

# Hillshade Image of Wisconsin

Metadata also available as

## Metadata:

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  - [Data Quality Information](#)
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  - [Spatial Reference Information](#)
  - [Entity and Attribute Information](#)
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### *Identification\_Information:*

#### *Citation:*

##### *Citation\_Information:*

*Originator:* Wisconsin Department of Natural Resources

*Publication\_Date:* 2001

*Title:* Hillshade Image of Wisconsin

*Geospatial\_Data\_Presentation\_Form:* raster digital data

##### *Publication\_Information:*

*Publication\_Place:* Madison, Wisconsin

*Publisher:* Wisconsin Department of Natural Resources (DNR)

##### *Other\_Citation\_Details:*

The majority of the 1-Degree DEMs were originally produced by the US Defense Mapping Agency. Refer to the USGS for details: <<http://mac.usgs.gov/mac/isb/pubs/factsheets/fs04000.html#dem>>

*Online\_Linkage:* <<http://www.dnr.state.wi.us/maps/gis/geolibrary.html>>

### *Description:*

#### *Abstract:*

This TIF-format Hillshade image is a raster representation of land elevation of Wisconsin. This Hillshade ("hlximag30.tif") is derived from the 7.5-minute (30-meter) DEMs published by the US Geological Survey (USGS).

#### *Purpose:*

This image is intended for on-screen cartographic display to convey an impression of the land surface elevation of Wisconsin. Land elevation has been exaggerated by

a factor of 8 to enhance the vertical dimension of the landscape. The image is intended for use with ArcView, ArcInfo, or other GIS software. The data is not intended for use in analysis.

*Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* December 2001

*Time\_of\_Day:* unknown

*Currentness\_Reference:* publication date

*Status:*

*Progress:* Complete

*Maintenance\_and\_Update\_Frequency:* None planned

*Spatial\_Domain:*

*Bounding\_Coordinates:*

*West\_Bounding\_Coordinate:* -93.032408

*East\_Bounding\_Coordinate:* -86.597317

*North\_Bounding\_Coordinate:* 47.128089

*South\_Bounding\_Coordinate:* 42.410216

*Keywords:*

*Theme:*

*Theme\_Keyword\_Thesaurus:* none

*Theme\_Keyword:* elevation

*Theme\_Keyword:* hypsography

*Theme\_Keyword:* DEM

*Theme\_Keyword:* digital

*Theme\_Keyword:* model

*Theme\_Keyword:* environment

*Theme\_Keyword:* hillshade

*Theme\_Keyword:* shaded

*Theme\_Keyword:* relief

*Place:*

*Place\_Keyword\_Thesaurus:* none

*Place\_Keyword:* Wisconsin

*Access\_Constraints:* None

*Use\_Constraints:* None

*Point\_of\_Contact:*

*Contact\_Information:*

*Contact\_Organization\_Primary:*

*Contact\_Organization:* Wisconsin DNR, Enterprise Data Management  
Section

*Contact\_Position:* GIS Data Specialist

*Contact\_Address:*

*Address\_Type:* mailing and physical address

*Address:*

Mailcode: ET/8 101 South Webster Street P.O. Box 7921

*City:* Madison

*State\_or\_Province:* WI

*Postal\_Code:* 53707-7921

*Country:* USA

*Contact\_Voice\_Telephone:* (608) 264-8916

*Contact\_Facsimile\_Telephone:* (608) 266-0870

*Contact\_Electronic\_Mail\_Address:* John.Laedlein@dnr.state.wi.us

*Hours\_of\_Service:* Normal business hours or as available

*Native\_Data\_Set\_Environment:*

Microsoft Windows 2000 Version 5.1 (Build 2600) Service Pack 1; ESRI ArcCatalog 8.3.0.800

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*Data\_Quality\_Information:*

*Logical\_Consistency\_Report:*

The data exists within a consistent data structure consistent with ArcInfo GRID requirements.

*Completeness\_Report:*

The Hillshade is visually inspected for completeness for the purpose of performing a final quality control and identifying any edits which may be needed.

*Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy\_Report:*

The DNR has not performed an independent evaluation of the accuracy of the data.

Digital elevation models meet horizontal National Map Accuracy Standards (NMAS) accuracy requirements. Additional information on DEM specifications can be found in the USGS National Mapping Program's Standards for Digital Elevation Model (DEMs): <<http://mapping.usgs.gov/standards>>, and in the USGS publication titled 'Digital Elevation Models - Data Users Guide 5.': <<ftp://mapping.usgs.gov/pub/ti/DEM/demguide>>.

*Vertical\_Positional\_Accuracy:*

*Vertical\_Positional\_Accuracy\_Report:*

The DNR has not performed an independent evaluation of the accuracy of the data.

As stated in the USGS DEM Data User's Guide, 'The method of determining 7.5-minute DEM accuracy involves computation of the root-

mean-square error (RMSE) for linearly interpolated elevations in the DEM and corresponding "true" elevations from the published maps. Test points are well distributed, are representative of the terrain, and have "true" elevations well within the DEM accuracy criteria.'

