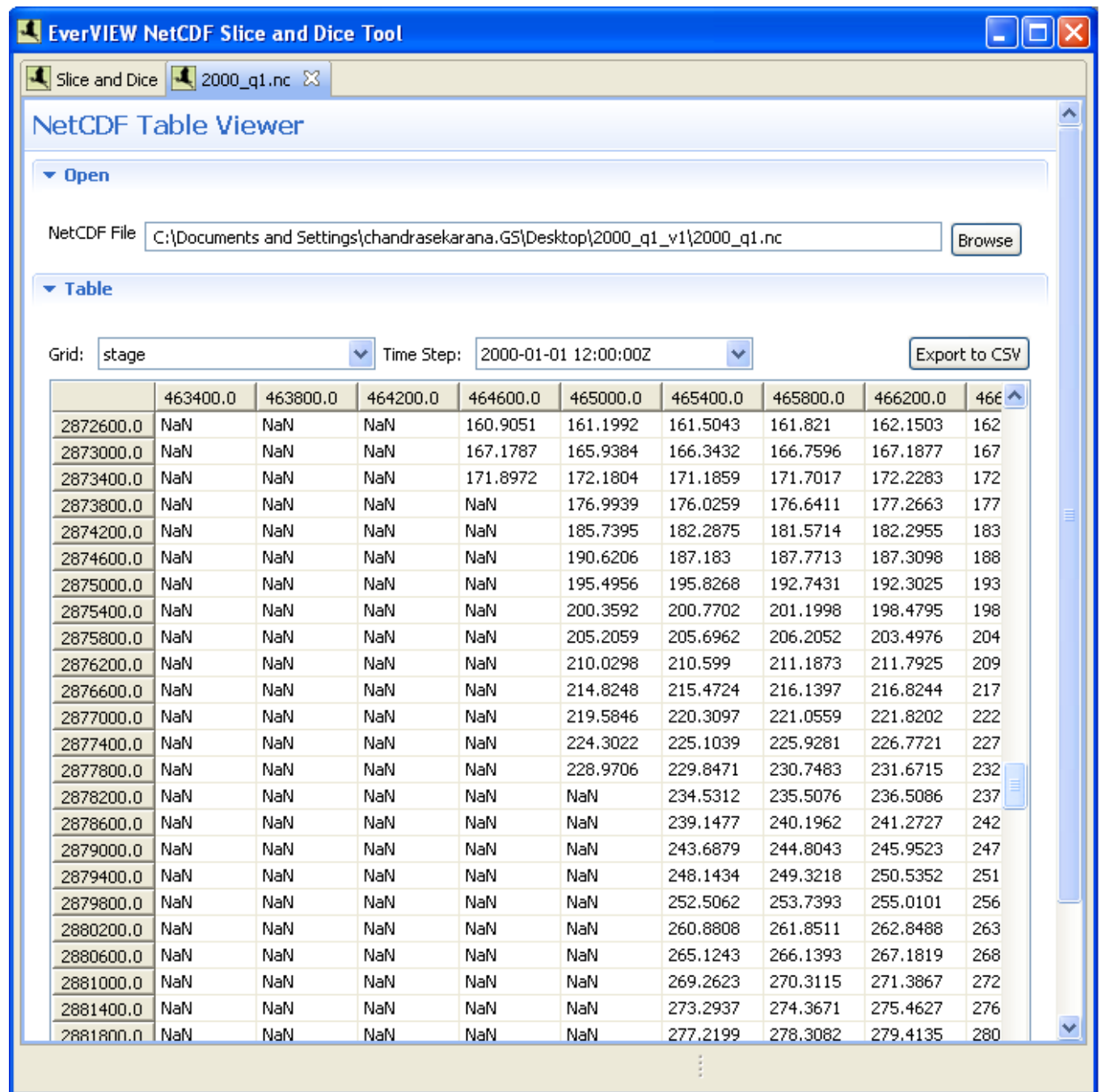


Figure 5. Windows XP Service Pack 2: Table Viewer that is used to preview Network Common Data Form (NetCDF) files in the EverVIEW NetCDF Slice and Dice Tool.

- After you have finished previewing the file, click the “Slice and Dice” tab at the top. Select the grid variable(s) that you want to subset. You can select more than one grid variable by holding the shift or control key while clicking them.

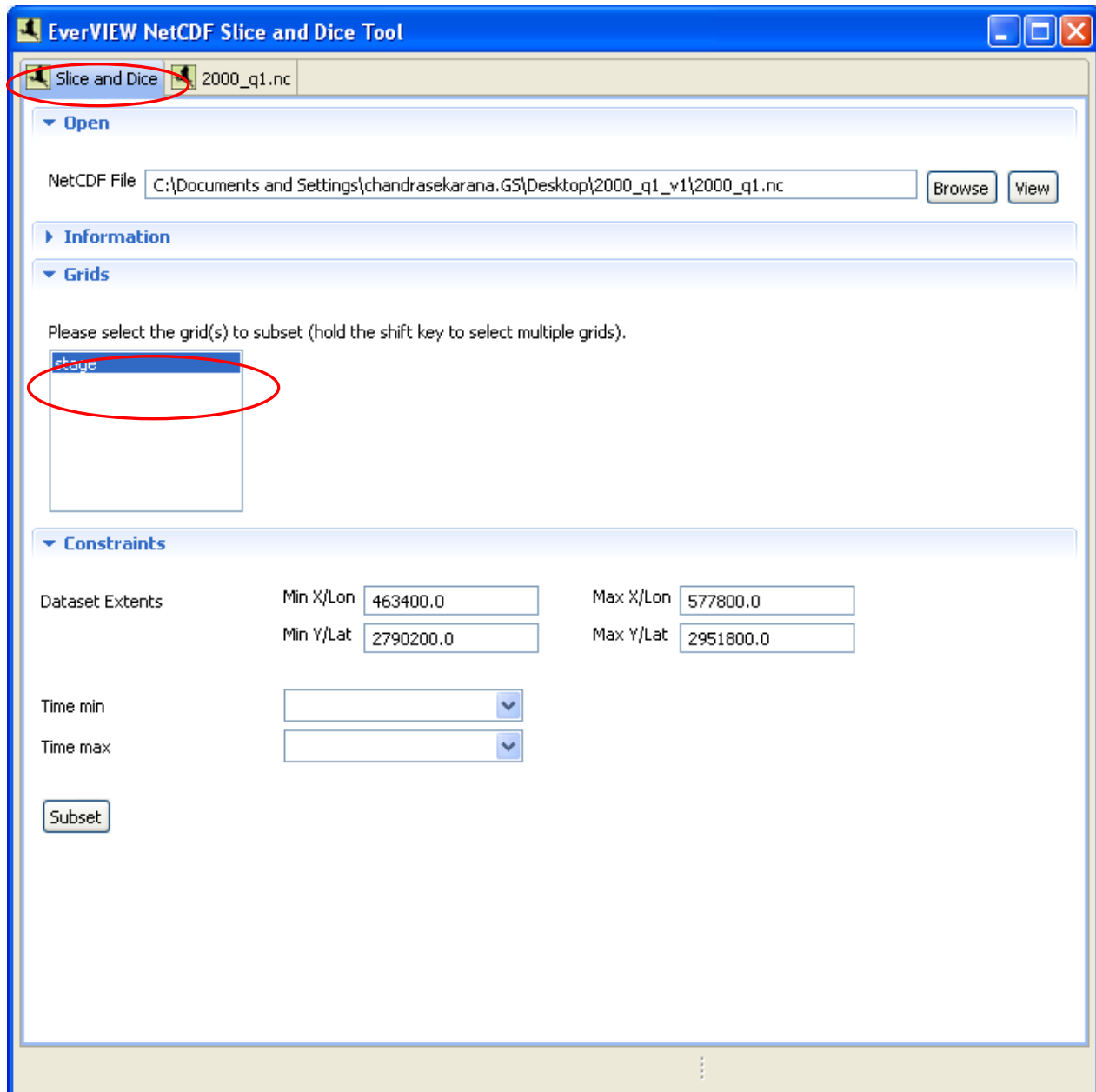


Figure 6. Windows XP Service Pack 2: Selecting grid(s) within the EverVIEW Slice and Dice Tool in order to subset Network Common Data Form (NetCDF) files.

7. After selecting the grid(s), the minimum and maximum x/y or latitude/longitude values will be populated in the “Dataset Extents” section.
8. Select the temporal bounds by specifying the start date and the end date from the drop down lists.

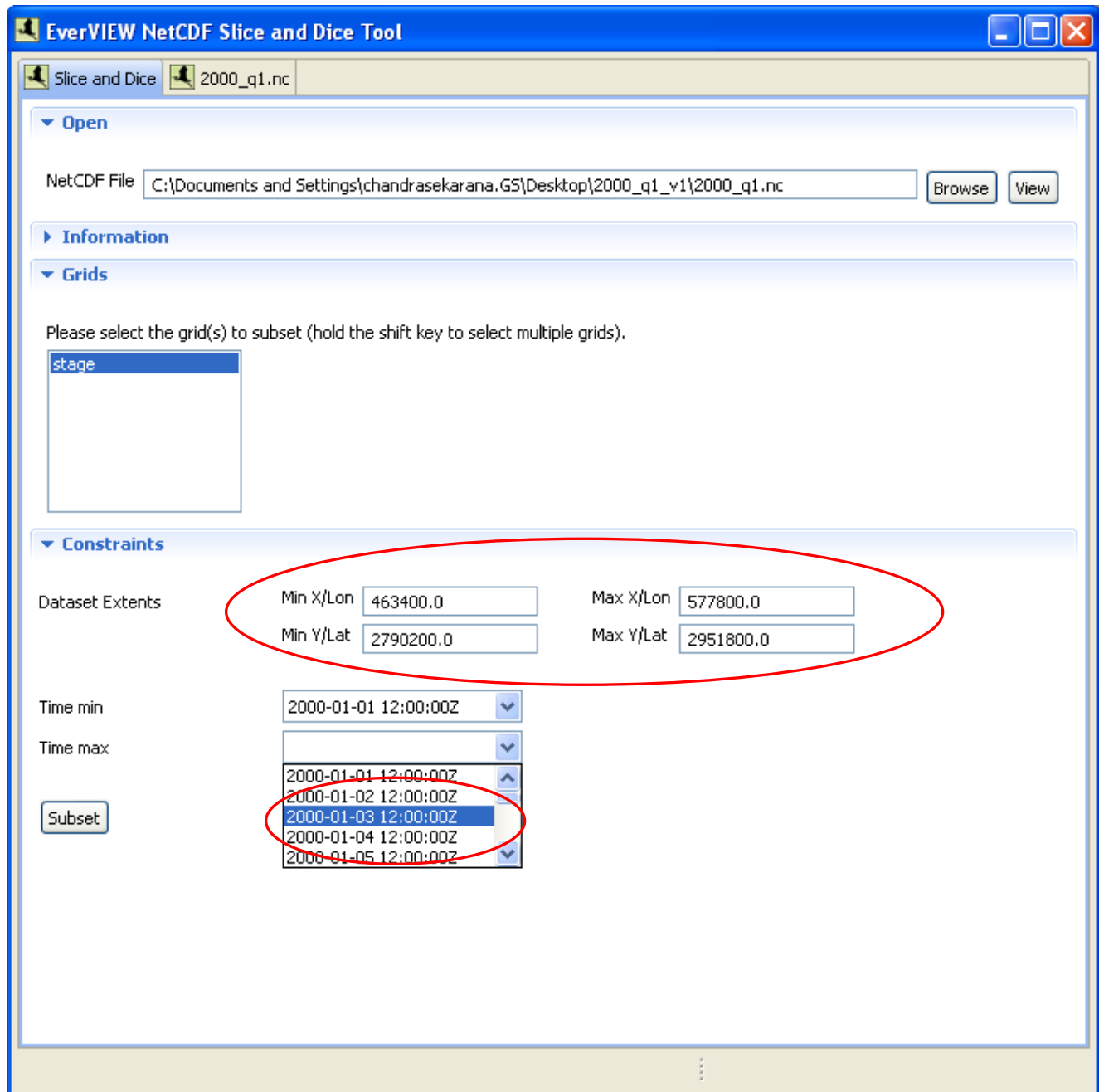


Figure 7. Windows XP Service Pack 2: Defining spatial and temporal bounds in the EverVIEW Slice and Dice Tool in order to subset files.

9. Click on the “Subset” button to subset the data according to the specified constraints.
10. After clicking “Subset,” a prompt will appear asking where to save the subsetting NetCDF file. Type in the name of a new NetCDF file, or select an existing NetCDF file, and click the “Save” button.
The subsetting file will automatically be saved with a “.nc” extension.

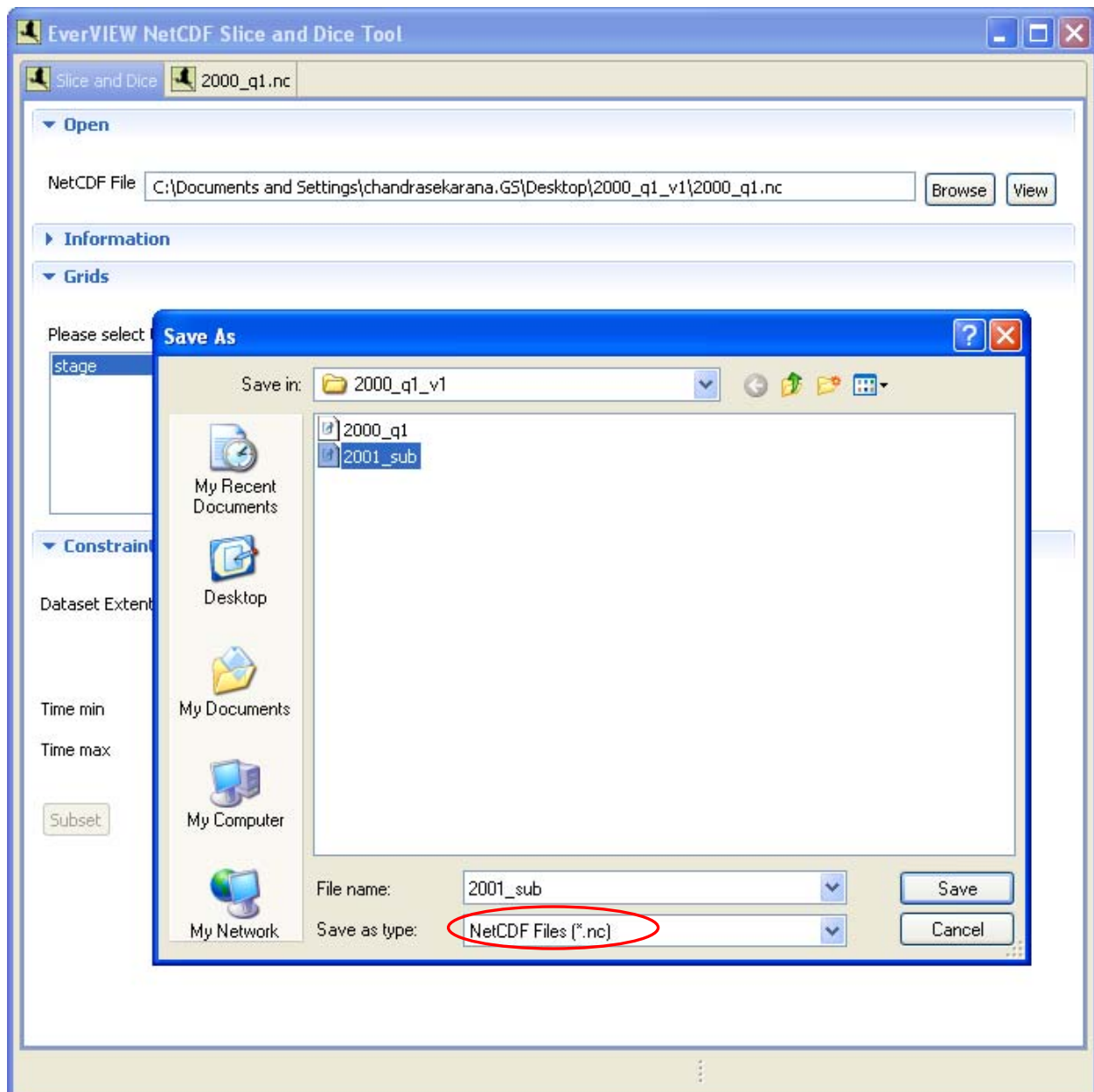


Figure 8. Windows XP Service Pack 2: Saving the subsetting Network Common Data Form (NetCDF) file in the EverVIEW NetCDF Slice and Dice Tool.

