



Isis 3 “qtie” Demo

June 27th, 2012

Tammy Becker / Tracie Sucharski



Interactive version of the program *deltack*

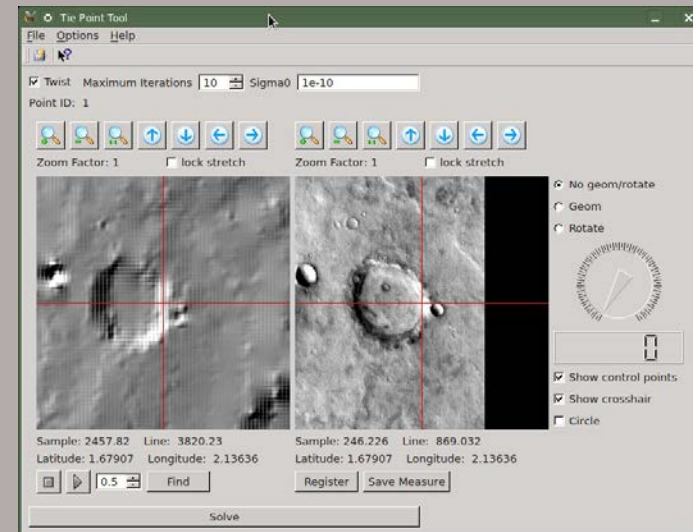
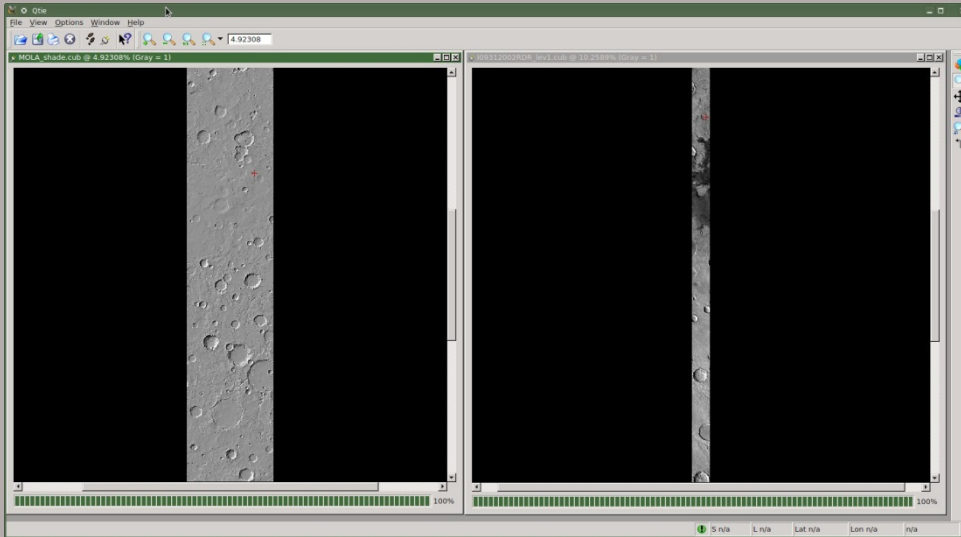
- *Qtie* can be used to correct problems with camera orientation only (not position) in a single Isis 3 cube.
- Uses a map projected Level 2 “Base” cube to determine latitude/longitude of control points.
- Like *jigsaw* and *deltack*, works on both framing cameras and line scanners.



ASTROGEOLOGY SCIENCE CENTER

Two core windows

Qtie main window similar to qview with many of the same tools

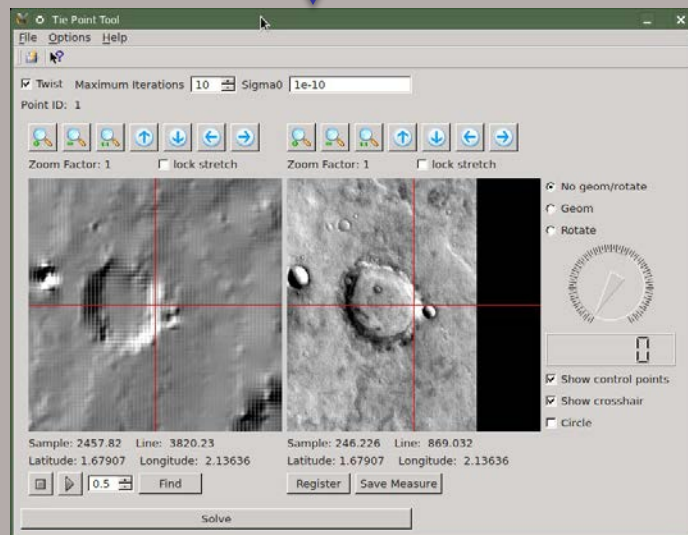
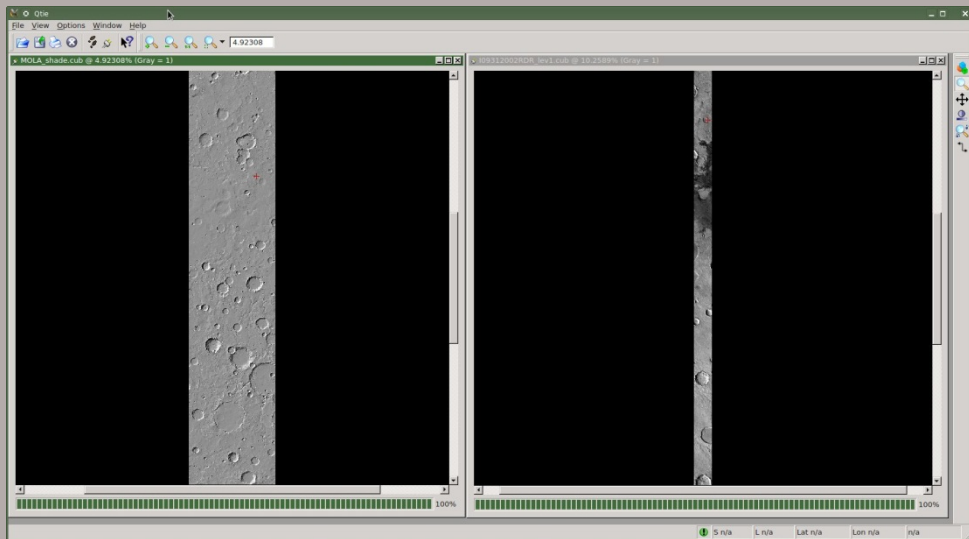




