



Tools for Farm Mapping

Conservation Tillage and Technology Conference
Ada, Ohio - February 23, 2007

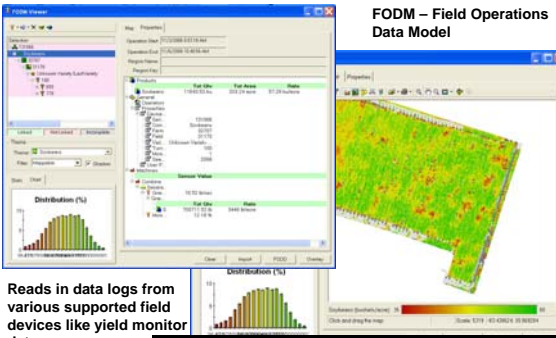
Nathan Watermeier, Program Director and Geospatial Extension Specialist

Ohio Geospatial Extension Program 

Today's Topics

- Yield Monitor Utility Software
- Standalone GIS
- Internet Based Mapping Tools
- Imagery for Base Maps and Digitizing Field Boundaries
- Low-Cost GPS and Computing Equipment

FOViewer – MapShots.com

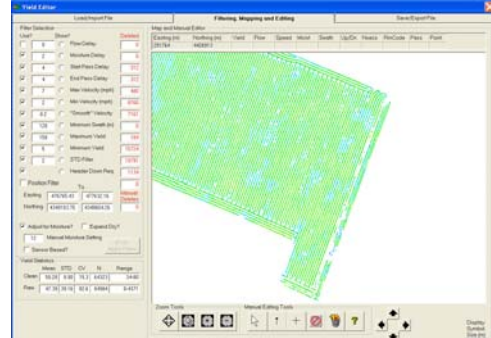


FODM – Field Operations Data Model

Reads in data logs from various supported field devices like yield monitor data.

<http://www.mapshots.com/FODM/fodd.asp>

Yield Editor 1.02 – USDA ARS



http://www.fse.missouri.edu/ars/decision_aids.htm

Specialized Field Record Keeping and GIS Programs

- SMS, Ag Leader Technology – <http://www.agleader.com>
- Farm Works Software - <http://www.farmworks.com>
- John Deere APEX – http://stellarsupport.deere.com/en_US/
- EasiSuite, MapShots – <http://www.mapshots.com>
- SST Toolbox, SST Development Group, Inc. – <http://www.sstdevgroup.com>
- Mobile Farm Software - <http://www.farm-software.net/>
- FarmHMS, FarmGIS, Red Hen Systems – <http://www.farmgis.com>

Large-scale and commercial enterprises and operations can also consider SGIS, Ag-Chem Equipment Co. Inc. <http://www.agchem.com>, Total Scout, AgCode, <http://www.agcode.com/> and CropLands, Enterprise software by Linnet - <http://www.linnet.ca>.


Stand Alone GIS

Geographic Information Systems use file types such as Shape (*.shp) or MapInfo Interchange files (*.mif)

- AccuGlobe – <http://www.accuglobe.net>
- DIVA-GIS – <http://www.diva-gis.org>
- ESRI – <http://www.esri.com>
- Manifold.net – <http://www.manifold.net>
- MapInfo – <http://www.mapinfo.com>
- JUMP – <http://www.jump-project.org/>
- AGIS - <http://www.agismap.com/>
- Delta Data Systems, AGIS - <http://www.deltadatasystems.com/agis/>
- fGIS – <http://www.forestpal.com/fgis.html>
- GRASS - <http://grass.itc.it/>
- Global Mapper – <http://www.globalmapper.com>
- JUMP Unified Mapping Platform - <http://jump-project.org/>
- TatuGIS Editor – <http://www.tatugis.com>

Forestry GIS (fGIS) <http://www.forestpal.com/fgis.html>

- Free GIS
- Digitize and create points, lines and polygons
- Calculate areas
- Import tabular data
- Transparency feature
- 3D topo features
- Limited data projection utility
- Label and print reports



AccuGlobe 2007 <http://www.accuglobe.net>



Internet Based GIS and Mapping

- A mapping system you use through the internet.
- Some require you to download a viewer others directly through a web browser

Limitations

- Mostly limited to data that they provide.
- With slow bandwidth makes slow map making.

