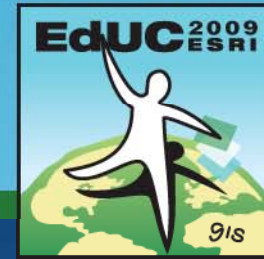


2009 ESRI Education User Conference

July 11–14, 2009



Please!
Turn OFF cell phones
and paging devices



Symbolize data in ArcMap: Create a weather map

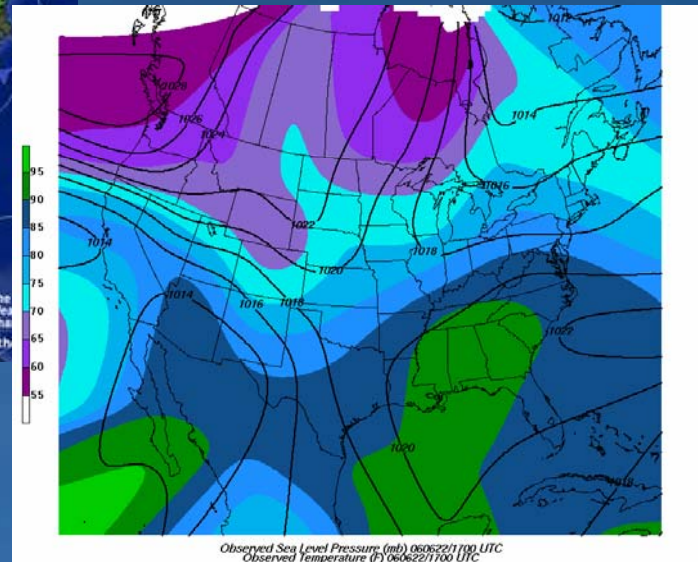
Gregory C. Emmanuel

Outline

- **Weather map basics**
- **GIS-ready weather data**
- **Prepare data in ArcCatalog**
 - Examine data & metadata
 - Geoprocessing
- **Display data in ArcMap**
 - Classify & symbolize wind data
- **Create temperature raster & isotherms**
 - Use Spatial Analyst
 - ModelBuilder isotherm model

Weather map basics

- Barometric pressure
 - Isobars (lines of equal pressure)



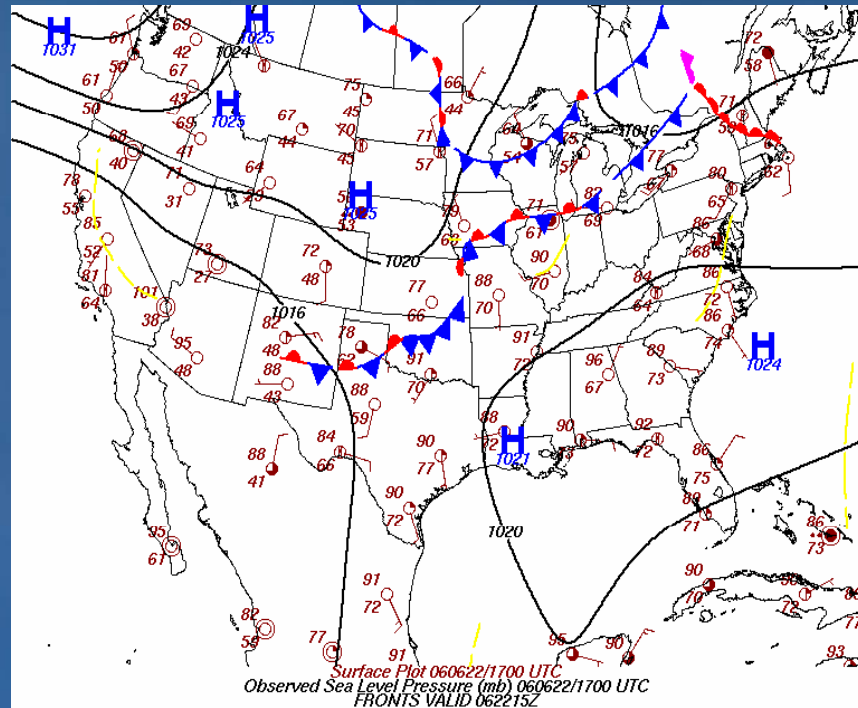
Weather map basics

- Surface temperature
 - Isotherms (lines of equal temperature)