ASTROGEOLOGY SCIENCE CENTER

Two core windows

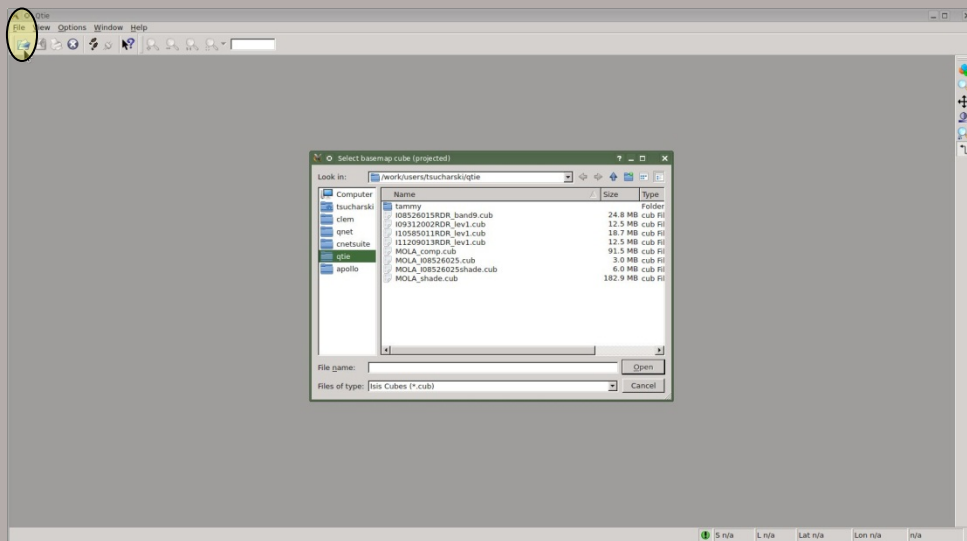
Qtie tool window – control point editing





Two core windows

Qtie main window similar to qview with many of the same tools



File Menu or Open Action on toolbar will prompt:

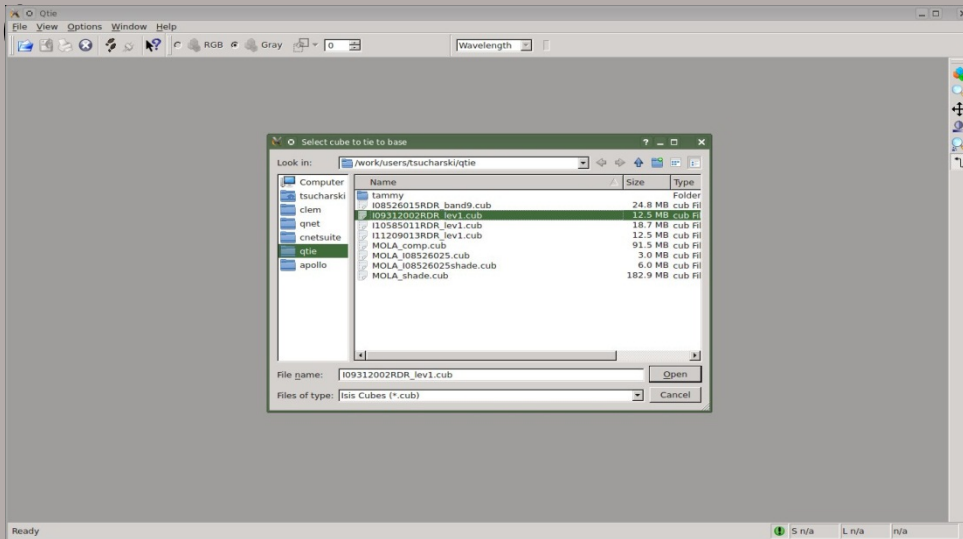
- Level2 “Base” cube which will determine latitude/longitude of control points



