Data
100-year flood susceptibility maps for the continental U.S. derived with a geomorphic method

Corresponding author
Ph.D. Eng. Caterina Samela
University of Basilicata - Viale dell'Ateneo Lucano, 10 , 85100 Potenza - Italy
e-mail: caterina.samela@unibas.it; caterina.samela@live.it

Description
This mapping dataset contains 100-year flood susceptibility maps for the continental U.S. with a 90 m resolution.
These mapping products were derived through terrain analysis and a technique of pattern classification performed on DEMs obtained from HydroSHEDS (http://hydrosheds.cr.usgs.gov/overview.php) with a 3 arc-second resolution. Specifically, the flood-prone areas were identified by applying a linear binary classifier based upon a morphologic descriptor named Geomorphic Flood Index (Manfreda et al., 2015; Samela et al., 2015; Samela et al., 2016). The raster maps have a 90 m resolution and are geo-referenced. The coordinate system of the maps is UTM (Universal Transverse Mercator) Zone 17N, the projection is Transverse Mercator, and the geodetic system is NAD (North American Datum) 1983.
To simplify the management and the use of the data, the continental U.S. was divided into eighteen major water resources regions according to the hydrologic units identified by the United States Geological Survey (USGS).

Raster data format
*ASCII text file *.txt*

File name syntax
The file names follow the naming convention:
"*WaterResourcesRegionUnitCode_RegionName_*geomorphological_flood_prone_areas_100y.txt*",* where the adopted USGS unit codes and region names are listed in the following table:

Water resources region hydrologic unit code	**Region name**	**Text file size**
01	New England region	119 MB
02	Mid Atlantic region	178 MB
03	South Atlantic-Gulf region	518 MB
04	Great Lakes region	372 MB
05	Ohio region	184 MB
06	Tennessee region	60.4 MB
07	Upper Mississippi region	340 MB
08	Lower Mississippi region	140 MB
09	Souris-Red- Rainy region	283 MB
10	Missouri region	1.55 GB
11	Arkansas White Red region	389 MB
12	Texas – Gulf region	260 MB
13	Rio Grande region	399 MB
14	Upper Colorado region	385 MB

15	Lower Colorado region	385 MB
16	Great Basin region	220 MB
17	Pacific Northwest region	359 MB
18	California region	212 MB

Header format

The ASCII format raster files begin with header information that defines the properties of the raster such as the cell size, the number of rows and columns, and the coordinates of the origin of the raster. The header information is followed by cell value information specified in space-delimited row-major order, with each row separated by a carriage return. Row 1 of the data is at the top of the raster, row 2 is just under row 1, and so on.

The syntax of the header information is a keyword paired with the value of that keyword. The definitions of the keywords are:

Parameter	**Description**	**Requirements**
NCOLS	Number of cell columns.	Integer greater than 0.
NROWS	Number of cell rows.	Integer greater than 0.
XLLCORNER	X coordinate of the origin (by lower left corner of the cell).	Match with Y coordinate type.
YLLCORNER	Y coordinate of the origin (by lower left corner of the cell).	Match with X coordinate type.
CELLSIZE	Cell size.	Greater than 0.
NODATA_VALUE	The input values to be NoData in the output raster.	-9999.

Example ASCII raster header:

```
ncols        7616
nrows        4161
xllcorner    -209626.718750
yllcorner    3775104.000000
cellsize     90
NODATA_value  -9999
```

References

Manfreda, S., Nardi, F., Samela, C., Grimaldi, S., Taramasso, A. C., Roth, G., & Sole, A. (2014a). Investigation on the use of geomorphic approaches for the delineation of flood prone areas. Journal of Hydrology, 517, 863-876. doi:http://dx.doi.org/10.1016/j.jhydrol.2014.06.009.

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