National Land Cover Dataset (NLCD) 1992

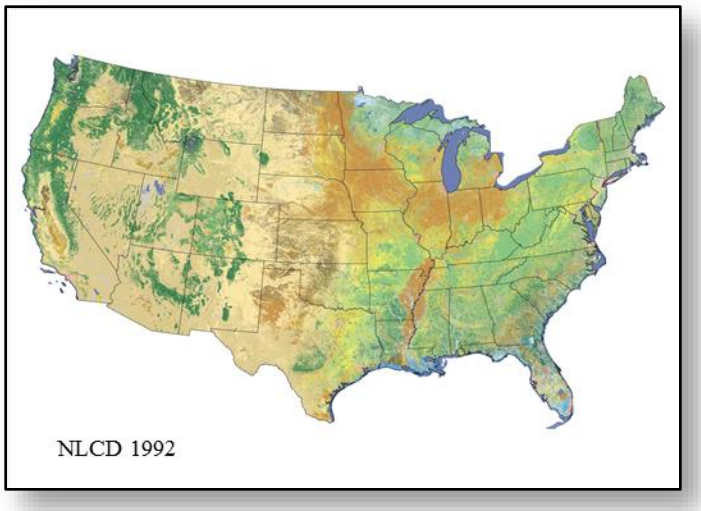
The National Land Cover Dataset (NLCD) 1992 is a raster land cover map developed by the U.S. Geological Survey (USGS) for the conterminous United States at a spatial resolution of 30 meters. EnviroAtlas displays this version of national land cover and the NLCD land cover footprint (covering the entire conterminous U.S.) in the land cover section of the EnviroAtlas interactive map. NLCD 1992 depicts native vegetation, agricultural land cover, and urban development in 21 land cover classes.

The classification system used by NLCD 1992 was modified from the Anderson Land Cover Classification System. Some Anderson Level II classes were consolidated and others divided into higher resolution classes to meet the thematic needs of NLCD. Forest was the major land cover type recorded across the U.S. in 1992 followed by agriculture. The fraction of the U.S. in urban land cover at the time was about 3%.

Continuous nationwide land cover data allows the assessment of national and regional environmental issues. Land cover, together with other EnviroAtlas biophysical and demographic data, can be used to estimate risks related to pollution and natural hazards and to prioritize areas for conservation. The NLCD data layer can be an important research tool for examining wildlife-habitat relationships, climate change effects, and habitat restoration scenarios. Land cover may be compared with data layers depicting natural areas, ecoregions, protected status, or occurrence of threatened species to assess whether there are adequate numbers of protected areas to represent regional ecosystems.

Things to know before using these data:

USGS recommends that NLCD 1992 land cover not be compared with any subsequent NLCD land cover data (NLCD 2001, 2006 or 2011) because post-1992 changes in mapping methods and legends would not produce an accurate picture of real changes in land cover. To remedy this situation, USGS developed a Retrofit Land Cover Change Product that compares the 1992 and 2001 datasets. Unchanged pixels between the two dates are coded with the NLCD Anderson Level I class code, while changed pixels are labeled with a "from-to" land cover change value.



One or more land cover classes may occur under similar growing conditions and have similar spectral signatures on satellite imagery, thus introducing errors into the data. For example, natural shrub and grass are not always spectrally distinguishable. Wetlands classes are difficult to extract without the aid of ancillary information such as the National Wetlands Inventory.

The data sets used to develop the land cover data span multiple years. Changes that have taken place across the landscape over the time period may not have been captured because some features, such as agricultural crops, may change on an annual basis.

Where can I go for more information?

USGS provides information on mapping procedures for NLCD 1992.

NLCD 1992 may be obtained by request from MRLC. NLCD 1992 metadata is available from Data.gov.

NOTE: The data described in this fact sheet have not been prepared or reviewed by the EnviroAtlas team; they are sourced from publicly available external web services and as such are prepared, stored, and managed by the organization listed above. With current technology, the EnviroAtlas team has no control over the way these data display in our application. Please go to the sources listed here for more information.

