

IEM Access & Free GIS

Daryl Herzmann
Department of Agronomy
Iowa State University



Outline

- IEM Background Info
- Free GIS components
 - PostGIS
 - UofM Mapserver
 - OpenGIS
- IEM GIS Efforts
 - IEM Access

IEM Overview

- Collect, compare, disseminate, and archive environmental data in Iowa
- Currently tracking over 650 sites in the Midwest US.
- Our goal is to bridge the gap between those that need data and those that have data.

Why GIS?

- Provides a framework for data management, analysis and display
- Provides a large community of folks able to use GIS datasets
- OpenGIS & FreeGIS provides standards to fit our software philosophy

Free GIS

- “Free software” is a matter of liberty, not price. To understand the concept, you should think of “free” as in “free speech” or “free markets,” not as in “for free” (gratis).
- IEM GIS development fits under the FreeGIS umbrella (software & data)
- <http://www.freegis.org>

'Free' Components

- PostgreSQL (Relational Database)
- PostGIS (Spatial Blade for PostgreSQL)
- UofM Mapserver (Internet Mapping Server)
- PHP (Application logic)
- Apache (Web Server)
- Grass (Desktop GIS)

Proprietary

Free

- Oracle
 - ArcSDE
 - ArcIMS
 - ASP
 - Microsoft IIS
 - ArcGIS
- PostgreSQL
 - PostGIS
 - Mapserver
 - PHP
 - Apache
 - Grass

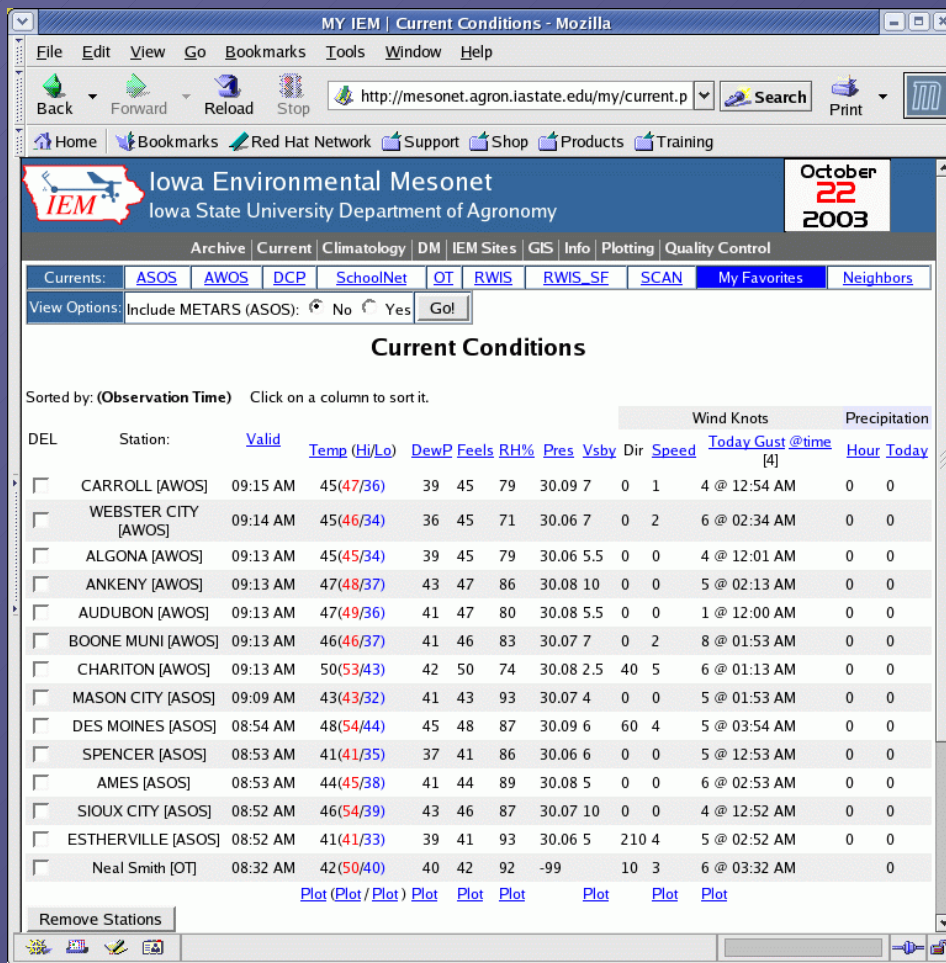
IEM Access

- Project name for our internal data management system.
- 'Access' refers to the ability for applications to seamlessly get at these data sources.
- At the simplest, it is a publicly available spatial database.

What does IEM Access hold?

- Latest observation
- Daily Summaries
- Monthly Summaries
- Growing Season Summaries
- Yearly Summaries
- Climatologies (soon)

Ex App: Current Sortables



MY IEM | Current Conditions - Mozilla

http://mesonet.agron.iastate.edu/my/current.p

Iowa Environmental Mesonet
Iowa State University Department of Agronomy

October 22 2003

Archive | Current | Climatology | DM | IEM Sites | GIS | Info | Plotting | Quality Control

Currents: ASOS AWOS DCP SchoolNet OT RWIS RWIS_SF SCAN My Favorites Neighbors

View Options: Include METARS (ASOS): No Yes

Current Conditions

Sorted by: (Observation Time) Click on a column to sort it.

