



Department of Science and Technology

DOST INNOVATIONS

Web and Mobile Applications
for Disaster Risk Reduction and Management



2023

**DOST INNOVATIONS: Web and Mobile Application
for Disaster Risk Reduction and Management
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Editor: Rachelle Anne L. Miranda
Reviewer: Maria Lyn P. Melosantos
Layout Artist: Jackson C. Lu / Wilcel James P. Bernardo
Coordinator: Raymond O. Torres

Disclaimer:

The Department of Science and Technology through the Disaster Risk Reduction and Climate Change Unit exercised care in the compilation and drafting of this compendium. The office acknowledges the owners and developers of the featured web and mobile applications. However, this is not a substitute for the technical training, manuals, or related materials of the applications. For technical assistance or transfer of technology, requests should be submitted to the provided contact information.

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About the Compendium

"The biggest part of our digital transformation is changing the way we think"
- Simon Preston

The "DOST Innovations: Web and Mobile Applications in Disaster Risk Reduction and Management" compendium presents the important role of science and technology in resilience building. This book describes how web and mobile applications help us understand risks and how we can all contribute in preventing, preparing, responding, and recovering from disasters. The innovations are developed for everyone- individuals, communities, private groups and businesses, organizations, and government leaders. This book serves as a guide among stakeholders to use these applications and to advocate the use of scientific data in planning and decision-making.

This compendium is a supplementary component of the book "Science For Resilience" available at the DOST National Research Council of the Philippines scientific library: <https://scientificlibrary.nrcp.dost.gov.ph/>.





Message of the Secretary

The Department of Science and Technology advocates “Science for Resilience”. At the heart of this message is the need to make use of scientific information, evidence, and knowledge to prevent and mitigate risks, to avoid the creation of new risks, and to accelerate preparedness, response, and recovery. In our practice and experience in the Philippines, it is clear that science and technology is one of the key means to strengthen our resilience agenda.

With the increasing disruptions of disasters to our socioeconomic and development gains, the country needs to be more innovative and bold with the use of technologies. To my mind, resilient Filipino communities put premium on science and technology for informed decision-making, planning, and action. In building resilience, science informs us. Science guides our decision-making. However, it is what we do with the information we received that makes science work. Our part is to recognize science as our valuable tool to implement actions toward resilience.

In this compendium, we collected valuable disaster risk reduction and management (DRRM) technologies and innovations that are available and accessible on the web and mobile phones. These innovations have the capacity to greatly contribute to our understanding of disaster risks and how can we manage them through practical applications in our households, communities, and even for local governance. This compendium is a collection of research, products, and technologies from hazard and risk analysis such as the Hazard Hunter, Fault Finder, Payong PAGASA, VolcanoInfoPH, to analytical and governance tools such as GeoMapperPH, GeoAnalyticsPH, PlanSmartPH, and REDAS. These technologies can make a huge difference if intelligently applied. The DRRM Innovations-with the ability to act on risk information are proven life-savers.

This is the very reason why we make science accessible and available for all, the kind of innovation that doesn't leave anyone behind.

It is clear that Science and Technology is making a profound difference in disaster risk reduction- in order to save lives and to reduce damages and losses. We, as a Filipino community, need to do our part to ensure effective outcomes. We must continue working together in making use of these people-centered and inclusive technologies towards resilience

DR. RENATO U. SOLIDUM JR.
Secretary

INTRODUCTION

The role of information technology and new media before, during, and after disasters have significantly become relevant over the past years in the Philippines. In 2022, a report from the DataReportal shows that there are over 66 million internet users and there are over 156 million cellular mobile connections in the country. The exponential growth and demand for information technology were largely attributed to the COVID-19 pandemic where there were alternative working and studying arrangements put in place. Experts say that the pandemic has accelerated our digital transformation.

The rapid advancement of digital information and communication technology (ICT), such as smartphones, digital applications, and websites, has become monumental in shaping the culture of resilience in the country. And it's not just the technology that is transforming. The technology is transforming our vulnerable communities from being victims to victors of disasters.

