

High Resolution Stereo Satellite Elevation Mapping Service Confirmed Proof of Accuracy Case History, WorldView-1 Stereo Photos, Chihuahua, Mexico

A one-metre square grid of elevations was produced by geophysical processing of July 21, 2009 WorldView-1 stereo satellite photos covering an area of 260 km².

The elevation accuracy is 19cm RMSE as determined by 1,115 conventionally established elevation check points.

October 2009.

Gerry Mitchell, P. Geo, Geophysicist, President PhotoSat Information Ltd;
Kevin MacNabb, Geophysicist, President MWH Geo-Surveys Inc.

A 1m square grid of elevation values, covering an area of 260 square kilometres, was produced over the Cinco de Mayo Project of MAG Silver (TSX : MAG), in Chihuahua Mexico. The elevation grid was constructed using geophysical processing of 50cm ground resolution stereo satellite photos taken by the WorldView-1 satellite on July 21, 2009. The stereo satellite elevations were referenced to the same benchmark as 1,115 previously established, accurately surveyed, gravity survey stations.

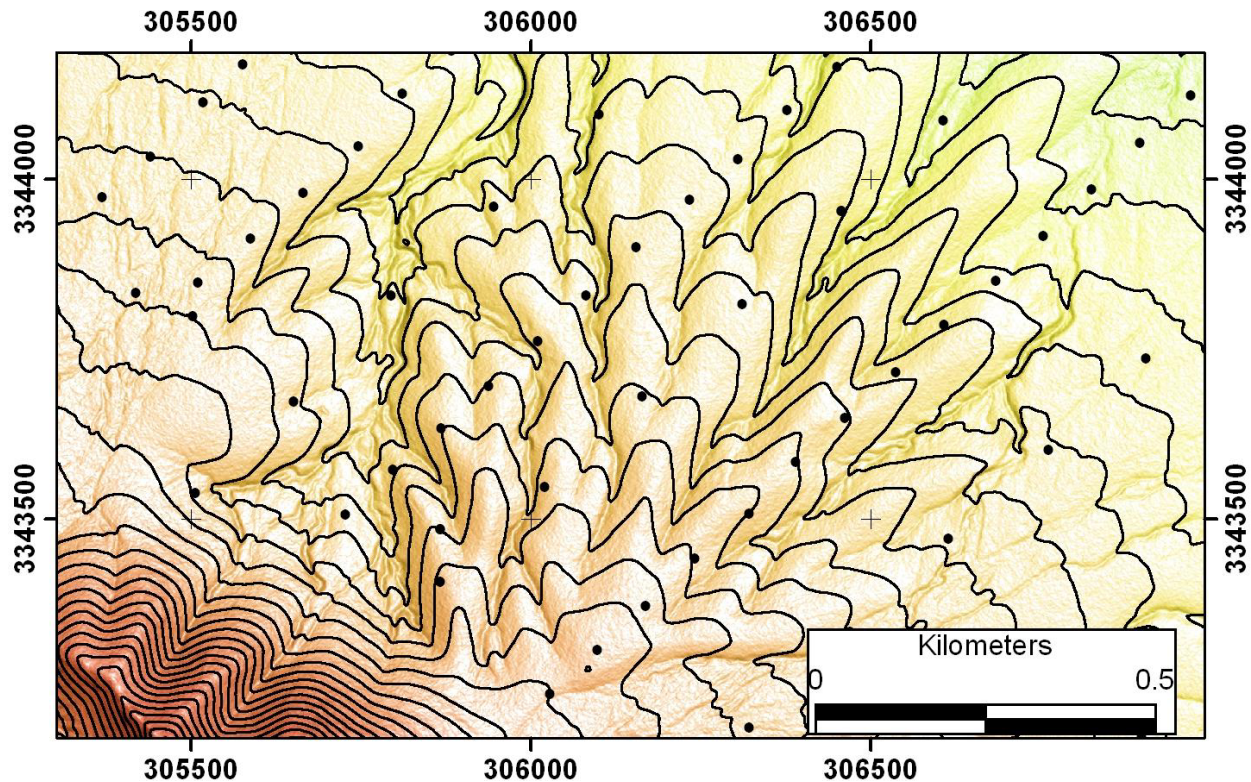


Figure 1. Stereo satellite elevation map with 5m contours showing a portion of the 1,115 check points used to determine the elevation mapping accuracy of 19cm Root Mean Square Error (RMSE) for the July 21, 2009 WorldView-1 stereo photos on the MAG Silver Chihuahua Project. For more information about the Mag Silver Cinco de Mayo, Chihuahua Project, please consult the MAG Silver website: www.magsilver.com/s/CincodeMayo.asp.

