FY 2005-2006
Annual Summary Report of Activities

Pennsylvania Spatial Data Access

The Public Geospatial Data Clearinghouse for the Commonwealth of Pennsylvania

Submitted by

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Introduction

Pennsylvania Spatial Data Access (PASDA), the public geospatial data clearinghouse for the Commonwealth of Pennsylvania. PASDA marked its 10th anniversary in 2006. PASDA was developed by the Pennsylvania State University in 1996 with data from the Pennsylvania Department of Environmental Protection and USGS. Currently, PASDA has a broad range of data providers including PennDOT, DCNR, DEP, PA Department of Health, USGS, PA Topographic and Geologic Survey, City of Philadelphia, Chester County, and many more. Users come from a broad spectrum of organizations and backgrounds, from teachers and citizens to businesses and government agencies, PASDA provides free access to data, applications, and customization tools to meet the needs of every user.

PASDA was developed by the Pennsylvania State University as a service to the citizens, governments, and businesses of the Commonwealth. PASDA is a cooperative project of the Governor's Office of Administration, Office for Information Technology, Bureau of Geospatial Technologies and Penn State Institutes of the Environment of the Pennsylvania State University. Funding is provided by the Pennsylvania Office for Information Technology, Bureau of Geospatial Technologies. In addition, the Pennsylvania State University provides substantial support to the PASDA program for system administration, database administration and infrastructure this year and throughout the life of the program. PASDA serves as the Commonwealth's node on the National Spatial Data Infrastructure (NSDI), Geospatial One Stop, and the National Biological Information Infrastructure.

About PASDA

Data

The data made available through PASDA is provided by our data partners to encourage the widespread sharing of geospatial data, eliminate the creation of redundant data sets, and to further build an inventory (through the development and hosting of metadata) of available data relevant to the Commonwealth. PASDA serves as a resource for locating data throughout the Commonwealth through its data storage, Internet Map Services, applications, and metadata/documentation efforts. The data on PASDA is provided by federal, state, local and regional government agencies, non-profit organizations, and academic institutions throughout the region.

Data Sharing

Sharing data is a process based on trust and efficiency. Since there is no funding involved, sharing data is voluntary and can be encouraged by making the process easy for the provider. PASDA has developed streamlined operations to process and acquire data from the data providers. Because data providers have limited resources and little time and money to devote to preparing their data and metadata, PASDA has made the process as simple as possible. In the cases of local government and non-profit data providers, this

ease of sharing is a direct benefit to their organization. The following are the basic steps in working with data partners:

Step 1: Contact PASDA at pasda@psu.edu
Step 2: PASDA will discuss the data with the provider--for example, roads, land use, parcels, aerial photography, etc. and if/how often it might be updated this data.
Step 3: PASDA will also review any metadata for compliance and work with the data provider to update or complete existing metadata.
Step 4: Send a CD, DVD, or FTP the data and metadata to PASDA.
Step 5: PASDA will place the data and metadata on the PASDA FTP site, and integrate it into our search and retrieval utilities and create a map service of the data if applicable.
Step 6: PASDA will notifies the data provider when the data is made available to the public.
Step 7: Data is accessible.

Staff

PASDA is a cooperative project developed with funding from the Geospatial Technologies Office to provide the greatest possible benefit to the GIS stakeholders in the Commonwealth. The management of PASDA is the responsibility of the PASDA Director at Penn State Institutes of the Environment (PSIEE). The PASDA staff includes:

- Maurie Caitlin Kelly, Director
- Ryan E. Baxter, Information Technology Coordinator
- David Walrath, GIS Programmer
- Scott B. Dane, PASDA Data Manager
- James F. Spayd, Metadata Coordinator
- Wayne Myers, Co-Director of the Office for Remote Sensing and Spatial Information Resources

Note: PASDA wishes to acknowledge the contributions of Chris Pfeiffer to the project. Chris is currently the Computer Systems Network Administrator for PSIE but continues to provide expertise and support to PASDA.

Services

The services available through PASDA include:

- **Data Storage and Access**

  PASDA staff work directly with non-profit organizations, government agencies, academic institutions, and other data stakeholders to identify, document, and

provide access to data and metadata. There is no fee to store or provide access to data through PASDA. PASDA follows the streamlined data acquisition procedure outlined above and integrates all data into the data management system, database, FTP site, and search and retrieval mechanisms.