ASTROGEOLOGY SCIENCE CENTER

Two core windows

Qtie main window similar to qview with many of the same tools



File Menu or Open Action on toolbar will prompt:

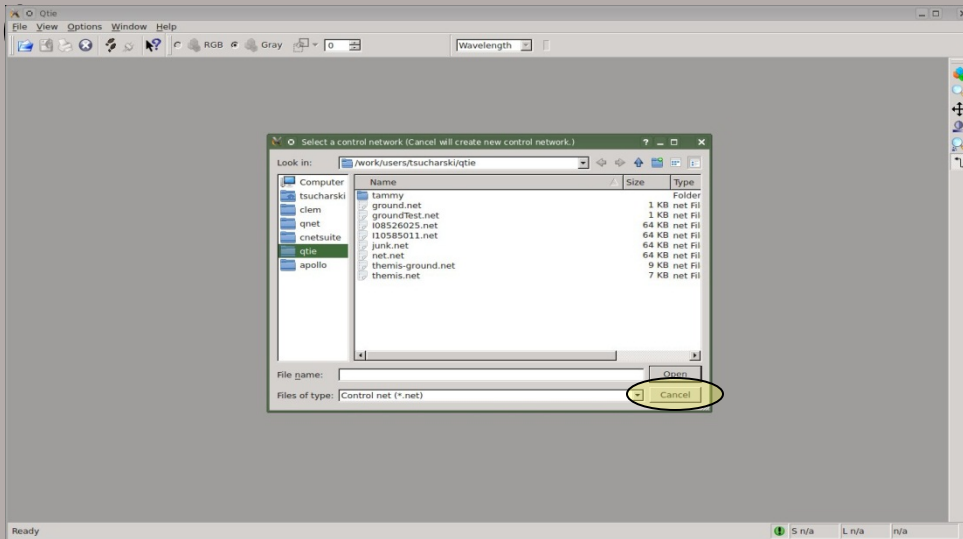
- Level 2 "Base" cube which will determine latitude/longitude of control points
- Level 1 un-projected "Match" cube which will have the camera angles updated



ASTROGEOLOGY SCIENCE CENTER

Two core windows

Qtie main window similar to qview with many of the same tools



File Menu or Open Action on toolbar will prompt:

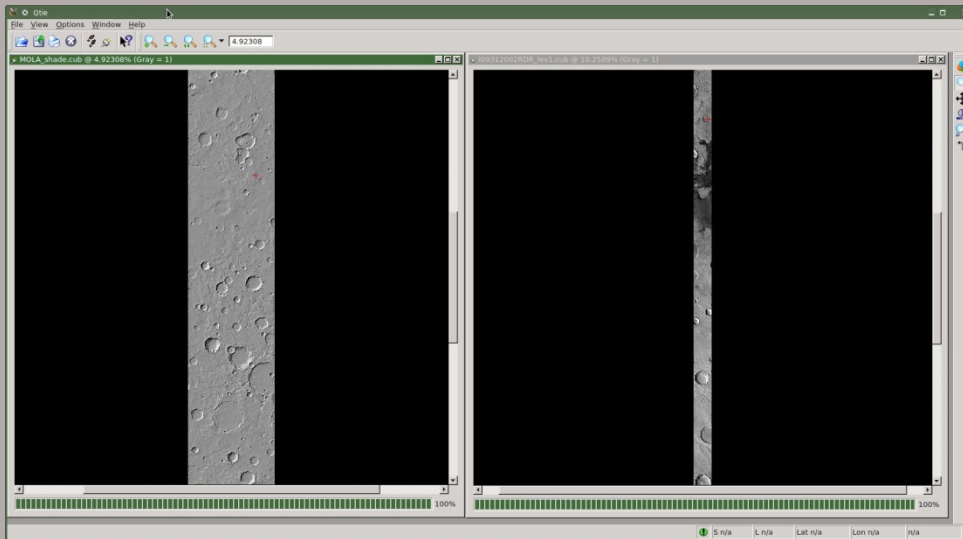
- Level 2 "Base" cube which will determine latitude/longitude of control points
- Level 1 un-projected "Match" cube which will have the camera angles updated
- Control network – Select "Cancel" if you want to create a new network



ASTROGEOLOGY SCIENCE CENTER

Two core windows

Qtie main window similar to qview with many of the same tools, ie. Zoom, stretch, pan



Mouse button functions (always on the “Match” cube):

- **Left:** Modify the closest control point
- **Middle:** Delete the closest control point
- **Right:** Create new control point

Control Points drawn on cubes with the following colors:

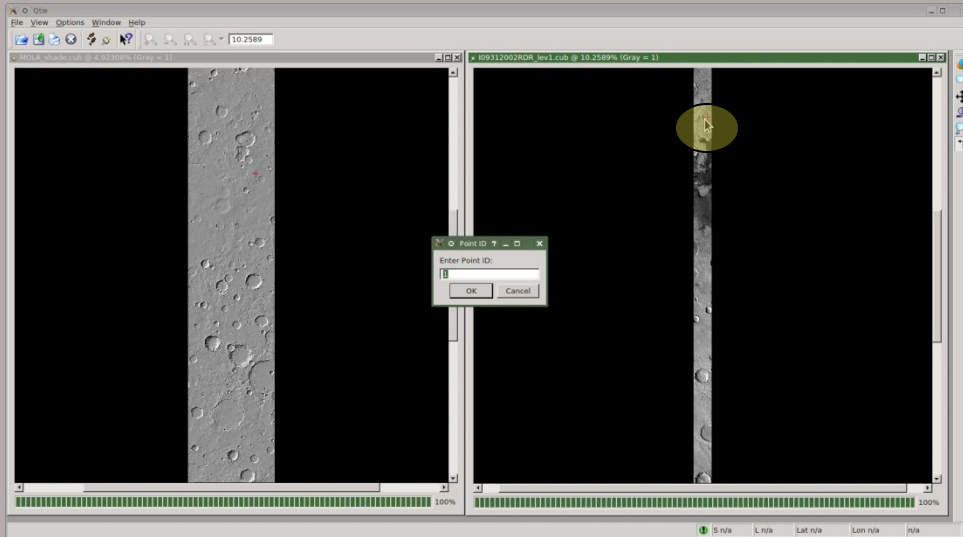
- Green “+” tie point
- Red “+” point currently being edited (i.e. in Qtie Tool window)



ASTROGEOLOGY SCIENCE CENTER

Two core windows

Qtie main window similar to qview with many of the same tools, ie. Zoom, stretch, pan



Create new control point with the right Mouse button on the “Match” cube.

Control Points drawn on cubes with the following colors:

- Green “+” tie point
- Red “+” point currently being edited (i.e. in Qtie Tool window)



Two core windows

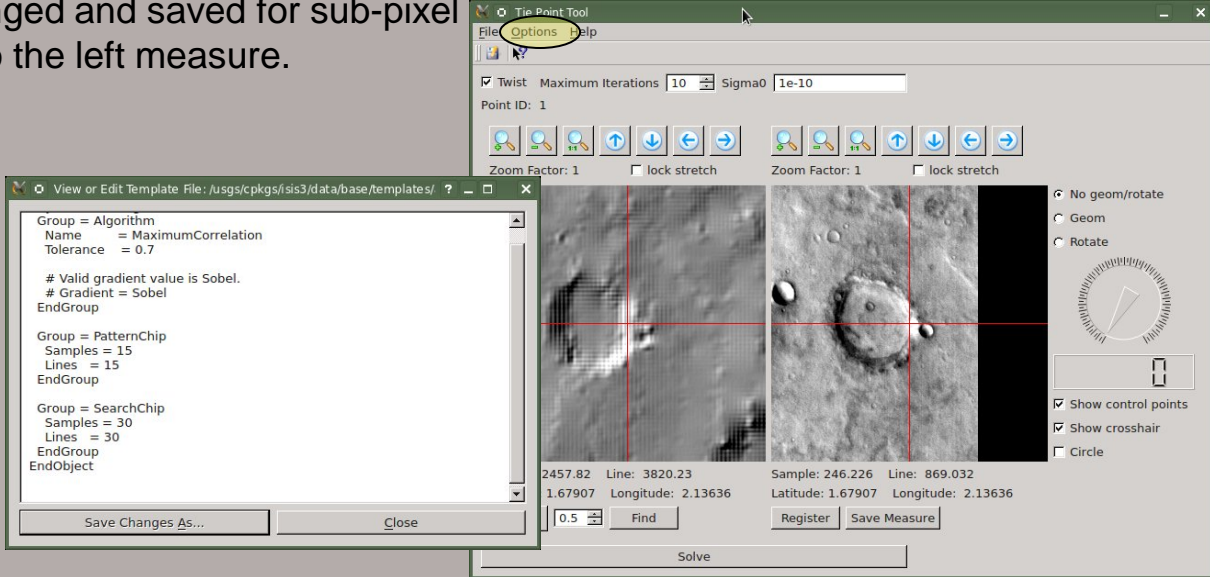
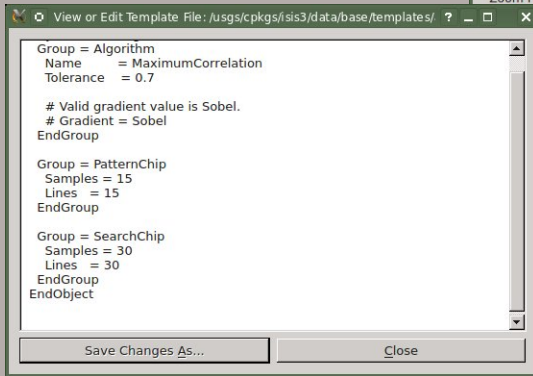
Qtie tool window – control point editing



Options Menu:

Registration Template:

- View and/or edit the registration template
- The registration template is shown in an editable window. These parameters can be changed and saved for sub-pixel registering the right measure to the left measure.

