Ground Water Networks

Kentucky v/s Other States (PA)
What are the differences in the photos?

Kentucky V/S Pennsylvania
Real-Time Groundwater Network
What are the differences in the photos?

Kentucky V/S Pennsylvania

Real-Time Groundwater Network
Kentucky V/S Pennsylvania Real-Time Groundwater Network

- Kentucky has 120 counties with 1 continuous groundwater site.
- Pennsylvania has 67 counties with 68 continuous groundwater sites.
Why is a Groundwater Network needed?
Drought Monitoring

SURVEY SAYS!

USGS
Example of PA Drought Monitoring

- What is needed for Drought Indicators
  - Precipitation
  - Palmer
  - Surface Water
  - Groundwater
Precipitation

- Drought conditions result from precipitation deficits.

- The Kentucky Water Science Center has 97 Precipitation sites. And this does not include all the NWS precipitation sites.
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The Palmer Drought Severity Index is a value computed as a function of both meteorological and hydrologic data to measure soil moisture conditions.

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Surface Water

- Every day, USGS stream-gage records are used to compute an average flow of the last 30 days preceding that day (called the “30-day moving average daily flow”), that serves as a stream-flow indicator.

- The Kentucky Water Science Center has 210 Streamflow sites.
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Groundwater

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- The Kentucky Water Science Center has “1” Continuous Groundwater site.
Groundwater

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- The Kentucky Water Science Center has “1” Continuous Groundwater site.
PA Composite Indicator Map

- Normal or Above
- Watch
- Warning
- Emergency
- Missing Data

▲ = Data used from another county
PA Composite Indicator Map

- Status of indicators is shown by the color of the four squares within each county. The color of the squares is not an indication of drought declarations. Status of the current drought declaration is shown by the color of the counties themselves (county colors change when declarations are issued).
PA Composite Indicator Map

- Precipitation Palmer Index
- Surface Water
- Ground Water

▲ = Data used from another county

Legend:
- Green: Normal or Above
- Yellow: Watch
- Orange: Warning
- Red: Emergency
- □: Missing Data
PA Composite Indicator Map

- Precipitation
- Palmer Index
- Surface Water
- Ground Water

▲ = Data used from another county

Legend:
- Green: Normal or Above
- Yellow: Watch
- Orange: Warning
- Red: Emergency
- Blank: Missing Data
PA Composite Indicator Map

- Precipitation
- Palmer Index
- Surface Water
- Ground Water

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Legend:
- Green: Normal or Above
- Yellow: Watch
- Orange: Warning
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USGS
PA Composite Indicator Map

○ = County Data
△ = Data used from another County
(as indicated by ▶)

Color codes:
- Green: Normal or Above
- Yellow: Watch
- Orange: Warning
- Red: Emergency
- White: Missing Data
PA Composite Indicator Map

MERCER COUNTY OBS WELL MR-3306
US GEOLOGICAL SURVEY PROVISIONAL DATA — SUBJECT TO CHANGE
30-DAY MOVING AVERAGE DAILY DEPTH TO WATER
BEGIN YEAR = 2001 NUMBER OF YEARS = 11.2 DATE OF PLOT = 06/10/13

ALL DATA SHOWN ARE BASED ON 30-DAY MOVING AVERAGES. PERCENTILE BANDS HAVE BEEN SMOOTHED.

SOLID LINE = 30-DAY MOVING AVERAGE OF CURRENT DAILY DEPTH TO WATER
GREEN (TOP) BAND = 25 TO 75 PERCENTILE DEPTHS (NORMAL CONDITIONS)
YELLOW BAND = 10 TO 25 PERCENTILE DEPTHS (DROUGHT WATCH CONDITIONS)
ORANGE BAND = 5 TO 10 PERCENTILE DEPTHS (DROUGHT WARNING CONDITIONS)
RED (BOTTOM) BAND = 0 TO 5 PERCENTILE DEPTHS (DROUGHT EMERGENCY CONDITIONS)

Link to Real-Time Graph
PA Composite Indicator Map

Real Time GW data
Only GW is in a Emergency situation, the other 3 are normal.
PA Composite Indicator Map

Weekly Palmer Drought and Crop Moisture Data for the Climate Divisions in the Eastern Region
CLIMATE PREDICTION CENTER, NCEP, NWS, NOAA
WEEK 12 OF THE 2013 DROUGHT SEASON IS THE WEEK ENDING 1 JUN 2013

SOIL MOISTURE FIELD

PA 1 SOUTHWEST PLATEAU 64.5 0.45 0.00 4.56 51.0 0.96 0.00 0.00 -0.04 -2.30 -1.18 F 4.28
PA 2 NORTHEAST PLATEAU 81.1 1.69 0.72 4.70 91.6 0.97 0.00 0.07 0.64 -1.59 -1.30 F 2.51

USGS
Why can’t Kentucky have same?

- They can.
- Cooperating efforts between all of us can make this happen.
- The system is already set up from Pennsylvania.
- Kentucky has 3 of the 4 indicators already.
"It's time we face reality, my friends. ... We're not exactly rocket scientists."