Thrive through change

In the context of disaster risk reduction and management (DRRM), the Filipino general public tends to communicate first through social media and trusted platforms by posting pictures and videos of an incident or emergency. The use of information technologies for crises and disasters has evidently increased information interaction, capacity, and dependability. This also proves that there's a need to promote its usage for disaster prevention, mitigation, and preparedness using these platforms. There has been a greater need, among Filipino communities, to foster the development and implementation of evidence-based and risk-informed approaches.

Recognizing the significance of web and mobile applications in DRRM, the Department of Science and Technology (DOST) has developed, supported, and funded research and programs focused on using information and communication technology that influences the government, private sectors, civil society groups, and the public in the way they consume risk knowledge, information, and evidence.

The DRRM digital innovations and applications facilitate the interactive use of hazard and risk information for decision-making and action. These applications also serve as a communication channel and a core component of disaster planning, response, and recovery. The effective use of scientific information through these technologies may prevent or lessen the impacts of disasters.

One key to resilience is understanding risks through the digital tools available without undermining human interaction. It is important to say that localization and STI application are a few of the most significant aspects of resilience building. Risks are local; therefore, actions must be localized.

DOST DRRM Innovations

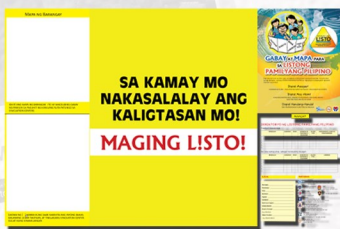
This book is intended as a resource for those who are looking for ways to get started in using DOST web and mobile applications in DRRM. This compendium highlights the importance of access to risk information to support comprehensive hazard and risk assessments for science-based planning, investments, and actions.

The narratives in this compendium are written as a “user’s guide” with instructions for accessing, utilizing, and applying the technologies. However, it is not intended as a replacement for any planning processes or procedures. It might benefit the user to have further knowledge of disaster preparedness planning.

Here are the links to some prevention and mitigation reference, preparedness planning, and procedures:



NDRRMC Manuals, Policies, Plans
https://drmmkc.ocd.gov.ph/pages/knowledge_resources



Family Preparedness Planning
<https://cdn.lga.gov.ph/publication/attachments/1628574359.pdf>



Science For Resilience
<https://scientificlibrary.nrccp.dost.gov.ph/>

The web and mobile technologies are categorized as (1) multihazards, (2) hydrometeorological, (3) geological. Through this, the readers can easily identify relevant DRRM web and mobile technologies.

It is also recommended that the users have access to a desktop, laptop, tablet, or mobile phone and access to an internet connection to immediately apply the instructions. There are also many tutorials available online some of which are already shared in this compendium.

Through these innovations, the DOST demonstrates that science is useful, usable, and most importantly used- the kind of innovation that does not leave anyone behind.

Multihazards

GeoRisk Philippines Initiative

I N N O V A T I O N S F O R R E S I L I E N C E

GEORISK PHILIPPINES is a data collection and sharing platform which established a standard coding system and protocols for all information that is used for hazards and risk assessment, development planning, and other analysis. There are four (4) main technologies developed under GeoRiskPH which can be accessed and used by the Local Government unit, private sector, academe, and the general public.



HazardHunterPH
GEORISKPH



GeoAnalyticsPH
GEORISKPH



GeoMapperPH
GEORISKPH



PlanSmart
Ready to Rebuild

HazardHunterPH

The HazardHunterPH serves as a one-stop-shop web and mobile phone application providing fast and easy multi-hazards assessment. By inputting your location, the application can display up-to-date hazard information and generate hazard assessment reports.



HazardHunterPH
GEORISKPH



Target Users: General public, private sector, public sector, all sectors



To get started (mobile users):

1. Go to google play (android users only) and App Store (iphone users).
2. Then, type and search for HazardHunterPH.
3. Download the application.
4. Once you've completed the download of the app, open it. Then type the location you want to assess in the search bar.
5. Double-tap on the map to select the target location.
6. The initial hazard assessment will appear on the screen. Select the 'view explanation and recommendation' link to see the full report.
7. Download the Risk Assessment for reference. Make use of this report on your preparedness planning.