National Land Cover Dataset (NLCD) 2001

The National Land Cover Dataset (NLCD) 2001 is a raster land cover map developed by the U.S. Geological Survey (USGS) for the conterminous United States, Alaska, Hawaii, and Puerto Rico at a spatial resolution of 30 meters. EnviroAtlas displays this version of national land cover and the NLCD land cover footprint (for the areas listed above) in the land cover section of the EnviroAtlas interactive map. NLCD 2001 depicts native vegetation, agricultural land cover, and urban development in 16 land cover classes with four additional classes in Alaska only.

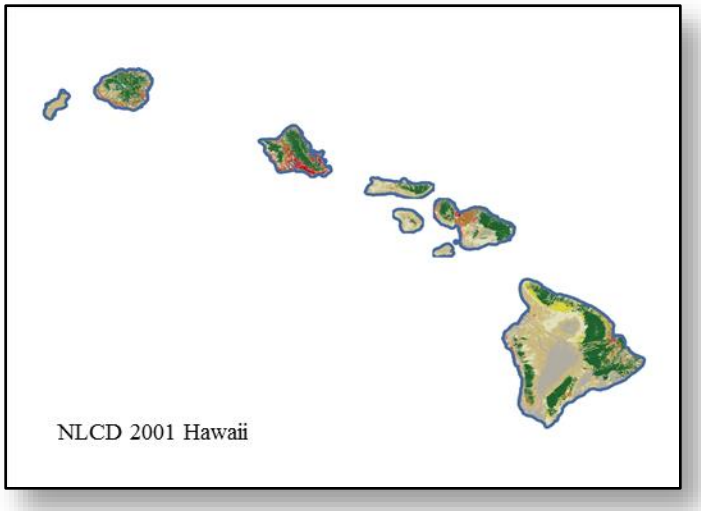
The classification system used by NLCD 2001 was modified from the Anderson Land Cover Classification System. Some Anderson Level II classes were consolidated and others divided into higher resolution classes to meet the thematic needs of NLCD. Product statistics, including pie charts and tables showing proportions of various land covers, are available for the conterminous U.S., Alaska, Hawaii, and Puerto Rico.

Continuous nationwide land cover data allows the assessment of national and regional environmental issues. Land cover, together with other EnviroAtlas biophysical and demographic data, can be used to estimate risks related to pollution and natural hazards and to prioritize areas for conservation. The NLCD data layer can be an important research tool for examining wildlife-habitat relationships, climate change effects, and habitat restoration scenarios. Land cover may be compared with data layers depicting natural areas, ecoregions, protected status, or occurrence of threatened species to assess whether there are adequate numbers of protected areas to represent regional ecosystems.

Things to know before using these data:

NLCD 2001 in an improvement over NLCD 1992 land cover; it uses classification algorithms that provide more precise classifications. NLCD 2001 should not be compared directly with NLCD 1992 because post-1992 changes in mapping methods and legends would not produce an accurate picture of real changes in land cover. USGS has developed a Retrofit Land Cover Change Product that compares the 1992 and 2001 datasets.

One or more land cover classes may occur under similar growing conditions and have similar spectral signatures on satellite imagery, thus introducing errors into the data. For example, natural shrub and grass are not always spectrally distinguishable. Wetlands classes are difficult to extract without the aid of ancillary information such as the National Wetlands Inventory.


NLCD 2001 Hawaii

Land cover data at this scale are appropriate for national and regional scale projects rather than local applications. The data sets used to develop the land cover data span multiple years. Changes that have taken place across the landscape over the time period may not have been captured because some features, such as agricultural crops, may change on an annual basis.

Where can I go for more information?

USGS provides an accuracy assessment for NLCD 2001.

NLCD 2001 and other NLCD databases may be downloaded from the MRLC Data Download page or the MRLC Consortium Viewer interactive map. NLCD 2001 metadata is available from USGS.