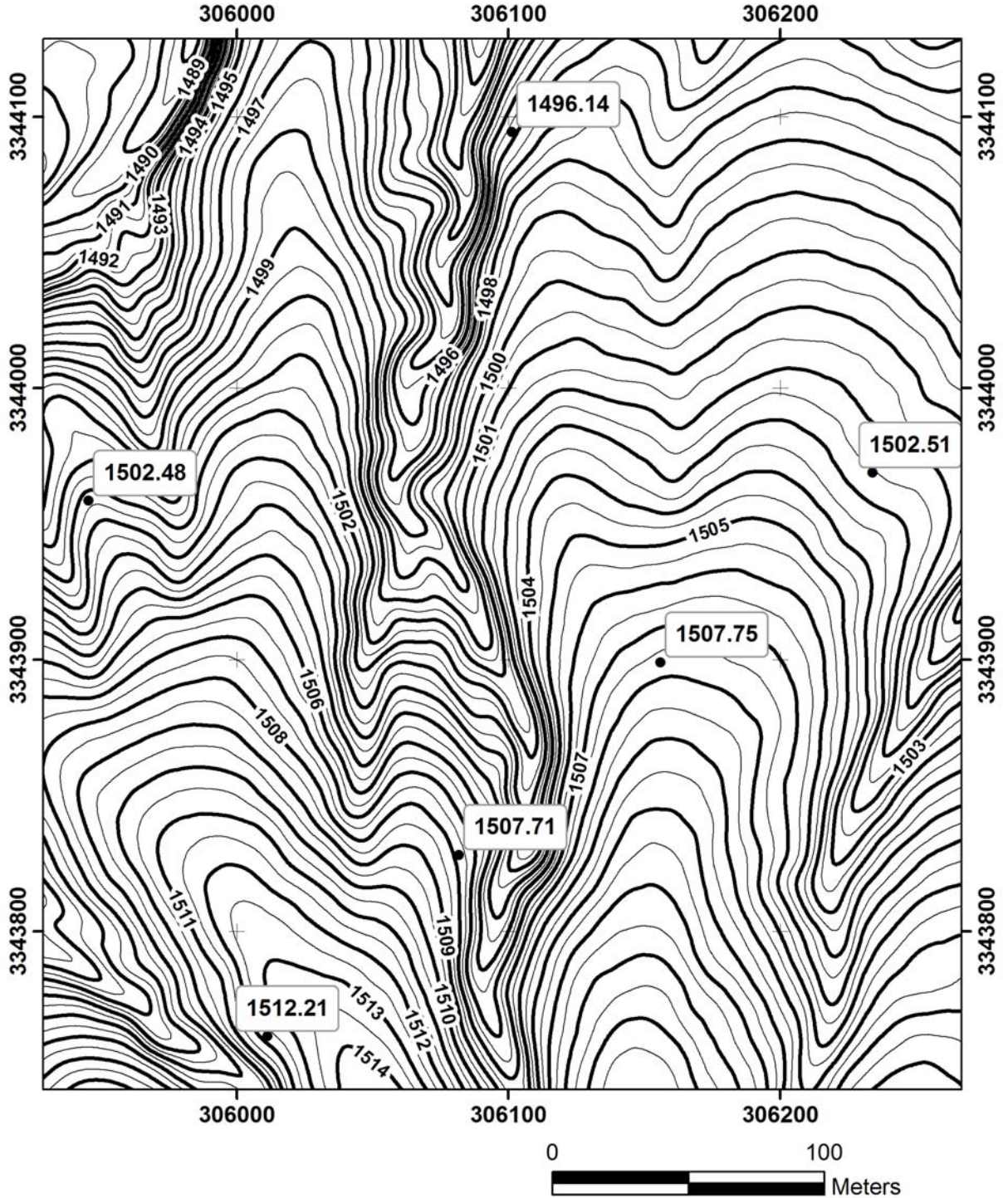


Figure 2. 50cm contours from the stereo WorldView-1 elevation mapping showing the elevations of some of the 1,115 elevation check points used to determine the stereo satellite elevation mapping accuracy of 19cm RMSE.

