

# NED-H Overview

**NED-H Collaborators' Meeting**  
**January 25-27, 2000**

Who?

How?

What?

**NED-H Development**  
**Questions**

Why?

When?

Where?

## What is NED-H?

- The National Elevation Data Set-Hydrologic Derivatives
- Topographically-derived data layers of hydrologic significance
- Made possible by the completion of NED and National Hydrography Dataset (NHD)
- Multi-layer data set (raster & vector)
- Albers projection, 30 meter cell size

# NED-H Data Layers

- Hydrologically Conditioned DEM (HC DEM)
- Shaded Relief
- Flow directions and flow accumulations
- Derivative Layers:
  - Slope, Aspect & Compound Topographic Index
- Synthetic Streamlines
- Reach Catchments
- Metadata

## Why do NED-H?

- Responsive to the need for better watershed boundaries for the country
- Complementary to the effort to create the Watershed Boundaries Dataset
- Complementary to on-going effort by NRCS to delineate watershed and subwatershed units for the country

## Why? (cont.)

- Serves to integrate two of USGS' key National Datasets - NED and NHD
- Development of NED-H will provide means of quality control for both datasets
  - feedback to both will be developed
- Adds value to NHD by transferring NED-derived parameters; e.g. stream gradients, upstream areas, flow lengths, etc.

## Why? (cont.)

- Provides flexibility to delineate watersheds above any location in country.
  - Example: Need to define basin above stream gage location
- Linkages provide connectivity between any locations in the country.
  - Example: Need to determine DS locations impacted by spill

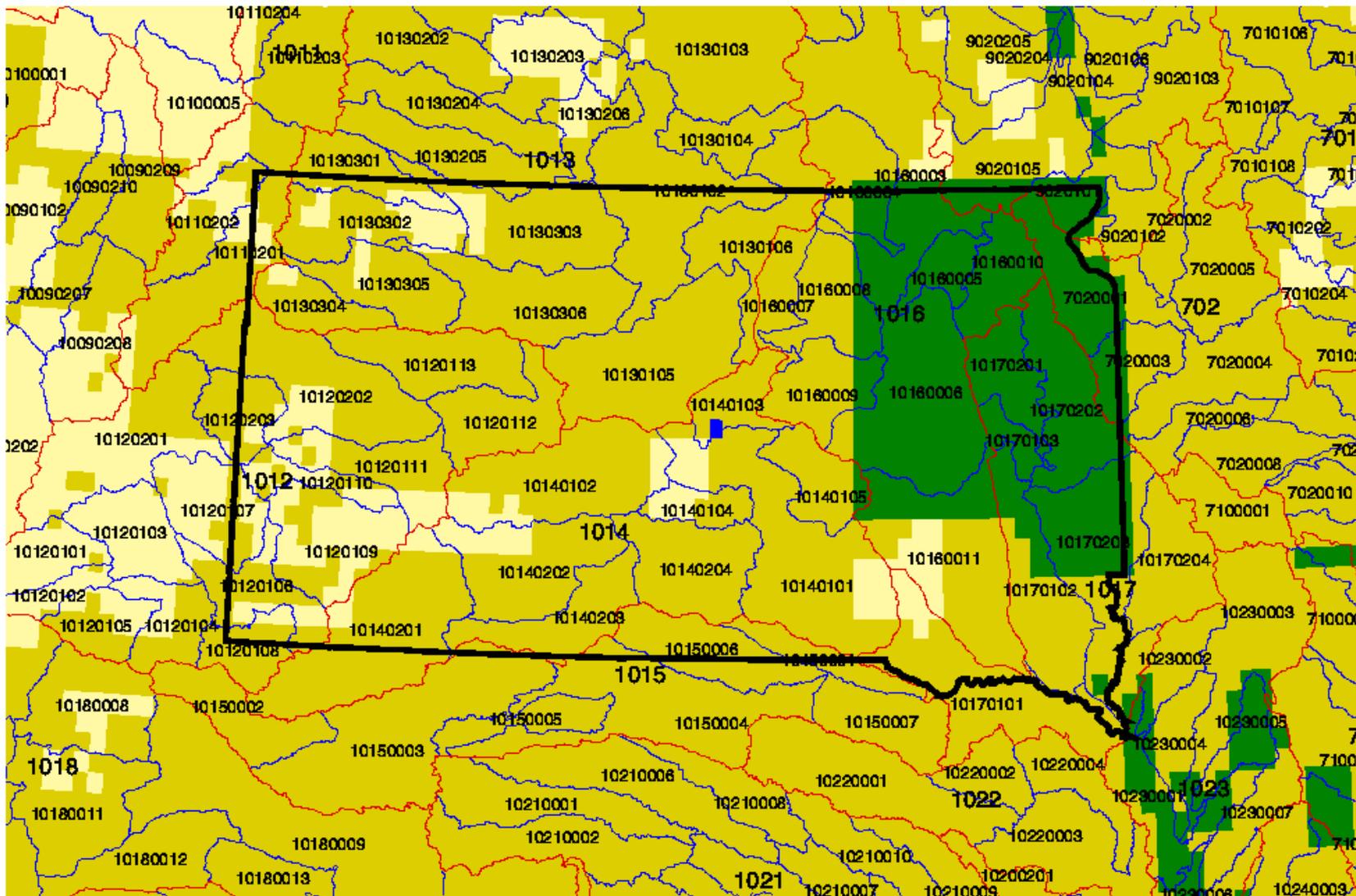
# How to do NED-H?

