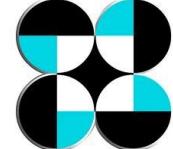


LiDAR Portal for Archiving and Distribution

Marx Tupas
Data Archiving and Distribution (DAD)
UP TCAGP

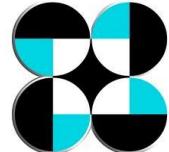


SoTM - Asia 2016
October 2, 2016

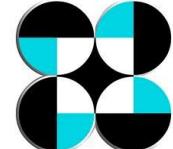


Outline

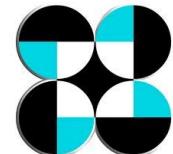
- LiDAR (derived) Datasets
- What is LiPAD?
- Available Datasets and Documents
- Registration
- Data Access
- EULA



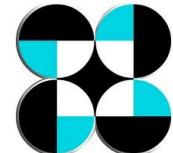
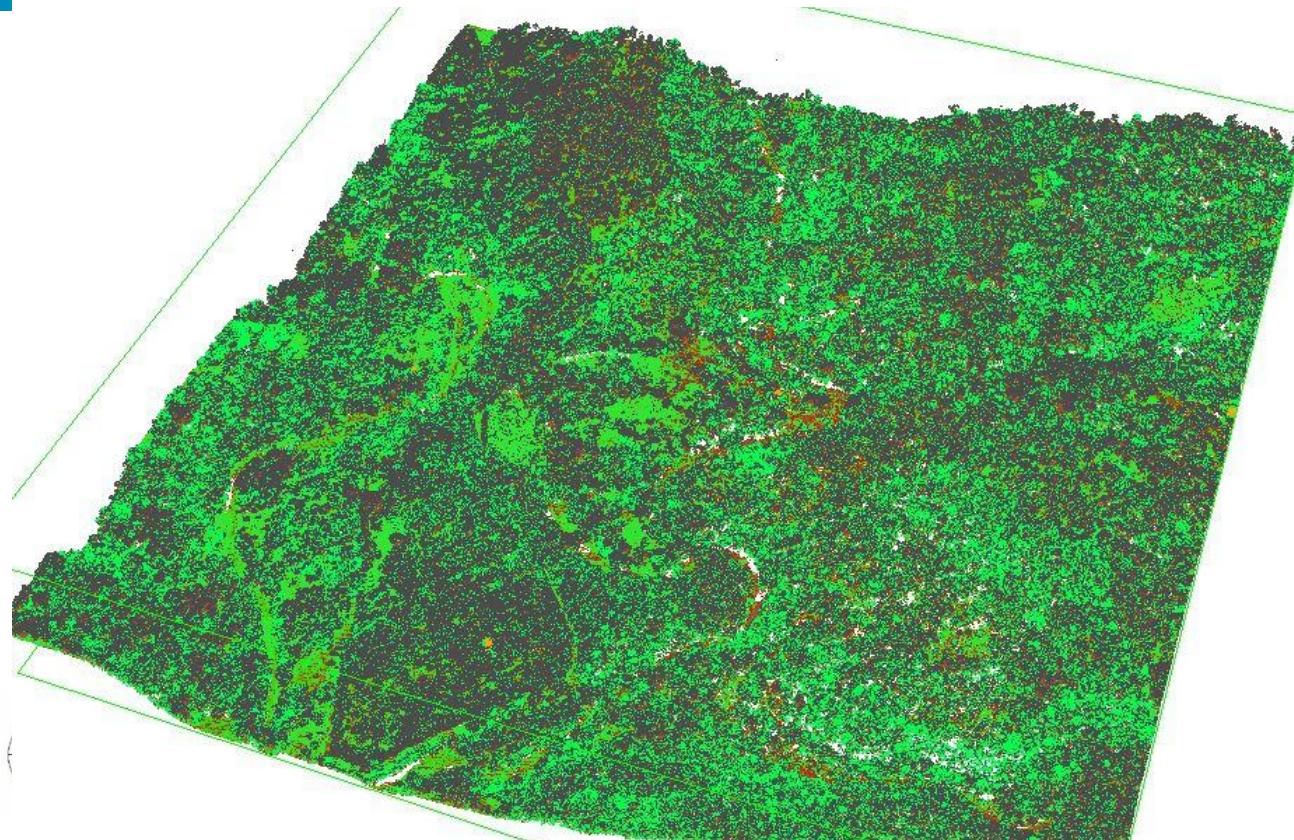
Data Acquisition: LiDAR Mapping Systems