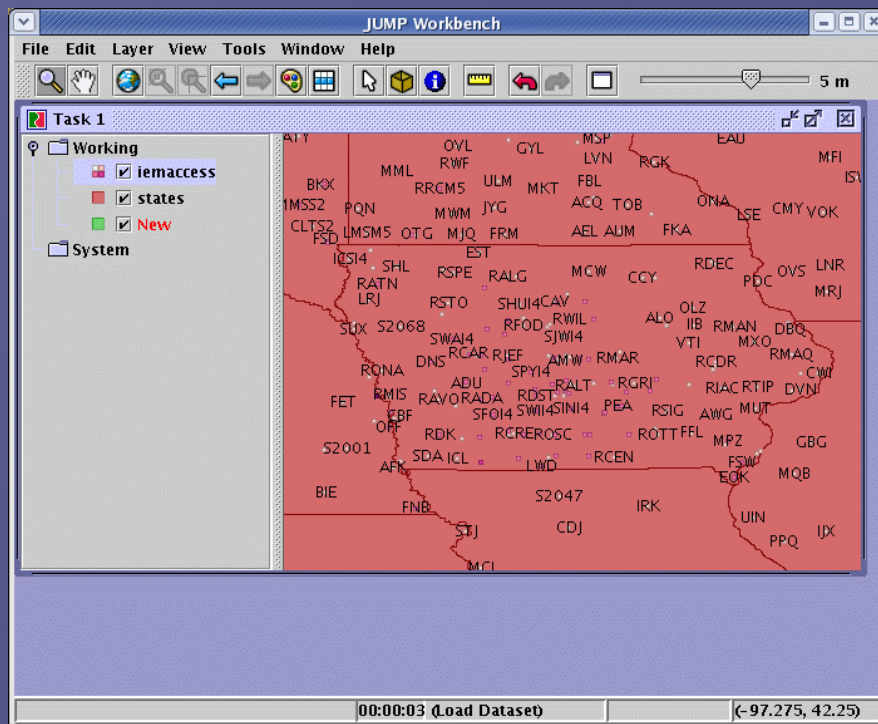
DEL	Station:	Valid	Temp (H/L)	DewP	Feels	RH%	Pres	Vsby	Dir	Speed	Wind Knots Today Gust @time [4]	Precipitation Hour Today
<input type="checkbox"/>	CARROLL [AWOS]	09:15 AM	45(47/36)	39	45	79	30.09	7	0	1	4 @ 12:54 AM	0 0
<input type="checkbox"/>	WEBSTER CITY [AWOS]	09:14 AM	45(46/34)	36	45	71	30.06	7	0	2	6 @ 02:34 AM	0 0
<input type="checkbox"/>	ALGONA [AWOS]	09:13 AM	45(45/34)	39	45	79	30.06	5.5	0	0	4 @ 12:01 AM	0 0
<input type="checkbox"/>	ANKENY [AWOS]	09:13 AM	47(48/37)	43	47	86	30.08	10	0	0	5 @ 02:13 AM	0 0
<input type="checkbox"/>	AUDUBON [AWOS]	09:13 AM	47(49/36)	41	47	80	30.08	5.5	0	0	1 @ 12:00 AM	0 0
<input type="checkbox"/>	BOONE MUNI [AWOS]	09:13 AM	46(46/37)	41	46	83	30.07	7	0	2	8 @ 01:53 AM	0 0
<input type="checkbox"/>	CHARITON [AWOS]	09:13 AM	50(53/43)	42	50	74	30.08	2.5	40	5	6 @ 01:13 AM	0 0
<input type="checkbox"/>	MASON CITY [ASOS]	09:09 AM	43(43/32)	41	43	93	30.07	4	0	0	5 @ 01:53 AM	0 0
<input type="checkbox"/>	DES MOINES [ASOS]	08:54 AM	48(54/44)	45	48	87	30.09	6	60	4	5 @ 03:54 AM	0 0
<input type="checkbox"/>	SPENCER [ASOS]	08:53 AM	41(41/35)	37	41	86	30.06	6	0	0	5 @ 12:53 AM	0 0
<input type="checkbox"/>	AMES [ASOS]	08:53 AM	44(45/38)	41	44	89	30.08	5	0	0	6 @ 02:53 AM	0 0
<input type="checkbox"/>	SIoux CITY [ASOS]	08:52 AM	46(54/39)	43	46	87	30.07	10	0	0	4 @ 12:52 AM	0 0
<input type="checkbox"/>	ESTHERVILLE [ASOS]	08:52 AM	41(41/33)	39	41	93	30.06	5	210	4	5 @ 02:52 AM	0 0
<input type="checkbox"/>	Neal Smith [OT]	08:32 AM	42(50/40)	40	42	92	-99	10	3	6 @ 03:32 AM	0	

Remove Stations

- PHP generates a custom view of sites you are interested in
- Mapserver can generate a plot of whatever you like.

Ex App: Shapefile download

- One-click to download a dynamically generated shapefile with the current conditions in it.
- Shown plotted in JUMP (Free GIS)



Other Applications

- Give the database your current position and ask for the nearest observation.
- Ask the database to take a site observation and compare it to its 10 nearest neighbors. (QC)
- Aggregate to some other polygon layer, ex) counties, states

PyIMS Fascade

- Allows Mapserver to appear as an ArcIMS service
- Homepage: google for 'PyIMS'
- Currently only supports RASTER
- IEM's PyIMS server is here
`db1.mesonet.agron.iastate.edu`
- Serve nationwide NEXRAD (4326)

Mapserver WMS

- First publicly accessible RADAR WMS?
- URI:
`mesonet.agron.iastate.edu/wms/radar.php?`
- Currently serves UTM Zone 15 North (epsg: 26915)

Current Challenges

- Including time within GIS
- Dynamic refreshes with desktop GIS
- Inefficiencies of WMS
- 'Interoperability'

Time for demos?

- ArcExplorer
 - Talk with pyIMS server
 - Talk with WMS
 - Ortho server and Mapserver
- Website
 - Current Sortables
 - Dynamic Plotting

I'm done, questions?



Daryl Herzmann

3010 Agronomy

294-5978

akrherz@iastate.edu