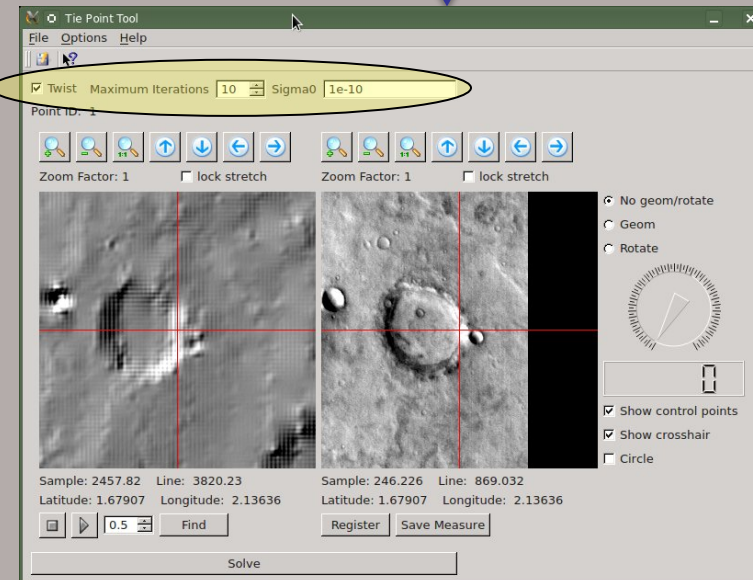


Two core windows

Qtie tool window – control point editing

Solution Parameters:

- Twist – Solve for 3 camera angles, need at least two control points.
- Maximum Iterations – Number of iterations in the least-squares bundle adjustment.
- Sigma0 – Standard deviation of unit weight. Tolerance for convergence. Convergence reached when solution parameters change by less than Sigma0.





ASTROGEOLOGY SCIENCE CENTER

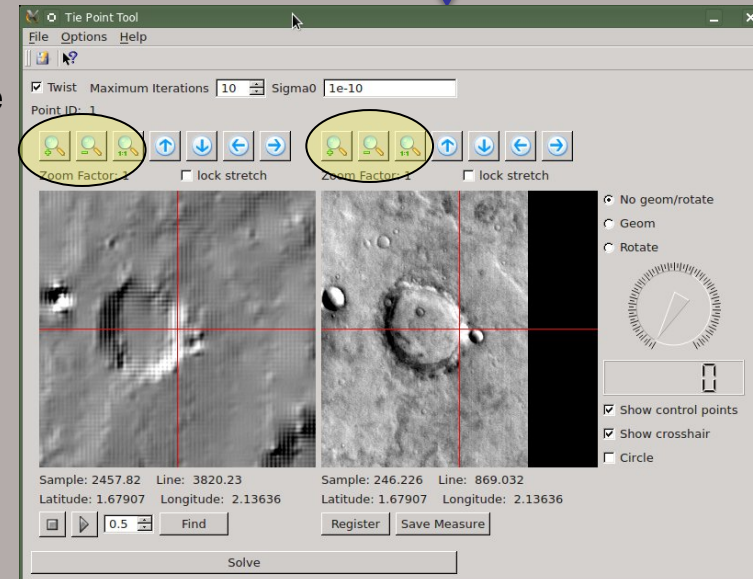
Three core windows

Qtie tool window – control point editing

Zooming Measure Views

The left and right measure views can be zoomed using the zoom buttons above each view.

Note: If the Geom button is selected, the right zoom buttons are inactive since the right measure will be scaled to match the left measure.





ASTROGEOLOGY SCIENCE CENTER

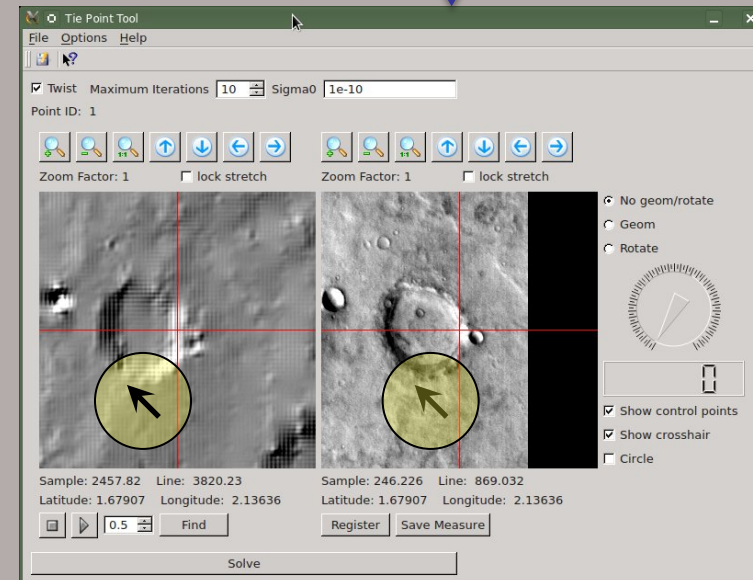
Two core windows

Qtie tool window – control point editing

Changing Measure Locations (left and right measure views)

The measure location can be adjusted by:

- Move cursor location under the crosshair by clicking left mouse button in either the left or right measure view.