11. Once the new NetCDF file has been created, a dialog box will appear letting you know that it was successful.

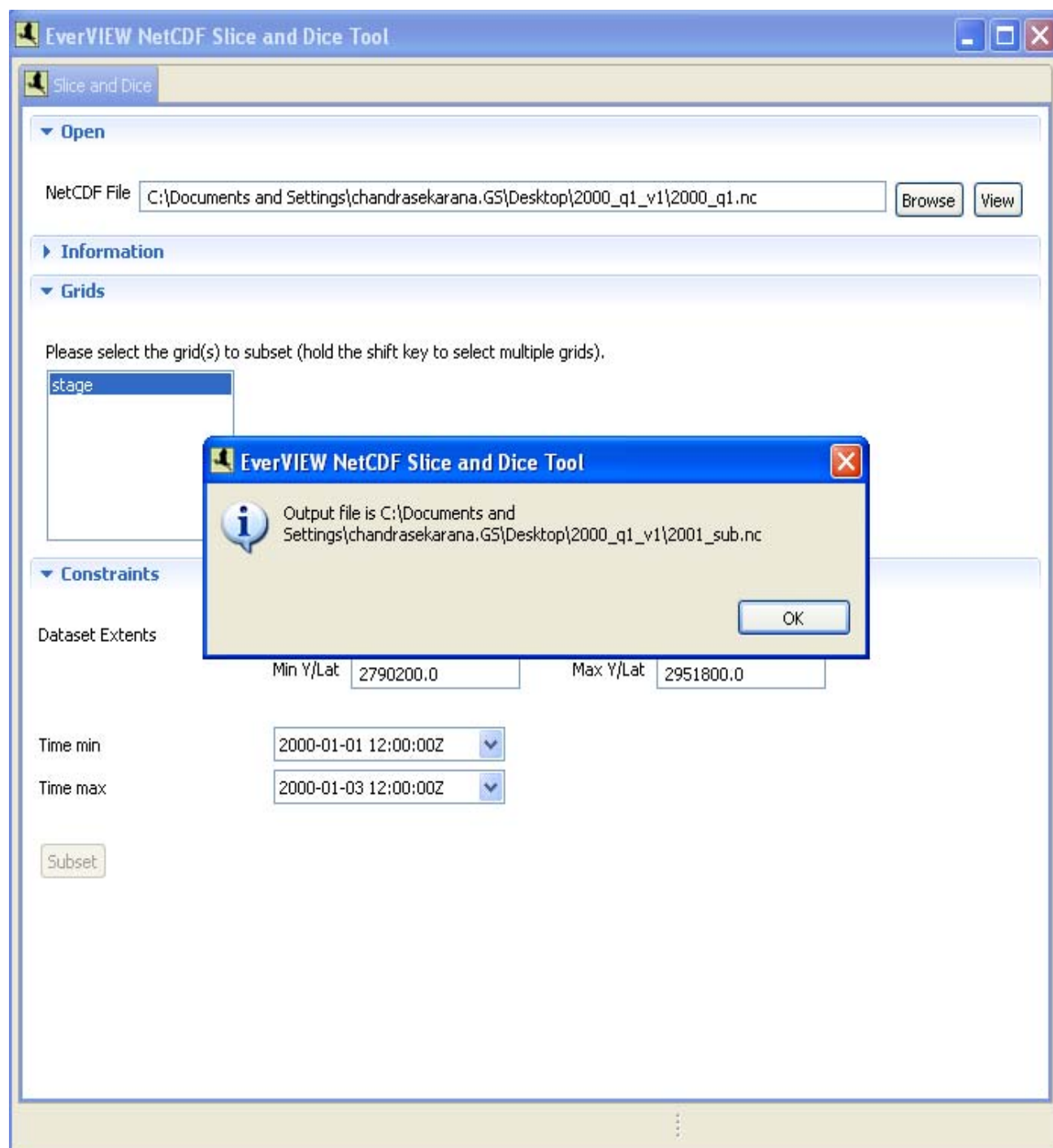


Figure 9. Windows XP Service Pack 2: Success dialog.

12. The newly created NetCDF file will automatically open in the NetCDF Table Viewer.

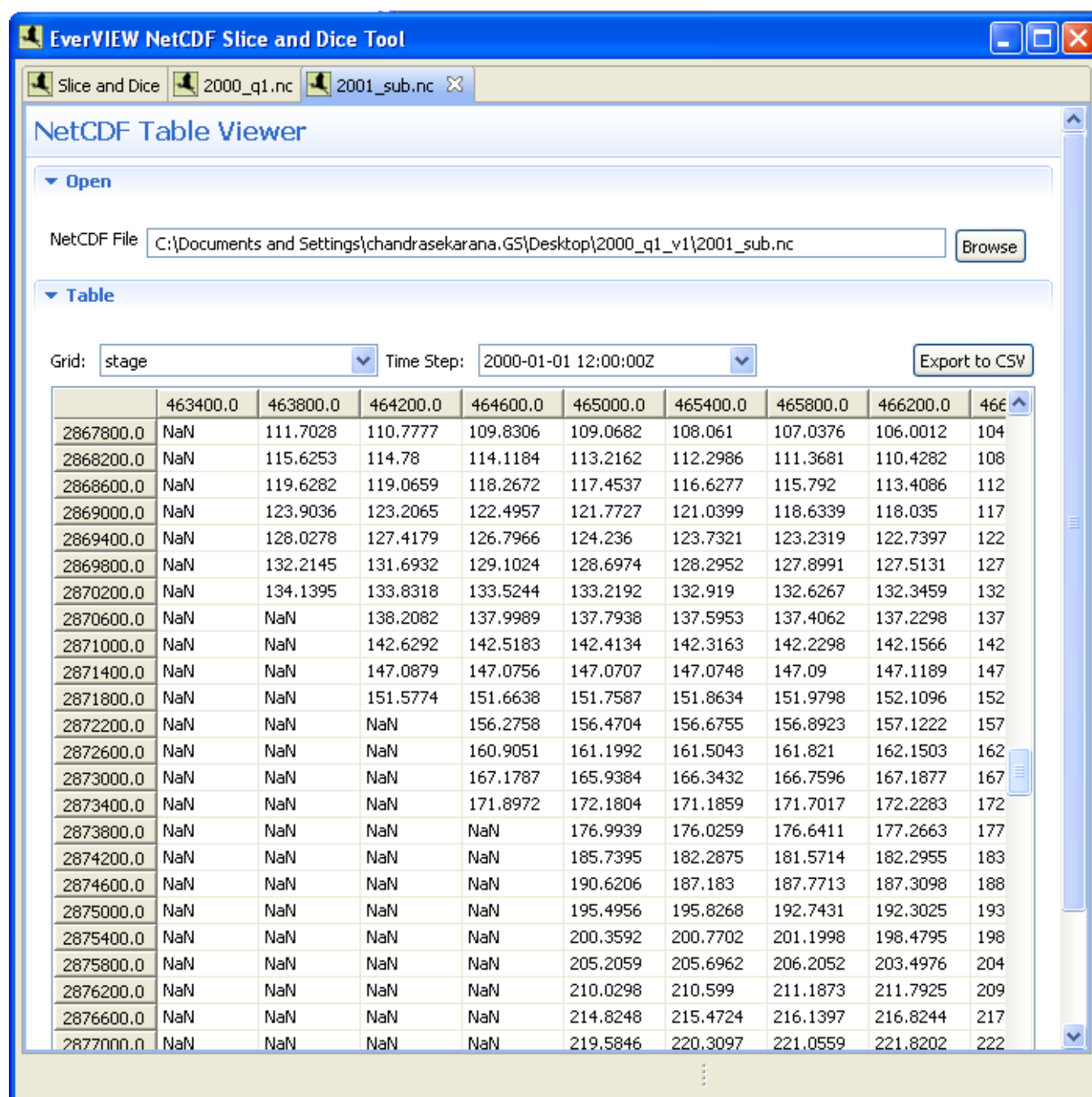


Figure 10. Windows XP Service Pack 2: Table Viewer in the EverVIEW Slice and Dice Tool showing the subsetting Network Common Data Form (NetCDF) files.

13. From here, you can select the grid variable and time step for which you want to view data.

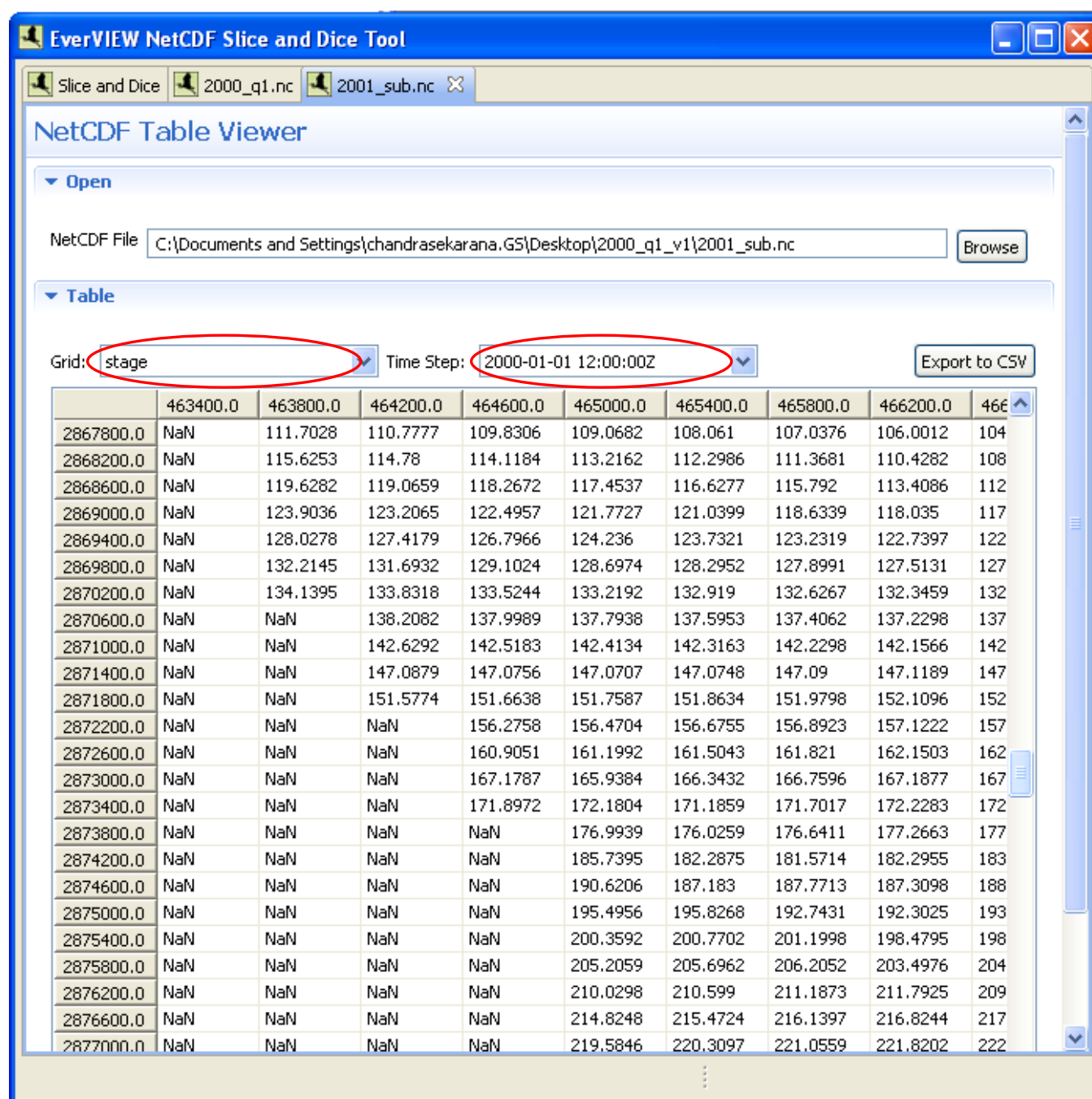


Figure 11. Windows XP Service Pack 2: Selecting the grid and time step in the EverVIEW Slice and Dice Tool Table Viewer.

14. From this view, you can also export the data for the current Grid and Time Step to CSV format by clicking the “Export to CSV” button.