Weather map basics

- Surface winds
 - Wind barbs (symbols to show winds speed & direction)



GIS-ready weather data

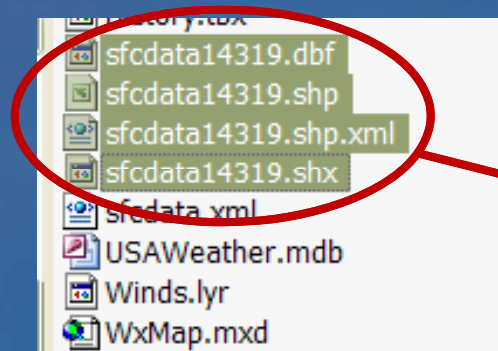
- **NOAA Satellite and Information Service**

- Satellite Services Division GIS
- <http://www.gis.ssd.nesdis.noaa.gov>
- Near real-time surface conditions for whole world

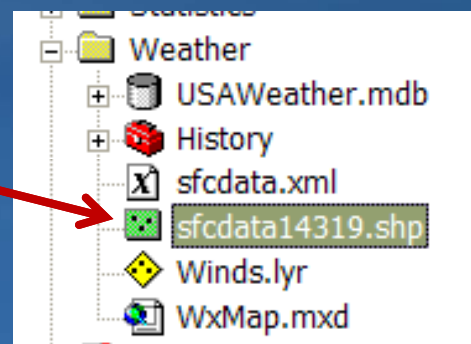


- **Shapefile**

- Must download all 3 files (.SHP, .SHX, .DBF)
- Metadata (.XML)



Windows Explorer

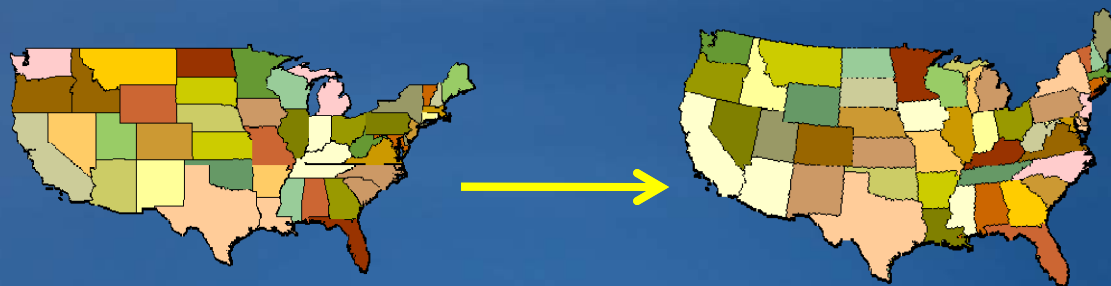
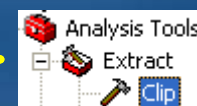
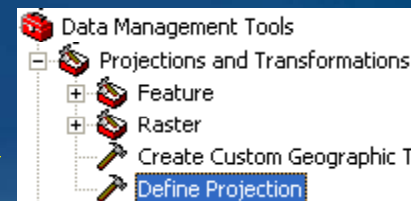


ArcCatalog

Demonstration

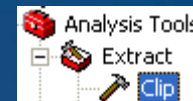
Examine & prepare data in ArcCatalog

- Preview data & metadata
- Define .SHP coordinate system →
- Clip .SHP data to study area – USA
- Convert .SHP to GDB FC
- Project .SHP to new coordinate System