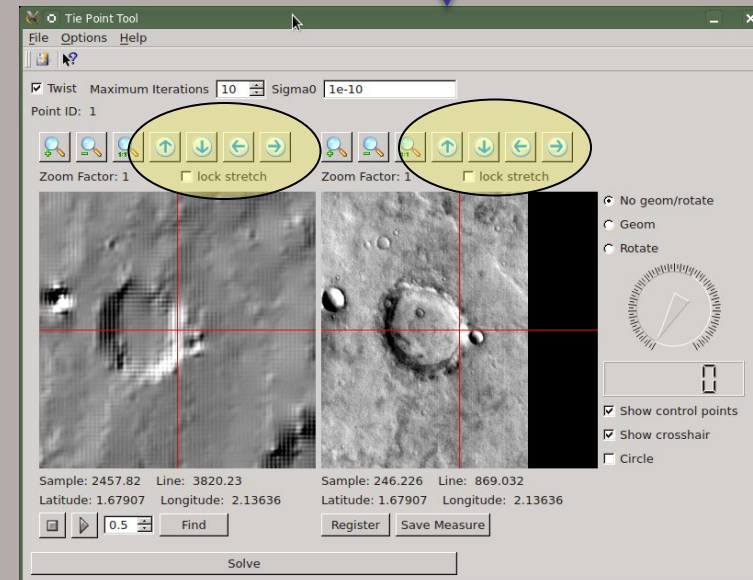
Two core windows

Qtie tool window – control point editing

Changing Measure Locations (left and right measure views)

The measure location can be adjusted by:

- Move cursor location under the crosshair by clicking left mouse button
- Move 1 screen pixel at a time by using arrow keys on the keyboard
- Move 1 screen pixel at a time by using arrow buttons above the right view





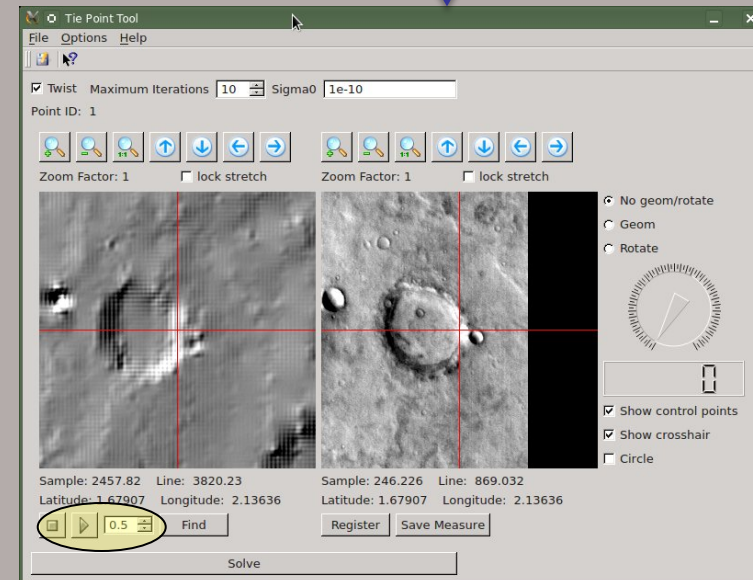
ASTROGEOLOGY SCIENCE CENTER

Two core windows

Qtie tool window – control point editing

Below the left view:

- **Blink controls:** Blink left and right view in left view window using the "Blink Start" button (with play icon) and "Blink Stop" button (with stop icon). Both arrow keys above the left and right view and the keyboard arrow keys may be used to move the left and right view while blinking.





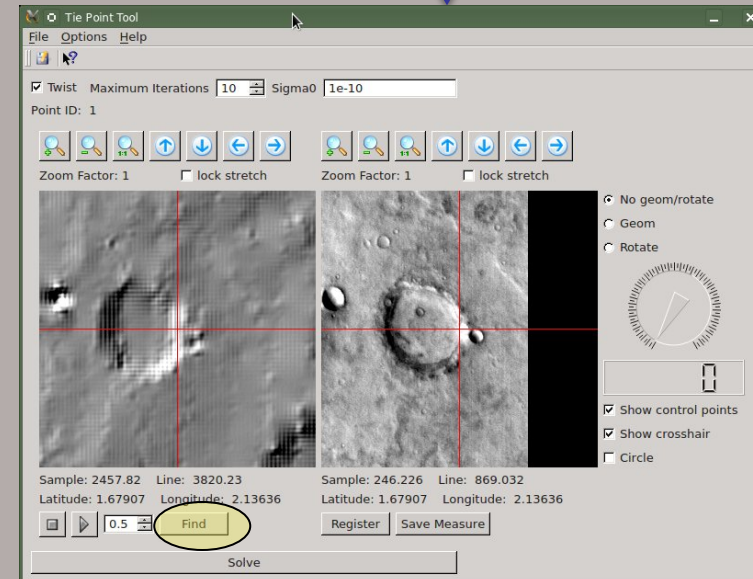
ASTROGEOLOGY SCIENCE CENTER

Two core windows

Qtie tool window – control point editing

Below the left view:

- **Blink controls:** Blink left and right view in left view window using the "Blink Start" button (with play icon) and "Blink Stop" button (with stop icon). Both arrow keys above the left and right view and the keyboard arrow keys may be used to move the left and right view while blinking.
- **Find:** Center right view so that the same latitude / longitude is under crosshair as the left view.