Data Acquisition Aircrafts Used for LiDAR Operation



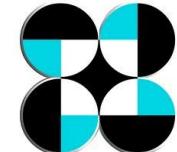
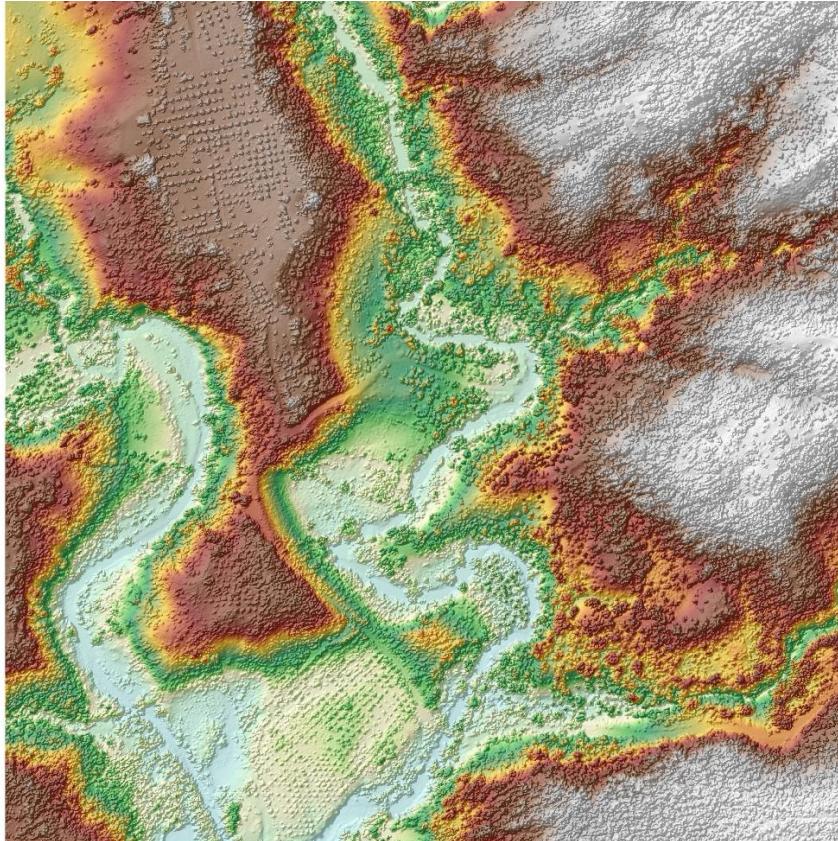
Classified LAZ tile of section of Brgy. Waan, Davao City



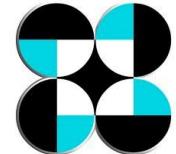
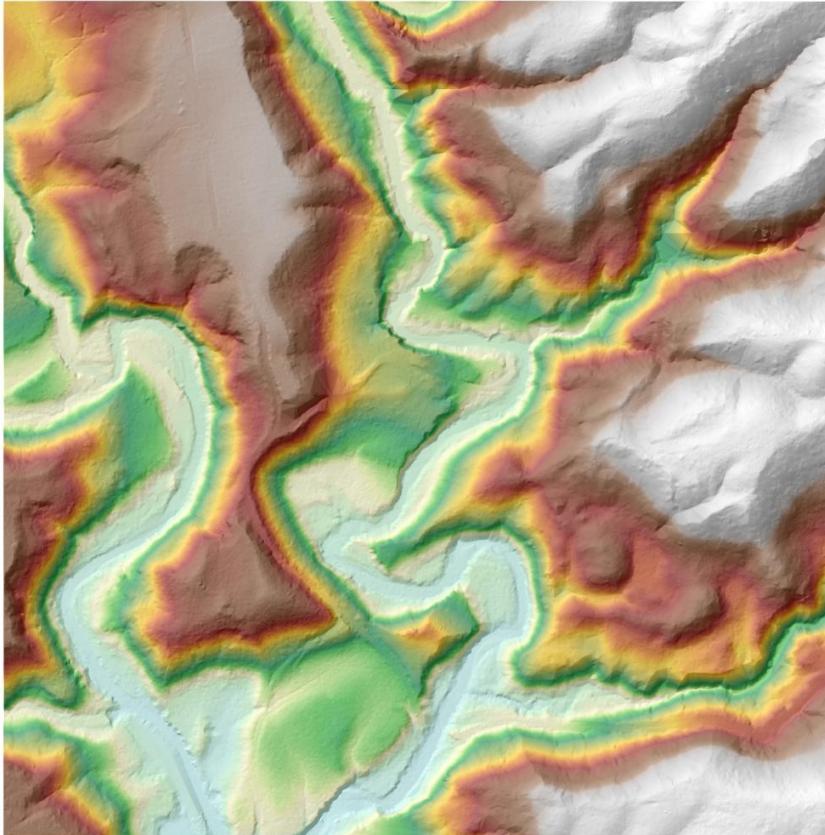
Orthophoto of section of Brgy. Waan, Davao City



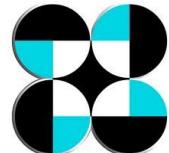
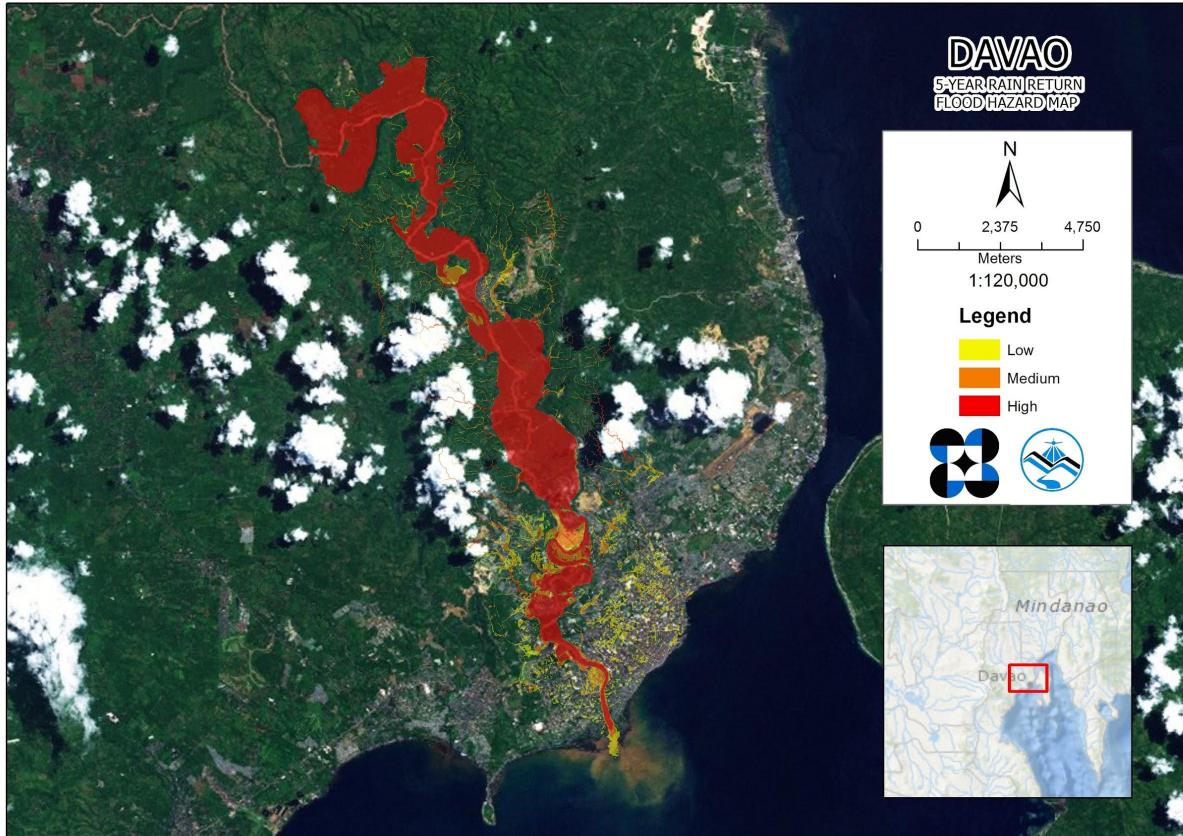
Digital Surface Model of section of Brgy. Waan, Davao City