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National Land Cover Dataset: Canopy 2001

The National Land Cover Dataset (NLCD) Canopy 2001 is a raster canopy density data layer developed by the U.S. Geological Survey (USGS) for the conterminous United States, southeast Alaska, Hawaii, and Puerto Rico at a spatial resolution of 30 meters. EnviroAtlas displays this version of the NLCD canopy map and the canopy footprint (for the areas listed above) in the land cover section of the EnviroAtlas interactive map.

The canopy layer quantifies the extent of forested land cover at regional and national scales. The canopy layer depicts percent cover in a 30 meter grid using a color range from pale grey-green to dark green to indicate increasing percentages of canopy coverage. Product statistics, including pie charts and tables showing proportions of various land covers, are available for the conterminous U.S., Alaska, Hawaii, and Puerto Rico. The sections labeled *forested* in the charts indicate the approximate area of each region that is covered by deciduous, evergreen, or mixed tree canopy.

Continuous nationwide land cover data paired with a canopy layer allows the assessment of national and regional environmental issues. Canopy cover, together with other EnviroAtlas biophysical and demographic data, can be used to examine wildlife-habitat relationships, climate change effects, and habitat restoration scenarios. Land cover and canopy cover may be compared with data layers depicting natural areas, ecoregions, protected status, or occurrence of threatened species to assess whether there are adequate numbers of protected areas to represent regional ecosystems.

Things to know before using these data:

Following the release of NLCD 2001, USGS moved to a 5-year cycle for updating land cover layers. Maintaining the same mapping methods among versions after 2001 allowed for direct comparison of map layers and the production of change detection maps to identify changes in land cover, urban development, and canopy cover. However, the updated 2011 Editions of NLCD 2001 and NLCD 2006 must be used in any comparison of NLCD 2001, NLCD 2006, and NLCD 2011. Canopy cover is not available for NLCD 2006.

One or more land cover classes may occur under similar growing conditions and have similar spectral signatures on satellite imagery, thus introducing errors into the data. Products such as the canopy layer use modeled data to estimate canopy density. The canopy layer was developed from tree canopy reference data. Canopy density prediction models were calibrated with the reference data and then extrapolated to map per-pixel tree canopy density.[1]

Land cover data at this scale are appropriate for national and regional scale projects rather than local applications. The data sets used to develop the land cover data span multiple years. Changes that have taken place across the landscape over the time period may not have been captured because some features may change on an annual basis.

Where can I go for more information?

USGS provides an accuracy assessment for NLCD 2001.

NLCD 2001 and other NLCD databases may be downloaded from the MRLC Data Download page or the MRLC Consortium Viewer interactive map. NLCD 2001 land cover and canopy metadata are available from USGS.

1. Huang, C., L. Yang, B. Wylie, and C. Homer. 2001. A strategy for estimating tree canopy density using Landsat 7 ETM+ and high resolution images over large areas, USGS, Sioux Falls, South Dakota.

National Land Cover Dataset: Impervious Surface 2001

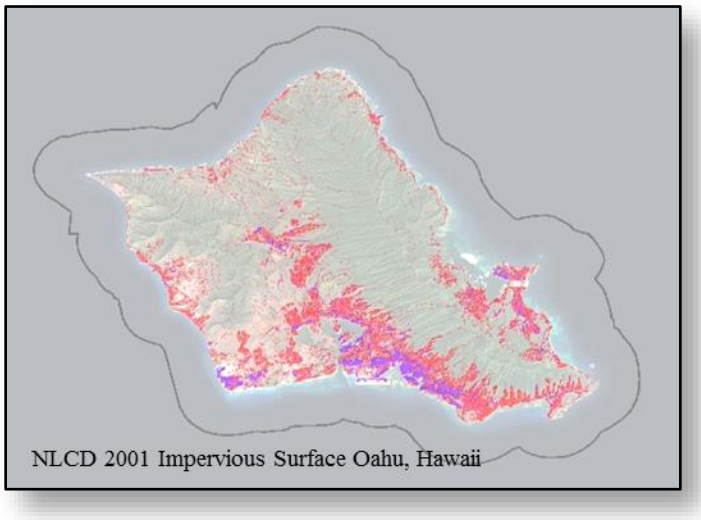
The National Land Cover Dataset (NLCD) Impervious Surface 2001 is a raster impervious cover map developed by the U.S. Geological Survey (USGS) for the conterminous United States, southeast Alaska, Hawaii, and Puerto Rico at a spatial resolution of 30 meters. The original land cover map was published in 2007; USGS added a percent developed imperviousness layer to NLCD 2001 version 2 in 2010. EnviroAtlas displays this version of the impervious surface map and the impervious surface footprint (for the entire conterminous U.S., Hawaii, Puerto Rico and the Anchorage area of Alaska) in the land cover section of the EnviroAtlas interactive map.