- **Metadata Development and Training**

  PASDA will create FGDC standard metadata free of charge for any agency, organization, or data stakeholder. The metadata will also be hosted by PASDA for the purposes of developing the state data inventory. PASDA staff provide free metadata training and training in the use of PASDA for individual organizations and groups. PASDA offers formal training on request to groups and organizations wishing to share data.

- **Outreach and User Assistance**

  PASDA works with agencies, non-profit organizations such as watershed groups and K-12 schools to promote the knowledge and use of GIS. PASDA develops lessons, tutorials, and guidelines for new GIS users. PASDA staff offer seminars and presentations at meetings, conferences, and schools. PASDA is committed to providing timely user assistance with the PASDA website and the data available through PASDA.

Summary of Major Activities & Accomplishments

A summary of activities for this year includes a dramatic increase in both the available data and services of PASDA. Though the size of the staff at PASDA has diminished, remaining staff have assumed additional responsibilities to ensure we continue to serve our users and the Commonwealth with the same degree of quality and effectiveness demonstrated in previous years. The activities and progress of PASDA throughout the 2006-2007 fiscal year focused on four major areas: data and metadata development; systems architecture and applications development; emergency response support; and outreach in the form of meetings, conferences, and presentations.

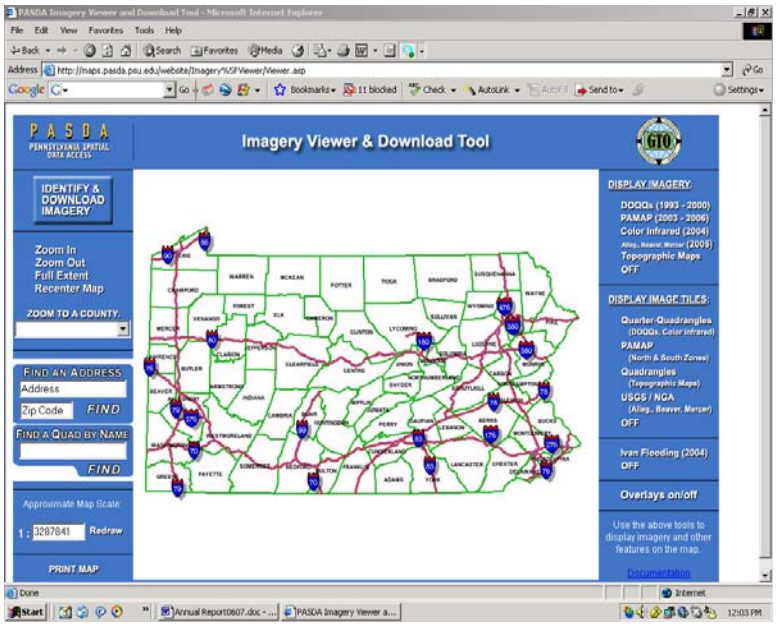
However, a number of initiatives deserve specific mention in this report.

Imagery Viewer and Download Utility

The Imagery Viewer and Download Utility was initially created as a mechanism to coordinate access to all raster data available through PASDA. As the number and diversity of imagery and raster based data increased dramatically in the previous two years, it was becoming more difficult for users to identify and differentiate between years and types of data. As PAMAP data arrived, it was determined that users would be frustrated with a lack of easy access and identification of the tiles they needed for download. Initially, these tiles were only relevant to a user who had previously

downloaded the tile index and opened it within a GIS. PASDA's information technology coordinator, Ryan Baxter, initiated the development and decided to outline the functionality and potential utility of developing a tool to provide easy and coordinated access to these resources.

The goals were: to have a single interface for all imagery/raster data; to allow searching by county, quad, and address as well as having the ability to click on a place in the map to identify; and to offer all potential download options and formats (http, ftp, Mr. Sid, GeoTiff etc). Although additional functionality was added at a later date, once these goals were met and tested, the viewer became operational in Summer 2006.

