AWIPS II Boundary Drawing Tool Interface User's Guide

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2.0 Forecaster Boundary Tool Interface

The primary functions of the tool are:

1. Allow the forecaster to enter meso-scale and/or synoptic scale surface boundaries;
2. Allow the forecaster to set a boundary in motion after its creation
3. Allow the forecaster to adjust location, shape and motion or delete any active boundary
4. Save data; the data are saved via AWIPS 2 localization APIs.

Under both the "CAVE D2D Tools" pull-down menus, there is a new menu entry called "Boundary Tool" (Figure 1).
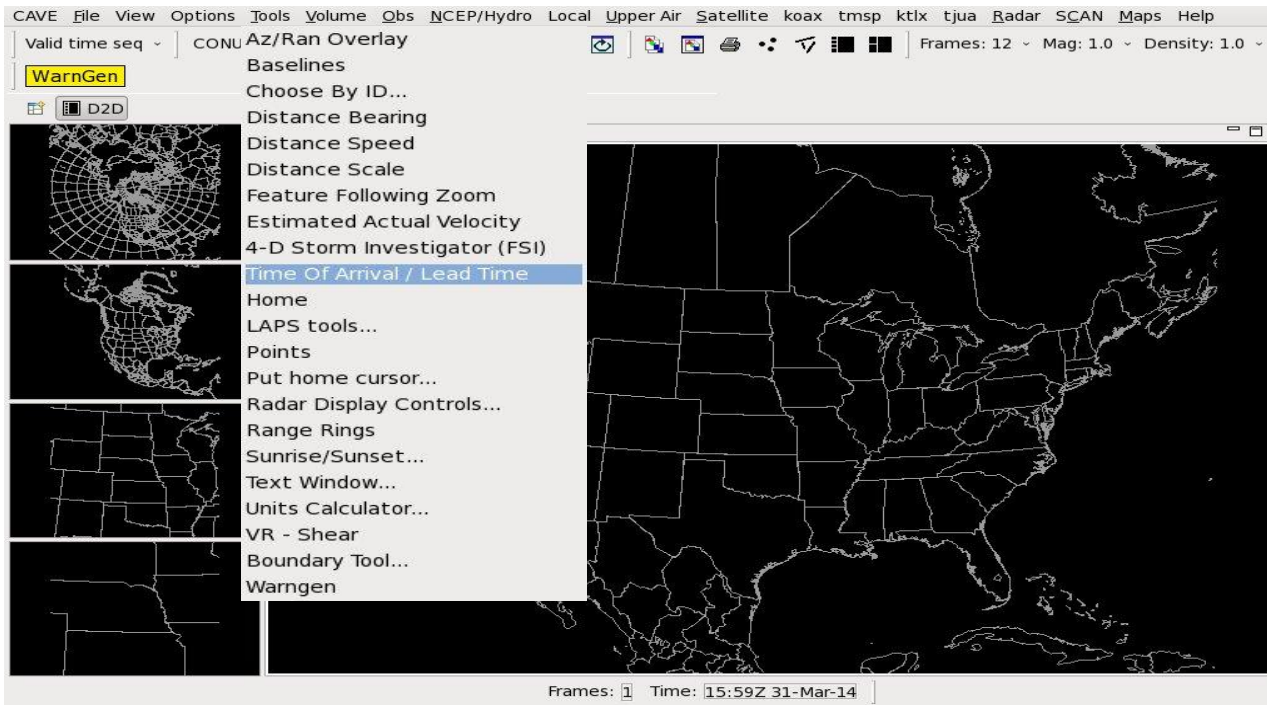

Figure 1: "CAVE D2D Tools" menu with "Boundary Tool" entry

3.0 Boundary Tool

Boundary Tool allows the forecaster to add new surface boundaries, adjust the positions of existing boundaries, set a stationary boundary to motion, modify the speed of a moving boundary or end an active boundary.