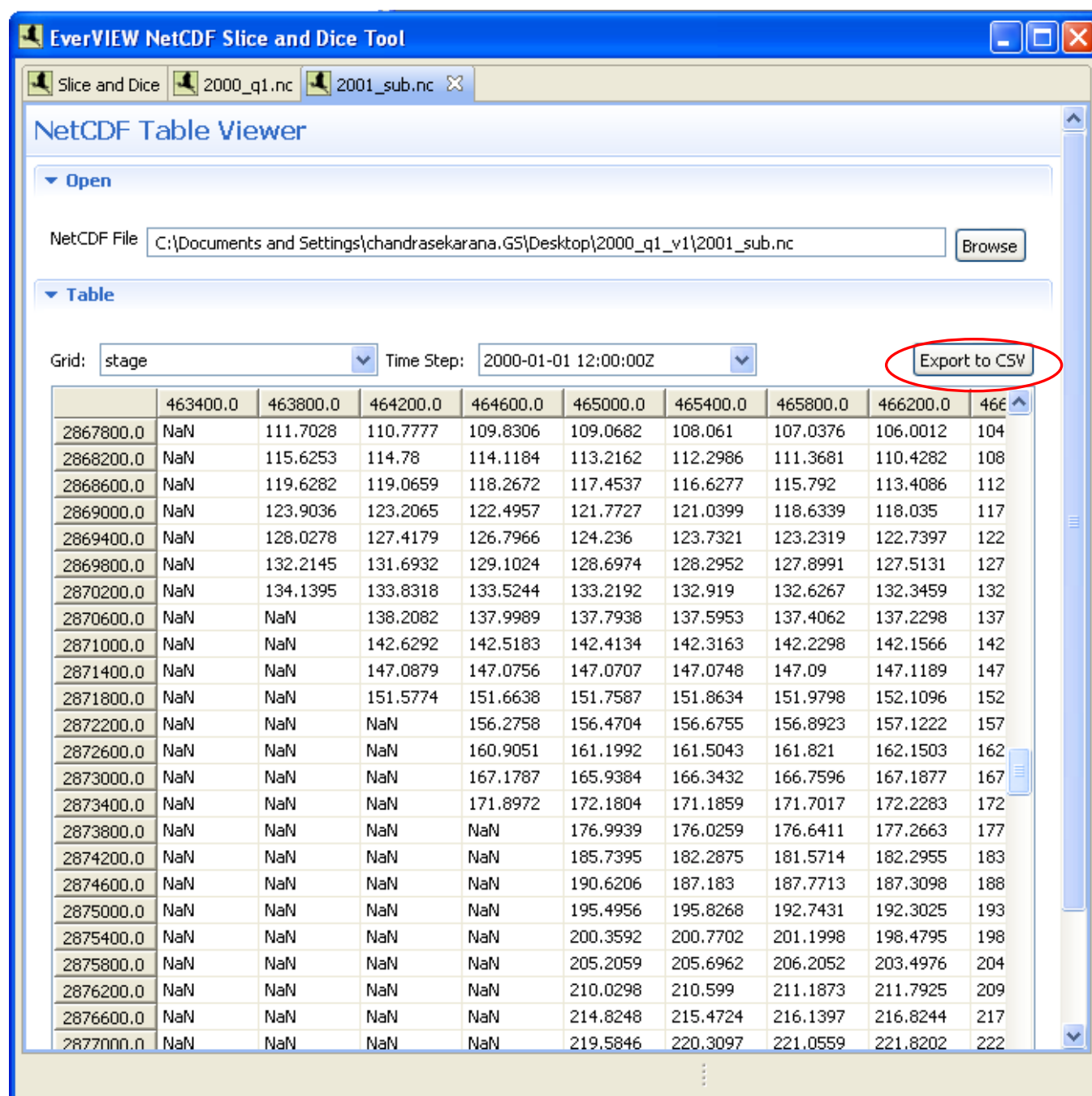


Figure 12. Windows XP Service Pack 2: Exporting a grid to a comma-separated value (CSV) file in the EverVIEW NetCDF Slice and Dice Tool.

Mac Operating System X 10.5

Installation

Download the image file (.dmg) and double click on it to mount the software. Some users may prefer to drag the “EverVIEW NetCDF Slice and Dice Tool” into the applications directory. This software requires write permission to the installation directory in order to function properly.

User Instructions

1. Run the application. To do this, navigate to the folder where the tool is installed and double click on EverVIEW_NetCDFSDTool application. The application can only be run from this directory, because it depends on other files and folders in the installation directory.

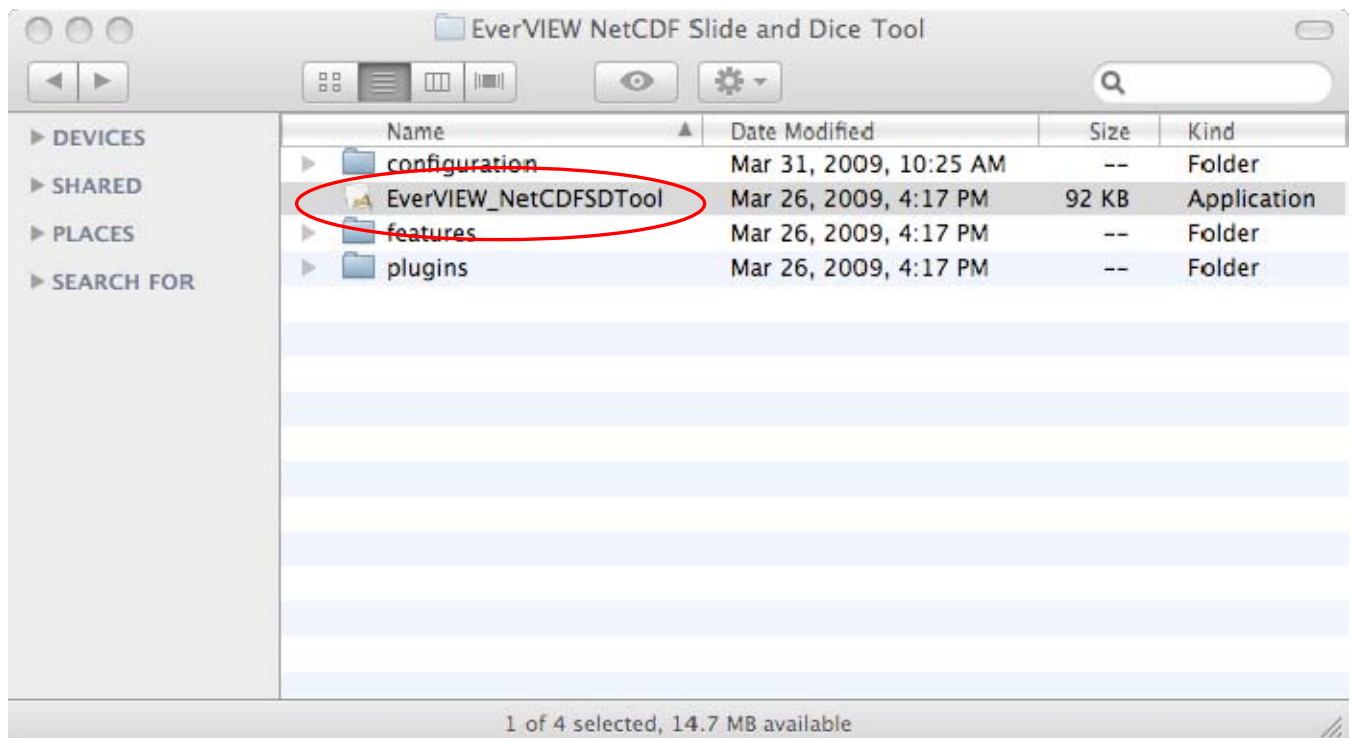


Figure 13. Mac Operating System X 10.5: Installation folder showing the EverVIEW_NetCDFSDTool executable.

2. The EverVIEW NetCDF Slice and Dice Tool will open and check to see if any updates are available. If updates are available, they will be installed automatically.
3. Click the “Browse” button and select the NetCDF file to subset.

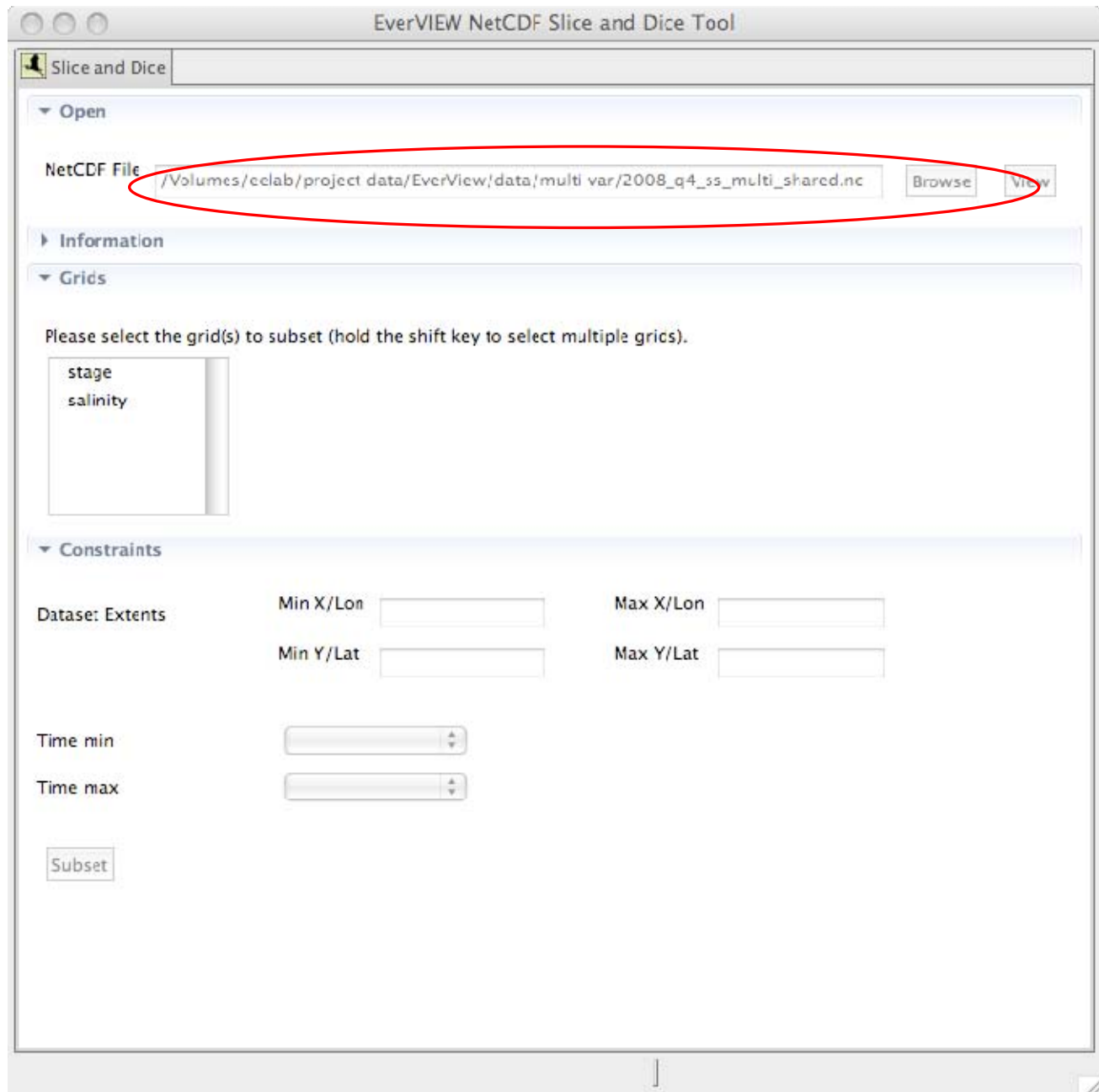


Figure 14. Mac Operating System X 10.5: Opening a Network Common Data Form (NetCDF) file in the EverVIEW NetCDF Slice and Dice Tool.

4. If you would like to preview the original NetCDF file, click the “View” button.

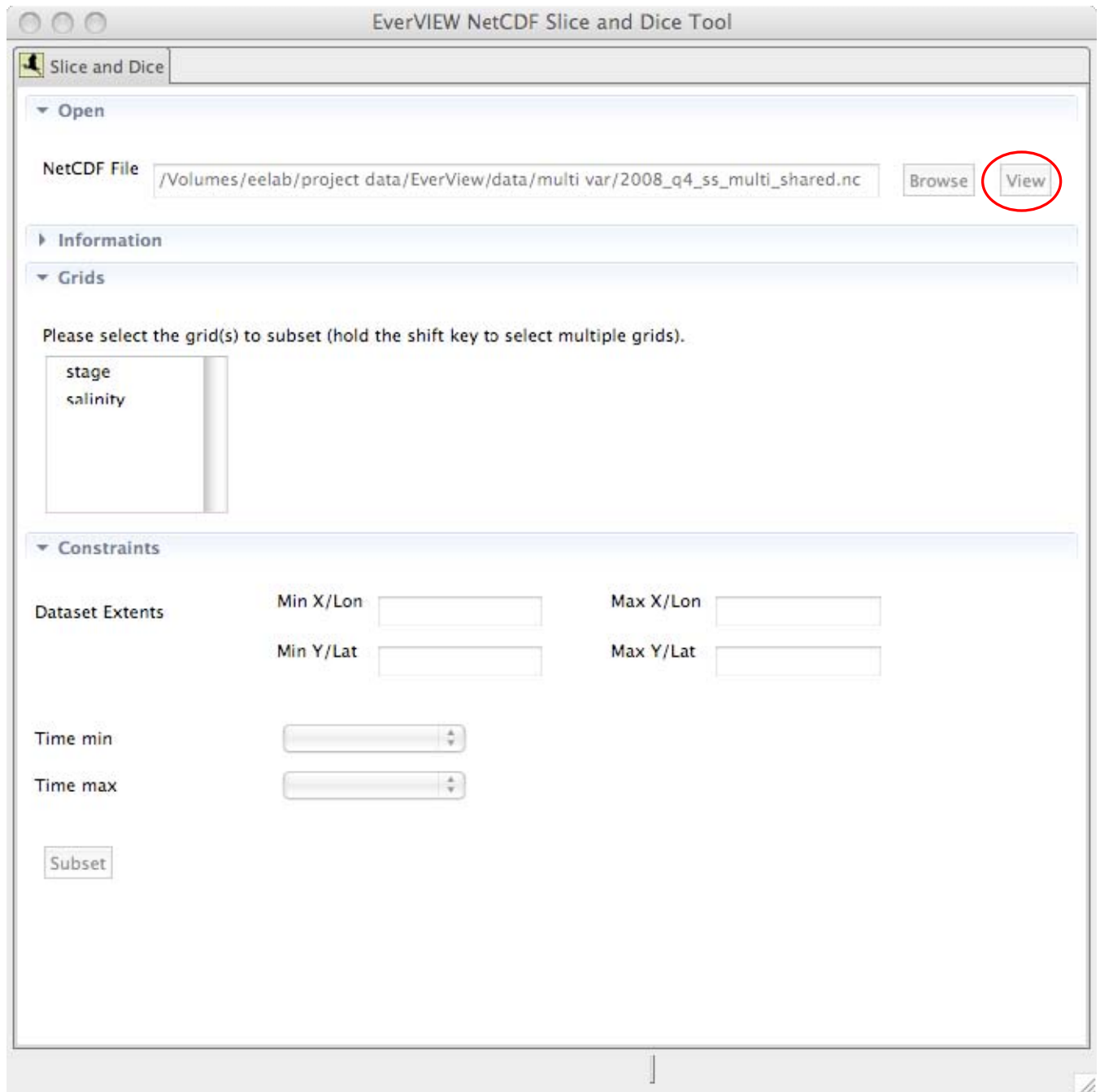


Figure 15. Mac Operating System X 10.5: Previewing a Network Common Data Form (NetCDF) file in the EverVIEW NetCDF Slice and Dice tool.