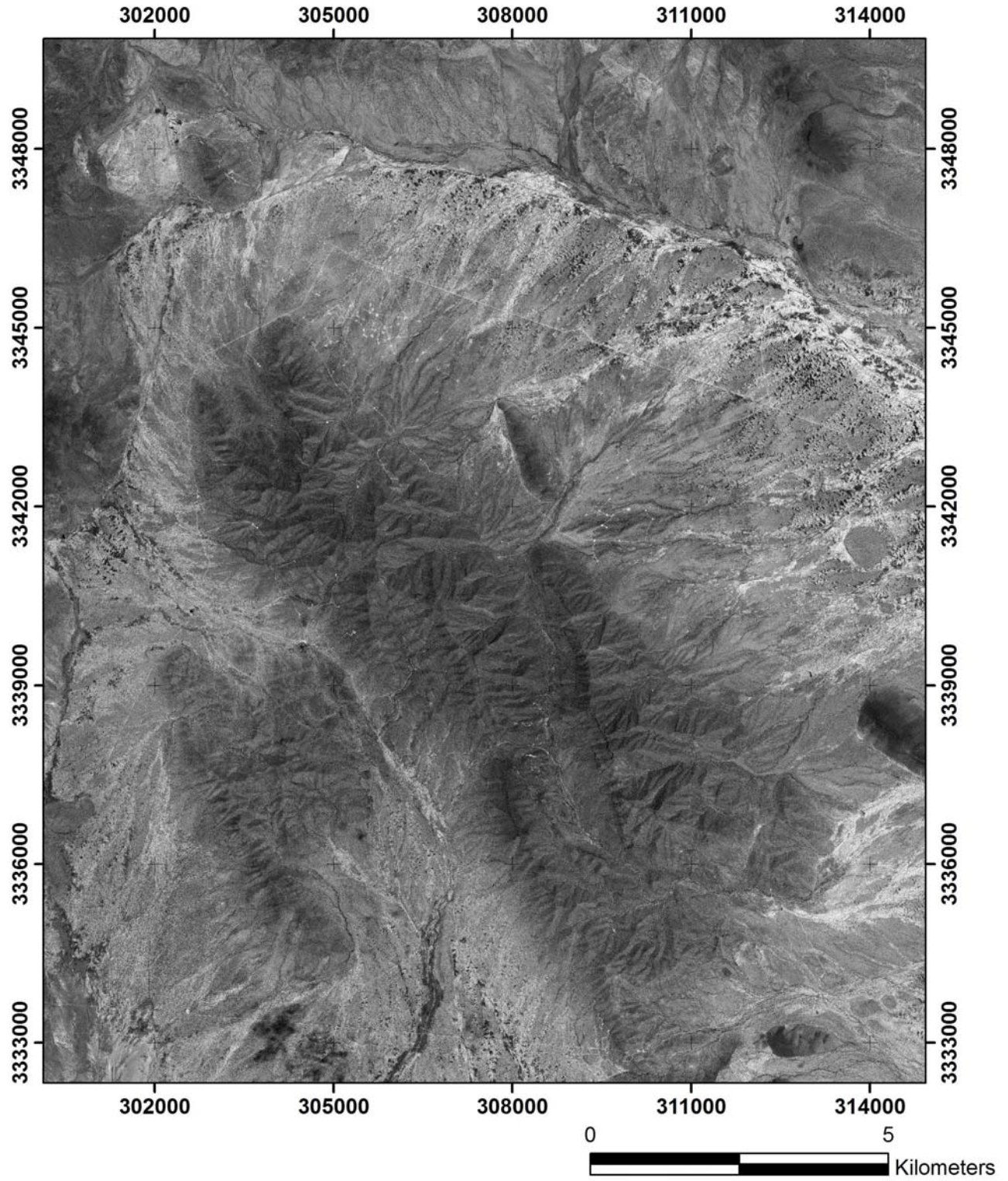


Figure 3. 50cm ground resolution, WorldView-1 stereo satellite photo, Chihuahua, Mexico, taken July 21, 2009.