Examples

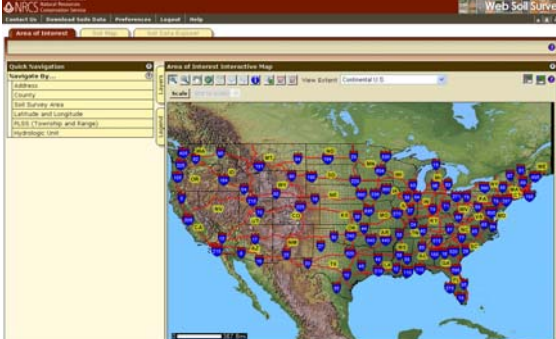
- Web Soil Survey – <http://websoilsurvey.nrcs.usda.gov>
- Google Earth – <http://earth.google.com>

National Cooperative Soil Survey Web Soil Survey

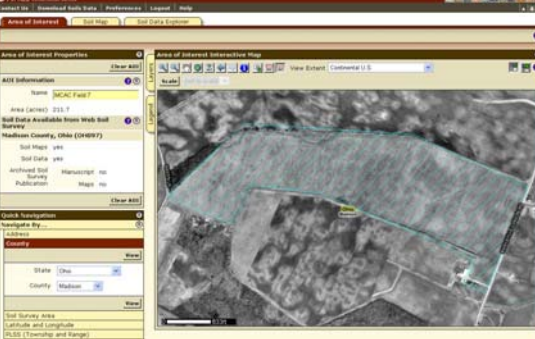


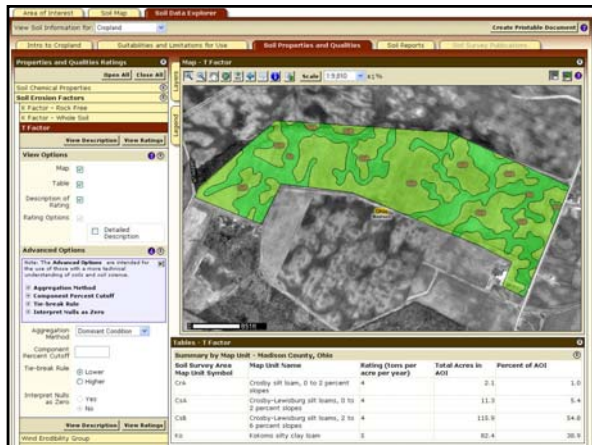
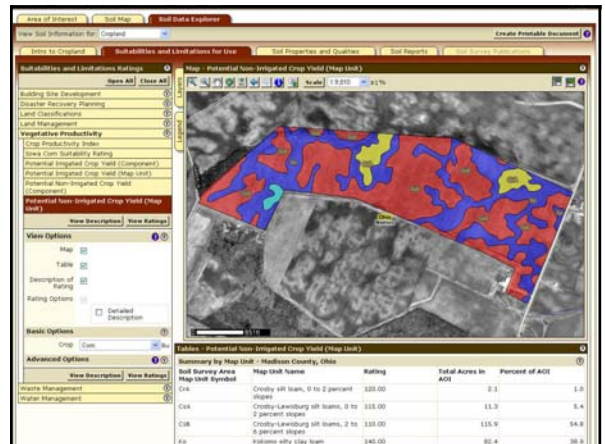
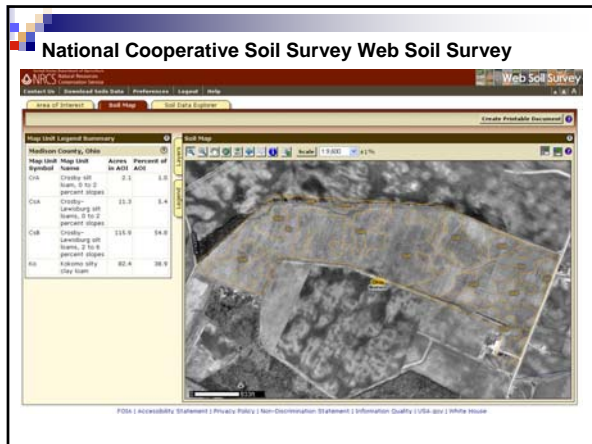
<http://websoilsurvey.nrcs.usda.gov/>