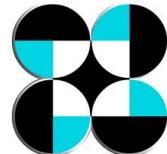
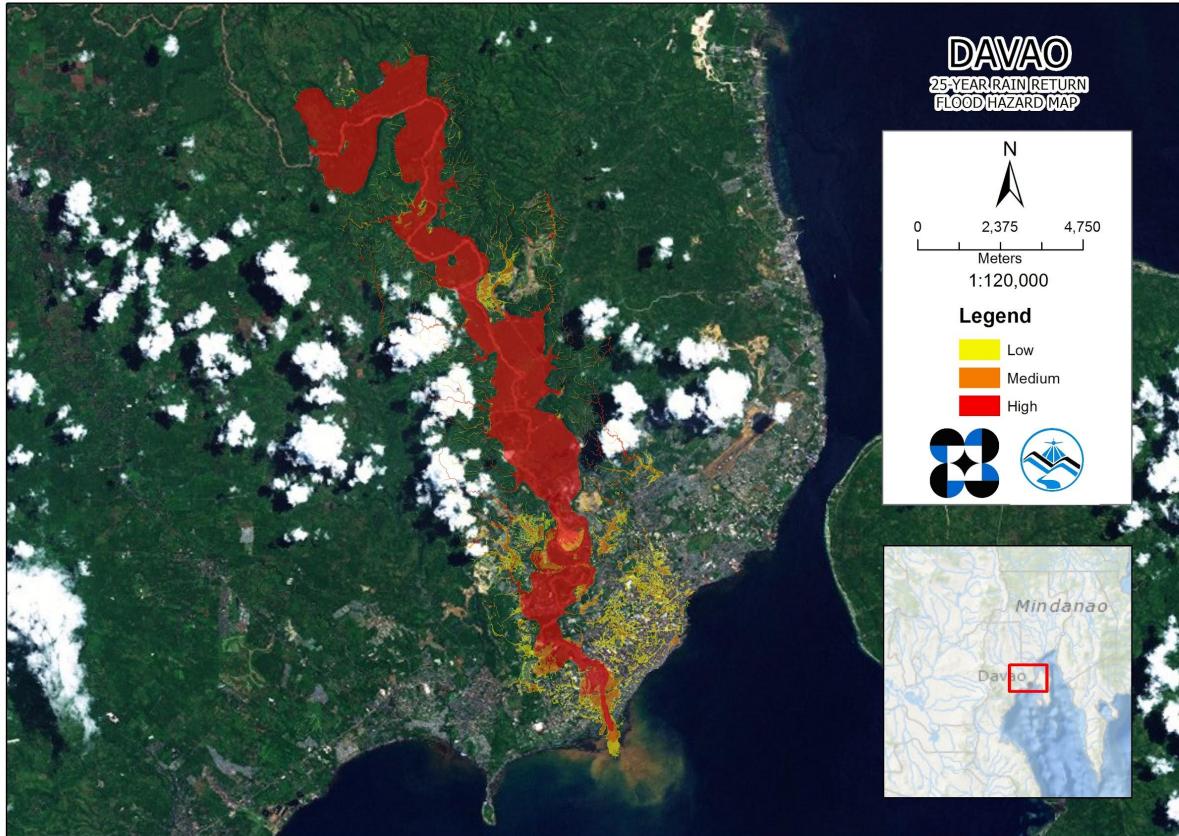
Digital Terrain Model of section of Brgy. Waan, Davao City