DEMGW930 is a 'composite' 30-meter DEM including Level 2 coverage where it exists and Level 1 elsewhere.

According to the USGS DEM Data User's Guide, "Level 1 DEM's are elevation data sets in a standardized format. The intent is to reserve this level for 7.5-minute DEM's or equivalent that are derived from scanning National High-Altitude Photography Program, National Aerial Photography Program, or equivalent photography. A vertical RMSE of 7 m is the desired accuracy standard. A RMSE of 15 m is the maximum permitted."

"Level 2 DEMs are elevation data sets that have been processed or smoothed for consistency and edited to remove identifiable systematic errors. DEM data derived from hypsographic and hydrographic data digitizing, either photogrammetrically or from existing maps, are entered into the level 2 category after review on a DEM Editing System. An RMSE of one-half contour interval is the maximum permitted. There are no errors greater than one contour interval in magnitude. The DEM record C contains the accuracy statistics acquired during quality control." For more information on the filtering process for 7.5-minute DEMs see: <<http://edcnts12.cr.usgs.gov/ned/filter/index.html>>

These figures do not include any additional error that may have been introduced in the course of data format conversions and re-projection.

Additional information on DEM specifications can be found in the USGS National Mapping Program's Standards for Digital Elevation Model (DEMs): <<http://www-nmd.usgs.gov/www/html/2nmpgds.html>>, and in the USGS publication titled 'Digital Elevation Models - Data Users Guide 5': <<ftp://mapping.usgs.gov/pub/ti/DEM/demguide>>.

*Lineage:*

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* United States Geological Survey

*Publication\_Date:* Unknown

*Title:*

7.5-minute Digital Elevation Model (30- x 30-m data spacing,

cast on Universal Transverse Mercator (UTM) projection)

*Edition:* None indicated

*Geospatial\_Data\_Presentation\_Form:* Model

*Publication\_Information:*

*Publication\_Place:* Reston, VA

*Publisher:* United States Geological Survey

*Other\_Citation\_Details:*

According to the USGS DEM reference document, "the 7.5-minute DEM data are produced in 7.5- x 7.5-minute blocks either from map contour overlays that have been digitized, or from automated or manual scanning of National Aerial Photography Program (NAPP) quarter quad-centered photographs or from the National High-Altitude Photography Program (NHAP) quad- centered photographs. The NHAP program was formally discontinued in 1988, however limited production using this scale source is permitted. The data are processed to produce a DEM having a 30-m sampling interval."

Additional information on DEM specifications can be found in the USGS National Mapping Program's Standards for Digital Elevation Model (DEMs): <<http://mapping.usgs.gov/standards>>, and in them USGS publication titled 'Digital Elevation Models - Data Users Guide 5.': <<ftp://mapping.usgs.gov/pub/ti/DEM/demguide>>.

*Source\_Scale\_Denominator:* 24000

*Type\_of\_Source\_Media:* Cartographic and photographic sources

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* unknown

*Source\_Currentness\_Reference:* None

*Source\_Citation\_Abbreviation:* USGS

*Source\_Contribution:* Includes land surface elevation information.

*Process\_Step:*

*Process\_Description:*

Staff in the DNR GIS Services Section created a Hillshade Grid from the DNR's composite 30-meter DEM using the HILLSHADE command in ArcInfo. An exaggeration factor, or Z factor, of 8 was used.

The Grid was converted to a Hillshade Image using the GRIDIMAGE command in ArcInfo.

*Process\_Date:* December 2001

*Process\_Time:* Unknown

*Process\_Contact:*

*Contact\_Information:*

*Contact\_Organization\_Primary:*

*Contact\_Organization:* Wisconsin Department of Natural Resources

*Contact\_Position:* GIS Data Specialist

*Contact\_Voice\_Telephone:* 608/264-8916

*Contact\_Facsimile\_Telephone:* 608/266-0870

*Contact\_Electronic\_Mail\_Address:* John.Laedlein@dnr.state.wi.us

*Hours\_of\_Service:* normal business hours or as available

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*Spatial\_Data\_Organization\_Information:*

*Indirect\_Spatial\_Reference:* None

*Direct\_Spatial\_Reference\_Method:* Raster

*Raster\_Object\_Information:*

*Raster\_Object\_Type:* Pixel

*Row\_Count:* 17310

*Column\_Count:* 16282

*Vertical\_Count:* 1

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*Spatial\_Reference\_Information:*