National Cooperative Soil Survey Web Soil Survey



National Cooperative Soil Survey Web Soil Survey



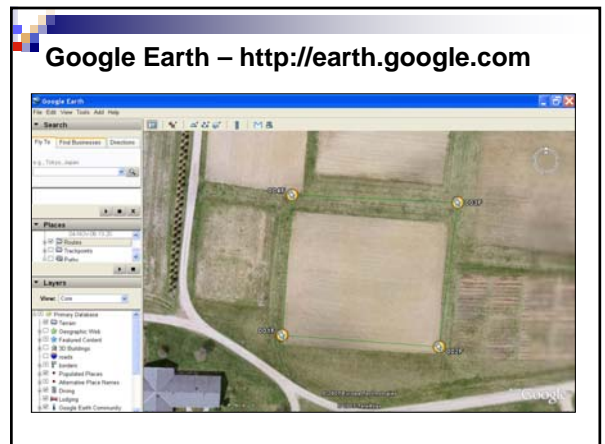
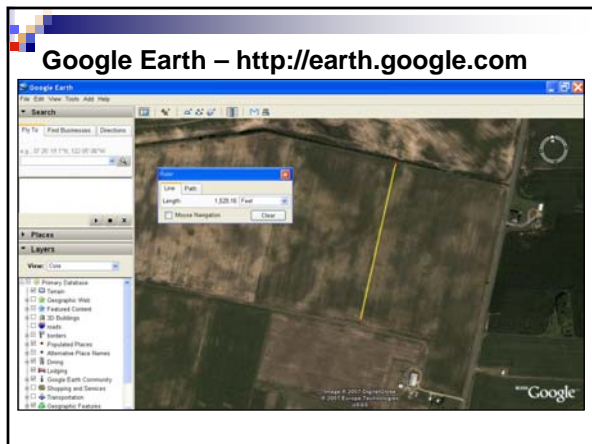


National Cooperative Soil Survey Web Soil Survey

Nonirrigated Yields by Map Unit

Madison County, Ohio

Map symbol and soil name	Land capability	Yields (Bu)		
		Corn	Soybeans	Winter wheat
C1A: Crookley	2w	120	40	48
C1B: Crookley-Lewisburg	2w	115	38	45
C1C: Crookley-Lewisburg	2w	110	30	45
K1: Kickomo	2w	140	45	50



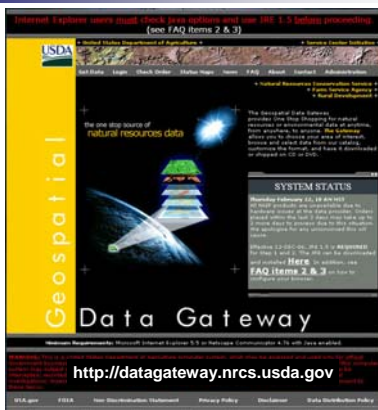
Acquiring Imagery and Topo Maps

- Local County Engineers or Auditors Office
- State GIS Data Support Centers:
 - Ohio GIS Support Center
 - <http://metadataexplorer.gis.state.oh.us/metadataexplorer/>
- USDA Geospatial Data Gateway
- USAPhotoMaps – <http://www.jdmcox.com>
- Microsoft Terraserver – <http://terraserver.microsoft.com>
- Terrafetch – <http://www.mapshots.com>

Most precision ag software allows you download data through program.



<http://metadataexplorer.gis.state.oh.us/metadataexplorer/>



USDA Geospatial Data Gateway

<http://datagateway.nrcs.usda.gov>

- Common Land Units (CLU)
- Hydrologic Units
- Topographic Images (Digital Raster Graphs – DRG)
- Digital Orthoquadrangles (1 m b/w images)
- Soil Survey (spatial and tabular)
- Annual Temperatures (min, max, average)

National Agriculture Imagery Program - NAIP

- 1 meter and 2 meter color imagery
- Initiated by USDA-FSA
- Available as county compressed mosaics (CCM) MrSID \$50 or quarter quadrangles as geoTIFF (\$5-15)
- Ohio 2004, 2005, and 2006
- Available for download from Ohio Metadata Explorer and USDA Geospatial Data Gateway




<http://metadataexplorer.gis.state.oh.us/metadataexplorer/>

Ohio Statewide Imagery Program (OSIP)

Products


- Statewide 1' = 200' scale **color digital** Orthophotography at 1-foot pixel resolution.
- Statewide 1" = 1,000' scale **color Infrared** Orthophotography at 1-meter resolution
- Statewide **LiDAR Acquisition**
- Statewide **LiDAR derived DEM**
- Optional OSIP products ex: 1"= 100' scale color digital orthophotography at **0.5-foot pixel** resolution, **Contours (2 and 5 foot)**
- Will be provided as public domain data available GIServOhio Portal

Digital Orthoimagery
 1" = 200' scale 1 foot pixel resolution



Jeff Smith, Ohio ESS OIT

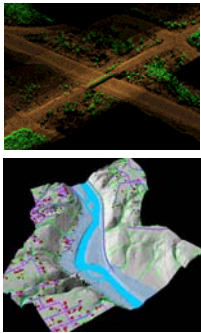
Color Infrared Digital Orthophotography
 1" = 1,000' scale with 1-meter resolution