- After clicking the “View” button, the NetCDF Table Viewer will be shown with the NetCDF file you selected.

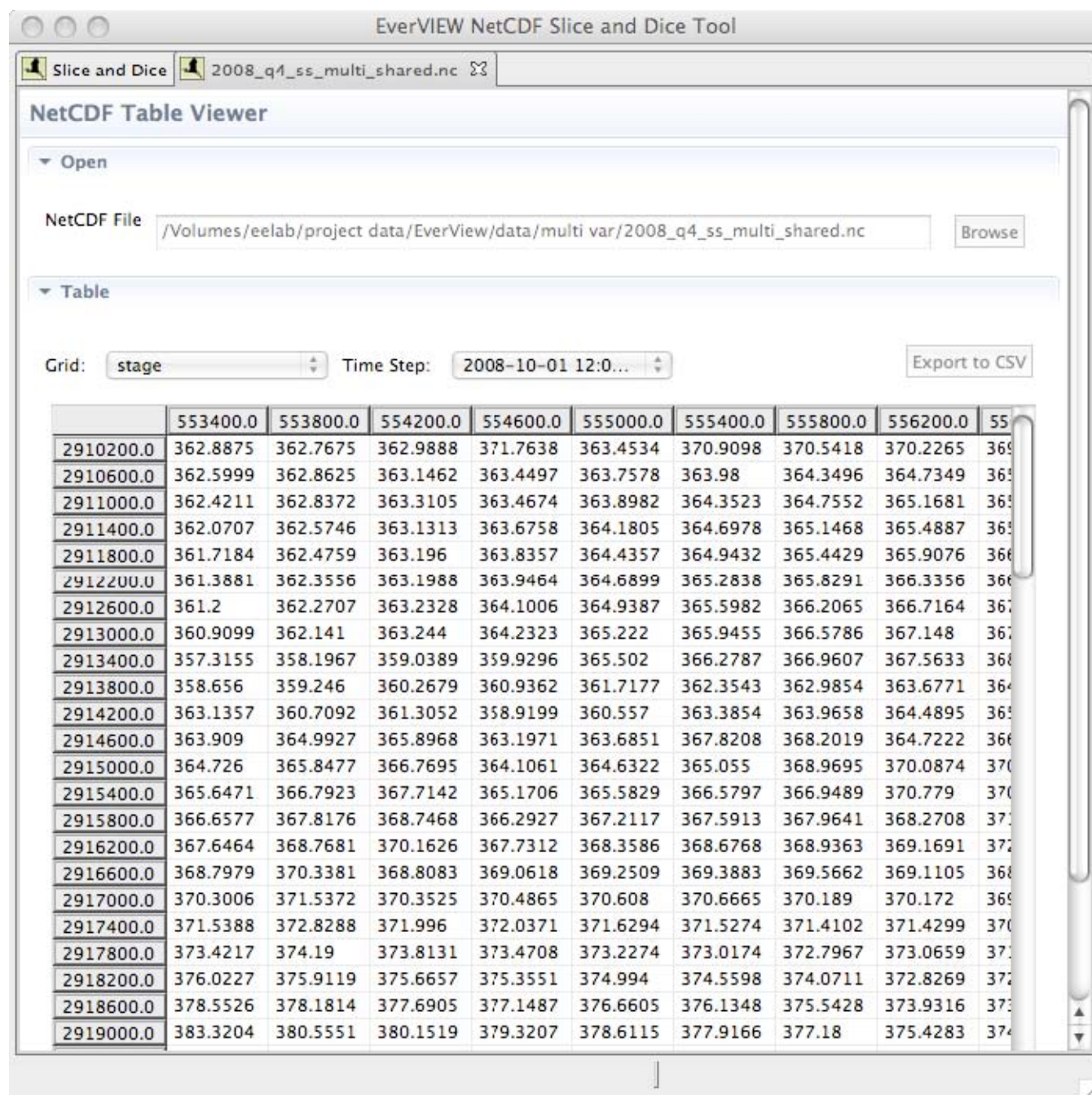


Figure 16. Mac Operating System X 10.5: Table Viewer in the EverVIEW Slice and Dice Tool that is used to preview a Network Common Data Form (NetCDF) file.

- After you have finished previewing the file, click the “Slice and Dice” tab at the top. Now select the grid variable(s) that you want to subset. You can select more than one grid variable by holding the shift or control key while clicking them.

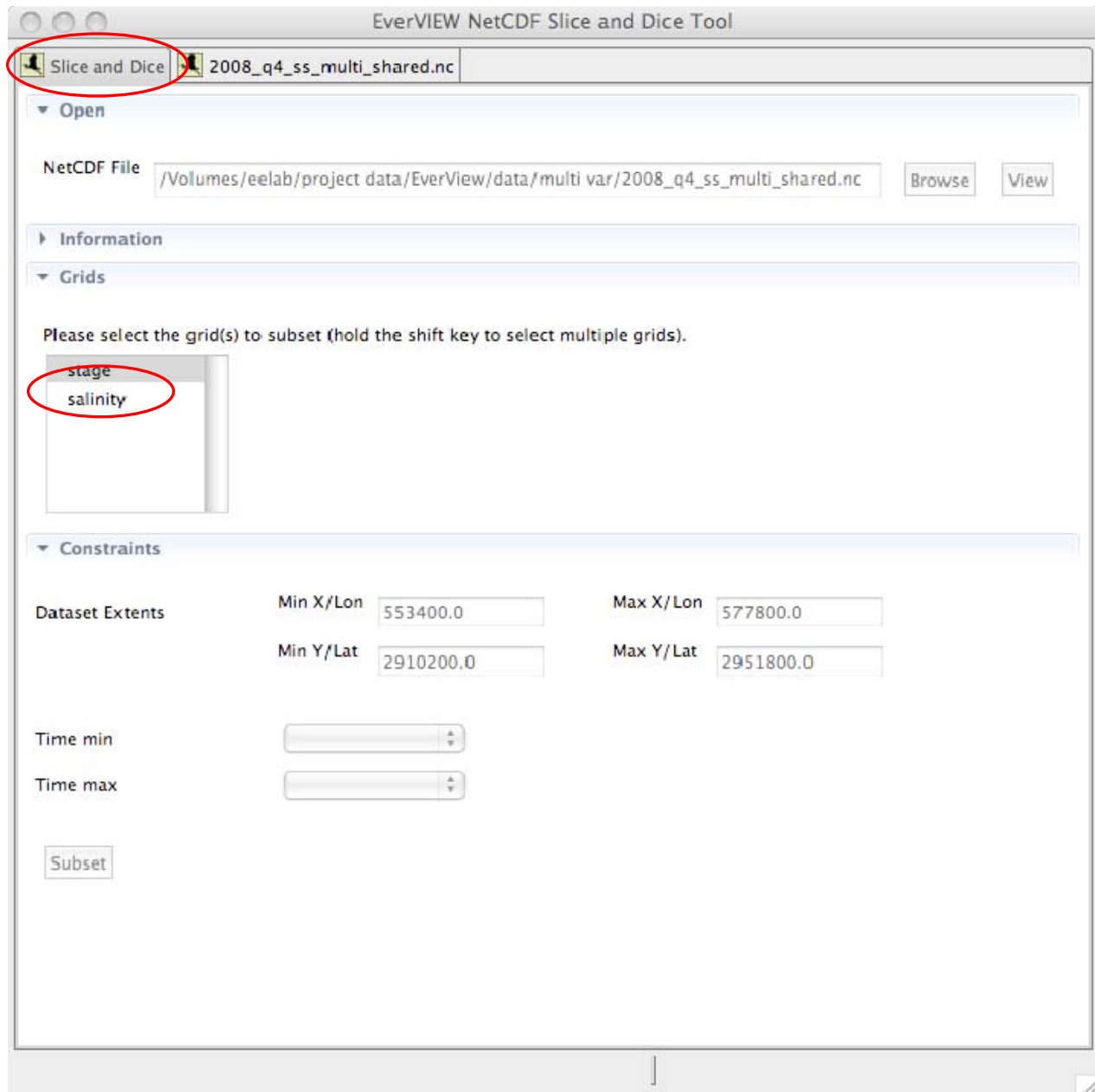


Figure 17. Mac Operating System X 10.5: Selecting grid(s) in the EverVIEW Slice and Dice Tool in order to subset files in Network Common Data Form (NetCDF).

7. After selecting the grid(s), the minimum and maximum x/y or latitude/longitude values will be populated in the “Dataset Extents” section.
8. Select the temporal bounds by specifying the start date and the end date from the drop down lists.

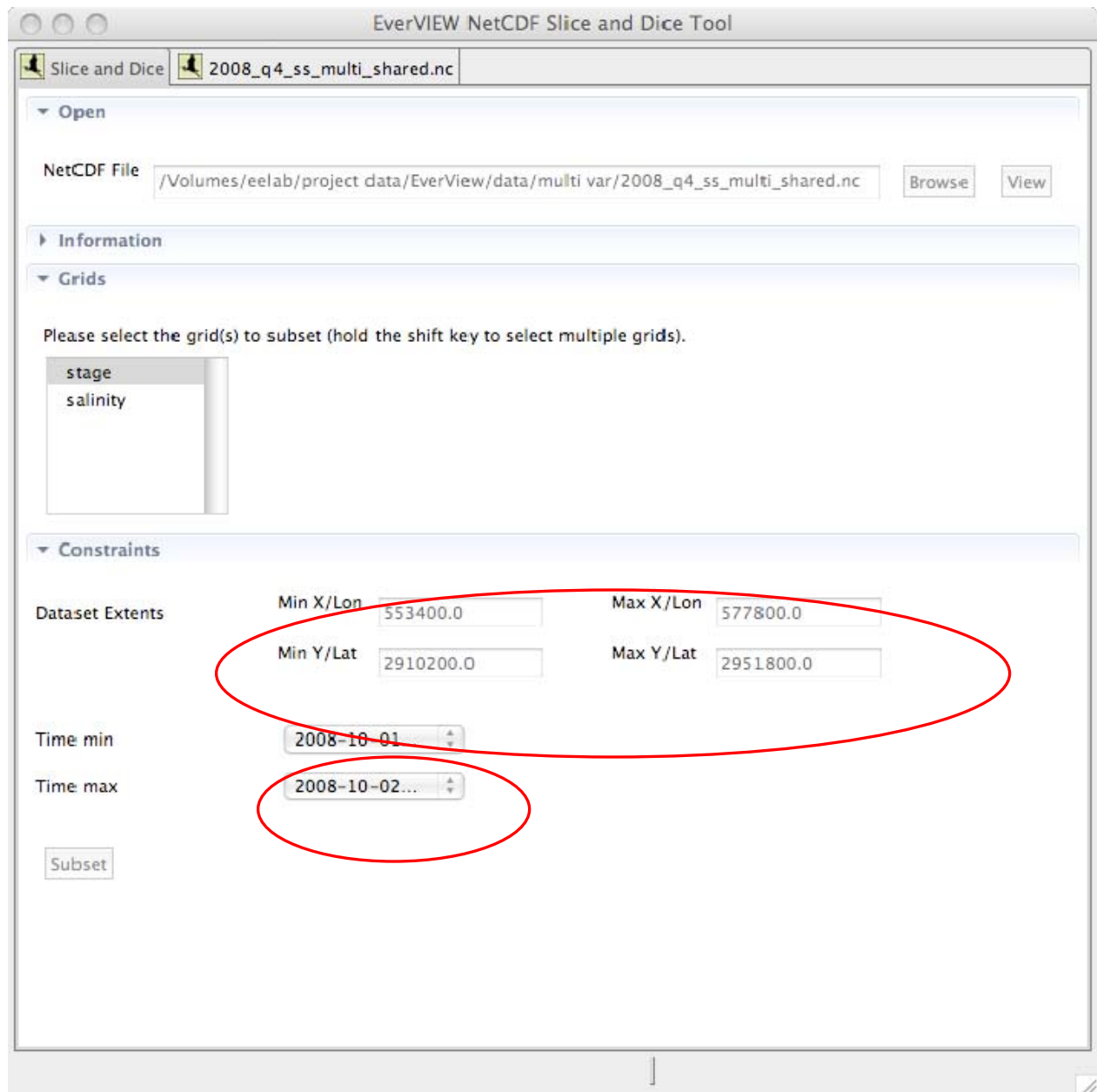


Figure 18. Mac Operating System X 10.5: Defining spatial and temporal bounds in the EverVIEW Slice and Dice Tool in order to subset Network Common Data Form (NetCDF) files.

9. Click on the “Subset” button to subset the data according to the specified constraints
10. After clicking “Subset,” a prompt will appear asking you where to save the subsetting NetCDF file.

Type in the name of a new NetCDF file, or select an existing NetCDF file, and click the “Save” button.

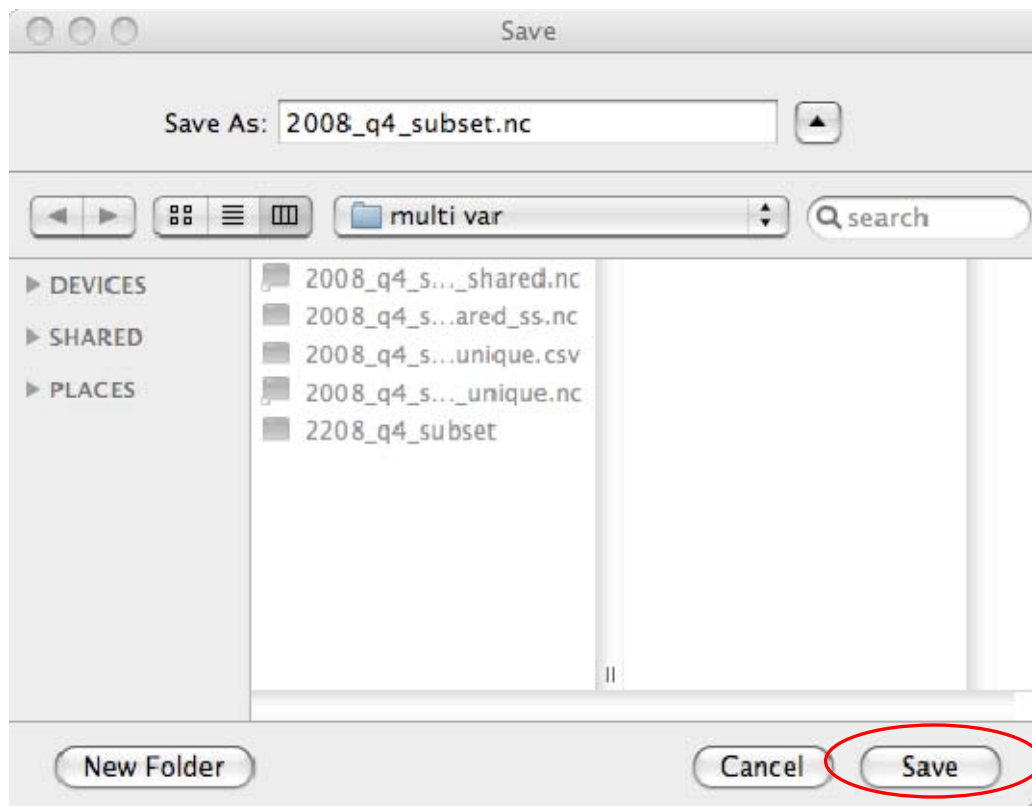


Figure 19. Mac Operating System X 10.5: Saving subsetting Network Common Data Form (NetCDF) files in the EverVIEW NetCDF Slice and Dice Tool.