The impervious surface layer quantifies the extent of developed land cover at regional and national scales. The impervious surface layer depicts percent imperviousness in a 30 meter grid using a color range from light grey, light pink, to purple (see image) to indicate increasing percentages of impervious surfaces. Product statistics, including pie charts and tables showing proportions of various land covers, are available for the conterminous U.S., Alaska, Hawaii, and Puerto Rico. The sections labeled *developed* in the pie charts indicate the approximate area of each region that is covered by impervious surfaces.

Continuous nationwide land cover data paired with an impervious surface layer allows the assessment of national and regional environmental issues. Monitoring the extent of imperviousness assists in efforts to mitigate the negative effects of impervious cover. The extent of impervious surfaces, together with other EnviroAtlas biophysical and demographic data, can be used to estimate risks related to stormwater runoff, urban heat islands, and natural hazards, such as flooding or drought.

Things to know before using these data:

With the release of NLCD 2001, USGS moved to a 5-year cycle for updating land cover layers. Maintaining the same mapping methods among versions after 2001 allowed for direct comparison of map layers and the production of change detection maps to identify changes in land cover and urban development. However, the updated 2011 Editions of NLCD 2001 and NLCD 2006 must be used in any comparison of NLCD 2001, NLCD 2006, and NLCD 2011.


NLCD 2001 Impervious Surface Oahu, Hawaii

One or more land cover classes may have similar spectral signatures on satellite imagery, thus introducing errors into the data. NLCD's relatively coarse 30 meter resolution may result in mixed pixels and possible over- or under-estimates of the area of impervious surfaces. USGS did compare the impervious layer with night-time light images to exclude low density imperviousness at the rural-urban fringe.

Land cover data at this scale are appropriate for national and regional scale projects rather than local applications. The data sets used to develop the land cover data span multiple years. Changes that have taken place across the landscape over the time period may not have been captured because some features may change on an annual basis.

Where can I go for more information?

USGS provides an accuracy assessment for NLCD 2001.

NLCD 2001 and other NLCD databases may be downloaded from the MRLC Data Download page or the MRLC Consortium Viewer interactive map. NLCD 2001 metadata is available from USGS.

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National Land Cover Dataset (NLCD) 2006

The National Land Cover Dataset (NLCD) 2006 is a raster land cover map developed by the U.S. Geological Survey (USGS) for the conterminous United States at a spatial resolution of 30 meters. EnviroAtlas displays this version of national land cover and the NLCD land cover footprint (covering the conterminous U.S.) in the land cover section of the EnviroAtlas interactive map. NLCD 2006 depicts native vegetation, agricultural land cover, and urban development in 16 land cover classes.

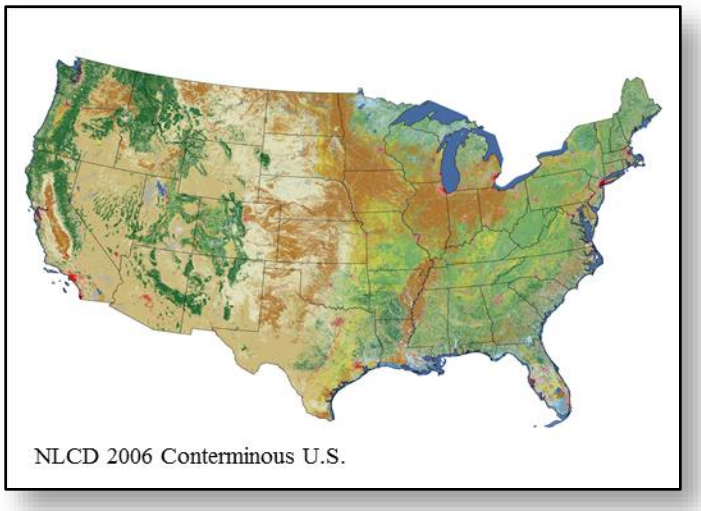
The classification system used by NLCD 2006 was modified from the Anderson Land Cover Classification System. Some Anderson Level II classes were consolidated and others divided into higher resolution classes to meet the thematic needs of NLCD. Product statistics, including a pie chart and table showing proportions of various land covers, are available for the conterminous U.S.