Selecting "Boundary Tool" menu button will launch the "Boundary Editor" GUI (Figure 2).
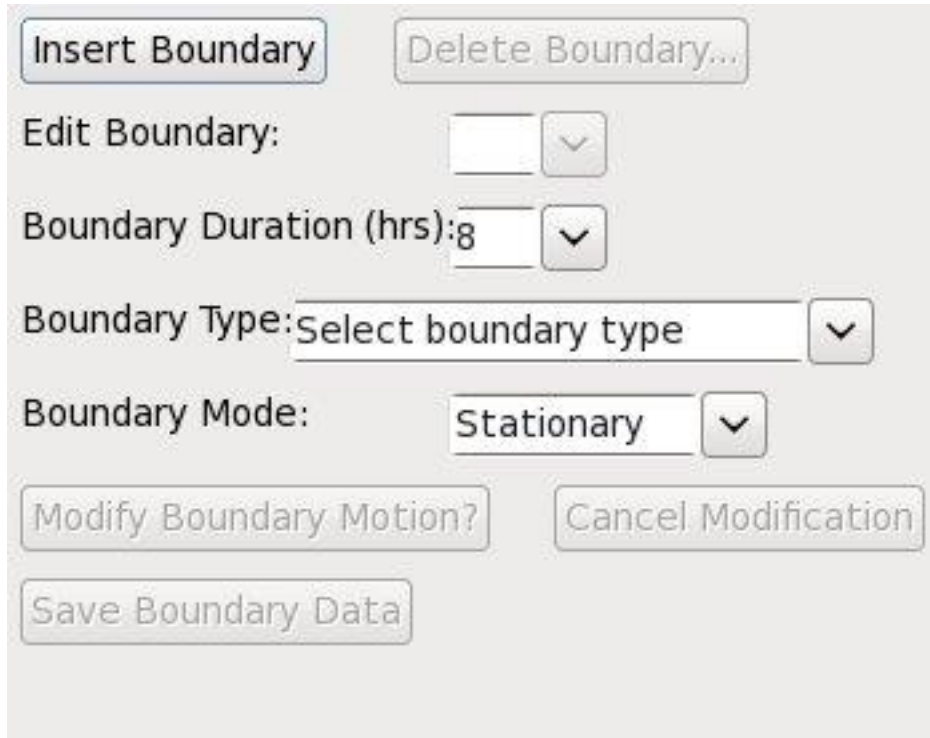
Figure 2: Boundary Editor GUI

3.1 Active Boundaries

Once the Boundary Tool's GUI is loaded, existing active boundaries will be displayed on D2D. Click the arrow button of the "Edit Boundary", a pull-down list of all active boundary ids will be shown. Click on the id for the boundary you want to edit, the selected number will be filled in the entry besides "Edit Boundary" label. Please check this Boundary ID number every time before you do any further modifications of existing active boundaries.

3.2 Create and Edit New Boundaries

To define a new boundary, select a D2D frame whose frame time will be this new boundary's creation time, click the "Insert Boundary" button, an editable boundary will be displayed on the center of D2D screen. Drag and adjust the poly-line to the desired position to align it with the meteorological boundary as depicted in the underlining data. Adjust the length of poly-line to cover the full length of the meteorological boundary by holding the right mouse button and pulling the tip of the poly-line to the end of the meteorological boundary. Add vertices as many you like and drag each vertex to align with the virtual point of the meteorological boundary. The boundary id is automatically assigned. The maximum boundary id found in the drop-down boundary id list is incremented by 1. The boundaries may be modified by dragging them to a new position or clicking the middle mouse button to add or delete a vertex. Please be aware that any updated or new boundaries must be saved. The label on the button "Save Boundary Data" turns red after any updates to remind you that this button must be clicked to save. Note that you need to define "Boundary Type" before clicking "Save Boundary data" button, otherwise you will be warned to define the boundary type before saving the data. Once the data is saved, the boundaries on D2D will become un-