11. Once the new NetCDF file has been created, a dialog box will appear letting you know that it was successful.

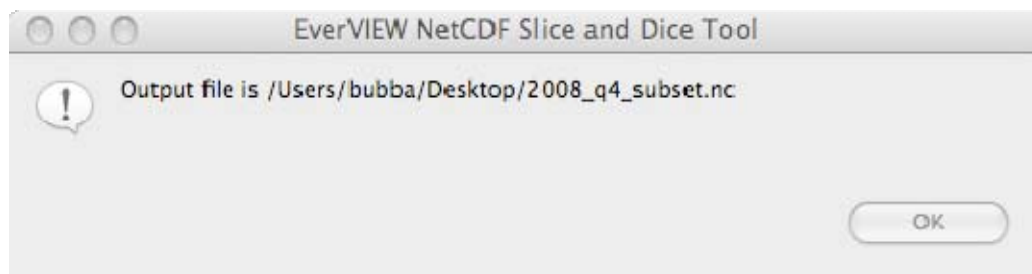


Figure 20. Mac Operating System X 10.5: Success dialog.

12. The newly created NetCDF file will automatically be opened in the NetCDF Table Viewer.

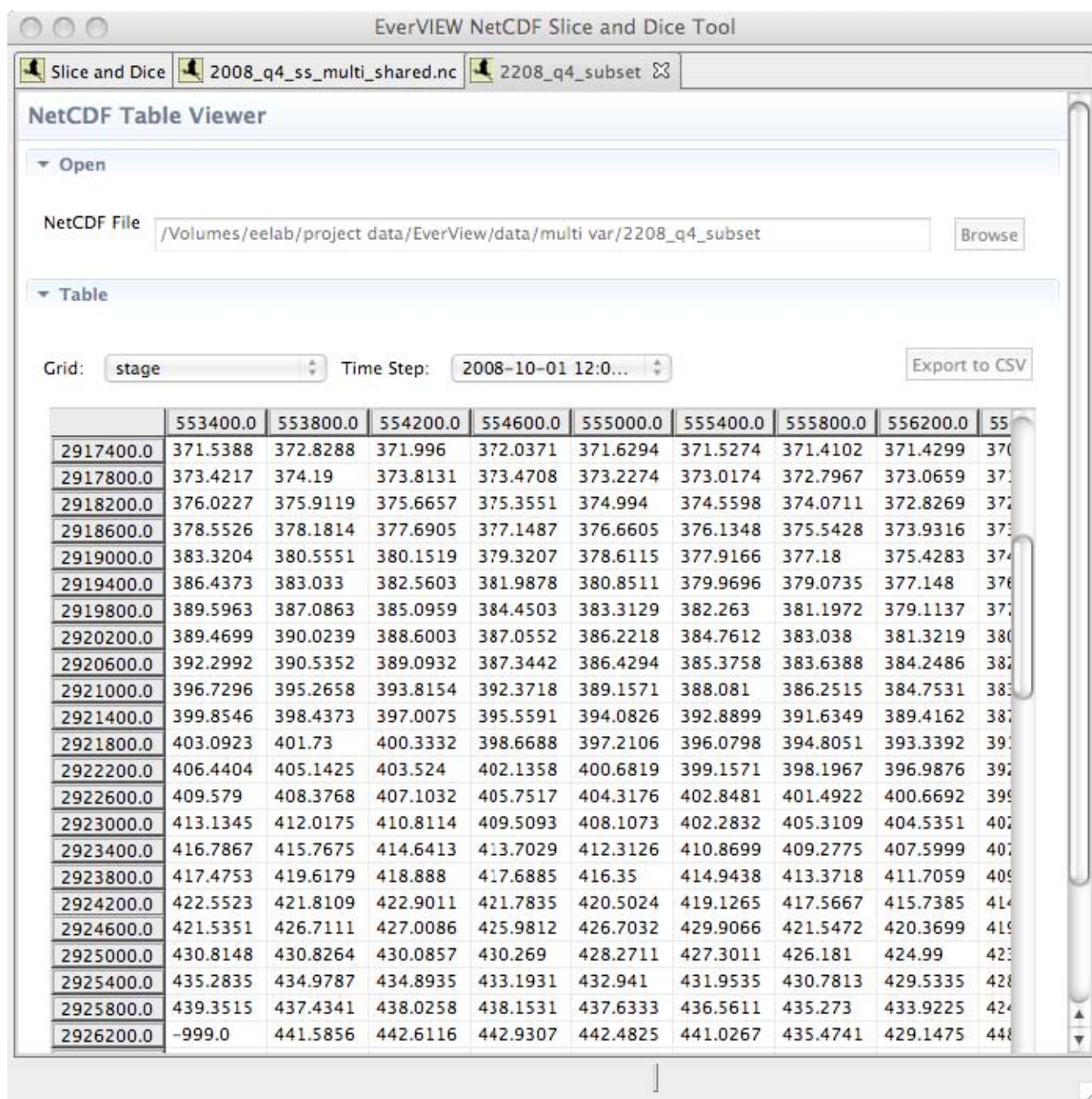


Figure 21. Mac Operating System X 10.5: Table Viewer in the EverVIEW Slice and Dice Tool showing subsetting Network Common Data Form (NetCDF) files.

13. From here, you can select the grid variable and time step for which you want to view data.

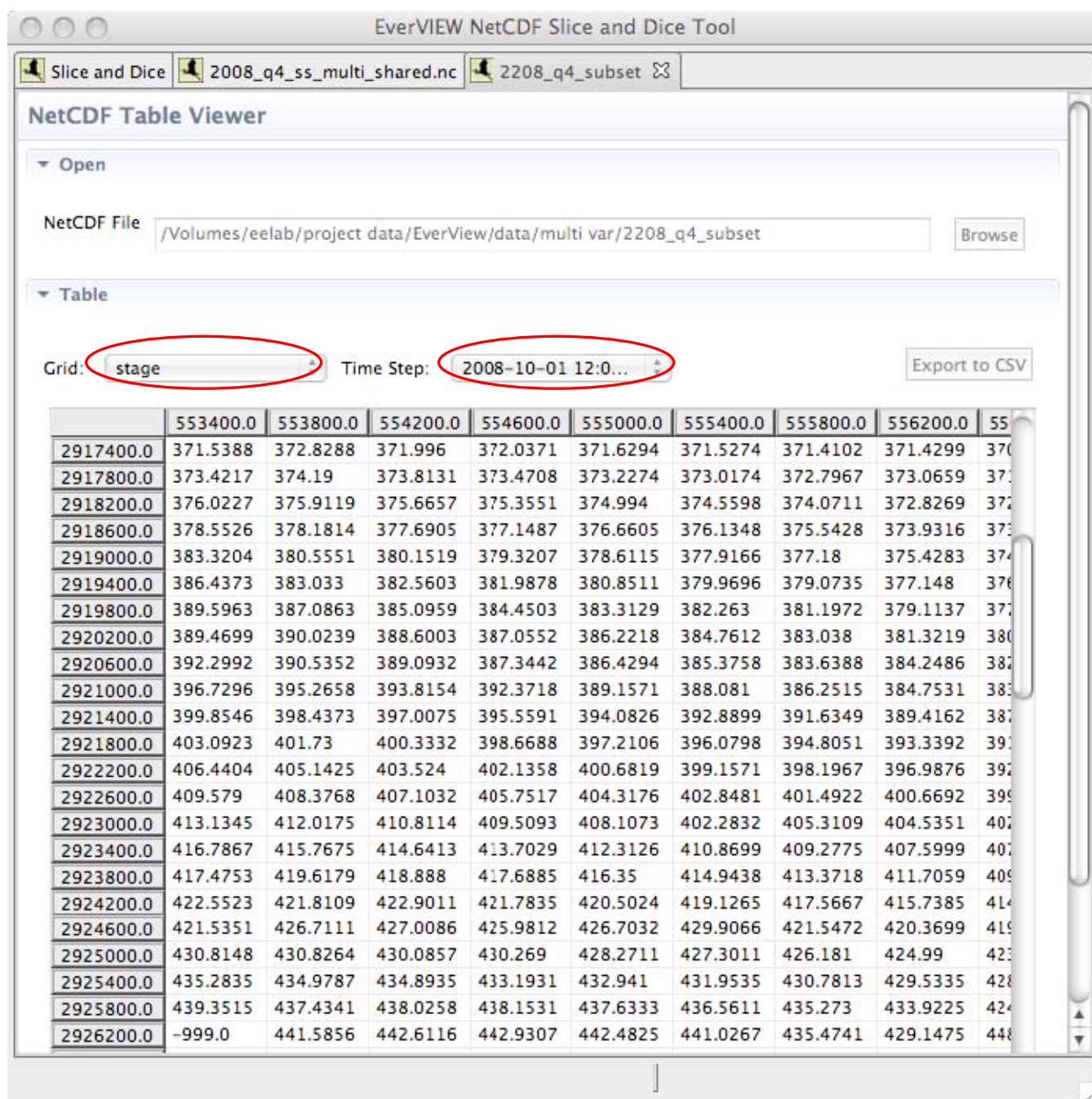


Figure 22. Mac Operating System X 10.5: Selecting the grid and time step in the Table Viewer of the EverVIEW Slice and Dice Tool.

14. From this view, you can also export the data for the current Grid and Time Step to CSV format by clicking the “Export to CSV” button.

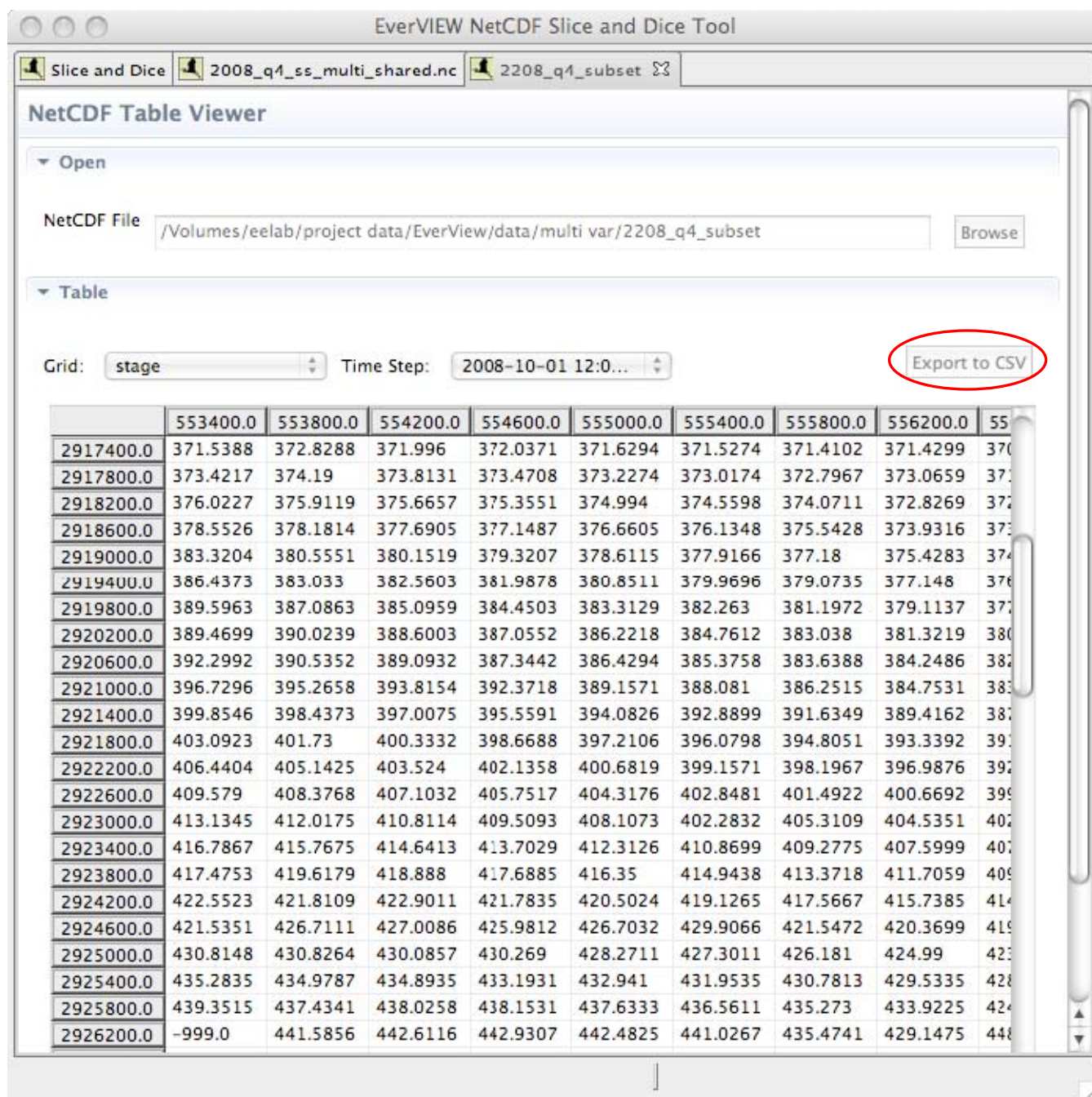


Figure 23. Mac Operating System X 10.5: Exporting a grid to a comma-separated value (CSV) file in the EverVIEW NetCDF Slice and Dice Tool.

Ubuntu 8.10

Installation

The software is available for download at <http://jem.cr.usgs.gov/everview.aspx>. Extract the zip file into a folder on your local machine and run the executable file. This software requires write permission to the installation directory in order to function properly.

User Instructions

1. Run the application. To do this, navigate to the folder where the tool is installed and double click on EverVIEW_NetCDFSDTool. You may need to give the file permissions to execute as a program in order for it to run. The application can only be run from this directory, because it depends on other files and folders in the installation directory.

