ISLSCP II HYDRO1k Elevation-derived Products

Revision date: April 25, 2011

Summary:

This data set contains elevation and elevation-based parameters at 1.0 and 0.5-degree spatial resolutions that were developed to support a wide variety of global modeling activities through the International Satellite Land Surface Climatology Project (ISLSCP) Initiative II data collection. These coarse scale data have sufficient statistical information (up to fourth moment) to allow a good statistical description of the sub-cell distribution of any particular elevation parameter (i.e. elevation, slope and aspect). The database used in the development effort was the HYDRO1k product (http://eros.usgs.gov/#/Find_Data/Products_and_Data_Available/HYDRO1K) with a native spatial resolution of 1 km, a high resolution database of global coverage of standard elevation-based derivatives (slope, aspect, elevation, compound topographic index, etc.).

Additional Documentation:

This data set is one of the products of the **International Satellite Land-Surface Climatology Project, Initiative II (ISLSCP II)** data collection which contains 50 global time series data sets for the ten-year period 1986 to 1995. A complete description of the data, it's derivation, acknowledgements, and references provided by the ISLSCP II Data Management Staff is included with this data set as a companion file named 1_hydro1k_elevation_doc.pdf.

ISLSCP II is a consistent collection of data sets that were compiled from existing data sources and algorithms, and were designed to satisfy the needs of modelers and investigators of the global carbon, water and energy cycle. The data were acquired from a number of U.S. and international agencies, universities, and institutions. The data and documentation have undergone two peer reviews.

ISLSCP is one of several projects of Global Energy and Water Cycle Experiment (GEWEX) [http://www.gewex.org/] and has the lead role in addressing land-atmosphere interactions -- process modeling, data retrieval algorithms, field experiment design and execution, and the development of global data sets.

Related Data Sets:

- Additional ISLSCP II data sets are available from the Oak Ridge National Laboratory Distributed Active Archive Center (ORNL DAAC).

Data Citation:

Cite this data set as follows:

Verdin, K. L. 2011. ISLSCP II HYDRO1k Elevation-derived Products. In Hall, Forrest G., G. Collatz, B. Meeson, S. Los, E. Brown de Colstoun, and D. Landis (eds.). ISLSCP Initiative II Collection. Data set. Available on-line [http://daac.ornl.gov/] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, U.S.A. doi:10.3334/ORNLDAAC/1007

File Information:

The archived data sets for ISLSCP II have been organized by categories. This data set is in the Hydrology, Soils, and Topography category-- a collection of hydroclimatology and surface elevation data sets.

Data Set Spatial Extent: Global gridded

Westernmost Longitude: -180 W

Easternmost Longitude: 180 E

Northernmost Latitude: 90 N

Southernmost Latitude: -90 S

Projection: Geographic

Data Set Spatial Resolution: one degree and half degree in both latitude and longitude

Data Set Temporal Extent: 1986 through 1995

Data File Format

All of the data files in each data set within the ISLSCP Initiative II data collection are in ASCII GRID format. The file format consists of numerical fields of varying length, which are delimited by a single space and arranged in columns and rows. There are 2 data files (.zip) in 1 degree (1d) and half degree (hd) resolution:

- **hydro1k_elevation_1deg.zip**
- **hydro1k_elevation_hdeg.zip**

When extrapolated, each file contains 24 ASCII files pertaining to elevation and elevation-based products, a changemap file, and a landmask file for a total of 26 files:

8 Elevation Products: The mean, median, minimum, maximum, range, standard deviation, skewness, and kurtosis of the 1-km values.

- Example file names: **hydro1k_elev_kurt_1d.asc** and **hydro1k_elev_kurt_hd.asc**

5 Slope Products: The mean, median, standard deviation, skewness, and kurtosis of the 1-km values .

- Example file names: **hydro1k_slope_mean_1d.asc** and **hydro1k_slope_mean_hd.asc**

5 Aspect Products: Aggregated from 1-km data with the mean, median, standard deviation, skewness, and kurtosis provided.

- Example file names: **hydro1k_aspect_median_1d.asc** and **hydro1k_aspect_median_hd.asc**

6 Compound Topographic Index (CTI) Products: The maximum, mean, median, standard deviation, skewness, and kurtosis.

- Example file names: **hydro1k_cti_max_1d.asc** and **hydro1k_cti_max_hd.asc**

In addition, both .zip files contain an ASCII changemap file and an ASCII landmask file:

- **hydro1k_changemap_Xd.asc** where Xd is 1 degree (1d) or half degree (hd) resolution
- **hydro1k_landmask_Xd.asc** where Xd is 1 degree (1d) or half degree (hd) resolution

Please refer to the table below and the 1_hydro1k_elevation_doc.pdf for further explanation of the file naming conventions and data descriptions.

File Name	Description
aspect_kurt	Kurtosis of the aspects within each cell
aspect_mean	Mean aspect of each cell
aspect_median	Median aspect of each cell
aspect_skew	Skewness in aspect for each cell
aspect_stdev	Standard deviation in aspect for each cell
cti_kurt	Kurtosis in CTI for each cell
cti_max	Maximum CTI within each cell
cti_mean	Mean CTI within each cell
cti_median	Median CTI within each cell
cti_skew	Skewness in CTI for each cell
cti_stdev	Standard deviation in CTI for each cell
elev_kurt	Kurtosis in elevation values within each cell
elev_max	Maximum elevation value within each cell
elev_mean	Mean elevation value within each cell
elev_median	Median elevation value within each cell
elev_min	Minimum elevation value within each cell
elev_range	Range of elevation values within each cell
elev_skew	Skewness in elevation values within each cell
elev_stddev	Standard deviation of the elevation values within each cell
landmask	Original land/water mask used in the aggregation of HYDRO1k
landmask_dif	Differences between the ISLSCP II land/water mask and the original land/water mask
slope_kurt	Kurtosis of the slopes within each cell
slope_mean	Mean slope within each cell
slope_median	Median slope within each cell
slope_skew	Skewness of the slopes within each cell
slope_stddev	Standard deviation of the slopes within each cell

For additional information, please refer to :

* **0_hydro1k_elevation_readme.txt**

Data Access:

These data are available through the Oak Ridge National Laboratory (ORNL) Distributed Active Archive Center (DAAC) **[http://daac.ornl.gov].**

Data Archive Contact Information:

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