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editable (Figure 3). If later you feel the need to adjust a boundary, select the boundary from the "Edit Boundary" pull-down list and click the "Edit Boundary" button and the selected boundary will become editable.
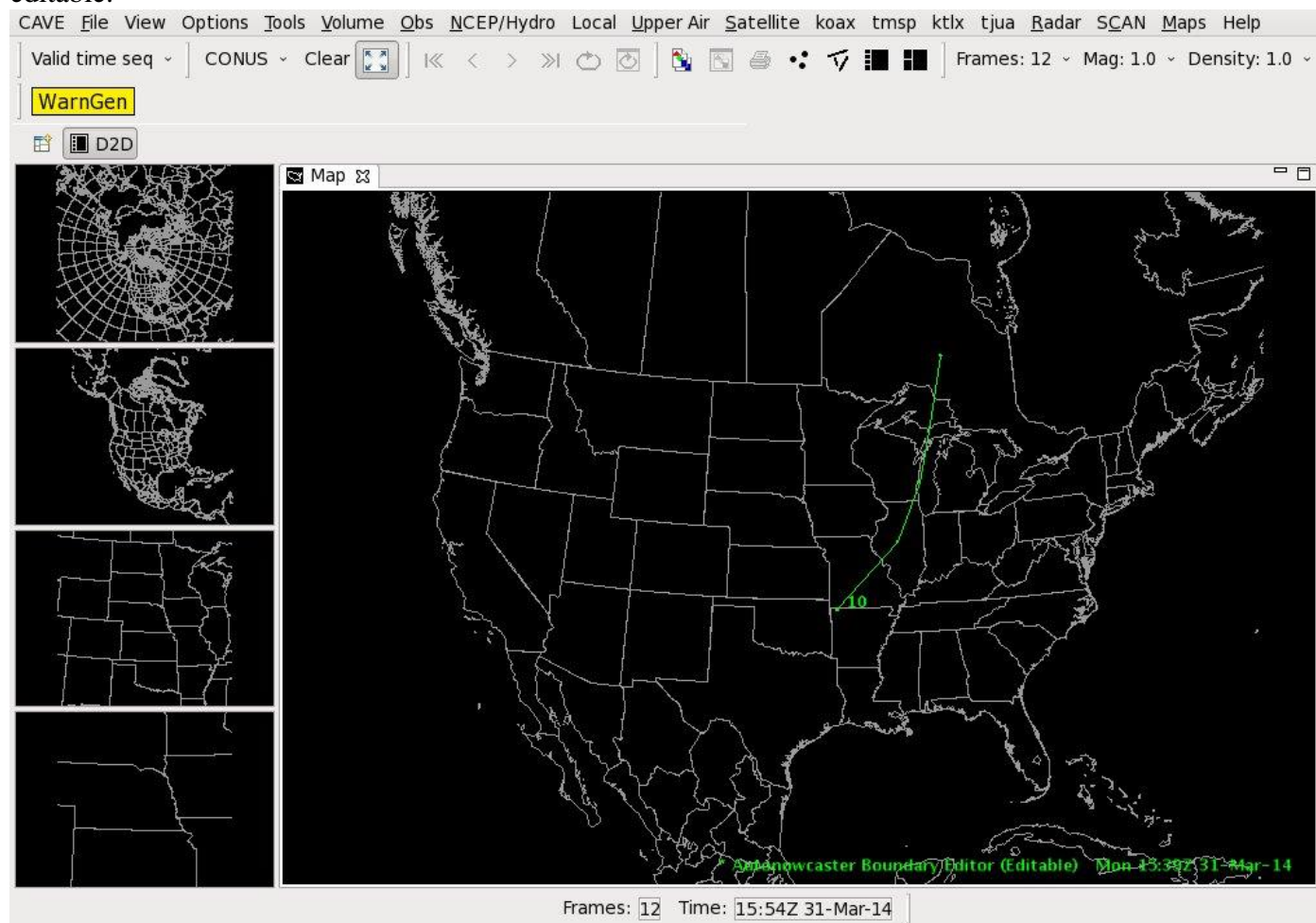

Figure 3: Active boundaries

3.3 Set Boundary duration time

By default, the duration time of a boundary is set to 8 hours. The user can set the lifespan of any boundary by clicking the arrow button of "Boundary Duration (hrs)" and selecting the desired number of hours.

3.4 Set Boundary in Motion

By default, a new boundary is stationary with three vertices. A boundary may be set to motion initially when creating the boundary or after saving the stationary boundary.

- To assign motion vectors to a particular boundary after already saving the stationary boundary; select the boundary id from the drop-down list, select the "Edit Boundary" button, then click the arrow button of the "Boundary Mode" and select "Moving", and choose a D2D frame other than the one in which you edited the boundary, and drag and adjust the poly-line to the desired position to align it with the meteorological boundary as depicted in the underlining data.

- To assign motion vectors to a boundary prior to saving the boundary, click the "Boundary Mode" button and select "Moving", and choose a D2D frame other than the one in which you created the boundary, then drag and adjust the polyline to the desired position and shape to align it with the meteorological boundary as depicted in the underlining data. Use the step forward and backward buttons on D2D to loop through the frames and verify whether the boundary motion has been properly defined*. Click the "SaveBoundary data" button once you are happy with the positions. The boundary will become un-editable.