To get started (web users):

1. Go to <https://hazardhunter.georisk.gov.ph> or scan the QR code.
2. Type the location you want to assess in the search bar.
3. Double-click or tap on the map to select the target location.
4. The initial hazard assessment will appear on the screen. Select the 'view explanation and recommendation' link to see the full report.
5. Download the Risk Assessment for reference. Make use of this report on your preparedness planning.

Video tutorials. Visit [GeoRiskPhilippines YouTube](#) or click the links below:

<https://www.youtube.com/watch?v=x45mNFp65Dc>

<https://www.youtube.com/watch?v=SzcMXFXHjJQ>

GeoAnalyticsPH

The GeoAnalyticsPH is an online platform that generates locally-based hazard and exposure analytics and hazard summary assessments. It enables analysis and visualization of the exposure of population, buildings, critical facilities and infrastructures of localities from barangay, municipal, city or provincial level.



Target Users: Local DRRM Offices, member agencies of the DRRM Council, general public, private sector



To get started (web users):

1. Go to <https://geoanalytics.georisk.gov.ph> or scan the QR code.
2. Select the “Go to Single Hazard Analysis”
3. On the left panel, select the target location.
4. Choose the target hazard from the available options.
5. Click submit. Wait for the results to finish loading.
6. The analytics will be shown in the upper right corner of the map.
The chart tab shows the land area prone to hazard in a pie chart.
The table tab shows the land area prone to hazard in the table.
The list tab shows the LGUs within the location and their land area assessment.
7. Download the analytics. Use this information for your planning and investments.

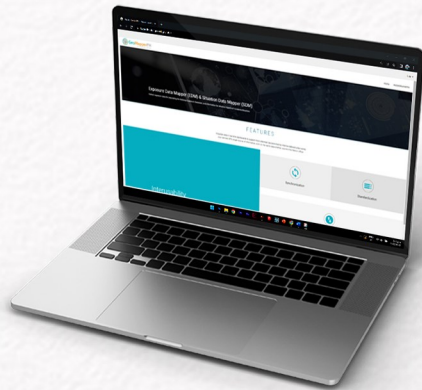
Video tutorials. Visit [GeoRiskPhilippines YouTube](#) or click the links below:

<https://www.youtube.com/watch?v=JyqaEdhhbcE>

<https://www.youtube.com/watch?v=4eCE0aK4XbY>

GeoMapperPH

GeoMapperPH serves as a platform for national government agencies, local government units, and non-government organizations to access, utilize, and contribute data to the GeoRiskPH integrated database. It is designed to facilitate the easy collection and updating of hazards, exposure, vulnerability, and coping capacity data to support the decision-making process before, during, and after disasters. It also visualizes data in real-time, improves data accuracy using the device's GPS single source of information, and works on the same data whether in the field or office.



Target Users: Local DRRM Offices, National Government Agencies and select partners



To get started (web user):

1. Go to **www.geomappersph.dost.gov.ph**.
2. Sign in to the GeoRiskPH portal first before logging in to your GeoMapperPH application.
3. Use the credentials (username and password) assigned to your organization. If no credentials yet, contact the GeoRiskPH team through georisk@phivolcs.dost.gov.ph.
4. Once you have successfully logged in, you will be directed to the GeoMappersPH sign-in display. Use the user-specific credentials assigned to you by your organization when logging-in.
5. Now, you can input and contribute data to the integrated system.

Video tutorials. Visit GeoRiskPhilippines YouTube or click the links below:

<https://www.youtube.com/watch?v=JyqaEdhhbcE>

<https://www.youtube.com/watch?v=4eCE0aK4XbY>

PlanSmart: Ready to Rebuild



PlanSmart Ready to Rebuild web application enables Local Government Units (LGU) to quickly access hazards, exposure and other vital information to auto-generate LGU profiles, maps, graphs, socio-economic profiles, among others. It has the capacity to delineate the effects of natural events and generate a PDF copy of a Rehabilitation and Recovery Plan. The automated planning tool aims to reconfigure the planning processes of disaster risk reduction and management of local government units for more efficient planning and faster rebuilding.