ASTROGEOLOGY SCIENCE CENTER

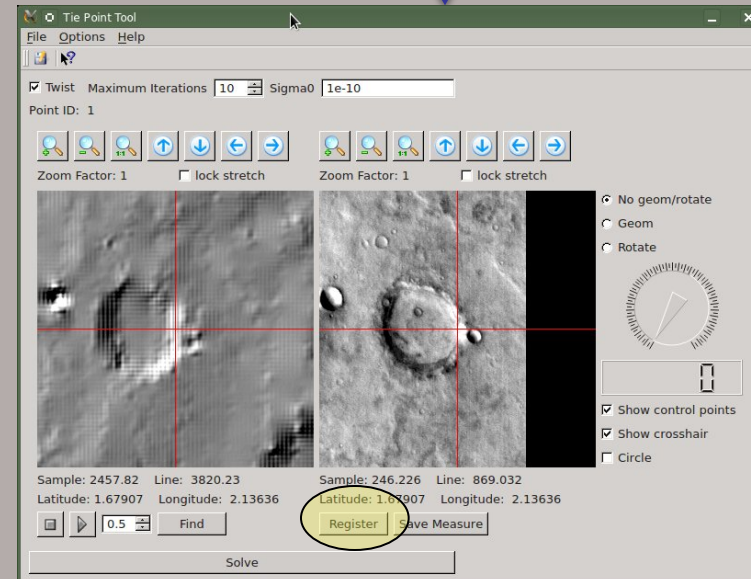
Two core windows

Qtie tool window – control point editing



Below the right view:

- **Register:** Sub-pixel register the the right view to the left view.





ASTROGEOLOGY SCIENCE CENTER

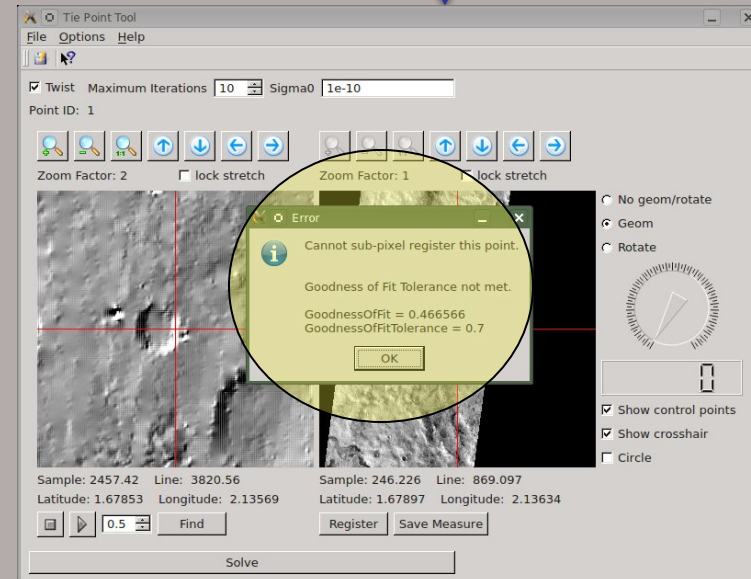
Two core windows

Qtie tool window – control point editing



Below the right view:

- **Register:** Sub-pixel register the the right view to the left view.
If sub-pixel registration is successful, statistics are displayed.
If sub-pixel registration is unsuccessful, the dialog at right will be shown.





ASTROGEOLOGY SCIENCE CENTER

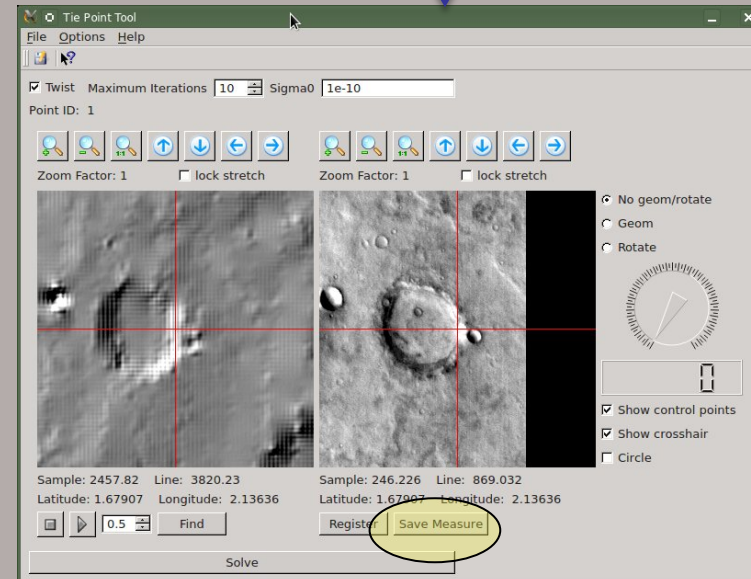
Two core windows

Qtie tool window – control point editing



Below the right view:

- **Register:** Sub-pixel register the the right view to the left view. If sub-pixel registration is successful, statistics are displayed.
If sub-pixel registration is unsuccessful, the dialog at right will be shown.
- **Save Measure:** Save the control measure under the right view to the edit control point.