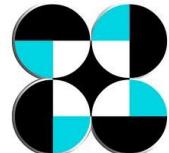
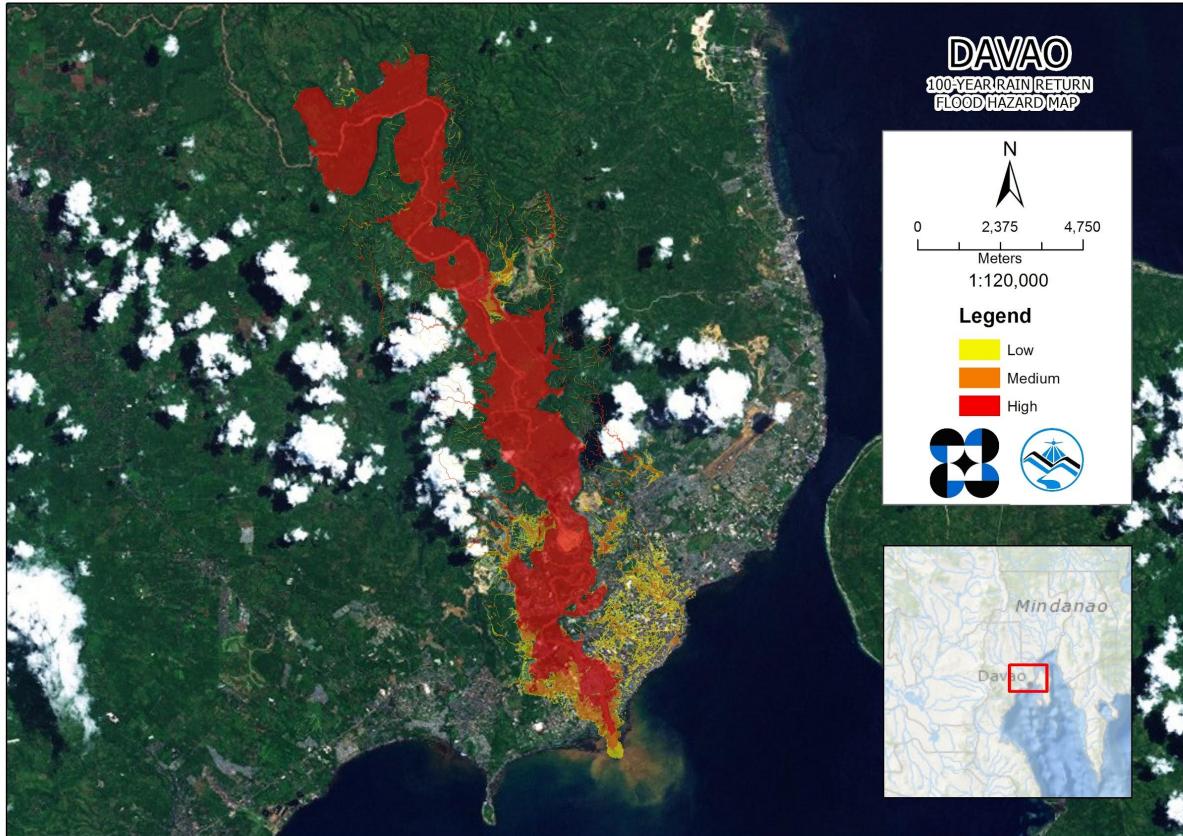
Davao Flood Hazard Map - 5 Year Rain Return



Davao Flood Hazard Map - 25 Year Rain Return



Davao Flood Hazard Map - 5 Year Rain Return



How much data do we have?

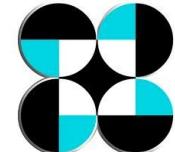
~400TB of raw and processed data

and we project that by the end of program life we'll hit 600Tb (~800Tb)

1 Tb - Portable HDD ~ 600

32Gb - Thumb drive ~ 18,750

4.7 Gb - DVD Drives ~ 127,660



What is LiPAD?

LiDAR Portal for Archiving and Distribution



The screenshot shows the LiPAD website with a blue header. The header includes the LiPAD logo (two stylized green and blue wave-like icons), the text "LiPAD", and "LiDAR Portal for Archiving and Distribution". There are also links for "Data Store", "Documents", a search bar with placeholder text "Type your search here...", and buttons for "Register" and "Sign in".

Welcome to LiPAD

LiPAD serves as the primary data access and distribution center of the Phil-LIDAR 1 and Phil-LIDAR 2 Programs, a Department of Science and Technology initiative that engages the University of the Philippines and fifteen (15) Higher Education Institutions (HEIs) throughout the country, with the aim to produce detailed flood hazard and resource maps using LiDAR technology.

The datasets, which include Digital Elevation Models (DEMs), Digital Terrain Models (DTMs), Orthophotos, Classified LAZ, Flood Hazard Maps and Resource Maps, are available for download in open and GIS-ready formats, for use by Local Government Units (LGUs), National Government Agencies (NGAs), members of the academe, and researchers, among others.



1552
Flood Hazard
Maps



80
Resource Layers



37,557 sq.
km.
Total LiDAR
Coverage

How to get data

1. Register
2. Request
3. Download

Register to LiPAD
Download Flood
Hazard Maps
Download LiDAR data
titles

OGC Services

1. WMS 1.1.1
2. WMS 1.3.0
3. WFS 1.0.0
4. WFS 1.1.0
5. WFS 2.0.0



What is LiPAD?

<https://lipad.dream.upd.edu.ph>



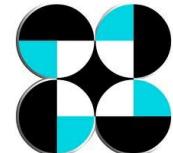
What is LiPAD for?

- ❖ exchange of information between all components of Phil-LiDAR 1 and 2 programs + SUCs/HEIs.
- ❖ catalog for Phil Lidar data archive.
- ❖ provide a standard distribution platform **for stakeholders** and other data requesters.



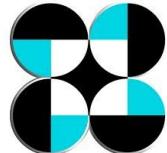
What is LiPAD made of?

- ❖ Built upon existing open source technologies with proven track records in the geospatial field and elsewhere.
- ❖ Uses well established geospatial standards and protocols.
- ❖ derived from [GeoNode/GeoServer](#) + [Ceph Object Storage](#) + [FTP](#) + [OGC Web Standards](#)



What can LiPAD do?