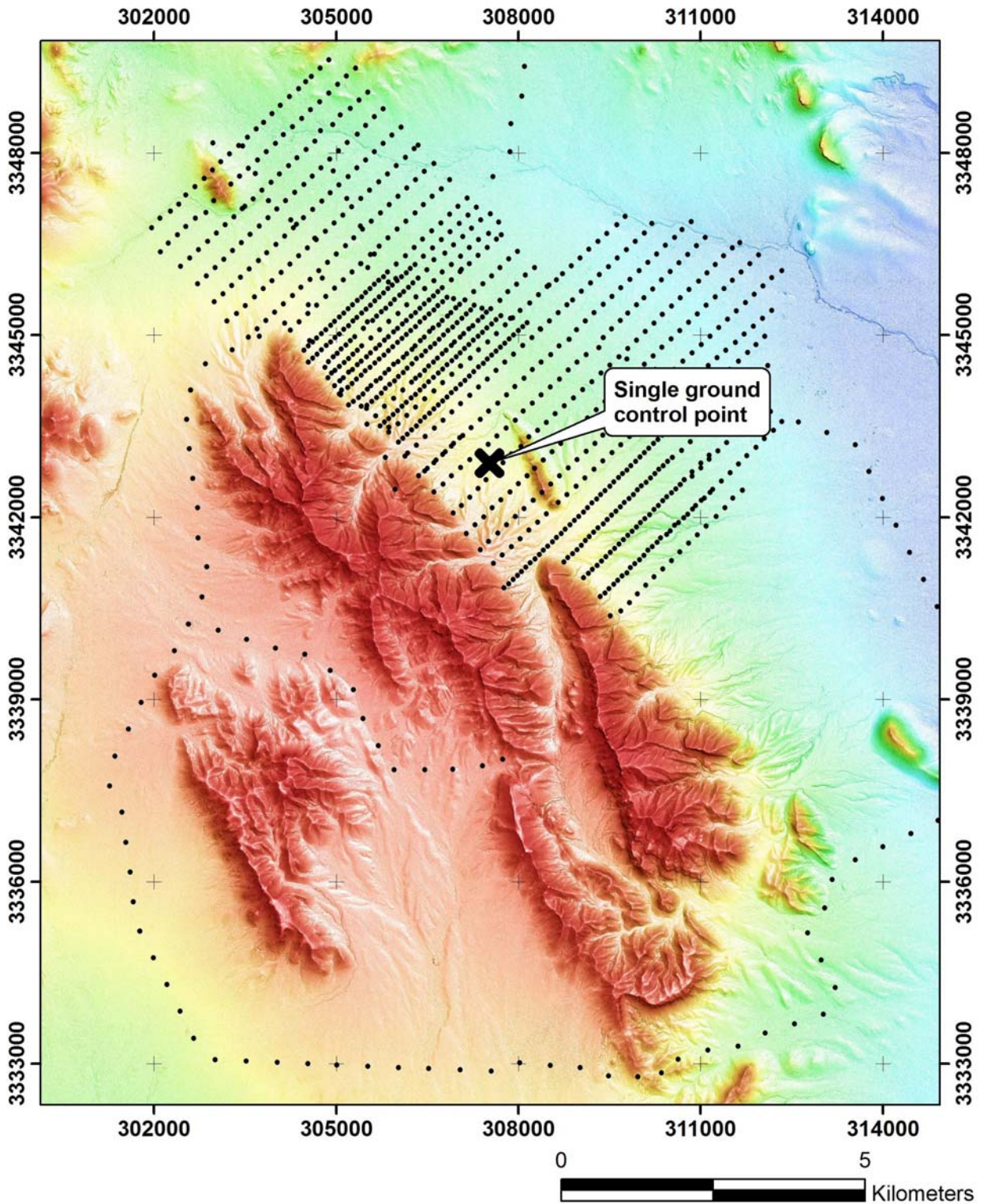


Figure 4. Stereo WorldView-1 elevation image created from the 1m posted DEM, Chihuahua, Mexico. The figure shows the location of the single ground control point used to reference the stereo WorldView elevations and the 1,115 elevation check points used for the accuracy measure of 19cm RMSE. The elevation check points have an elevation range of 275m. The image colour range is 1,350m in blue to 1,900m in red.



Figure 5. The entire 260 square kilometre Chihuahua, Mexico, July 21, 2009, WorldView-1 stereo satellite elevation mapping was referenced to the single ground control point shown in this photo. This ground control point was also used as one of the gravity survey control points. The photo shows a gravity field measurement being made at the control point. The 19cm RMSE accuracy of the July 21, 2009 WorldView-1 stereo satellite elevation mapping was determined using 1,115 independent elevation check points shown in figure 5. All of the GPS positions were surveyed in Real Time Kinematic (RTK) mode with accuracies of 2cm or better. The GPS instruments were a Magellan RTK base with a ProMark™ 500 GPS rover.