*Please note that the boundary motion vectors are calculated for each point on the boundary. Dragging the entire boundary will result in a constant velocity for all points on the boundary.
However, in real world the boundary shape is not constant because different parts of a boundary have different velocities. You can compute the motion of each vertex by dragging one point at time or adjust the position of each vertex at the proper location after dragging the entire boundary (e.g. Figure 4). The velocities are calculated by determining the displacement in space and time between the editable points on the boundary and the position of the points on the original boundary.
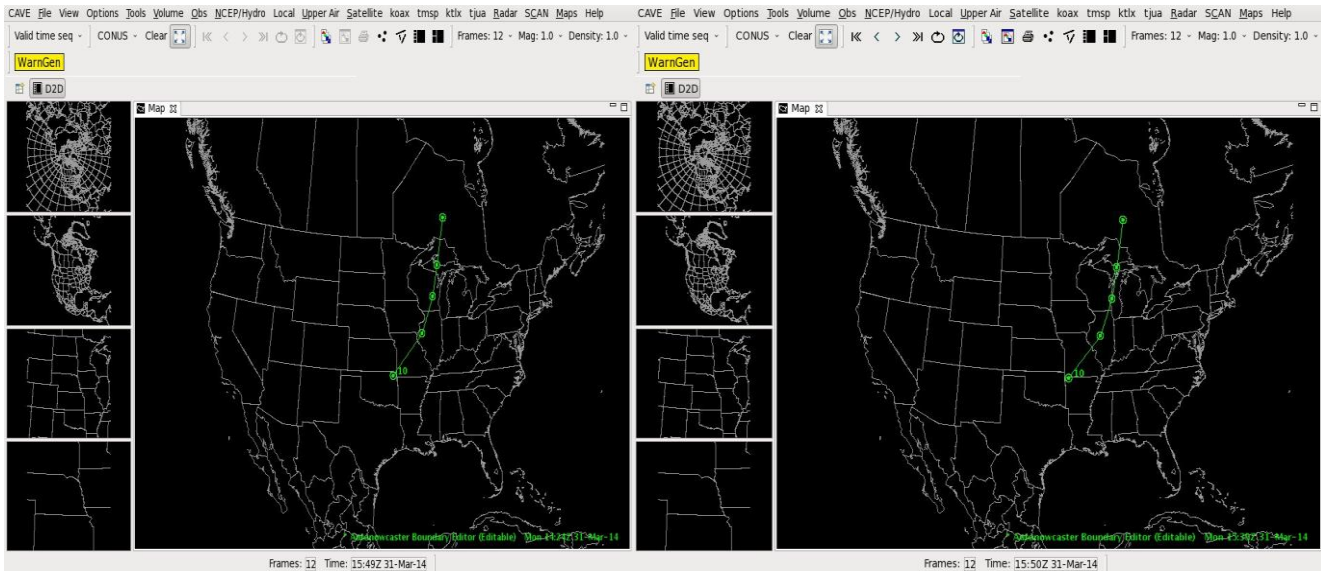

Figure 4: Moving boundary

3.5 Modify Boundary Position and Motion

Over time the boundaries are likely to get out of sync with the real boundaries.

For stationary boundary, click "Edit Boundary" button and select the boundary id you want to adjust, and reposition it to align with the real position as depicted in the underlying data.

For moving boundary, click "Edit Boundary" button to select the boundary id to be adjusted, then click "Modify Boundary Motion" button. A confirmation window will pop up, allowing you to select "Yes" which will make the boundary stationary. Now you can adjust the boundary shape and location accordingly in the current frame. Then click the arrow button of "Boundary Mode" and select "Moving", and choose another D2D frame, and drag the polyline to the desired position to align it with the meteorological

boundary as depicted in the underlining data; this will compute the new motion of that boundary. You can cancel the modification you just made before saving the data by clicking on "Cancel Modification" button. A confirmation window will pop up, allowing you to select "Yes"; which will restore the original boundary before your modification.

3.6 End Boundary

If a boundary is obsolete, select the boundary id that you want to end from the "Edit Boundary" drop-down list, and click the "Delete Boundary" button. A confirmation window will pop up, allowing you to select "Yes"; which will remove the boundary from the list of active boundaries, there is no need to click "Save Boundary data".

4.0 Appendix: Acronyms and Abbreviations

AWIPS	Advanced Weather Interactive Processing System
D2D	Display 2-Dimensional
GUI	Graphical User Interface
MDL	Meteorological Development Laboratory
NOAA	National Oceanic and Atmospheric Administration
NWS	National Weather Service
WFO	Weather Forecast Office

5.0 MDL Contact Information

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