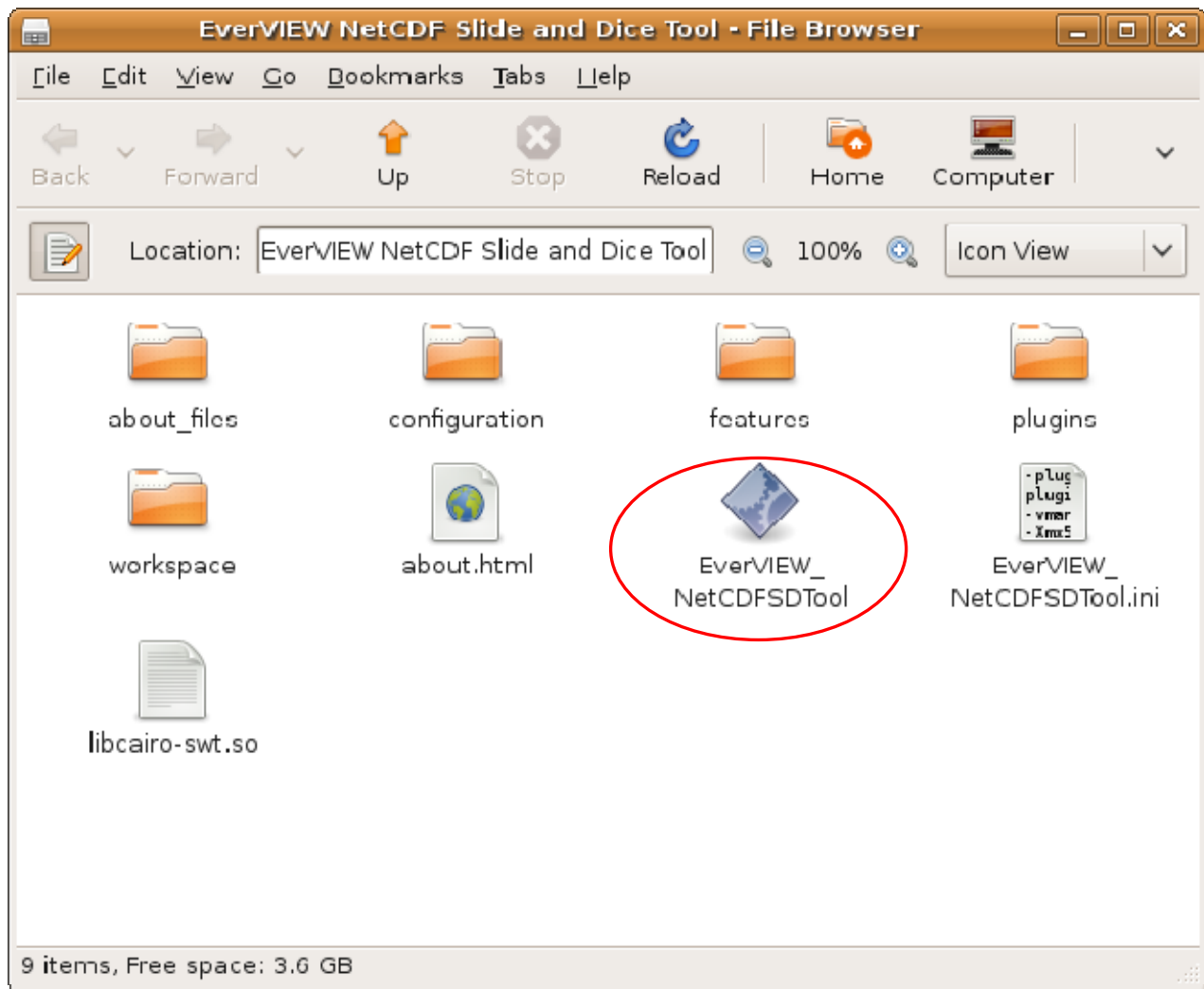


Figure 24. Ubuntu 8.10: Installation folder showing the EverVIEW_NetCDFSDTool executable.

2. The EverVIEW NetCDF Slice and Dice Tool will open and check to see if any updates are available.

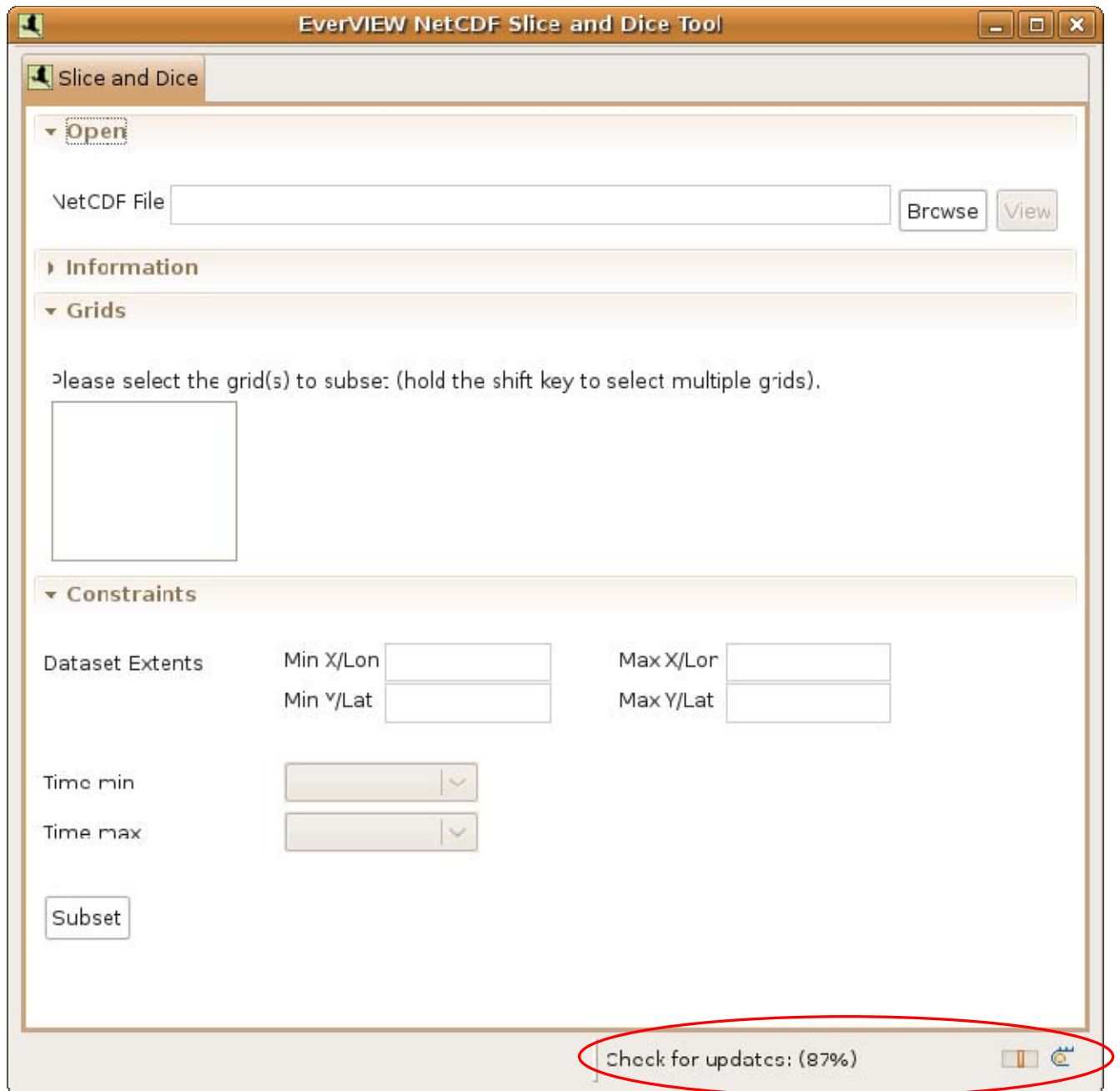


Figure 25. Ubuntu 8.10: Automatic updates.

3. Click the “Browse” button and select the NetCDF file to subset.

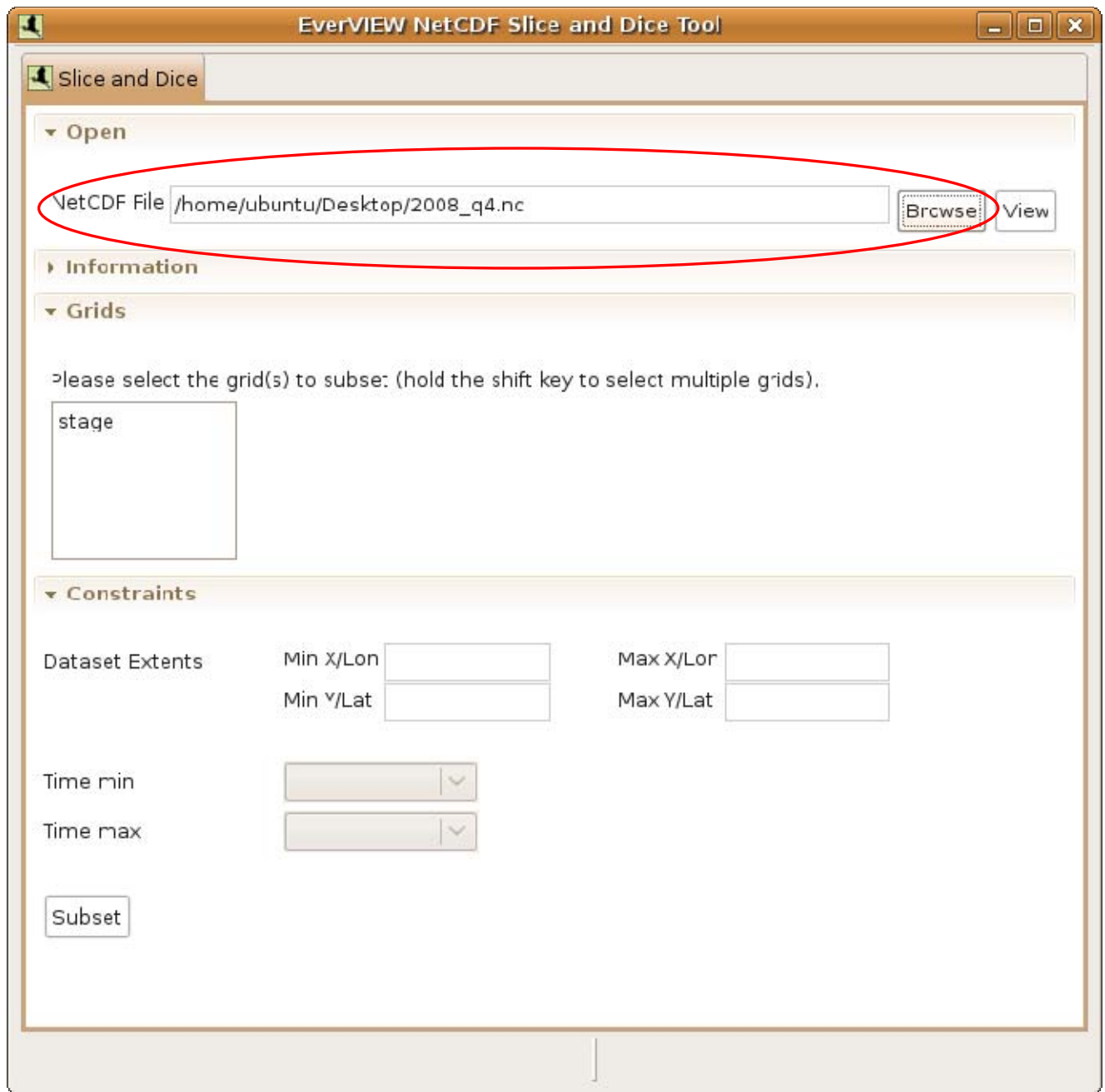


Figure 26. Ubuntu 8.10: Opening a Network Common Data Form (NetCDF) file in EverVIEW.

4. If you would like to preview the original NetCDF file, click the “View” button.

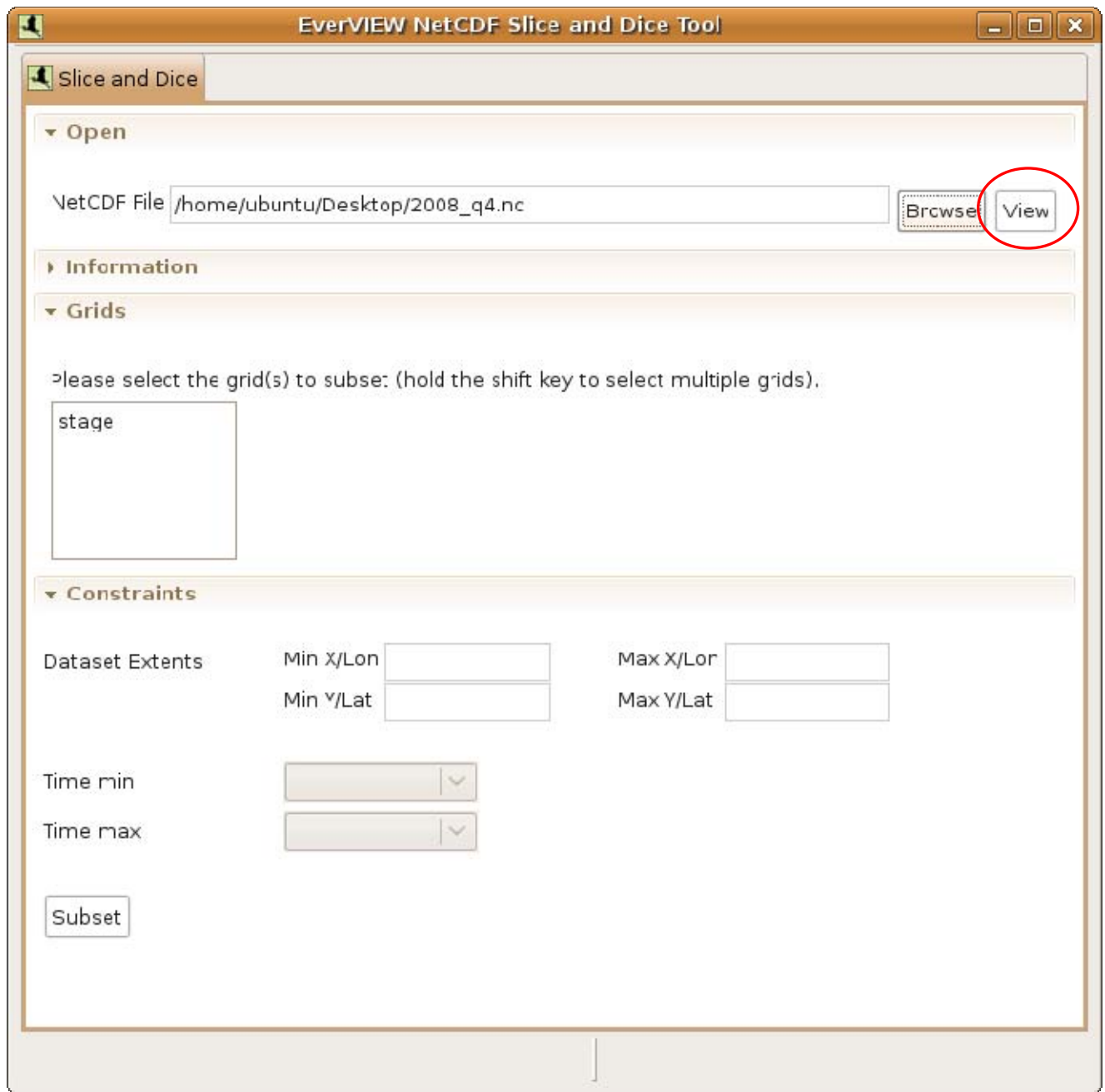


Figure 27. Ubuntu 8.10: Previewing a Network Common Data Form (NetCDF) file in the EverVIEW NetCDF Slice and Dice Tool.