- ❖ Integrated login to various Phil-LiDAR resources,
- ❖ Data catalog and metadata searching functionalities,
- ❖ Map visualization and direct download of derived datasets such as flood hazard maps,
- ❖ Data request and FTP access to fine scale LiDAR, DEMs, and Orthophotos.



What is in LiPAD?

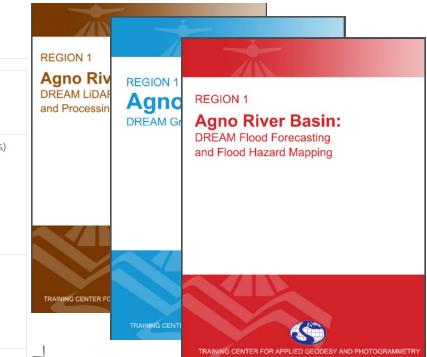
Data Store

- ❖ Data Tiles
 - Digital Elevation Models (DTM/DSM)
 - Classified LAZ
 - Orthophotos
- ❖ Layers
 - Flood Hazard Maps
 - SAR DEMs
 - Resource Layers
- ❖ Maps



Documents

- ❖ Technical Reports
- ❖ End User License Agreement



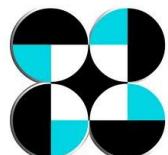
Available Data Types

| Datasets | Data format | Clipping dimension | Program | Access |
|------------------------------|-------------|---------------------|--------------------|--|
| Flood Hazard Maps | Vector | Municipal boundary | DREAM/Phil-LiDAR 1 | No registration needed |
| LiDAR Digital Terrain Models | Raster | 1 km tile | DREAM/Phil-LiDAR 1 | Registration required, Request approval |
| LiDAR Digital Surface Models | Raster | 1 km tile | DREAM/Phil-LiDAR 1 | Registration required, Request approval |
| Orthophotos | Raster | 1 km tile | DREAM/Phil-LiDAR 1 | Registration required, Request approval |
| Classified LAZ | Point cloud | 1 km tile | DREAM/Phil-LiDAR 1 | Registration required, Request approval |
| SAR Digital Elevation Models | Raster | Provincial boundary | DREAM | Registration required |



Available Data Types

| Datasets | Data format | Clipping dimension | Program | Access |
|--|-------------|--------------------|--------------|-----------------------|
| Aquaculture | Vector | Municipal boundary | Phil-LiDAR 2 | Registration required |
| Mangroves | Vector | Municipal boundary | Phil-LiDAR 2 | Registration required |
| Agricultural Land Cover | Vector | Municipal boundary | Phil-LiDAR 2 | Registration required |
| Agricultural and Coastal Landcover | Vector | Municipal boundary | Phil-LiDAR 2 | Registration required |
| River Basin Irrigation Network | Vector | River Basin | Phil-LiDAR 2 | Registration required |
| River Basin Streams (LiDAR), Streams (SAR) | Vector | River Basin | Phil-LiDAR 2 | Registration required |
| River Basin Inland Wetlands | Vector | River Basin | Phil-LiDAR 2 | Registration required |



Available Data Types

| Datasets | Data format | Clipping dimension | Program | Access |
|---|-------------|---------------------|--------------|-----------------------|
| DBH (diameter at breast height) and Standing Tree Volume Estimation | Vector | Municipal boundary | Phil-LiDAR 2 | Registration required |
| Canopy Cover Model | Raster | Municipal boundary | Phil-LiDAR 2 | Registration required |
| Canopy Height Model | Raster | Municipal boundary | Phil-LiDAR 2 | Registration required |
| Biomass Estimation | Raster | Municipal boundary | Phil-LiDAR 2 | Registration required |
| Hydropower Potential Sites | Vector | Provincial boundary | Phil-LiDAR 2 | Registration required |



Available Documents

| Report | File format | Clipping dimension | Program | Access |
|---|-------------|--------------------|---------|-----------------------|
| LiDAR Data Acquisition and Processing | pdf | Flood Plain | DREAM | Registration required |
| Flood Forecasting and Flood Hazard Mapping | pdf | River Basin | DREAM | Registration required |
| Ground Surveys | pdf | River | DREAM | Registration required |