Continuous nationwide land cover data allows the assessment of national and regional environmental issues. Land cover, together with other EnviroAtlas biophysical and demographic data, can be used to estimate risks related to pollution and natural hazards and to prioritize areas for conservation. The NLCD data layer can be an important research tool for examining wildlife-habitat relationships, climate change effects, and habitat restoration scenarios. Land cover may be compared with data layers depicting natural areas, ecoregions, protected status, or occurrence of threatened species to assess whether there are adequate numbers of protected areas to represent regional ecosystems.

Things to know before using these data:

After the release of NLCD 2001, USGS moved to a 5-year cycle for updating land cover layers. Maintaining the same mapping methods among versions after 2001 allowed for direct comparison of map layers and the production of change detection maps to identify changes in land cover, canopy, and urban development. However, the updated 2011 Editions of NLCD 2001 and NLCD 2006 must be used in any comparison of NLCD 2001, NLCD 2006, and NLCD 2011.

One or more land cover classes may occur under similar growing conditions and have similar spectral signatures on satellite imagery, thus introducing errors into the data. For example, natural shrub and grass are not always spectrally distinguishable. Wetlands classes are difficult to extract without the aid of ancillary information such as the National Wetlands Inventory. The NLCD Level II overall accuracy for the 2006 land cover map was 78%.



NLCD 2006 Conterminous U.S.

Land cover data at this scale are appropriate for national and regional scale projects rather than local applications. The data sets used to develop the land cover maps span multiple years. Changes that have taken place across the landscape over the time period may not have been captured because some features, such as agricultural crops, may change on an annual basis.

Where can I go for more information?

USGS provides an accuracy assessment for NLCD 2006.

NLCD 2006 land cover and other NLCD databases may be downloaded from the MRLC Data Download page or the MRLC Consortium Viewer interactive map. NLCD 2006 metadata is available from USGS.

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National Land Cover Dataset: Impervious Surface 2006

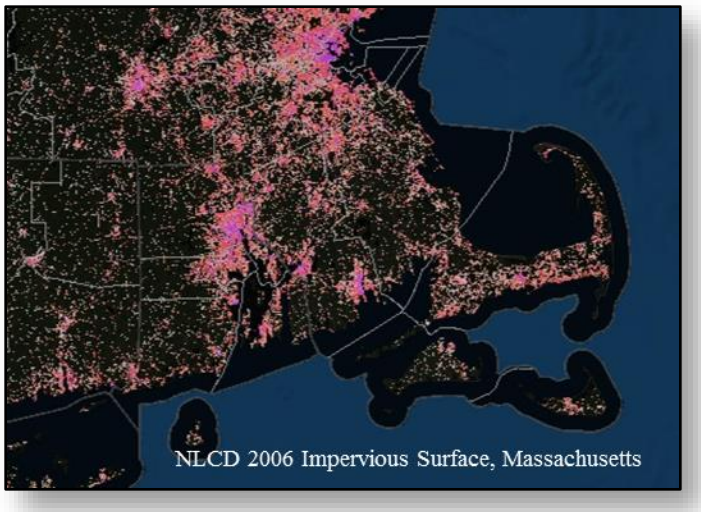
The National Land Cover Dataset (NLCD) Impervious Surface 2006 is a raster impervious cover map developed by the U.S. Geological Survey (USGS) for the conterminous United States at a spatial resolution of 30 meters. EnviroAtlas displays this version of the impervious surface map and the impervious surface footprint (for the conterminous U.S.) in the land cover section of the EnviroAtlas interactive map.