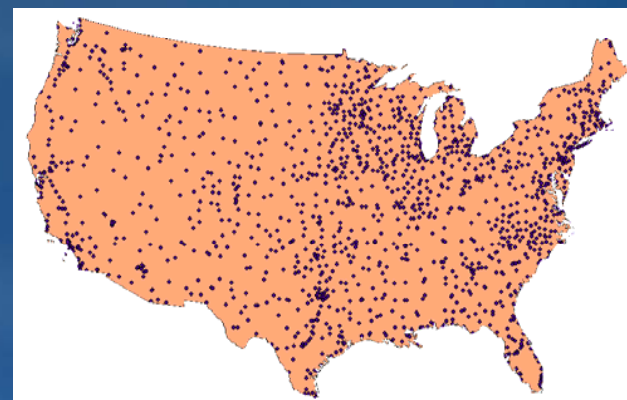
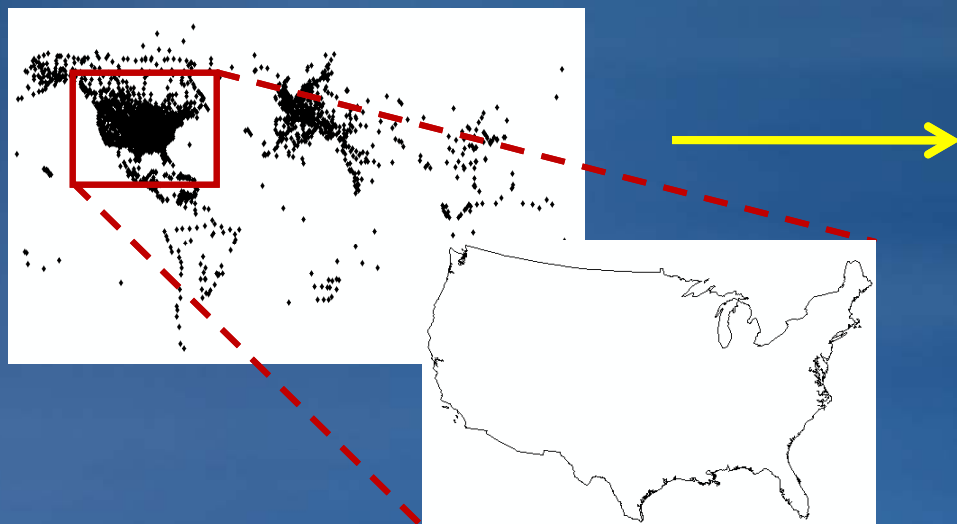


Clip features

- Use a FC to define the boundary of another



Input Features

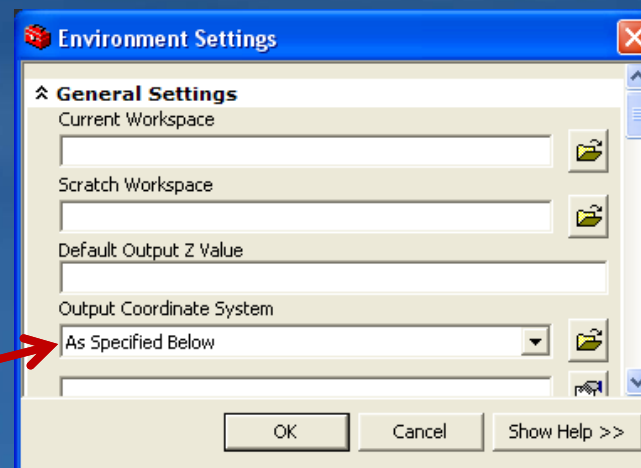
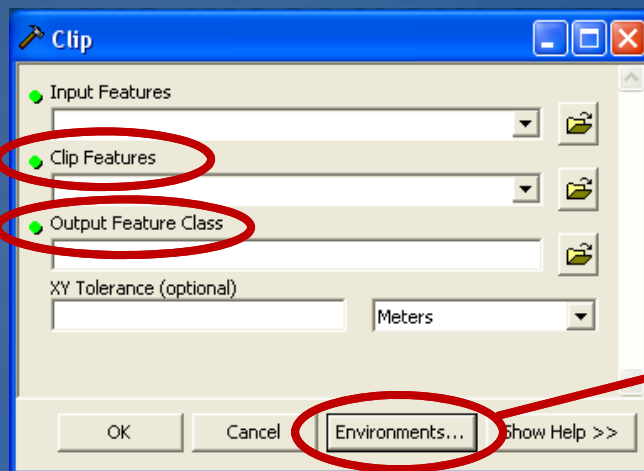
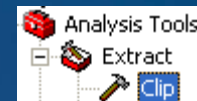