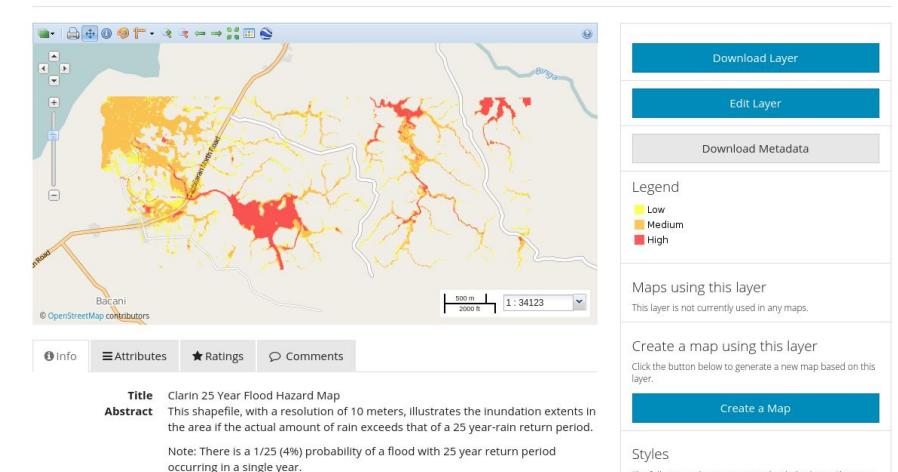
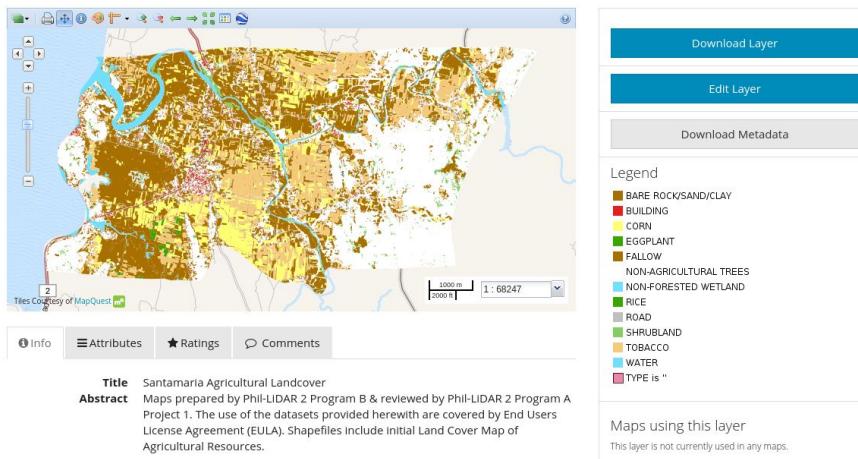
Sample Available Map on LiPAD

The screenshot shows the LiPAD portal interface with a search bar and navigation menu. Below the header is a map titled "Santamaria Agricultural Landcover". The map displays a coastal area with various agricultural land types color-coded according to a legend. A legend on the right side lists categories such as Bare Rock/Sand/Clay, Building, Corn, Eggplant, Fallow, Non-Agricultural Trees, Non-Forested Wetland, Rice, Road, Shrubland, Tobacco, Water, and Type is. Below the map are buttons for "Download Layer", "Edit Layer", and "Download Metadata". At the bottom, there are tabs for "Info", "Attributes", "Ratings", and "Comments".

Santamaria Agricultural Landcover

The screenshot shows the LiPAD portal interface with a search bar and navigation menu. Below the header is a map titled "Clarin 25 Year Flood Hazard Map". The map shows a river system with flood hazard areas highlighted in red, orange, and yellow. A legend on the right side indicates hazard levels: Low (yellow), Medium (orange), and High (red). Below the map are buttons for "Download Layer", "Edit Layer", and "Download Metadata". At the bottom, there are tabs for "Info", "Attributes", "Ratings", and "Comments".

Clarin 25 Year Flood Hazard Map

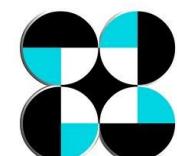


Maps using this layer
This layer is not currently used in any maps.

Create a map using this layer
Click the button below to generate a new map based on this layer.

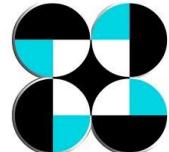
Create a Map

Styles
The following styles are associated with this layer. Choose a



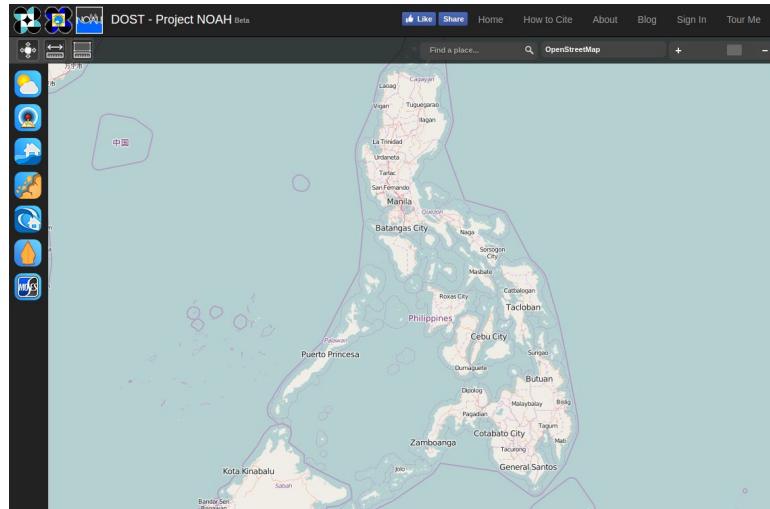
Who would want access to LiPAD?

- ❖ GIS and Mapping practitioners from:
 - Academe and Universities
 - LGUs
 - NGAs
 - NGOs



Where does LiPAD fit in?

- ❖ Complements existing efforts of other programs and agencies



HOME WHAT IS GEOPORTAL MODULES AGENCY NODE PORTAL PARTNER AGENCIES DOWNLOADS CONTACT US

Philippine Geoportal
One Nation One Map

WHAT IS GEOPORTAL?

Geoportal is used to find and access geospatial data and services.

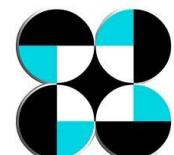
The Philippine Geoportal also advocates the use of standard multiscale basemaps that serve as tools for strategic planning, decision making, situational analysis and other common requirements.

DISCOVER DATA USE DATA SHARE DATA

You can search for geospatial data using our [map catalog](#) or browse thru the data using our online [map viewer](#).

Download geospatial data for offline use or consume web services straight from your application.

Got data you want to share? Use the [map builder](#) for uploading geospatial data and defining related metadata.