The impervious surface layer quantifies the extent of developed land cover at regional and national scales. The impervious surface layer depicts percent imperviousness in a 30 meter grid using a color range from light grey, light pink, to purple (see image) to indicate increasing percentages of impervious surfaces. Product statistics, including a pie chart and table showing proportions of various land covers, are available for the conterminous U.S. The section labeled *developed* in the pie chart indicate the approximate area of each region that is covered by impervious surfaces.

Continuous nationwide land cover data paired with an impervious surface layer allows the assessment of national and regional environmental issues. Monitoring the extent of imperviousness assists in efforts to mitigate the negative effects of impervious cover. The extent of impervious surfaces, together with other EnviroAtlas biophysical and demographic data, can be used to estimate risks related to stormwater runoff, urban heat islands, and natural hazards, such as flooding or drought.

Things to know before using these data:

With the release of NLCD 2001, USGS moved to a 5-year cycle for updating land cover layers. Maintaining the same mapping methods among versions after 2001 allowed for direct comparison of map layers and the production of change detection maps to identify changes in land cover and urban development. However, the updated 2011 Editions of NLCD 2001 and NLCD 2006 must be used in any comparison of NLCD 2001, NLCD 2006, and NLCD 2011. Impervious surface area, or the proportionate area of imperviousness in every 30 m pixel, increased 4.1% over the 2001 amount across the U.S. The area encompassing the number of 30 m pixels that contained any impervious surface was nearly the size of California and Indiana combined.


NLCD 2006 Impervious Surface, Massachusetts

One or more land cover classes may have similar spectral signatures on satellite imagery, thus introducing errors into the data. NLCD's relatively coarse 30 meter resolution may result in mixed pixels and possible over- or under-estimates of the area of impervious surfaces. USGS did compare the impervious layer with night-time light images to exclude low density imperviousness at the rural-urban fringe.

Land cover data at this scale are appropriate for national and regional scale projects rather than local applications. The data sets used to develop the land cover data span multiple years. Changes that have taken place across the landscape over the time period may not have been captured because some features may change on an annual basis.

Where can I go for more information?

USGS provides an accuracy assessment for NLCD 2006.

NLCD 2006 and other NLCD databases may be downloaded from the MRLC Data Download page or the MRLC Consortium Viewer interactive map. NLCD 2006 metadata is available from USGS.

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National Land Cover Dataset (NLCD) 2011

The National Land Cover Dataset (NLCD) 2011 is a raster land cover map developed by the U.S. Geological Survey (USGS) for the conterminous United States and Alaska at a spatial resolution of 30 meters. EnviroAtlas displays this version of national land cover and the NLCD land cover footprint (covering the conterminous U.S.) in the land cover section of the EnviroAtlas interactive map. NLCD 2011 depicts native vegetation, agricultural land cover, and urban development in 16 land cover classes.

The classification system used by NLCD 2011 was modified from the Anderson Land Cover Classification System. Some Anderson Level II classes were consolidated and others divided into higher resolution classes to meet the thematic needs of NLCD. Product statistics, including pie charts and tables showing proportions of various land covers, are available for the conterminous U.S. and Alaska.

Continuous nationwide land cover data allows the assessment of national and regional environmental issues. Land cover, together with other EnviroAtlas biophysical and demographic data, can be used to estimate risks related to pollution and natural hazards and to prioritize areas for conservation. The NLCD data layer can be an important research tool for examining wildlife-habitat relationships, climate change effects, and habitat restoration scenarios. Land cover may be compared with data layers depicting natural areas, protected status, or occurrence of threatened species to assess whether there are adequate numbers of protected areas to represent regional ecosystems.

Things to know before using these data:

After the release of NLCD 2001, USGS moved to a 5-year cycle for updating land cover layers. Maintaining the same mapping methods among versions after 2001 allowed for direct comparison of map layers and the production of change detection maps to identify changes in land cover, canopy, and urban development. However, the updated 2011 Editions of NLCD 2001 and NLCD 2006 must be used in any comparison of NLCD 2001, NLCD 2006, and NLCD 2011.