- After clicking the “View” button, the NetCDF Table Viewer will be shown with the NetCDF file you selected.

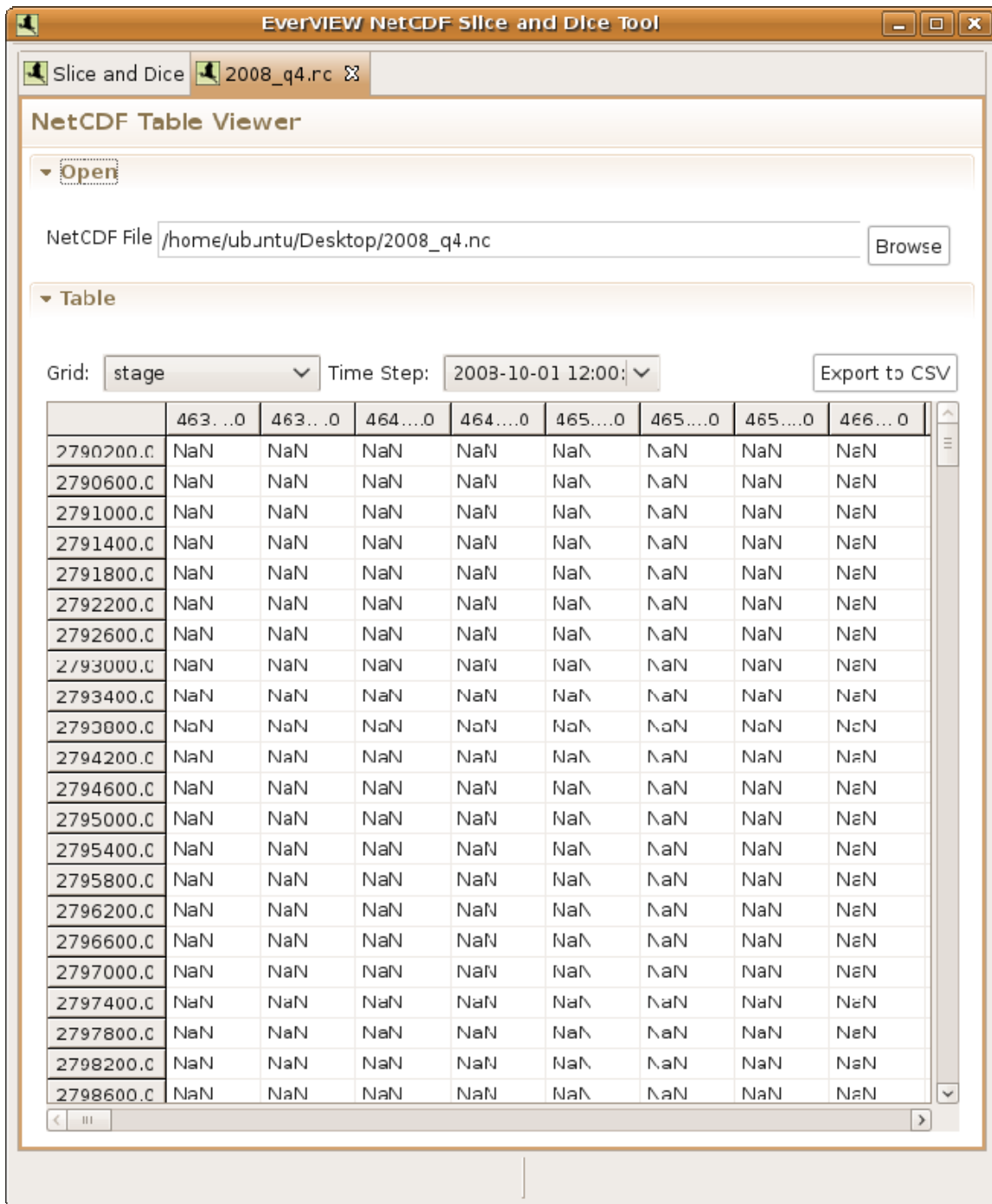


Figure 28. Ubuntu 8.10: Table Viewer in the EverVIEW Slice and Dice Tool used to preview a Network Common Data Form (NetCDF) file.

- After you have finished previewing the file, click the “Slice and Dice” tab at the top. Now select the grid variable(s) that you want to subset. You can select more than one grid variable by holding the shift or control key while clicking them.

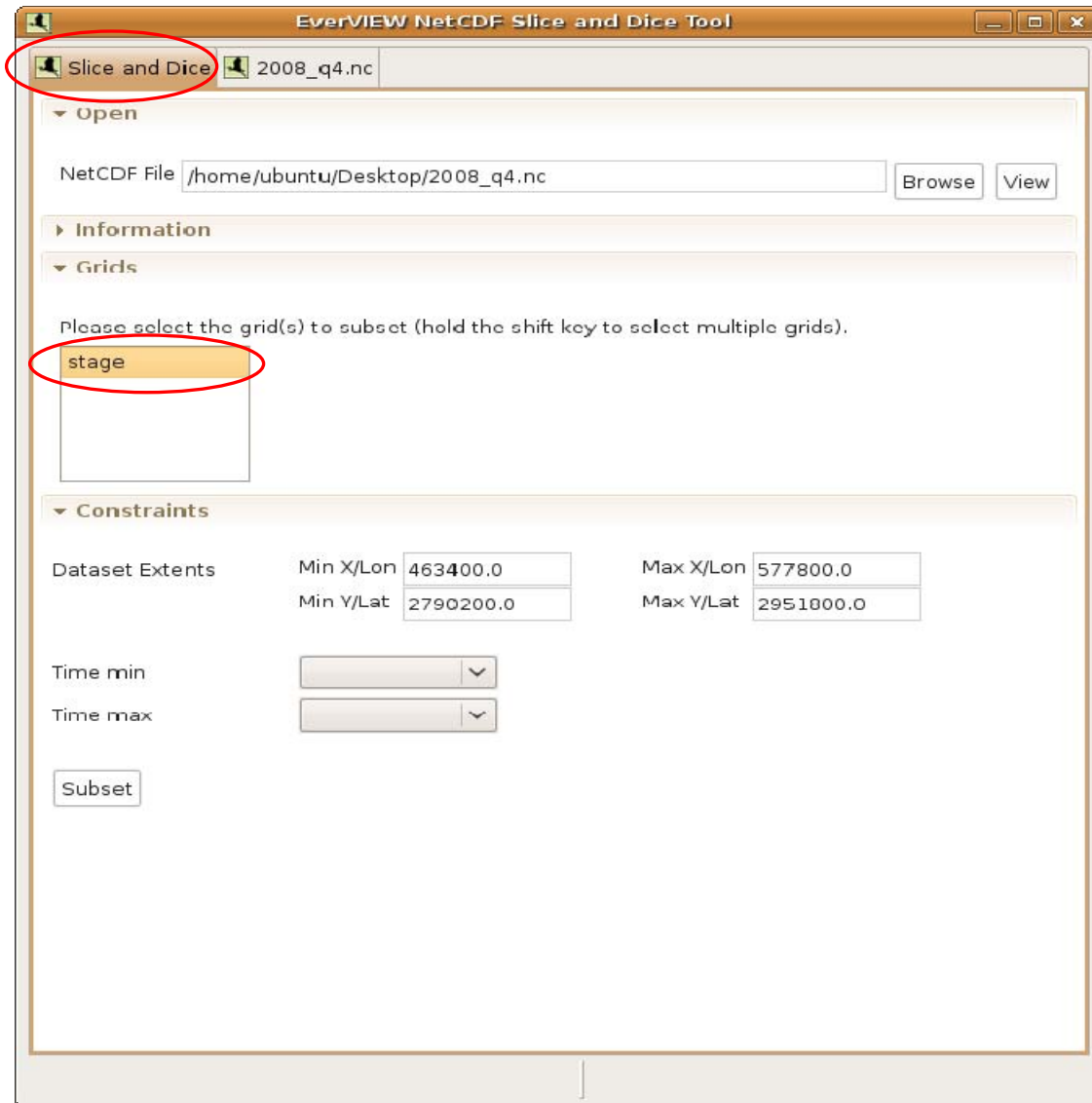


Figure 29. Ubuntu 8.10: Selecting grid(s) in the EverVIEW Slice and Dice Tool in order to subset Network Common Data Form (NetCDF) files.

7. After selecting the grid(s), the minimum and maximum x/y or latitude/longitude values will be populated in the “Dataset Extents” section.
8. Select the temporal bounds by specifying the start date and the end date from the drop-down lists.

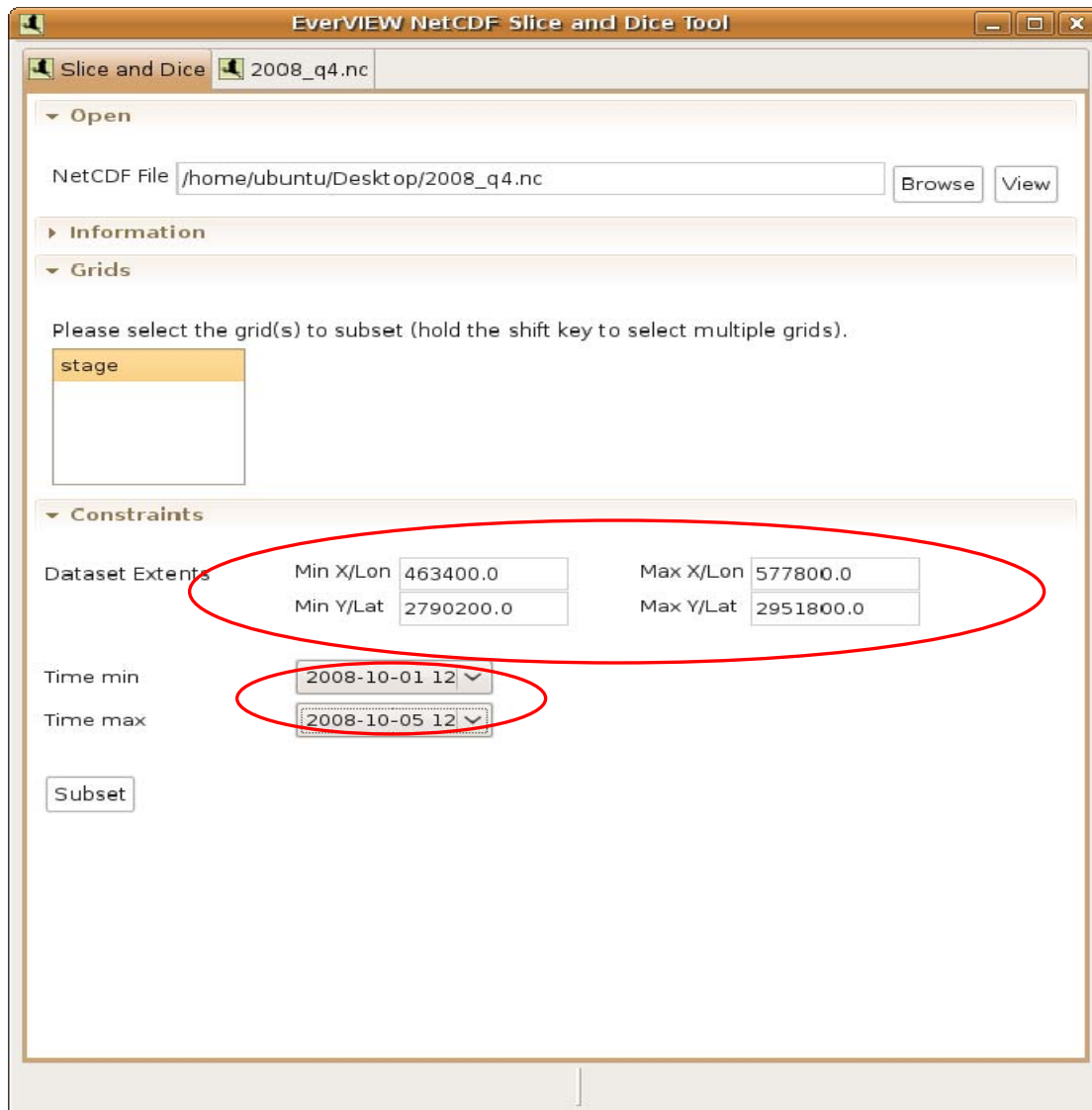


Figure 30. Ubuntu 8.10: Defining spatial and temporal bounds in the EverVIEW Slice and Dice Tool in order to subset Network Common Data Form (NetCDF) files.

9. Click on the “Subset” button to subset the data according to the specified constraints
10. After clicking “Subset,” a prompt will appear asking you where to save the subsetting NetCDF file.
Type in the name of a new NetCDF file, or select an existing NetCDF file, and click the “Save” button.