LiPAD Registration

Registration

- LGUs, NGAs and Academe - no (other) requirements than user information
- Private entities - referred to <Office of the Chancellor through channels>*
*dependent on IP discussions

Requirement and Limitations

- Compliance with End User Licensing Agreement
- Data Tiles requires shapefile of region of interest
- Download is via FTP
- Data download limit of 500MB per day
- If data required is >10GB, manual data delivery
- Endorsement letter for each data request



How to Register: User Information

1. Click Register and fill out the form with your user information

Step 1 of 2

General Information

First Name

Juan

Middle Name

This field is required.



2. Upload a pdf file of an official letter of request signed by the head of office.
*optional

Formal Request Letter (PDF only)

Browse...

csrc.pdf

Captcha

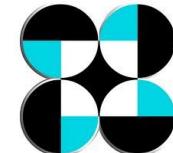
I'm not a robot



Privacy - Terms

Please answer the Captcha to continue.

Continue

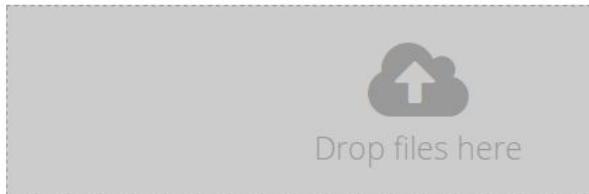


How to Register: Data Requested

3. Upload shapefile of your ROI *optional

Valid file formats are ONLY the following :

- shp
- dbf
- prj
- shx
- xml



or select them one by one:

[Browse...](#)

No files selected.

[Clear Files](#)



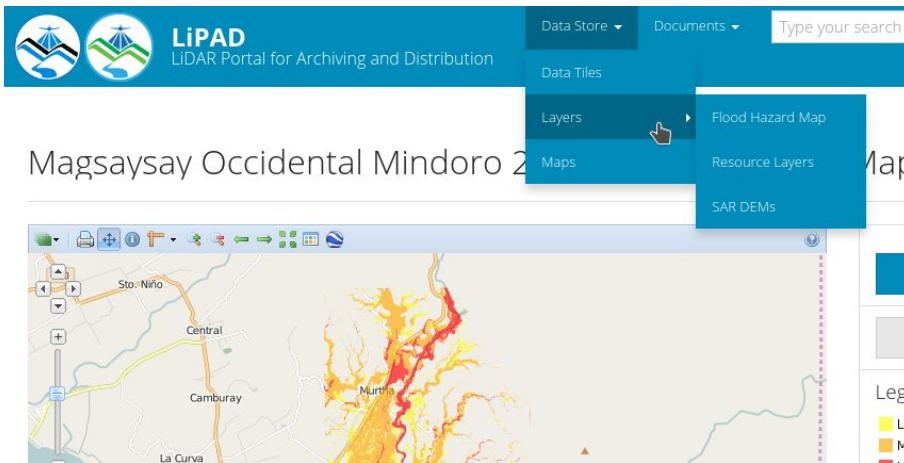
4. Verify your email. Upon approval of your account, you can now change your password.

5. *A confirmation email will be sent to notify the users of approval to use data tile downloads.



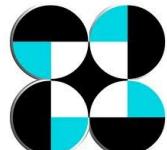
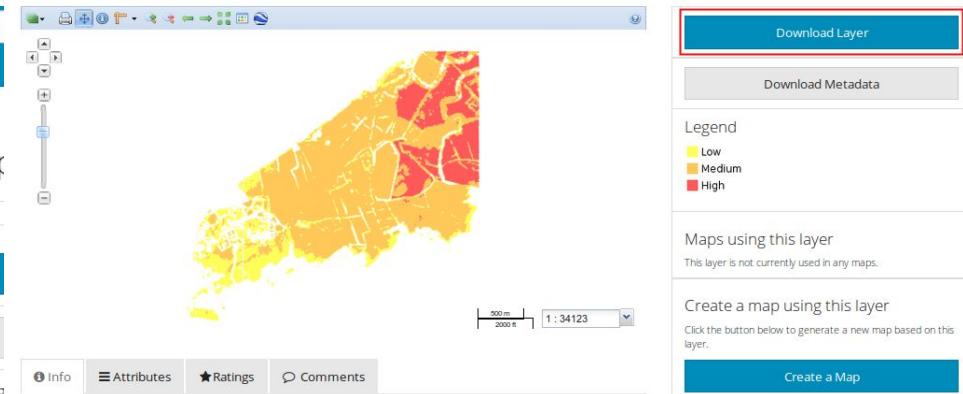
How to Download Flood Hazard Maps and Other Layers

1. Go to **Data Store > Layers** and select which layer type needed.



2. View layer and click Download Layer

Cauayan 100 Year Flood Hazard Map



How to Download Flood Hazard Maps and Other Layers

3. Click **Sign EULA** once EULA is displayed.

I accept the [End User License Agreement](#)

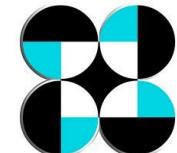
[Sign EULA](#) [I do not accept](#)

4. Click the link to selected format to download.

Download Layer

| | WGS84 | PRS92 |
|-------|----------------------------------|----------------------------------|
| data | Zipped Shapefile | Zipped Shapefile |
| image | PNG | PNG |
| image | JPEG | JPEG |

[Close](#)



How to Download LiDAR DEMs, Classified LAZ, Orthophotos

1. Go to **Data Store > Data Tiles** and select tiles of your area of interest on the map.

The screenshot shows the LiPAD Portal for Archiving and Distribution. The main interface is titled "Data Store > Data Tiles". On the left, there's a map of a geographic area with a grid overlay. Several tiles are highlighted in blue, indicating they have been selected. Labels on the map include "Calabanga", "Bantion", "Magana", "Ganaman", "Camaligan", "Majayjay", and "Mount Isarog". A legend on the right side of the map area defines the colors for different data types: green for DTM, light green for DSM, purple for ORTHO, white for Classified LAZ, yellow for No Data, and red for Boundary. At the bottom of the map area, it says "Data, imagery and map information provided by MapQuest, Open Street Map and contributors, CC-BY-SA".