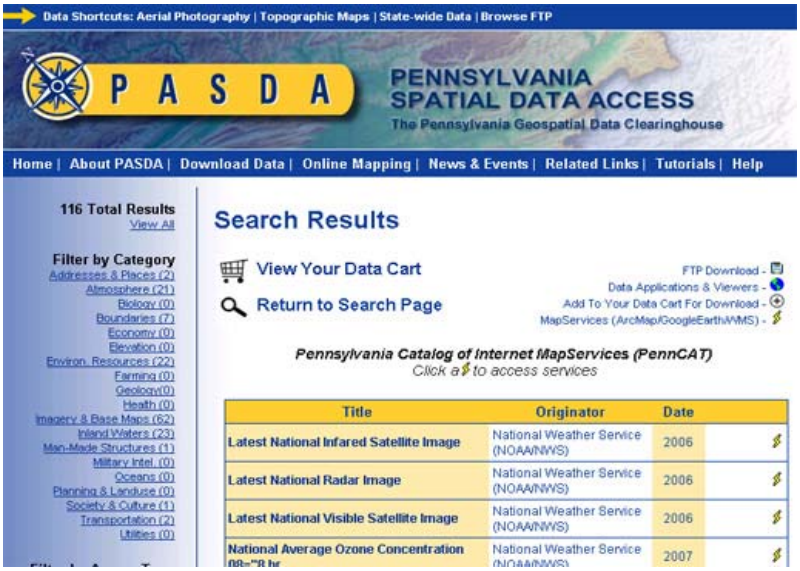


The Imagery Viewer has become the most used tool in the PASDA suite of services. In FY 2006-2007 the Viewer received over 2 million hits and was used to "create maps" (meaning users reached the final map/download stage of their search) 745,279 times.

Map Services

In FY 2005-2006 PASDA had initiated development of Map Services. These services were developed in an effort to address the growing interest in accessing and integrating data into desktop GIS without the need to download vast amounts of data. The first services were developed during that fiscal year using vector data such as roads and streams. Also during that year, a map service for the DOQQs was developed. The development of a map service for each incoming data set became part of the processing of PASDA data. Data was acquired, metadata created, loaded to FTP and the database, integrated into existing applications (such as the PA Atlas), and then a map service created (with the exception of specialized data sets). In FY 2006-2007 the success of

these services and the mainstreaming of this process into the overall data acquisition procedures allowed for the expansion and enhancement of map services in the PASDA architecture. The PAMAP data was loaded in the database and added to the suite of map services, as were the NAIP and DRGs. In addition, a collaborative effort with PSU EMS provided PASDA with data from the National Weather Service in map service ready format.



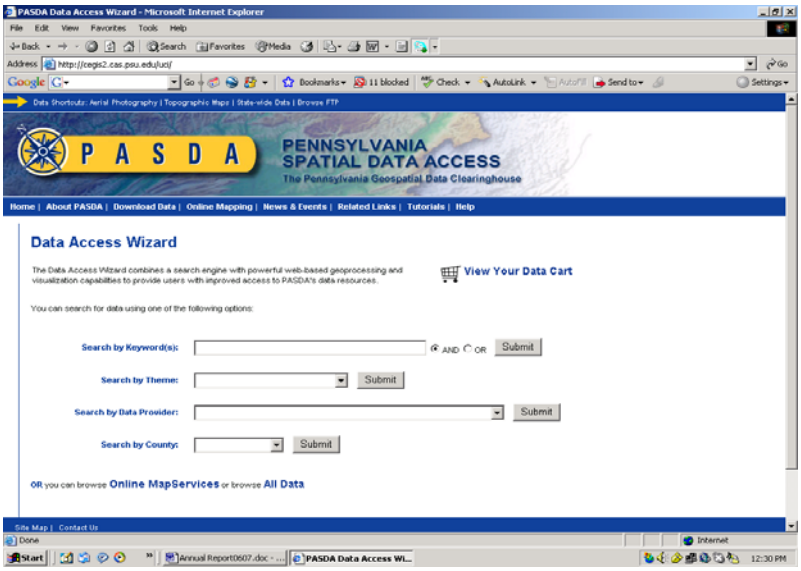
Additional options were added to the suite of map services. Users could add the data through ArcMap, view in Google Earth, or use our WMS service. In addition to image services, feature services, which allow greater analysis capabilities, were developed for most data.