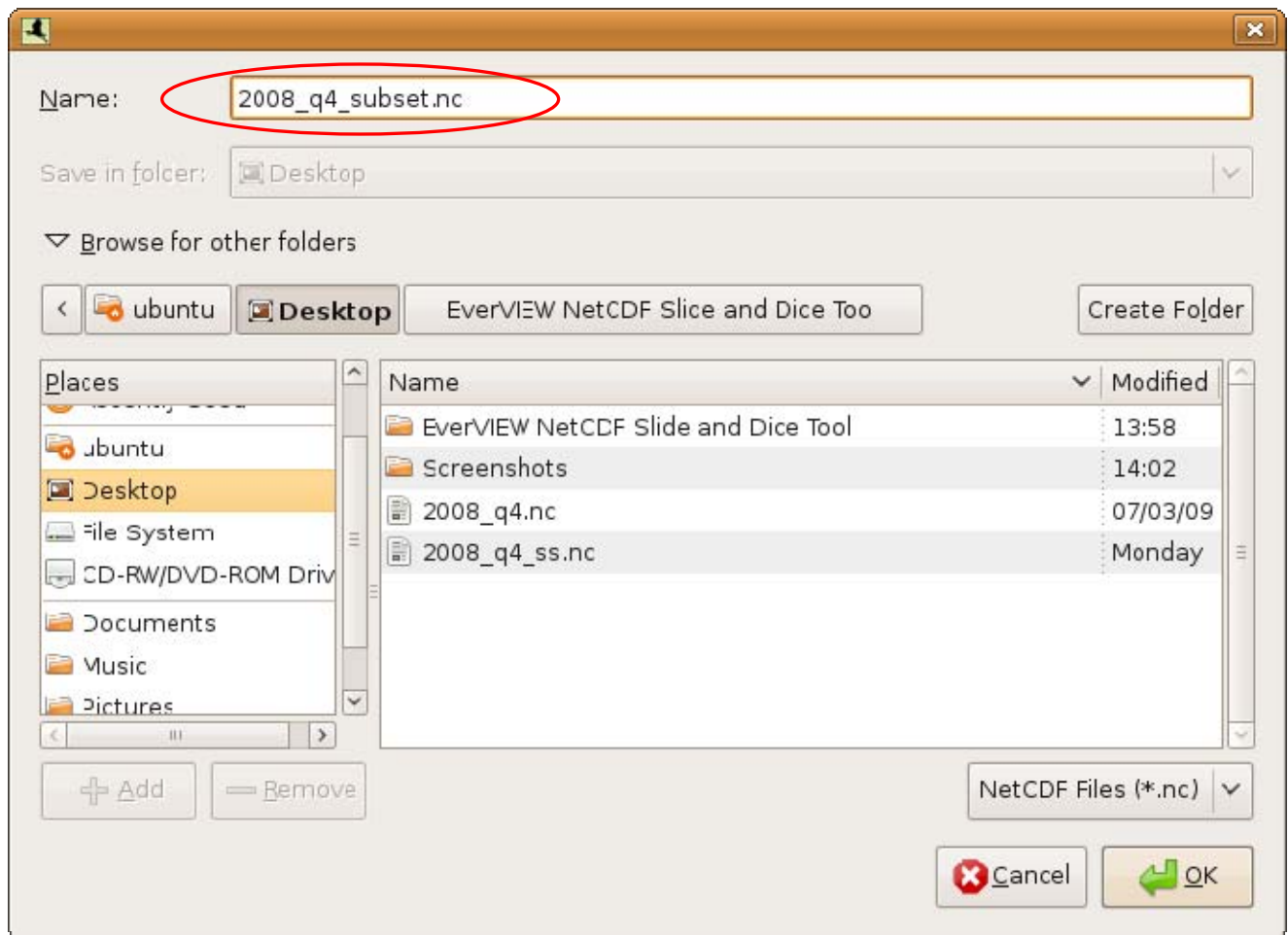


Figure 31. Ubuntu 8.10: Saving subsetting Network Common Data Form (NetCDF) files in the EverVIEW NetCDF Slice and Dice Tool.

11. Once the new NetCDF file has been created, a dialog box will appear letting you know that it was successful.



Figure 32. Ubuntu 8.10: Success dialog.

12. The newly created NetCDF file will automatically be opened in the NetCDF Table Viewer.

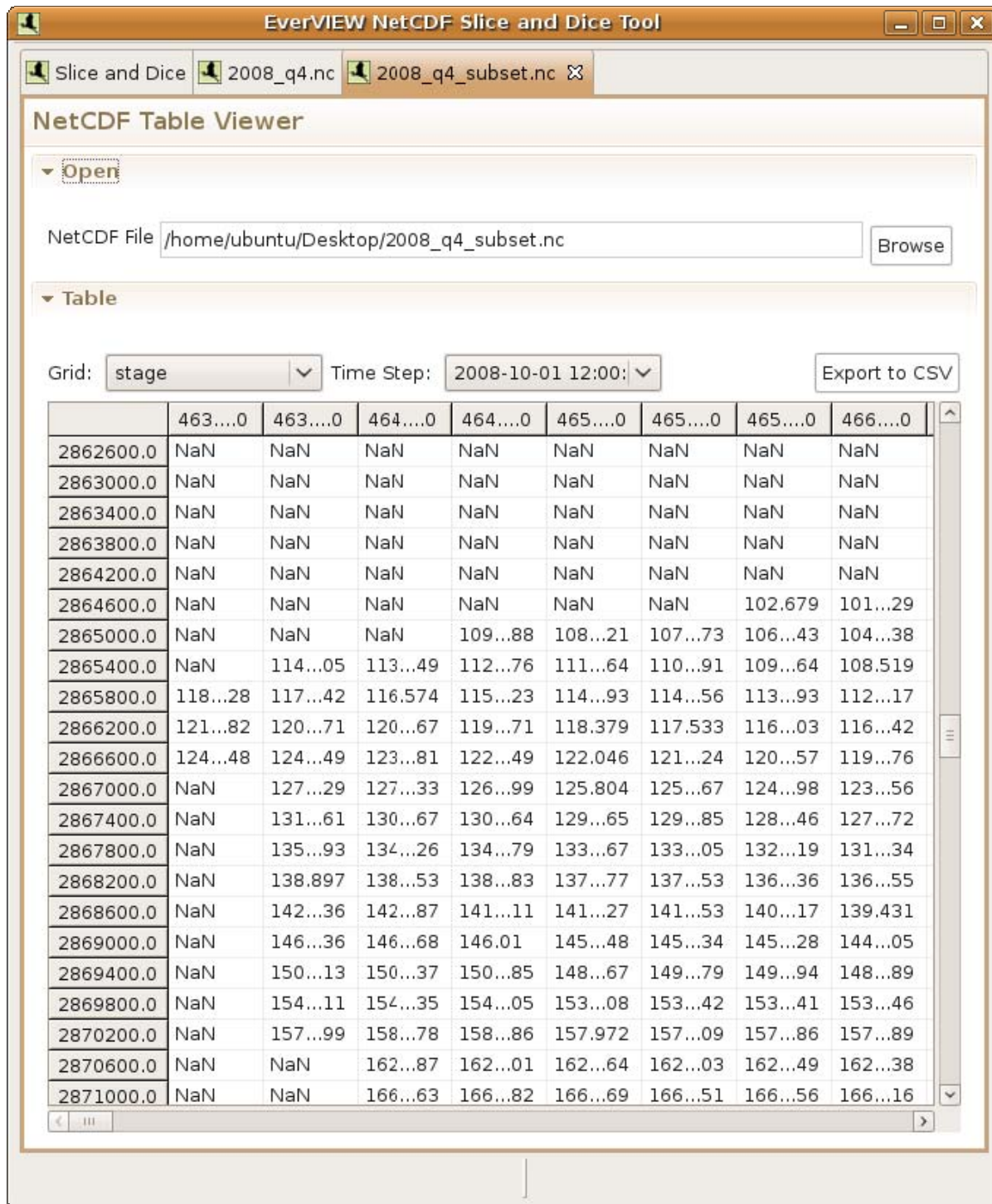


Figure 33. Ubuntu 8.10: Table Viewer in the EverVIEW Slice and Dice Tool showing subsetted Network Common Data Form (NetCDF) files.

13. From here you can select the grid variable and time step for which you want to view data.

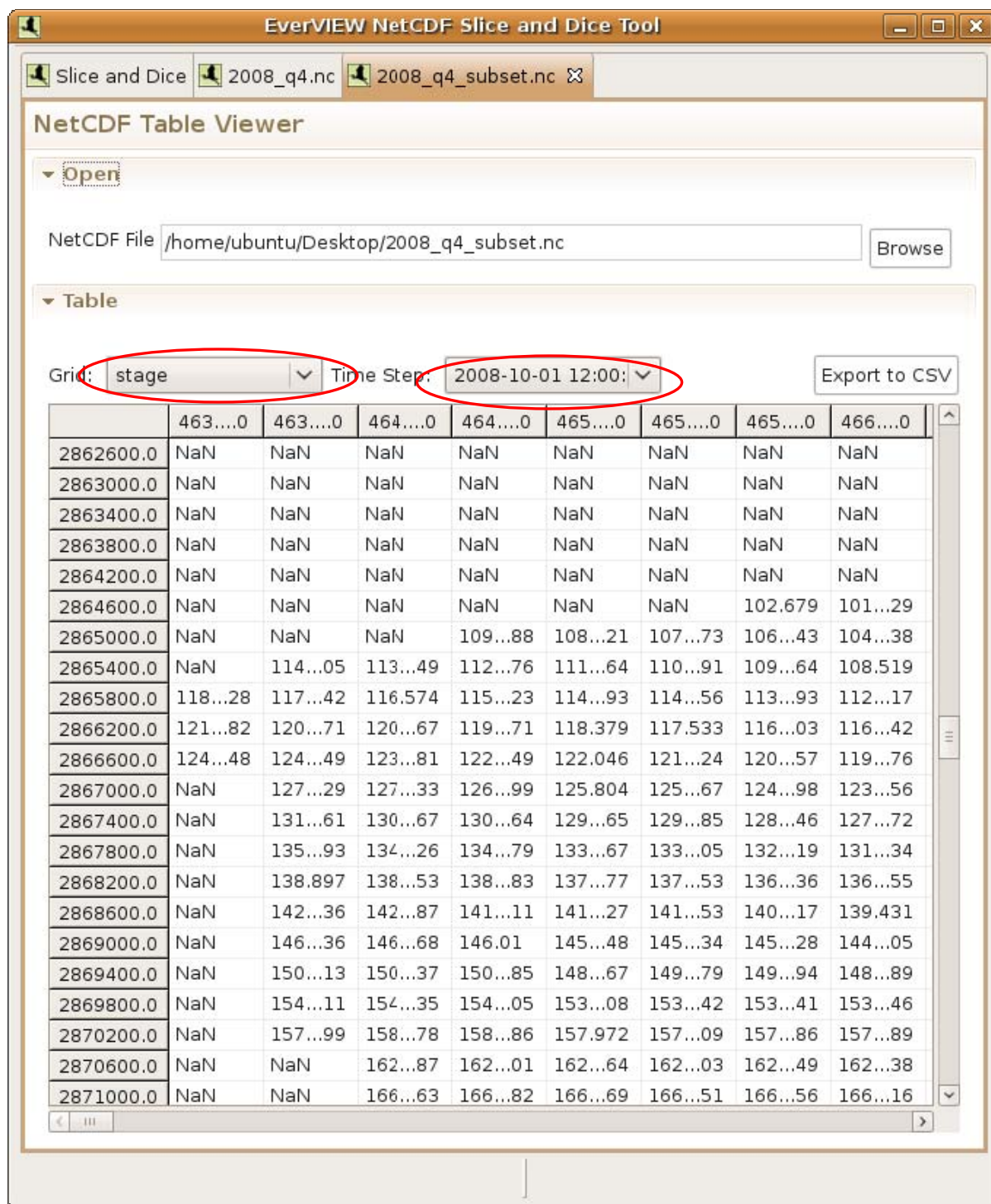


Figure 34. Ubuntu 8.10: Selecting the grid and time step in the Table Viewer of the EverVIEW Slice and Dice Tool.

14. From this view, you can also export the data for the current Grid and Time Step to CSV format by clicking the “Export to CSV” button.

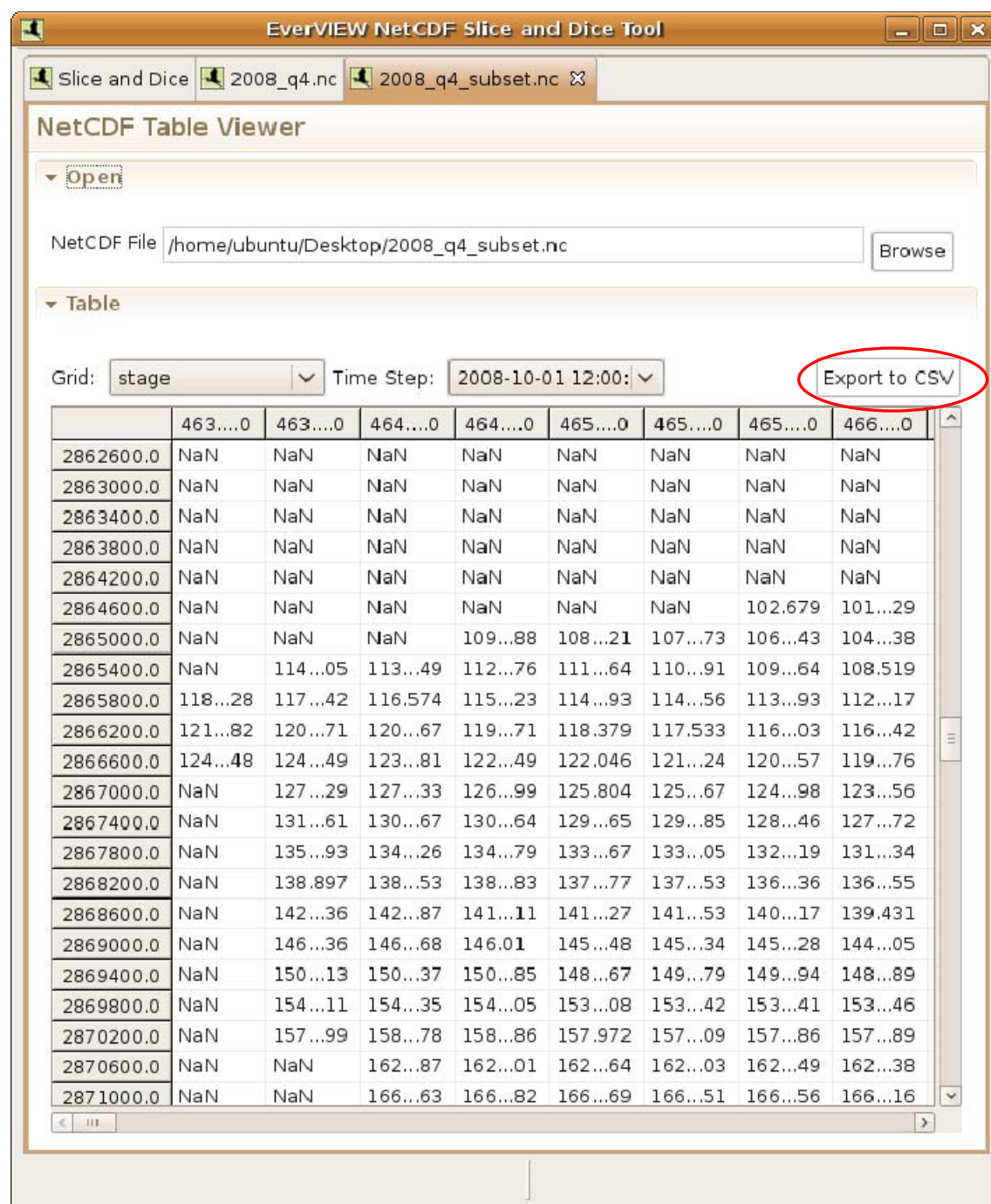


Figure 35. Ubuntu 8.10: Exporting a grid to a comma-separated value (CSV) file in the EverVIEW NetCDF Slice and Dice Tool.

References Cited

Unidata Program Center, 2009, NetCDF User's Guide. Boulder, Colo.,

University Corporation for Atmospheric Research, accessed online April 1, 2009, at

<http://www.unidata.ucar.edu/software/netcdf/docs/netcdf/>.