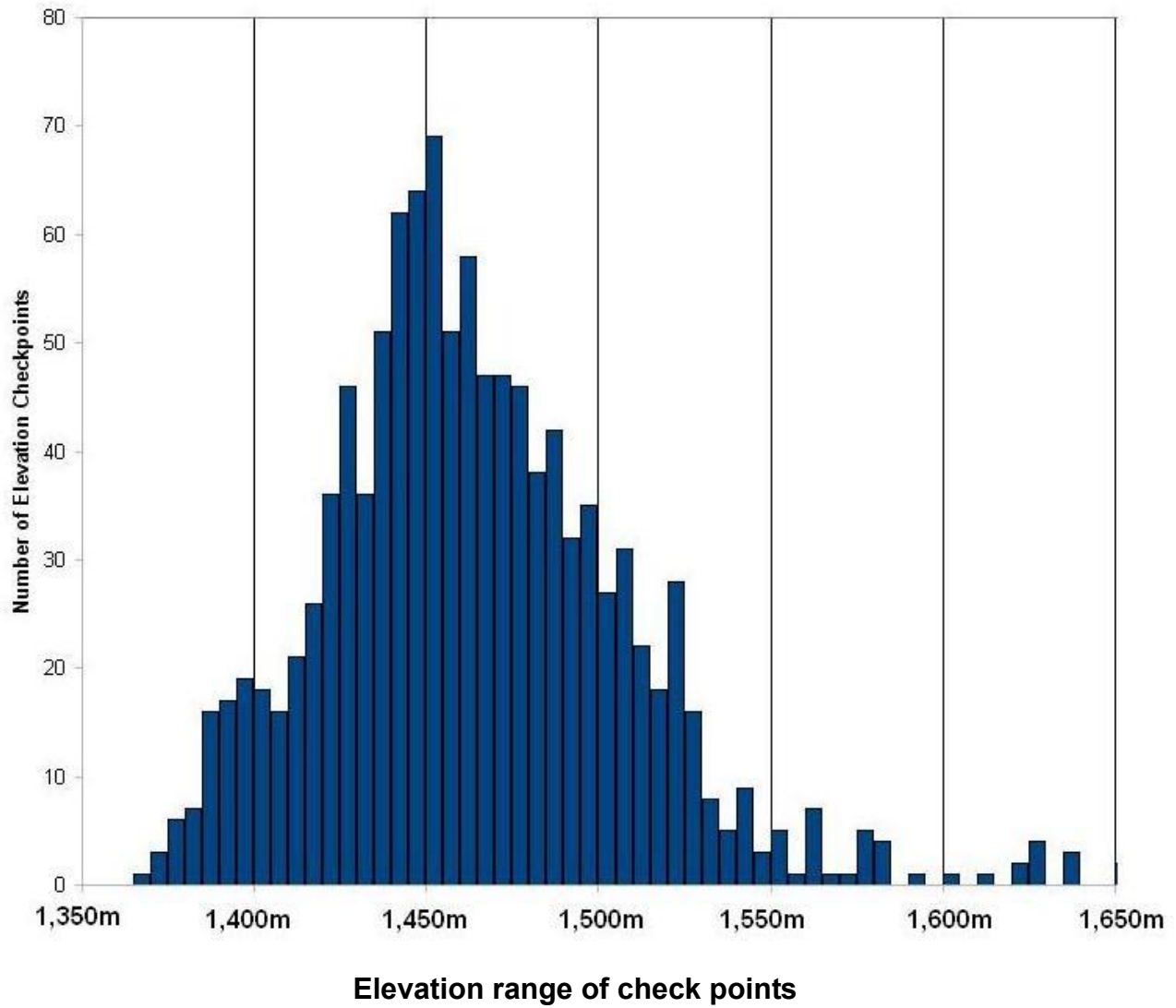


Figure 6. Histogram of the elevations of the 1,115 elevation check points showing an elevation range of 275m, from 1,365m to 1,640m.