Jeff Smith, Ohio ESS OIT

Light Detection and Ranging (LiDAR)

- Bare earth and reflective surface data
- Generate a LiDAR derived digital elevation model (DEM)
- Further enhanced to develop a digital terrain model (DTM) for creating contours
- Couple with imagery and spatial data for specific applications

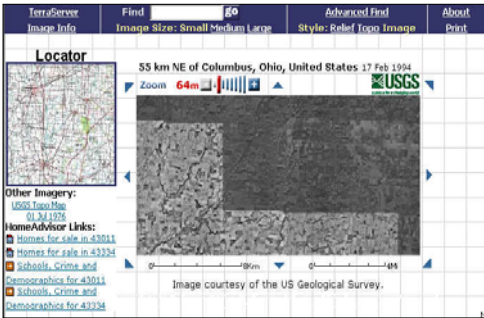
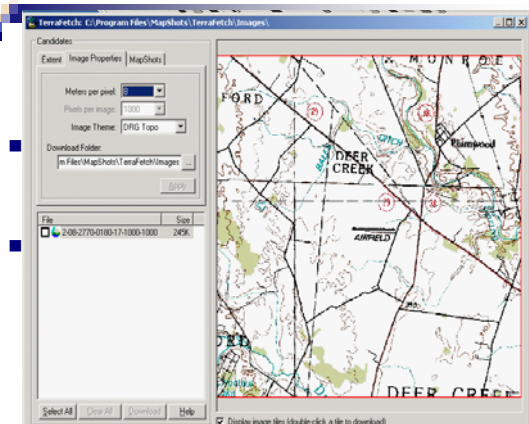


USAPhotoMaps – www.jdmcox.com



Microsoft Terraserver
<http://terraserver.microsoft.com>

**DOQ
DRG**

GPS Record Keeping Software for the Handheld

- Farm Site Mate and Farm Trac Mate – FarmWorks
- SMS Mobile – AgLeader **NEW!**
- ArcPad 7.0 - ESRI
- AgGPS EZ-Map – Trimble
- HGIS - Starpal
- Pocket Dlog – Delta Data Systems
- SST Stratus – SST Development Group
- Pocket Crops – MapShots
- Field Recon - AgRenaissance
- FieldWorker

Garmin Handhelds



eTrex Legend
\$148

eTrex Vista
\$225

GPSMAP 60
\$250

GPSMAP 76SC
\$440

Prices listed from <http://www.gpscocity.com>

Pocket PC – Windows Mobile 5.0



iPAQ hx2495

iPAQ hx2795

iPAQ hx4700

www.hp.com

Embedded GPS PocketPCs

SiRFstar III (WAAS) GPS receivers



ASUS MyPal A636N
\$530 w/ Nav software
\$400 w/o Nav software

HP iPAQ rx5900 Travel Companion
\$600

Ruggedized PocketPCs Windows Mobile 5.0



Trimble Recon GPS XC
2-5 meter accuracy

SMS Mobile
AgLeader

Titan RH or Titan Jr
2-5 meter accuracy
Farm Works Software

Trimble GeoXH Handheld
Sub-Foot Accuracy
(also GeoXT and XM)

Low-Cost GPS Add-on's

New Chipset Low Power Grade - SiRF Star III Chipset



GlobalSat BC-337
\$80

Hiacom HI-407 BT
\$80

Hiacom HI-406BT-C
Digital Compass
Rechargeable
Bluetooth
\$85

Holux GR-271
\$75

Hiacom HI-505SD
Bluetooth with
Secure Digital Slot
\$110

Hiacom HI-303III
\$80

New Innovations Low-Cost GPS

World's Smallest

iBlue 757
Bluetooth
Solar Powered
100 hrs Extended
1-3 Meters
Data Logger also available
\$100

GlobalSat BT-359W
\$105

GlobalSat BT-359W
1 x 3"
\$85

Wintec WBT-100
\$95
Bluetooth, USB GPS, Data Logger, Compass

4-in-1

Cabled GPS Solution

Haicom HI-204III
\$70

Garmin 18PC
5Hz - \$200
1Hz - \$80

Holux GR-213
\$60

Ultra-Mobile PCs

Samsung Q1

ASUS R2H

Large Screen Field Monitors and Computers Windows CE

Farm Works Titan RT

Raven Viper

Virtual Terminals

- Future equipment is moving towards ISO standards (ISO 11783)
- CAN bus connectivity
- Different colored equipment working together
- One screen, less cab clutter, multiple functions, download specific applications on the go via satellite or wireless

Questions?

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