Output Features

Clip Features
(the cookie cutter)

Get the most from a GP tool

- Perform 3 operations at once
- Clip GP tool
 - Use a FC to define boundary of another – **Clip**
 - Set Output FC to different format – **Conversion**
 - Set Output Coordinate System to different one – **Projection**



Software demonstration

Classify weather data

- Choose appropriate field
- Exclude missing values from classification scheme

WINDDIR	SPD_KT_	RSPD_KT_	SPD_M_h_	SLP	TEMP_C_	TEMP_F_
170	20	20	23	1009.6	34	93
290	8	10	9	-99.9	19	66
140	5	5	6	-99.9	23	73
300	11	10	13	1014.8	22	71
180	20	20	23	1006.1	29	84
140	8	10	9	-99.9	30	86
999	999	999	999	1017.7	19	66
180	11	10	13	-99.9	30	86
340	5	5	6	-99.9	31	88
330	8	10	9	1021.7	20	68
160	12	10	14	-99.9	25	77
999	5	5	6	1020.1	24	75
190	12	10	14	1014.7	30	86

Symbolize weather data

- Weather style set

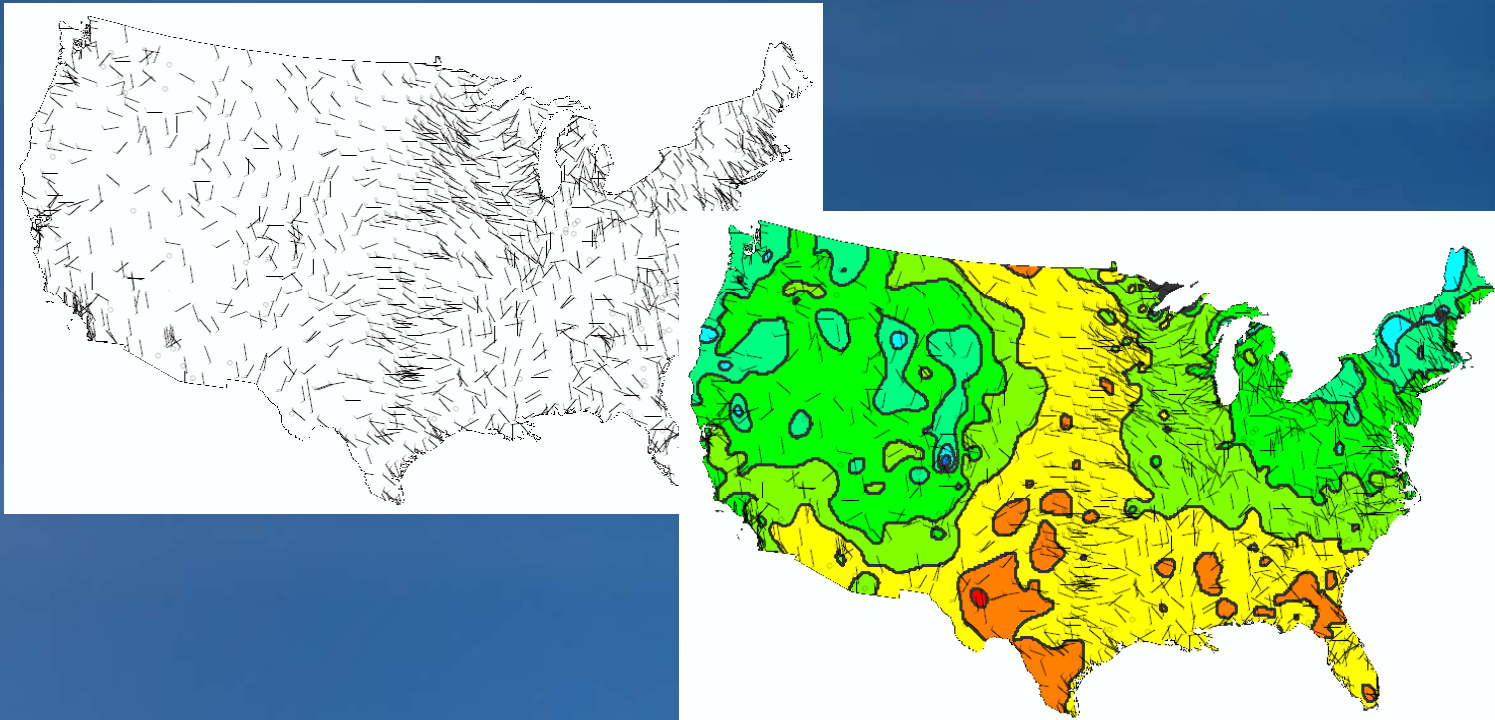
The screenshot shows the 'Style Manager' dialog box. The left pane displays a tree view of the file system, with 'Weather.style' and 'Marker Symbols' circled in red. The right pane shows a grid of symbols for wind speeds from 20K to 90K. The 'Wind Speed--30K' symbol is circled in red, and a red arrow points from it to a larger 'Wind barb' symbol shown to the right of the dialog box.