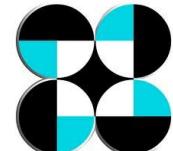


2. Select type of data to be downloaded and click Submit.

Download Data Class(es)

LAZ
 DTM TIF
 DSM TIF
 Orthophoto

Submit



How to Download LiDAR DEMs, Classified LAZ, Orthophotos

3. On the Data Cart page, review your selected tiles and click Create FTP Folder.

Processed [4] georeferenced files. A total of [14] objects have been added to cart.

Cart [71.7 MB]

[Return to Selection](#) [Create FTP Folder](#) [Empty This Cart](#)

SRS: UTM 51N (Default) ▾

| Tile Object | Size | Quantity |
|---------------------|----------|----------|
| E531N1513_LAZ.laz | 339.2 KB | 1 |
| E531N1513_DTM.tif | 4.6 MB | 1 |
| E531N1513_DSM.tif | 4.6 MB | 1 |
| E531N1512_LAZ.laz | 873.9 KB | 1 |
| E531N1512_DTM.tif | 4.6 MB | 1 |
| E531N1512_DSM.tif | 4.6 MB | 1 |
| E530N1512_ORTHO.tif | 11.5 MB | 1 |
| E530N1512_LAZ.laz | 3.5 MB | 1 |
| E530N1512_DTM.tif | 4.6 MB | 1 |
| E530N1512_DSM.tif | 4.6 MB | 1 |
| E530N1513_ORTHO.tif | 11.5 MB | 1 |
| E530N1513_LAZ.laz | 7.0 MB | 1 |
| E530N1513_DTM.tif | 4.6 MB | 1 |
| E530N1513_DSM.tif | 4.6 MB | 1 |



4. An email will be sent notifying you that you can now download the tiles via FTP client.

Host: <ftp://test-lipad-ftp-pl1@dream.upd.edu.ph> - FileZilla

Username: test-lipad4 Password: Port: Quickconnect

Response: 226 Transfer complete
Status: Directory listing successful
Command: Retrieving directory listing...
Response: 250 CWD command successful
Command: PWD
Response: "/FTP/PL1/test-lipad-ftp-pl1/DL/DAD/LiPAD_requests/ftprequest_2015-12-01_1026/DSM_TIF" is the current directory
Command: PASV
Response: 227 Entering Passive Mode (200,92,131,229,39,99).
Command: MLSD
Response: 226 Transfer complete
Status: Directory listing successful

Local site: /home/ken/Simulations/ Remote site: /FTP/PL1/test-lipad-ftp-pl1/DL/DAD/LiPAD_requests/ftprequest_2015-12-01_1026/DSM_TIF

| Filename | Filesize | Filetype | Last modified | Filename | Filesize | Filetype | Last modified | Permission |
|---------------|-----------|----------|-------------------|----------------------------|----------|----------|---------------------|------------|
| .. | | | | .. | | | | |
| Simulations | | | | ftprequest_2015-07-28_2215 | 4.9 MB | tif-file | Tuesday, 01... 0770 | |
| Templates | | | | ftprequest_2015-07-28_2222 | 4.9 MB | tif-file | Tuesday, 01... 0770 | |
| Torrent | | | | ftprequest_2015-07-28_2228 | 4.9 MB | tif-file | Tuesday, 01... 0770 | |
| Videos | | | | ftprequest_2015-07-28_2336 | 4.9 MB | tif-file | Tuesday, 01... 0770 | |
| Source | Directory | | Thursday, 09 A... | E342N1622_DSM.tif | 4.9 MB | tif-file | Tuesday, 01... 0770 | |
| ns-allnone... | Directory | | Tuesday, 15 De... | E342N1623_DSM.tif | 4.9 MB | tif-file | Tuesday, 01... 0770 | |
| | | | | E342N1624_DSM.tif | 4.9 MB | tif-file | Tuesday, 01... 0770 | |
| | | | | E343N1622_DSM.tif | 4.9 MB | tif-file | Tuesday, 01... 0770 | |
| | | | | E343N1623_DSM.tif | 4.9 MB | tif-file | Tuesday, 01... 0770 | |
| | | | | E343N1624_DSM.tif | 4.9 MB | tif-file | Tuesday, 01... 0770 | |
| | | | | E344N1622_DSM.tif | 4.9 MB | tif-file | Tuesday, 01... 0770 | |
| | | | | E344N1623_DSM.tif | 4.9 MB | tif-file | Tuesday, 01... 0770 | |
| | | | | E344N1624_DSM.tif | 4.9 MB | tif-file | Tuesday, 01... 0770 | |

2 directories 20 files, Total size: 97.2 MB

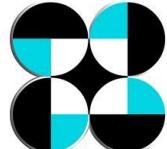
Server/Local file Directio Remote file Size Priority Status

Queued files Failed transfers Successful transfers



Acknowledgements

The presenters would like to acknowledge the support of the Department of Science and Technology – Philippine Council for Industry, Energy and Emerging Technology Research and Development (DOST-PCIEERD) and the Phil-LiDAR 1 and 2 research and training staff.



**Comments and suggestions
are welcome. Please email**

lipad@dream.upd.edu.ph

Thank you!