The success of the map service initiative can be seen in the statistics. In FY 2006-2007 there were over 500,000 users of map services. The most popular map services were PA

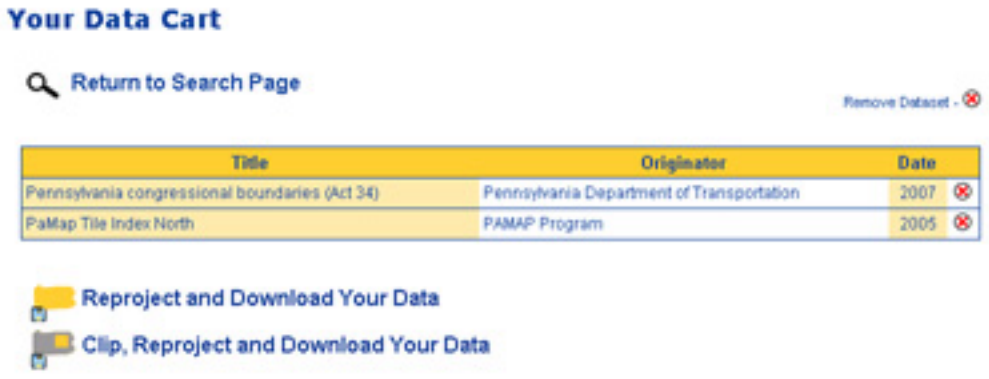
MAP, PA DOQQ (PA Aerial), and DRG. The most popular weather services were latest radar and satellite (having only added these in 2007).

Data Wizard and User Centered Interface

The finalization of the Data Wizard and User Centered Interface and its integration into the new PASDA website was a major accomplishment and culmination of two years effort. The Data Wizard, as the final result is called, ties together the metadata, relational database, website, and provided a coordinated single point of reference for all data and services available through PASDA. Users can search by keyword, provider, and more or select only map services to view.



The Data Wizard also provides a direct link to the Data Cart option that allows users to select multiple data sets and customize them in terms of geographic extent and projection.



Users can select data sets to add to their cart, view their cart, or view metadata, go directly to the ftp site, or see any applications or map services related to a particular data set by selecting one of the following icons:

As the statistics indicate, use of the Data Wizard has increased dramatically throughout the FY.

New PASDA Website

A long-term goal of the PASDA team was to redevelop the PASDA website to more accurately reflect the growing suite of services offered. During this FY, the PASDA staff met throughout the early Fall to create an outline for the new website that would serve to integrate website and services. The resulting website has several enhancements including short cuts to data, a calendar for news and events, and a more streamlined look and feel with less text and more focus on data. The site is a more direct conduit to the Data Wizard, Map Services, and applications.

Acquisition of Hardware and Systems Architecture & Application Development

PASDA was given an opportunity through funding from GTO to acquire significant hardware resources to support the further enhancement and growth of the relational database—the backbone of all PASDA applications and map services, as well as provide for redundant backup and storage and enhanced capability for applications servers. The ability to acquire this additional hardware required a redesign of some existing system architecture and redeployment of existing equipment. The new system architecture will support all incoming imagery through 2007 and allow for fully developed raster based map services and applications. It will also add stability, increase performance, and allow flexibility in deploying new services.

Expanded Data Partners

PASDA was able to acquire new data partners throughout the year and to solidify existing partnerships through increased communication and more frequent updates of data. The Pennsylvania Department of Environmental Protection added significant amounts of data to their existing data on PASDA and older, outdated data was eliminated from the site. Users now have regular, quarterly updates of DEP data. A new partner for PASDA is the Pennsylvania Fish and Boat Commission. The PFBC provides regular updates to PASDA for all of its available data and also provides a direct link to the data on PASDA from the Commission web site. NOAA/National Weather Service is also a new PASDA data partner and has partnered with collaborators at PSU to deploy weather based map services. The partnership with PAMAP has grown and been enhanced by sharing data management personnel between projects. Scott Dane works both with PASDA and PAMAP and has been able to facilitate the acquisition of the data by PASDA. Ongoing partners continued to share and add data to PASDA. The City of Philadelphia has updated and added to its data assets on PASDA. PennDOT, DCNR, PA Department of Health have all provided updates to PASDA throughout the year in continuation of the data partnership established in years past. The Western Pennsylvania Conservancy, Natural Lands Trust, Heritage Conservancy, EPA, USGS, Schuylkill Action Network, and USDA are all continuing PASDA partners as well.