 **Target Users:** OCD Regional Offices, Local DRRM Offices, relevant National Government Agencies



Contact Information

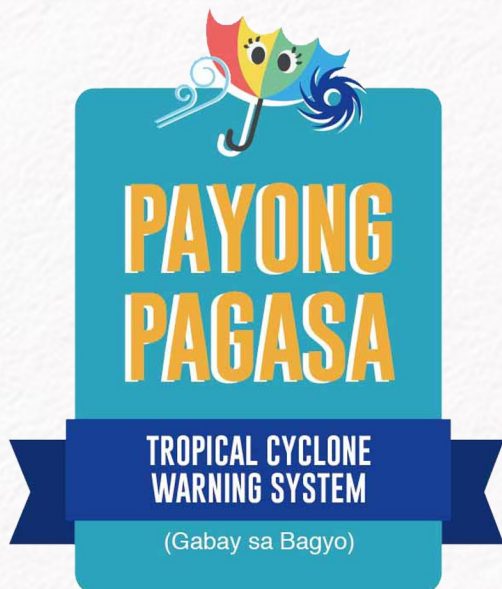


Email: georisk@phivolcs.dost.gov.ph
od@phivolcs.dost.gov.ph

Hydrometeorological Hazards

PAYONG PAGASA

It provides accessibility of climatological information and advisories for agriculture, water resources and other socio-economic sectors.



Services:

Daily Monitoring of Rainfall and Temperature/ “Daily Gabay sa Panahon”. This displays the rainfall and temperature for a specific municipality. It also shows the accumulated data for the past 3-days.

Daily-Farm Weather Forecasts and Advisories/ “Daily Payong Pangsakahan”. This displays the weather forecast and advisories for farmers and fisherfolk.

10-day Regional Agri-weather Information/ “10-day Payong Pangsakahan sa Rehiyon”. This displays the agri-weather forecasts and farm advisories for a 10-day period for every region.

Monthly Climate Assessment and Outlook/ “Monthly Payong PAGASA”. This displays the monthly assessment and forecast of rainfall and temperature per province including prevailing weather systems.

10-day Weather Outlook/ “10-day Payong Panahon”. This displays the 10-day weather forecast for every municipality.



To get started (mobile users):

1. Go to google play (android users only) and select Payong PAGASA.
2. Download the application.
3. On the left side, select the type of information you need. Use this information in your planning and preparedness actions



To get started (web users):

1. Go to www.pagasa.dost.gov.ph
2. In the tab section, select the type of information you need. Use this information in your planning and preparedness actions.

PAGASA Website



The PAGASA provides Tropical Cyclone (TC) threat forecasts for lead time extending to two weeks. It aims to detect/evaluate likelihood of TC formation within the Philippine Area of Responsibility and the possibility forecast in track and direction for the next 2-weeks.



To get started (web users):

1. Go to **www.pagasa.dost.gov.ph** or scan the QR code.
2. In the tab section, select Tropical Cyclone and then, select Tropical Cyclone Potential Forecast. Use this information in your planning and preparedness actions.

The CliMap, or the Climate Information Map is an online platform featuring an interactive map where users can explore and download the available climate data over the desired area anywhere in the Philippines.



To get started (web users):

1. Go to **www.pagasa.dost.gov.ph** or scan the QR code.
2. In the tab section, select Climate and then, select Climate Projection. Use this information in your planning and preparedness actions.

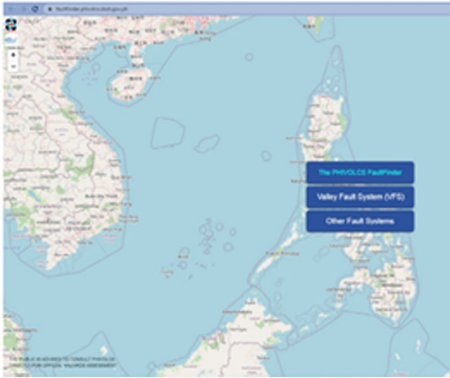
Contact Information




Email: information@pagasa.dost.gov.ph

Geological Hazards

PHIVOLCS FaultFinder



It is a free web and mobile application that can determine the location of active faults in an area, as well as measure the shortest distance between an active fault and a user's current location or site of choice.