Wind Speed--20K	Wind Speed--25K	Wind Speed--30K
Wind Speed--35K	Wind Speed--40K	Wind Speed--45K
Wind Speed--50K	Wind Speed--55K	Wind Speed--60K
Wind Speed--65K	Wind Speed--70K	Wind Speed--75K
Wind Speed--80K	Wind Speed--85K	Wind Speed--90K

Wind barb

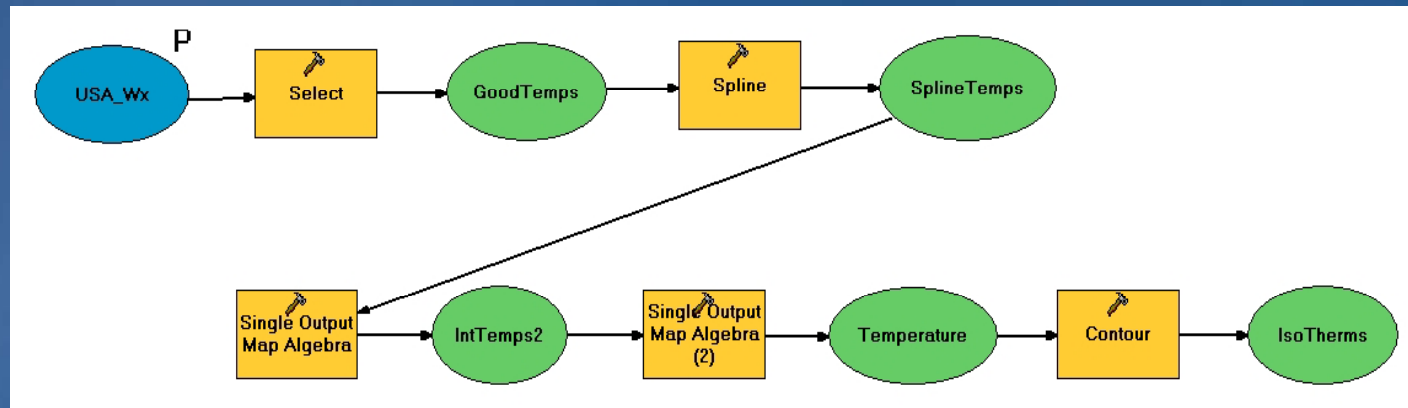
Spatial Analyst extension

- Spline
- Contour

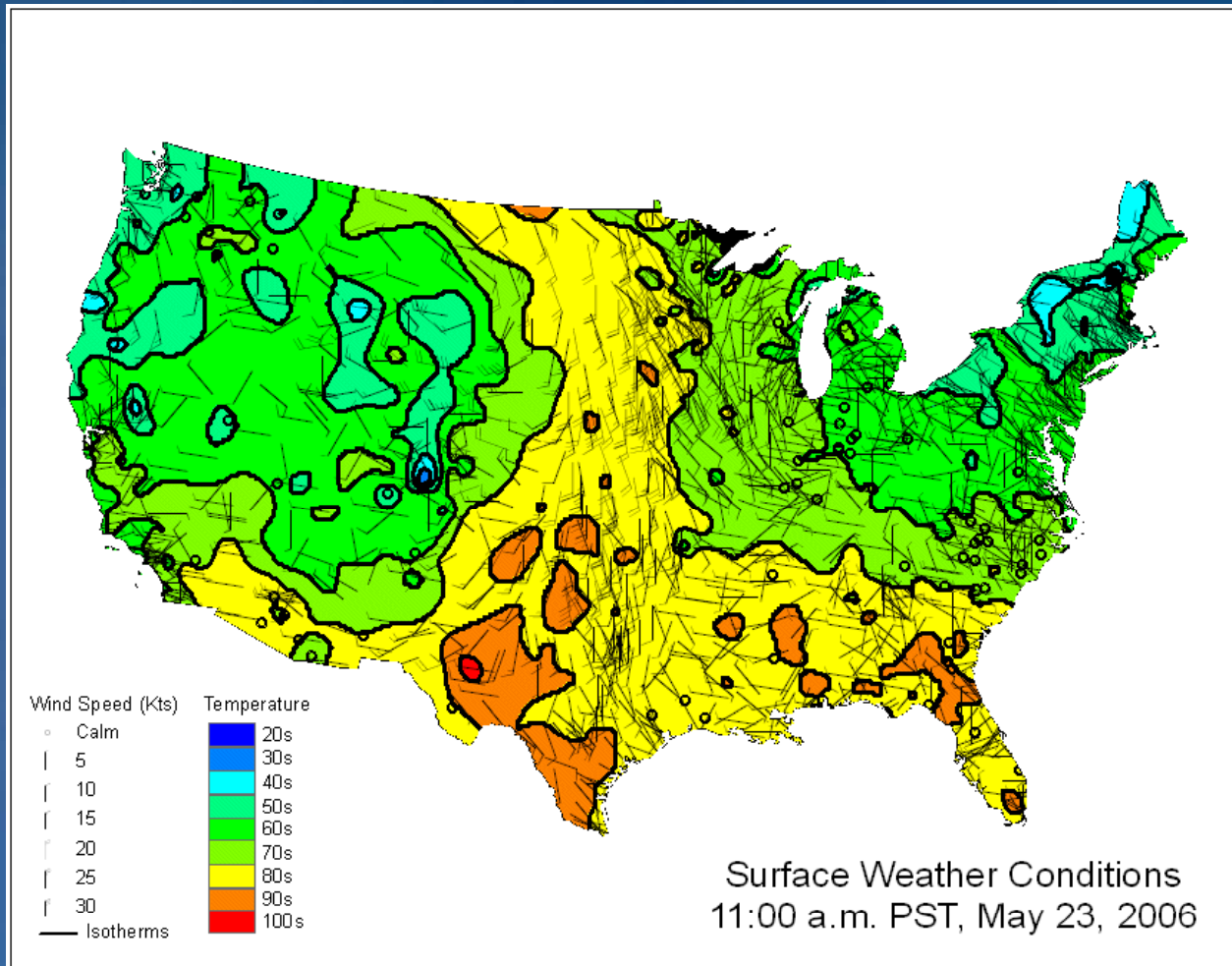


ModelBuilder

- Create a GP model
- String several tools together
- Output of one tool becomes input for another



Create a layout



Software demonstration

Summary

- Weather map basics
- GIS-ready weather data
- Prepare data in ArcCatalog
- Display data in ArcMap
- Create temperature raster & isotherms

Exercise – Symbolize Data in ArcMap: Create a Weather Map (45 minutes)

1. Examine weather data
2. Process the data
 - Define projection
 - Clip
3. Add data to ArcMap
4. Symbolize with Weather style set
 - Temperature
 - Wind
5. Create map layout
 - Apply a template

GIS Training and Education Survey

<http://www.esri.com/training>

- **Brief online survey to get your feedback**
 - All survey takers get a free one-module Web course
- **Helps us develop training products that:**
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 - Cover the ESRI products you use
 - Focus on most common GIS tasks and roles
- **Survey available at:**
 - ESRI Showcase: Training and Education Island
 - ESRI Training Web site (until July 20th)

Thank you for attending!

Questions?