PAMAP

The PAMAP program has dramatically increased the amount of data available as well as increasing the hardware needs for PASDA. As the statistics demonstrate, the data, applications and map services available through PASDA for PAMAP are heavily used. In addition to providing these services to the PAMAP program, PASDA also provides assistance with metadata and works with project management and partners to maintain streamlined data flow from PAMAP to PASDA. PASDA also provides support to users seeking or utilizing PAMAP data in the form of both e-mail and phone assistance.

PAView

PASDA is a member of the Executive Committee for the PaView project. This project is a national effort to develop educational information and promote access to data resources such as satellite imagery and aerial photography. PASDA works with PaView members at California University of PA, Penn State, DCNR, and GTO to manage and populate the website and provide direct access to data via the PASDA clearinghouse.

Emergency Support

PASDA provides emergency event support to GTO for such instances as floods, tornados, and accidents. Response to events such as Hurricane Ivan or the train accident in Beaver County was supported through the development of ArcIMS based mapping applications in 2005-2006. In FY 2006-2007, PASDA created an ArcIMS application for the December 2006 winter storm and also develop a Civil Air Patrol test site for exercises. In response to the Commonwealth's need for support and to enhance response time, PASDA developed an Emergency Application Support Template. The template will be used to allow for immediate response to application development needs related to emergency events.

DEP Mine Maps

PASDA continued to work with DEP in the process of providing access to underground mine maps. PASDA created versions of sample maps in Mr. Sid and Jpeg 2000 images for DEP to review. PASDA also provided advice on metadata and helped organize a meeting of DEP representatives to discuss the data components project status. It is expected that the data will arrive in the 2007-2008 FY.

GTO Support

James Spayd, metadata and data systems coordinator for PASDA, worked with GTO to develop templates for state agency data to be used in the GTO enterprise architecture and developed metadata for existing data in the GTO database. PASDA staff also provided assistance to GTO in emergency response support, GIS Day, development of map services, and data acquisition.

Meetings, Conferences, Training, Presentations, & Papers

PASDA staff participated in numerous meetings, conferences, and delivered presentations at many of these events. Of particular interest are:

- ESRI 2006 International Users Conference—collaborative presentation with PSU EMS

- Central Appalachian GIS Conference—presented on new developments on PASDA
- LIDAR Seminar—participated in workshop
- Ortho Workshop—participant
- GIS Day at the Capitol Rotunda—member of organization committee
- NSF Computing Proposal—submitted advanced computing proposal to NSF to support raster data and LIDAR
- ESRI Federal Users Conference—collaborative presentation with PSU EMS
- PA GIS Conference—participated as exhibitor
- OGCII Workshop—participant
- Hurricane Preparedness Teleconference—participant for GTO
- ESRI 2007 International Users Conference—collaborative presentation with PSU EMS
- ArcGIS Server and ArcGIS Server .Net Training
- SEDA-COG GIS Symposium—exhibitor
- PAMAP Advisory Board—participant
- PAView Executive Committee meetings

Procedural Documents Submitted to GTO include:

- PASDA's Role in Emergency Management—white paper for GTO
- Data Naming Process Document
- Data Status Sheet (continually updated)
- Data Processing Procedures
- Draft goals for FY 2007-2008
- Job descriptions and plans
- Architecture diagram
- Equipment proposal diagram
- Projects and services document

User Assistance & Feedback

PASDA continued to serve a wide variety of users with diverse needs in FY 2005-2006. Questions ranged from e-mails inquiring about data availability to more in depth questions related to data use and applicability. Approximately 300 inquiries per month are answered.

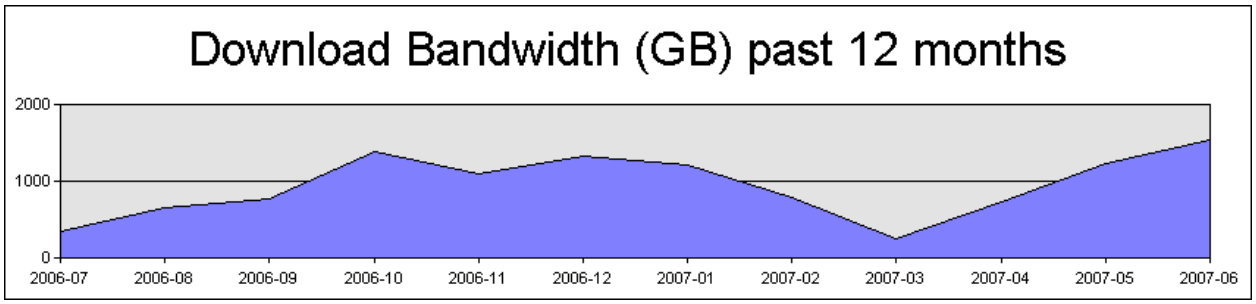
Some examples of users include:

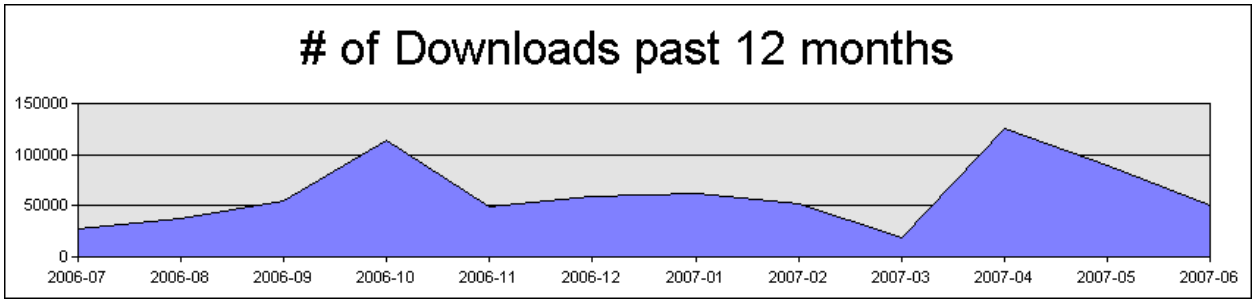
Examples of User Feedback:

PASDA Statistics July 2006-June 2007

Data Download Bandwidth (Gigabytes)

Month	PASDA	PAMAP Imagery	Total
2006-07	230	119	349
2006-08	269	392	661
2006-09	284	493	777
2006-10	281	1,113	1,394
2006-11	200	901	1,101
2006-12	393	929	1,322
2007-01	170	1,050	1,220
2007-02	441	346	787
2007-03	244	N/A	244
2007-04	239	489	728
2007-05	310	927	1237
2007-06	290	1,239	1529
Total	**3,351**	**7,998**	**11,349**


Download Bandwidth (GB) past 12 months
2000
1000
0
2006-07
2006-08
2006-09
2006-10
2006-11
2006-12
2007-01
2007-02
2007-03
2007-04
2007-05
2007-06


# of Downloads past 12 months
150000
100000
50000
0
2006-07
2006-08
2006-09
2006-10
2006-11
2006-12
2007-01
2007-02
2007-03
2007-04
2007-05
2007-06