 **Target Users:** General Public, Private Sector, and all sectors

To get started (phone users):

1. Go to google play (android users only) and select The PHIVOLCS FaultFinder.
2. Download the application.
3. In the center, select the type of information you need. Use this information in your planning and preparedness actions.

To get started (web users):


1. Go to www.faultfinder.phivolcs.dost.gov.ph
2. In the tab section, select the type of information you need. Use this information in your planning and preparedness actions.

Video tutorials. (DOST PHIVOLCS Youtube and Facebook)

<https://www.facebook.com/watch/?v=1372233522919676>

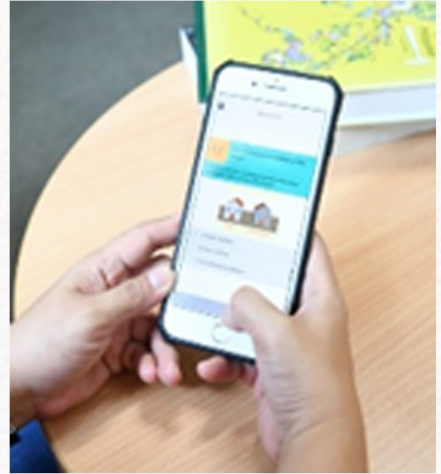
<https://www.youtube.com/watch?v=Pm2Q2PajP3Y>

Contact Information

 Email: soepd@phivolcs.dost.gov.ph

How Safe is My House App

This web and mobile application is a self-check for Earthquake Safety of Concrete Hollow Block (CHB) Houses in the Philippines. The result determines if the structure is safe and presumably built according to standard construction procedures. If not, it may recommend further professional consultations and necessary structural strengthening.



 **Target Users:** General Public, Private Sector, and all sectors


To get started (phone users):

1. Go to google play (android users only) and App Store (iphone users) and select How Safe Is My House?.
2. Download the application.
3. Tap on the screen. Read the objectives of the test.
4. Click start. Then, answer the 12 questions.
5. See the results. Use the information in taking necessary actions in rebuilding or retrofitting your house.

To get started (web users):

1. Go <https://howsafeismyhouse.phivolcs.dost.gov.ph/>
2. Click on the screen. Read the objectives of the test.
4. Click start. Then, answer the 12 questions.
5. See the results. Use the information in taking necessary actions in rebuilding or retrofitting your house.


Contact Information

 Email: phivolcs_mail@phivolcs.dost.gov.ph

VolcanoPH Info App



The app provides real-time volcano advisories with push notification informing users of the latest on activities of active volcanoes in the country.

 **Target Users:** General Public, Private Sector, and all sectors


To get started (phone users):

1. Go to google play (android users only) and select VolcanoPH Info.
2. Download the application.
3. Check the daily volcano advisories and see recommended actions.

To get started (web users):

1. Go to www.phivolcs.dost.gov.ph
2. In the tab section, select the volcano, and in the dropdown button, select the volcano bulletin.
3. Other services are also shown on the website. (earthquake advisories, tsunami, landslide)
4. Check the daily volcano advisories and see recommended actions

Contact Information

 Email: vmepd@phivolcs.dost.gov.ph.

ACKNOWLEDGEMENT

In the organizational meeting in 2022 of the Committee on Disaster Resilience at the House of Representatives, the Department of Science and Technology was requested to share a compilation of DOST web and mobile applications in DRRM. This led to the development of this book. We would like to express our sincerest gratitude to the committee for expressing their interest in our work and for inspiring us to develop this book.

We would also like to appreciate the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), the Philippine Institute of Volcanology and Seismology (PHIVOLCS), and partner organizations for their work in developing and improving the DRRM web and mobile applications. We would also like to thank the Technology Application and Promotion Institute (TAPI) for working with us to make this book a reality. All of your dedication in providing the best services to the Filipino people is truly encouraging.



About the Cover

The idea behind the cover is to showcase that resilience is within their reach. The Department of Science and Technology utilizes commonly used gadgets such as mobile smartphones, tablets, laptops to make risk information and analysis more accessible to the Filipino public.



For more information visit www.dost.gov.ph, DOST Philippines Facebook page.