*Horizontal\_Coordinate\_System\_Definition:*

*Planar:*

*Map\_Projection:*

*Map\_Projection\_Name:* Transverse Mercator

*Transverse\_Mercator:*

*Scale\_Factor\_at\_Central\_Meridian:* 0.999600

*Longitude\_of\_Central\_Meridian:* -90.000000

*Latitude\_of\_Projection\_Origin:* 0.000000

*False\_Easting:* 520000.000000

*False\_Northing:* -4480000.000000

*Planar\_Coordinate\_Information:*

*Planar\_Coordinate\_Encoding\_Method:* row and column

*Coordinate\_Representation:*

*Abcissa\_Resolution:* 30.000000

*Ordinate\_Resolution:* 30.000000

*Planar\_Distance\_Units:* meters

*Geodetic\_Model:*

*Horizontal\_Datum\_Name:* D\_North\_American\_1983\_HARN

*Ellipsoid\_Name:* Geodetic Reference System 80

*Semi-major\_Axis:* 6378137.000000

*Denominator\_of\_Flattening\_Ratio:* 298.257222

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*Entity\_and\_Attribute\_Information:*

*Detailed\_Description:*

*Entity\_Type:*

*Entity\_Type\_Label:* Band\_1

*Attribute:*

*Attribute\_Label:* ObjectID

*Attribute\_Definition:* Internal feature number.

*Attribute\_Definition\_Source:* ESRI

*Attribute\_Domain\_Values:*

*Unrepresentable\_Domain:*

Sequential unique whole numbers that are automatically generated.

*Attribute:*

*Attribute\_Label:* Value

*Attribute:*

*Attribute\_Label:* Red

*Attribute:*

*Attribute\_Label:* Green

*Attribute:*

*Attribute\_Label:* Blue

*Overview\_Description:*

*Entity\_and\_Attribute\_Overview:*

No entities are represented; elevation is the only attribute information included in the DEM. Elevations are expressed in meters relative to the National Geodetic Vertical Datum of 1929 (NGVD29).

*Entity\_and\_Attribute\_Detail\_Citation:*

For more information, refer to the USGS 'Digital Elevation Model Data' User's Guide: <[http://edcwww.cr.usgs.gov/glis/hyper/guide/usgs\\_dem](http://edcwww.cr.usgs.gov/glis/hyper/guide/usgs_dem)>

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*Distribution\_Information:*

*Distributor:*

*Contact\_Information:*

*Contact\_Organization\_Primary:*

*Contact\_Organization:* Wisconsin DNR, Enterprise Data Management  
Section

*Contact\_Position:* GIS Data Specialist

*Contact\_Address:*

*Address\_Type:* mailing address

*Address:*

Mailcode: ET/8 101 South Webster Street P.O. Box 7921

*City:* Madison

*State\_or\_Province:* Wisconsin (WI)

*Postal\_Code:* 53707-7921

*Country:* United States of America (USA)

*Contact\_Voice\_Telephone:* (608) 264-8916

*Contact\_Facsimile\_Telephone:* (608) 266-0870

*Contact\_Electronic\_Mail\_Address:* John.Laedlein@dnr.state.wi.us

*Resource\_Description:* Downloadable Data

*Distribution\_Liability:*

Refer to <<http://www.dnr.state.wi.us/org/legal/WebSiteLegalInformation.html>>

*Standard\_Order\_Process:*

*Digital\_Form:*

*Digital\_Transfer\_Information:*

*Format\_Name:* ARC/INFO Grid format

*Format\_Version\_Number:* ARC7

*File-Decompression\_Technique:* WINZIP

*Transfer\_Size:* 0.000

*Digital\_Transfer\_Option:*

*Online\_Option:*

*Computer\_Contact\_Information:*

*Network\_Address:*

*Network\_Resource\_Name:*

Not Applicable (DNR geographic data may not currently be obtained from a distribution computer)

*Offline\_Option:*

*Offline\_Media:* CD-ROM

*Recording\_Capacity:*

*Recording\_Density:* 650

*Recording\_Density\_Units:* megabytes

*Recording\_Format:* ISO 9660

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*Metadata\_Reference\_Information:*

*Metadata\_Date:* 20031211

*Metadata\_Contact:*

*Contact\_Information:*

*Contact\_Organization\_Primary:*

*Contact\_Organization:* Wisconsin DNR, Enterprise Data Management  
Section

*Contact\_Position:* GIS Data Specialist

*Contact\_Address:*

*Address\_Type:* mailing address

*Address:*

101 South Webster St. P.O. Box 7921

*City:* Madison

*State\_or\_Province:* WI

*Postal\_Code:* 53707-7921

*Contact\_Voice\_Telephone:* (608) 264-8916

*Contact\_Facsimile\_Telephone:* (608) 266-0870

*Contact\_Electronic\_Mail\_Address:* John.Laedlein@dnr.state.wi.us

*Metadata\_Standard\_Name:* FGDC Content Standards for Digital Geospatial Metadata

*Metadata\_Standard\_Version:* FGDC-STD-001-1998

*Metadata\_Time\_Convention:* local time

*Metadata\_Extensions:*

*Online\_Linkage:* <<http://www.esri.com/metadata/esriprof80.html>>

*Profile\_Name:* ESRI Metadata Profile

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