Top Downloaded Files

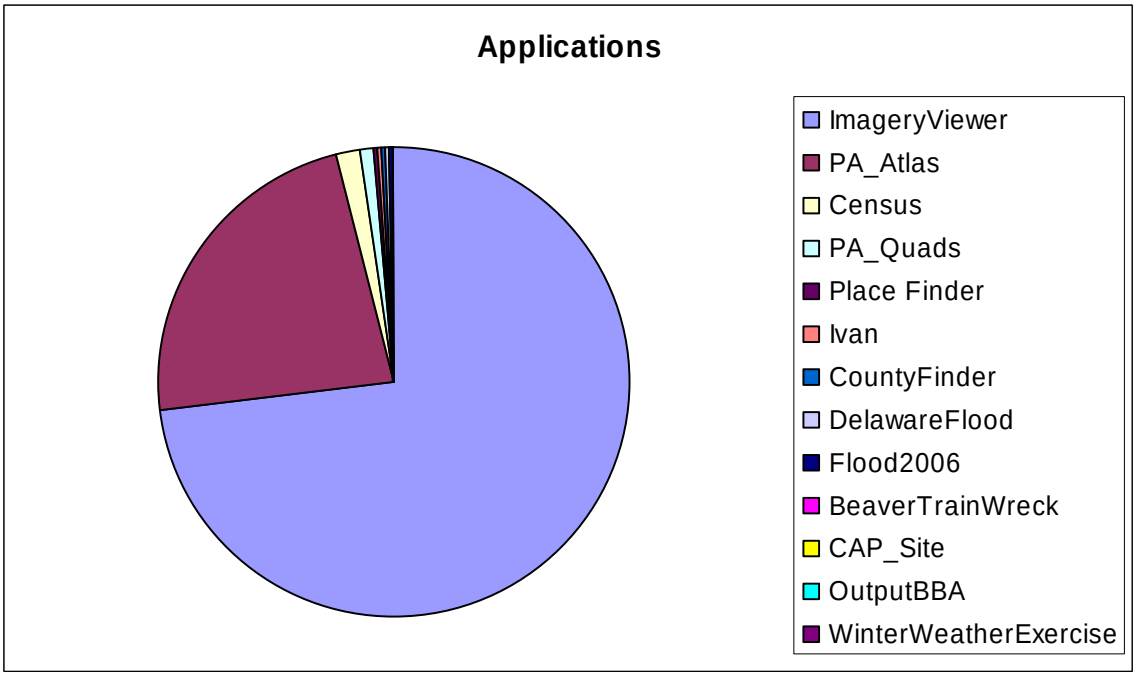
File	Downloads
PAMAP_Tile_IndexNorth.zip	1784
PAMAP_Tile_IndexSouth.zip	1713
padot-localroads_2005.zip	1164
floodpln/floodpln.zip	1050
netstreams.zip	976
padot-municipalities_2005.zip	913
compendium/majrivrs.zip	805
penndot_stateroads_01_2006.zip	771
smallsheds.zip	762
padot/PaStateRoads2007_01.zip	675
padot/boundary_layers/PA_COUNTY01_2006.zip	674
padot/boundary_layers/PaCounty2007_01.zip	528
philacity/phila-buildings_shp.zip	527
padot/boundary_layers/PaMunicipalities2007_01.zip	506
drg24k/philadelphia_pa.zip	478
nwi_poly_statewide2005.zip	434
pamap_imagery/cycle1/SID/North/2005/30000000/31002230PAN.zip	425
mrsid/drg24k/lykens_pa.zip	424
padot/local/padot-localroads_2005.zip	376
watersheds/sheds104.zip	354
drg24k/hanover_pa.zip	344
padot/boundary_layers/padot-state_2005.zip	336
compendium/coal.zip	317
psu-palulc_2000.zip	317
philacity/phila-topocontours2ft_shp.zip	316
compendium/majrrds.zip	307
dcnr/dcnr_stateforestlands_2006.zip	303
philacity/phila-hydrology_shp.zip	289
pamap_imagery/cycle1/SID/North/2005/10000000/17002190PAN.zip	285
philacity/PhiladelphiaParcels200701.zip	279
nlt/Floodplains.zip	273
watersheds/smallsheds.zip	256
pgc/pgc-pa-bnd_sgl-p_geo_2004.zip	253
pamap_imagery/cycle1/SID/North/2005/40000000/49002670PAN.zip	251
netstreams.zip	249
compendium/activerr.zip	244
philacity/phila-streetcenterlines2003_shp.zip	242
indexes/pa_quarterquads_200304.zip	237