One or more land cover classes may occur under similar growing conditions and have similar spectral signatures on satellite imagery, thus introducing errors into the data. For example, natural shrub and grass are not always spectrally distinguishable. The NLCD Level II overall accuracy for the 2006 land cover map was 78%. A formal accuracy assessment has not been completed for NLCD 2011, but the procedural intent was to retain or improve the accuracies from the NLCD 2001 and 2006 versions.

Land cover data at this scale are appropriate for national and regional scale projects rather than local applications. The data used to develop the land cover maps span multiple years. Changes that have taken place across the landscape over the time period may not have been captured because some features, such as agricultural crops, may change on an annual basis.

Where can I go for more information?

USGS provides information on mapping procedures for NLCD 2011.

NLCD 2011 land cover and other NLCD databases may be downloaded from the MRLC Data Download page or the MRLC Consortium Viewer interactive map. NLCD 2011 metadata is available from USGS.

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National Land Cover Dataset: Canopy 2011

The National Land Cover Dataset (NLCD) Canopy 2011 is a raster canopy density data layer developed by the U.S. Geological Survey (USGS) for the conterminous United States at a spatial resolution of 30 meters. EnviroAtlas displays this version of the NLCD canopy map and the canopy footprint in the land cover section of the EnviroAtlas interactive map.

The canopy layer quantifies the extent of forested land cover at regional and national scales. The canopy layer depicts percent cover in a 30 meter grid using a color range from pale grey-green to dark green to indicate increasing percentages of canopy coverage. Product statistics are available for the conterminous U.S. The sections labeled *forested* in the charts indicate the approximate area of each region that is covered by various types of tree canopy.

Continuous nationwide land cover data paired with a canopy layer allows the assessment of national and regional environmental issues. Canopy cover, together with other EnviroAtlas biophysical and demographic data, can be used to examine wildlife-habitat relationships, climate change effects, and habitat restoration scenarios. Land cover and canopy cover may be compared with data layers depicting natural areas, protected status, or occurrence of threatened species to assess whether there are adequate numbers of protected areas to represent regional ecosystems.

Things to know before using these data:

Following the release of NLCD 2001, USGS moved to a 5-year cycle for updating land cover layers. Maintaining the same mapping methods among versions after 2001 allowed for direct comparison of map layers and the production of change detection maps to identify changes in land cover, urban development, and canopy cover. However, the updated 2011 Editions of NLCD 2001 and NLCD 2006 must be used in any comparison of NLCD 2001, NLCD 2006, and NLCD 2011. Canopy cover is not available for NLCD 2006. The 2011 percent tree canopy data was not designed to be directly comparable to the 2001 canopy. The 2001 data defined trees as >5 m in height, while the 2011 data had no height restrictions, but defined trees by species.

One or more land cover classes may occur under similar growing conditions and have similar spectral signatures on satellite imagery, thus introducing errors into the data.


NLCD 2011 Canopy, Mississippi Delta, Louisiana

Products such as the canopy layer use modeled data to estimate canopy density. The canopy layer was developed from tree canopy reference data. Canopy density prediction models were calibrated with the reference data and then extrapolated to map per-pixel tree canopy density.[1]

Land cover data at this scale are appropriate for national and regional scale projects rather than local applications. The data sets used to develop the land cover data span multiple years. Changes that have taken place across the landscape over the time period may not have been captured because some features may change on an annual basis.

Where can I go for more information?

USGS provides information on mapping procedures for NLCD 2011. NLCD 2011 and other NLCD databases may be downloaded from the MRLC Data Download page or the MRLC Consortium Viewer interactive map. NLCD 2011 land cover metadata are available from USGS.

1. Huang, C., L. Yang, B. Wylie, and C. Homer. 2001. A strategy for estimating tree canopy density using Landsat 7 ETM+ and high resolution images over large areas USGS, Sioux Falls, South Dakota.