- Critical process is development of HC DEM
- NED is processed using GIS techniques to ensure proper movement of water across the land surface
- Develop iterative QA/QC procedure utilizing HUCs, NHD, DRG and DOQQ

## How? (cont.)

- 3 Stage Plan for development
  - Stage 1: Blind Pass Processing
    - Produce Stage 1 NED-H data layers
    - Initial accuracy assessment to identify major problems
      - Discrepancies with NHD & existing watershed boundaries are flagged as potential problems
    - Output valuable for first pass at watershed delineations
    - Development sequence could be driven by status of Level 2 DEMs

# Distribution of NED Elevation Data Relative to Hydrologic Unit Code Basins (South Dakota)



40 0 40 80 120 Kilometers

- South Dakota
- 4-Digit HUC
- 8-Digit HUC
- 1/3-Arc Second DEM
- 1-Arc Second DEM (Level 1)
- 1-Arc Second DEM (Level 2)
- 30-Minute DEM
- 3-Arc Second DEM



## How? (cont.)

- 3 Stage Plan for development (cont.)
  - Stage 2: Vector Editing
    - In-depth review of Stage 1 reach catchments and synthetic streamlines
    - Locations in error are redigitized
    - Watershed and subwatershed units are defined
    - Watershed/subwatersheds can populate initial WBD
    - Vector editing cause disconnect with NED-H layers

## How? (cont.)

- 3 Stage Plan for development (cont.)
  - Stage 3: Raster editing
    - Valid Stage 2 corrections are incorporated into DEM
    - Hydrologically conditioned DEM and derivative layers are produced
    - Final conflation with NHD is performed and appropriate attributes transferred
    - Vertically integrated data layers - NED-H, NHD, WBD

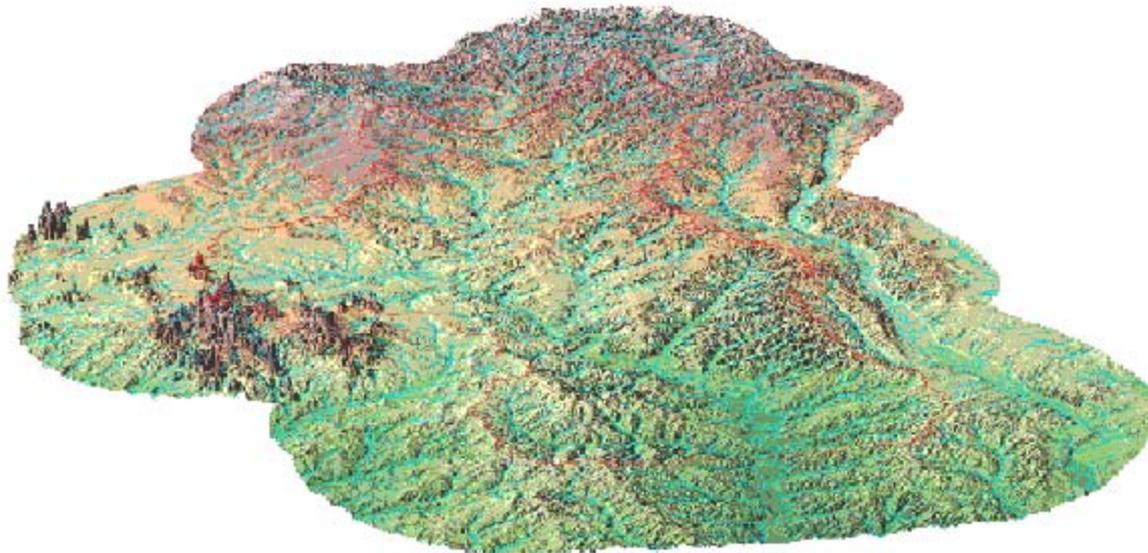
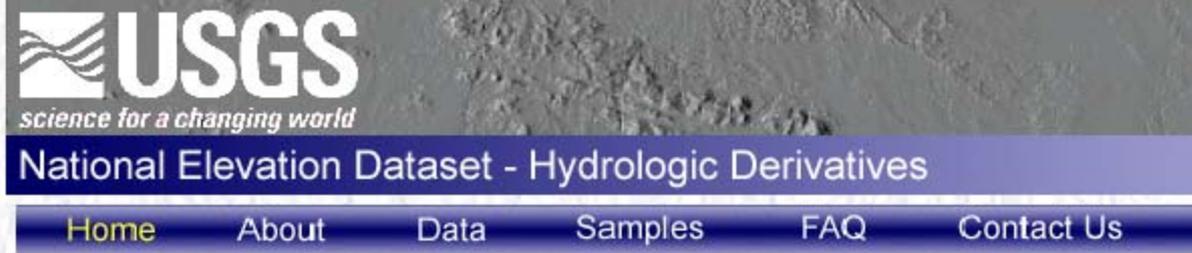
# Uses of NED-H Results

- Stage 1
  - serves as a preliminary guide for watershed delineation
- Stage 2
  - valuable static watershed boundaries
  - input to WBD
- Stage 3
  - fully integrated datasets - NED, NHD & WBD

# Size of the problem

- 2,149 Cataloging Units in U.S.
  - Stage 1: <1 day/unit
  - Stage 2 & 3: ~1 wk/unit
- ~50 person-years
- 1.2 Terabytes of Data

– <http://edcnts12.usgs.gov/ned-h>



The National Elevation Dataset-Hydrologic Derivatives (NED-H) is an interagency effort with its goal the development of a hydrologically correct version of the National Elevation Dataset (NED) and systematic derivation of standard hydrologic derivatives. The quality and wall-to-wall coverage of the high resolution digital elevation data, the development of the National Hydrography Dataset (NHD) and advances in GIS application of terrain modeling have made possible the development of these derivative data layers.

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