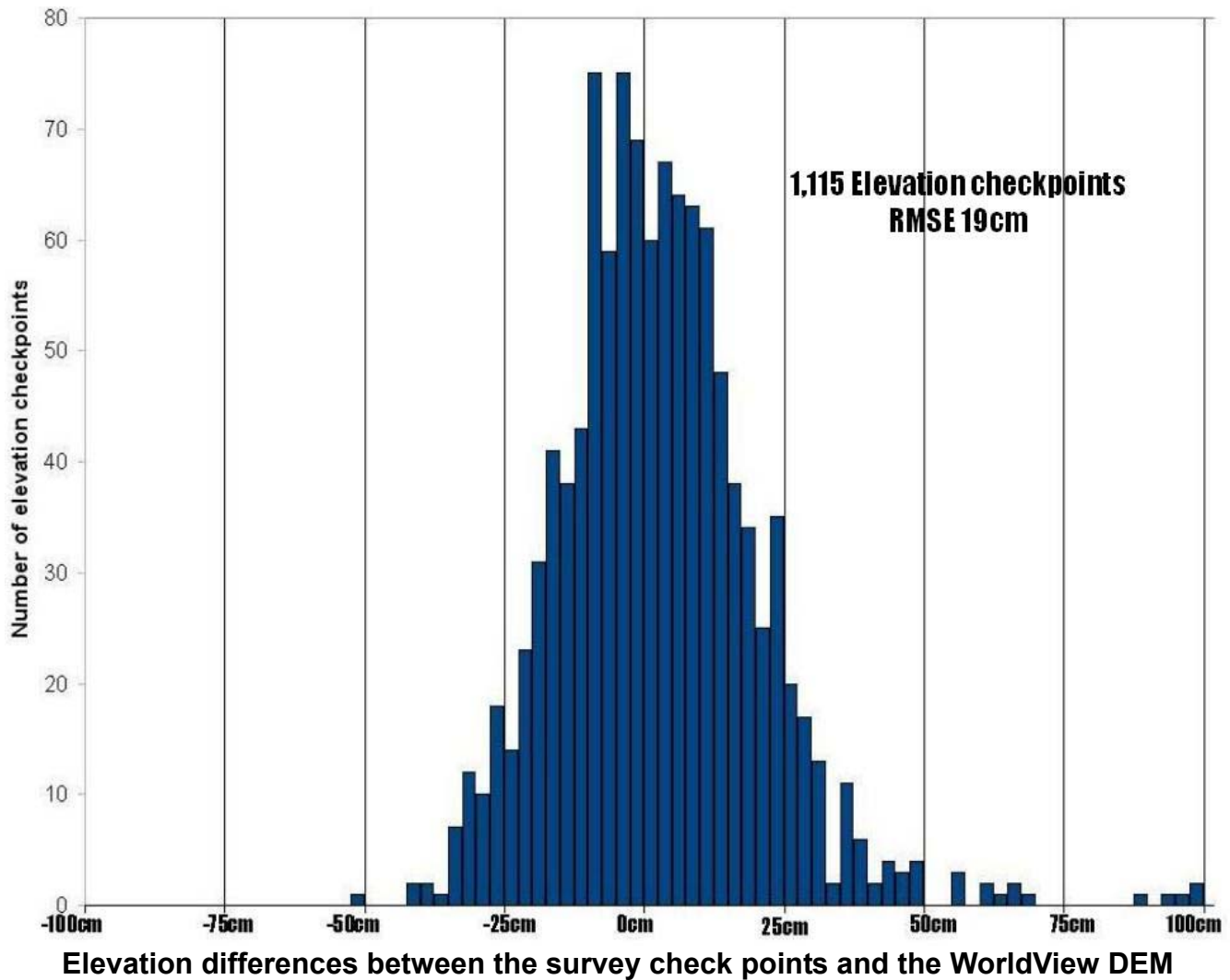


Figure 7. Histogram of the elevation differences between the WorldView-1 stereo satellite elevations for the 15km by 15km area and the 1,115 elevation check points. The Root Mean Square Error (RMSE) is 19cm.

Cautionary Statement:

This is an accuracy assessment for elevation mapping from a specific stereo pair of WorldView-1 satellite photos. These results will not apply to all stereo pairs of WorldView-1 photos.

For gravity surveying and ground control points, contact:



**Tel: (250) 542-9897
(775) 722-0616**

For stereo satellite elevation mapping, contact:



Tel: (604) 681-9770