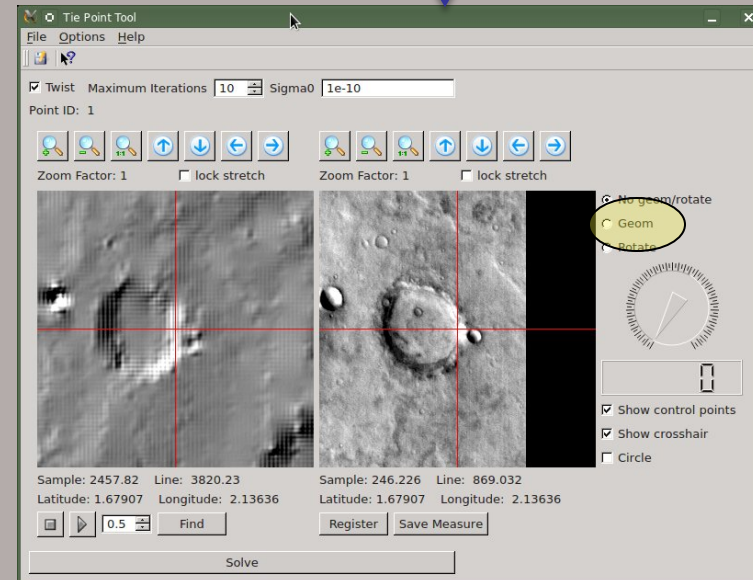




ASTROGEOLOGY SCIENCE CENTER

Two core windows

Qtie tool window – control point editing



Other Point Editor Functions

Along the right border of the window:

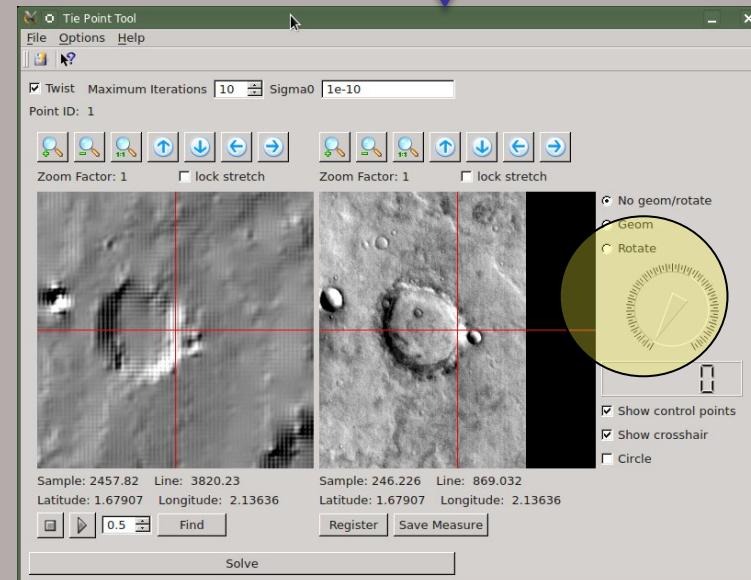
- **Geom:** Geometrically match right view to the left view



ASTROGEOLOGY SCIENCE CENTER

Two core windows

Qtie tool window – control point editing



Other Point Editor Functions

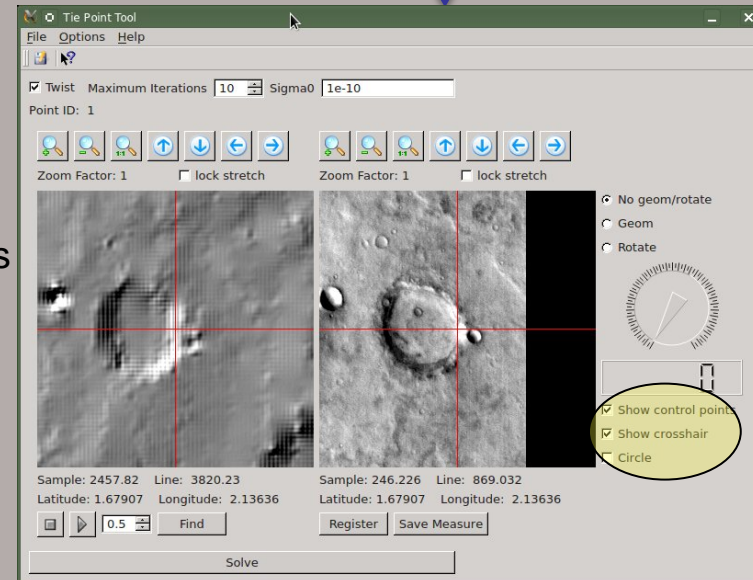
Along the right border of the window:

- **Geom:** Geometrically match right view to the left view
- **Rotate:** Rotate right view using either the dial or entering degrees



Two core windows

Qtie tool window – control point editing



Other Point Editor Functions

Along the right border of the window:

- **Geom:** Geometrically match right view to the left view
- **Rotate:** Rotate right view using either the dial or entering degrees
- **Show control points:** Draw crosshairs at all control point locations within the view
- **Show crosshair:** Show a red crosshair across the entire view
- **Circle:** Draw circle which may help center measure on a crater



Two core windows

Qtie tool window – control point editing

“Solve” will perform the bundle adjustment.

The dialog below will show output from the bundle Adjustment such as Maximum Error and Average Error. If you are satisfied with the solution, select “Update” to update the camera angles on the “Match” cube.