National Land Cover Dataset: Impervious Surface 2011

The National Land Cover Dataset (NLCD) Impervious Surface 2011 is a raster impervious cover map developed by the U.S. Geological Survey (USGS) for the conterminous United States and the Anchorage, Alaska area at a spatial resolution of 30 meters. EnviroAtlas displays this version of the impervious surface map and the impervious surface footprint (for the conterminous U.S.) in the land cover section of the EnviroAtlas interactive map.

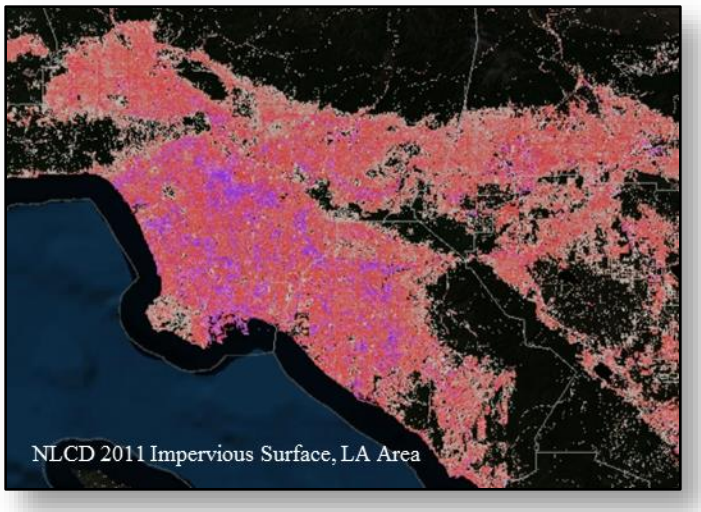
The impervious surface layer quantifies the extent of developed land cover at regional and national scales. The impervious surface layer depicts percent imperviousness in a 30 meter grid using a color range from light grey, light pink, to purple (see image) to indicate increasing percentages of impervious surfaces. Product statistics, including pie charts and tables showing proportions of various land covers, are available for the conterminous U.S. and the Anchorage, Alaska area. The sections labeled *developed* in the charts indicate the approximate area of each region that is covered by impervious surfaces.

Continuous nationwide land cover data paired with an impervious surface layer allows the assessment of national and regional environmental issues. Monitoring the extent of imperviousness assists in efforts to mitigate the negative effects of impervious cover. The extent of impervious surfaces, together with other EnviroAtlas data, can be used to estimate risks related to stormwater runoff, urban heat islands, and natural hazards, such as flooding or drought.

Things to know before using these data:

With the release of NLCD 2001, USGS moved to a 5-year cycle for updating land cover layers. Maintaining the same mapping methods among versions after 2001 allowed for direct comparison of map layers and the production of change detection maps to identify changes in land cover and urban development. However, the updated 2011 Editions of NLCD 2001 and NLCD 2006 must be used in any comparison of NLCD 2001, NLCD 2006, and NLCD 2011. Impervious surface area, or the proportionate area of imperviousness in every 30 m pixel, increased 4.1% over the 2001 amount across the U.S. The area encompassing the number of 30 m pixels that contained any impervious surface was nearly the size of California and Indiana combined.

One or more land cover classes may have similar spectral signatures on satellite imagery, thus introducing errors into the data. NLCD's relatively coarse 30 meter resolution may result in mixed pixels and possible over- or under-estimates of the area of impervious surfaces. USGS did compare the impervious layer with night-time light images to exclude low density imperviousness at the rural-urban fringe.


NLCD 2011 Impervious Surface, LA Area

Land cover data at this scale are appropriate for national and regional scale projects rather than local applications. The data sets used to develop the land cover data span multiple years. Changes that have taken place across the landscape over the time period may not have been captured because some features may change on an annual basis.

Where can I go for more information?

USGS provides information on mapping procedures for NLCD 2011.

NLCD 2011 and other NLCD databases may be downloaded from the MRLC Data Download page or the MRLC Consortium Viewer interactive map. NLCD 2011 metadata is available from USGS.

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