Internet Map Services and Applications

Total Hits: 2,575,700

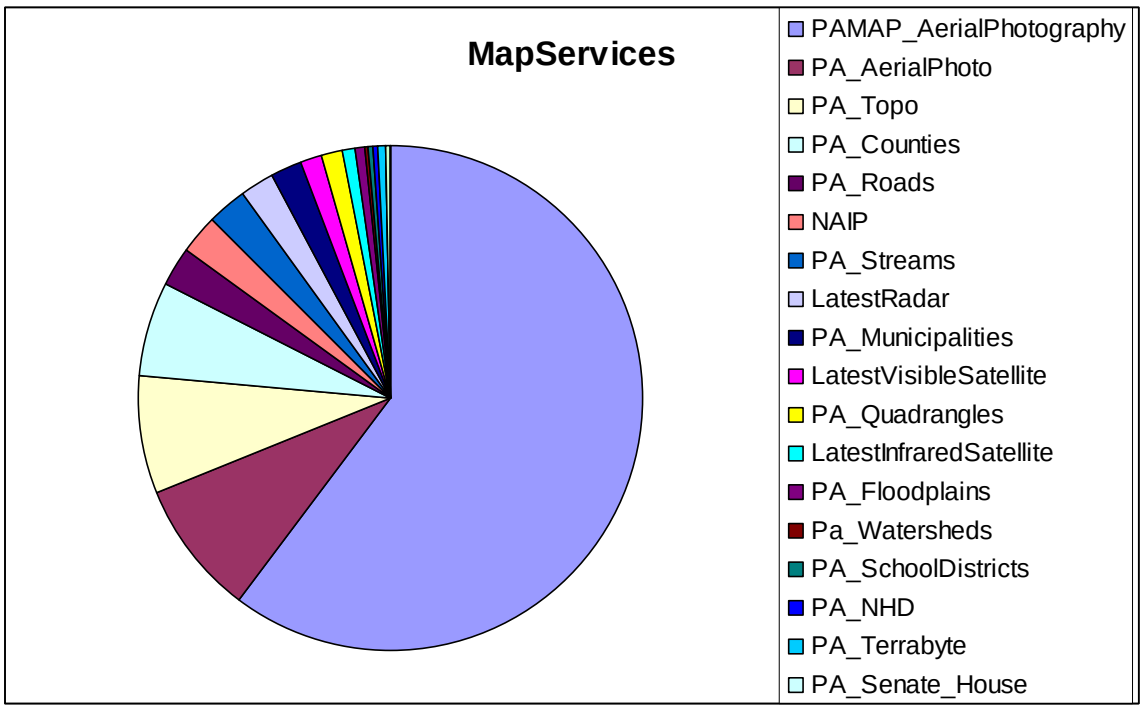
Mapping Applications

ImageryViewer	745279
PA_Atlas	235522
Census	16319
PA_Quads	8695
Place Finder	3442
Ivan	3197
CountyFinder	2832
DelawareFlood	2828
Flood2006	1211
BeaverTrainWreck	799
CAP_Site	152
OutputBBA	42
WinterWeatherExercise	14



Internet Map Services

Service Name	Users
PAMAP_AerialPhotography	311682
PA_AerialPhoto	43809
PA_Topo	39827
PA_Counties	30378
PA_Roads	14110
NAIP	12757
PA_Streams	12595
LatestRadar	11024
PA_Municipalities	9596
LatestVisibleSatellite	8030
PA_Quadrangles	7231
LatestInfraredSatellite	3636
PA_Floodplains	3031
Pa_Watersheds	1931
PA_SchoolDistricts	1807
PA_NHD	1543
PA_Terrabyte	1506
PA_Senate_House	970
PA_NHDWaterbody	610
PA_Stewardship_Areas	430
NGA	102



Data Wizard

Use statistics on the data wizard reflect users who have reached the point of actually selecting and downloading data using the data cart. These numbers do not reflect “hits” on the the Data Wizard page.

Month	*Users*
2006-07	1100
2006-08	5658
2006-09	10600
2006-10	11534
2006-11	14871
2006-12	14530
2007-01	17728
2007-02	21968
2007-03	23035
2007-04	21002
2007-05	23581
2007-06	24709

PASDA Website

Use statistics on the PASDA website reflect “hits” on the website beyond the home page—two levels into the site. For example, a hit is only registered if a user hits the homepage then advances to a second level page—Access Data, Explore PA, etc. Applications, downloads, map services, and data downloads are captured in the statistics above.

Month	*Hits*
2005-07	889,566
2005-08	876, 560
2005-09	910,698
2005-10	815,339
2005-11	727,805
2005-12	711,143
2006-01	861,922
2006-02	936,554
2006-03	1,040,432
2006-04	992,741
2006-05	987, 871
2006-06	1,113,089

User Assistance

Statistics on user assistance are gathered from e-mails and phone calls that are directed to pasda@psu.edu, staff e-mail addresses, and phone calls to all staff.

Month	*E-mail*	*Phone*	
2006-07		347	65
2006-08		319	42
2006-09		417	71
2006-10		466	69
2006-11		361	65
2006-12		303	39
2007-01		382	57
2007-02		430	66
2007-03		485	63
2007-04		488	68
2007-05		507	72
2007-06		497	70