Deltares

Southeast Asia Flood Monitoring and Risk Assessment for regional DRF mechanism

Platform manual

Deltares

Title
Southeast Asia Flood Monitoring and Risk Assessment for regional DRF mechanism

Client   **Pages**
The World Bank   12

Keywords
South East Asia flood monitoring and risk assessment for regional DRF mechanism

Version	Date	Author	Initials	Review	Initials	Approval	Initials
	June 2018	Joost Beckers, Paolo Campanella, Kymo Slager		Andrew Eddy, Alex Curran		Gerard Blom	
	October 2021	Giusy Capelluty Antonello Libroia		Roberto Rudari			

State Final

Deltares

Contents

1   Table of Contents

<div align="right">**Deltares**</div>

1 Introduction

1.1 Project background

In order to assist the Lao PDR, Cambodia and Myanmar to increase their financial resilience against floods, the World Bank has commissioned the development of tools for support of rapid response financing in the wake of a natural disaster. This project, named *"South East Asia Flood Risk Assessment for Regional Disaster Risk Financing Mechanism"* (*SEA DRIF*), will develop a web-platform for near-real-time (NRT) assessment of flood impact. The project will also derive risk profiles for the three countries of interest, which form the quantitative basis for designing and delivering potential insurance products.

2 User manual

The platform can be accessed via a web-browser, using the URL: http://seadrif.cimafoundation.org/.

1.2 Home Page

The platform home page is shown in Figure 1. It contains a brief description of the project and a map zoom on the Region of Interest.
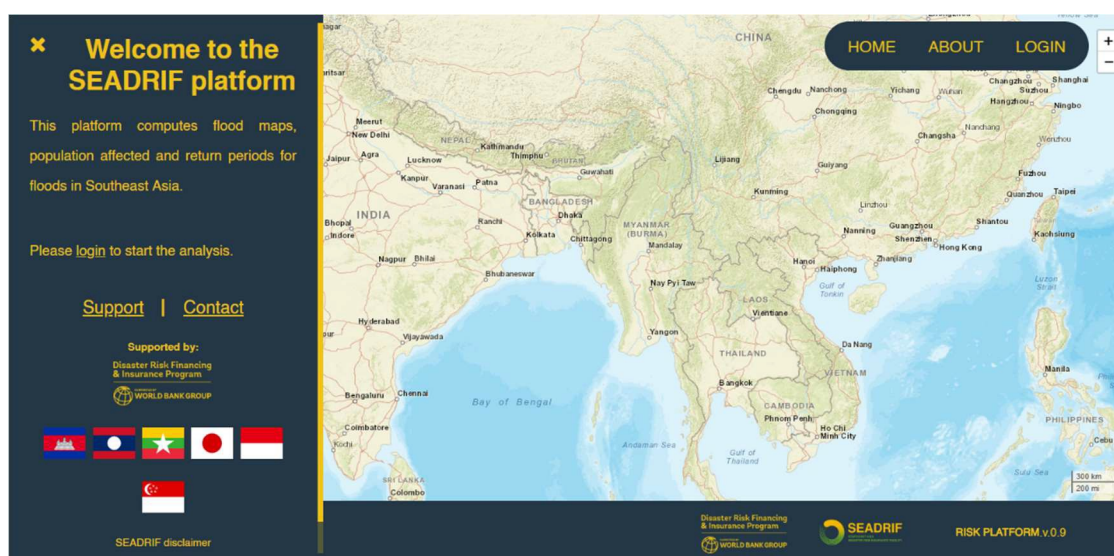

Figure 1: SEA DRIF platform home page.

On the left panel of the screen, the user can request user documentation in pdf format ('*Support'*) or contact the system administrators of the platform ('*Contact'*). The logos redirect to the sponsors of the project (World Bank DRFI Program, GFDRR).

From the navigation menu on the top right of the screen, the user can click the '*About'* button to retrieve a more extensive description of the project and the platform (page not shown). The user can also click '*Login*', which opens a login panel (see next section).

The control map shows a composite on the three countries of the last flood map identified from the observations. It does not show any sensible data that are accessible only to logged users.

Deltares

1.3 Login / Sign Up / Logout

When the user clicks on '*Login*' on the home page, a Login pop-up is opened (Figure 2). Here the user can access the platform or request a new account that will be handled by the system administrators.
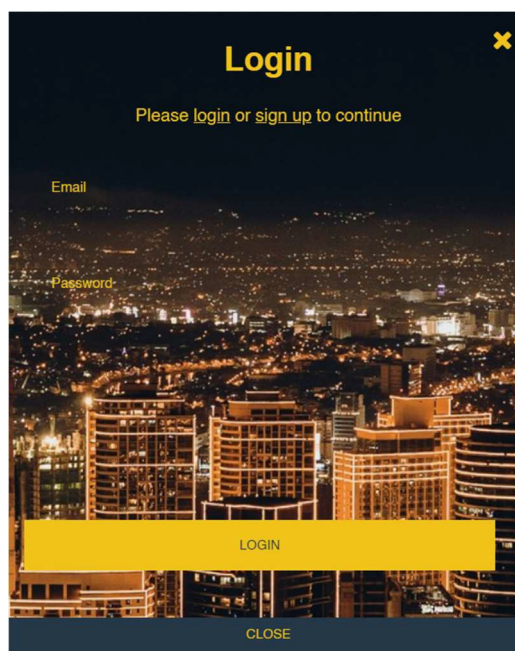

Figure 2: SEA DRIF login page.

The sign-up procedure allows the user to request a new account to access SEADRIF.The form asks users to input the following information (Figure 3):

> Name
> Last Name
> E-mail
> Institution

By clicking "REQUEST REGISTRATION", the system will send an e-mail to the system administrator. The administrator can either accept or refuse the user and choose the user type and home country.

There are two kinds of users:

- **National Users**: they can access only data from one country
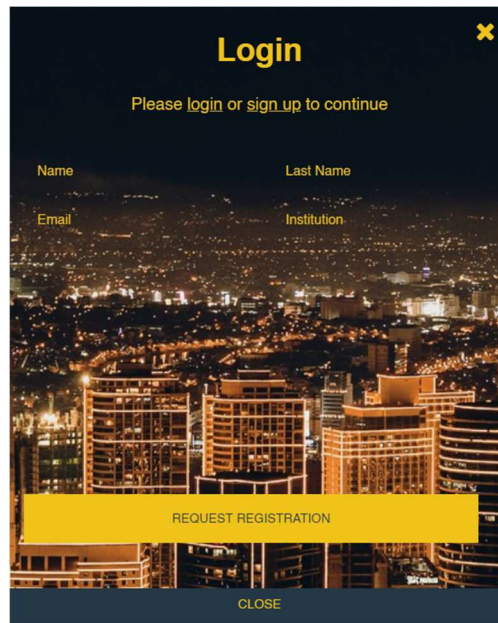- **Administrators**: they can access data from all available countries

Figure 3: SEA DRIF registration form.

After the user has been registered, he/she will be given login credentials, which are the user e-mail and the assigned password. To login, the user must enter these credentials and click the 'Login' button.

After the login, administrators will be redirected to the Choose Country page (Figure 4), while National users will be redirected to the Country Home Page (Figure 5). When the user is logged in, the '*Login*' button changes to a '*Logout*' button. Using the 'Logout' button will cause the user to exit from the platform and return to the home page.

1.4 Choose Country Page

Users that are allowed to see data for all three countries (these are typically system administrators or World Bank staff) land on this page after login. The user can click on the drop-down menu on the top of the screen to select a country flag to access a given Country Home Page (Figure 4).
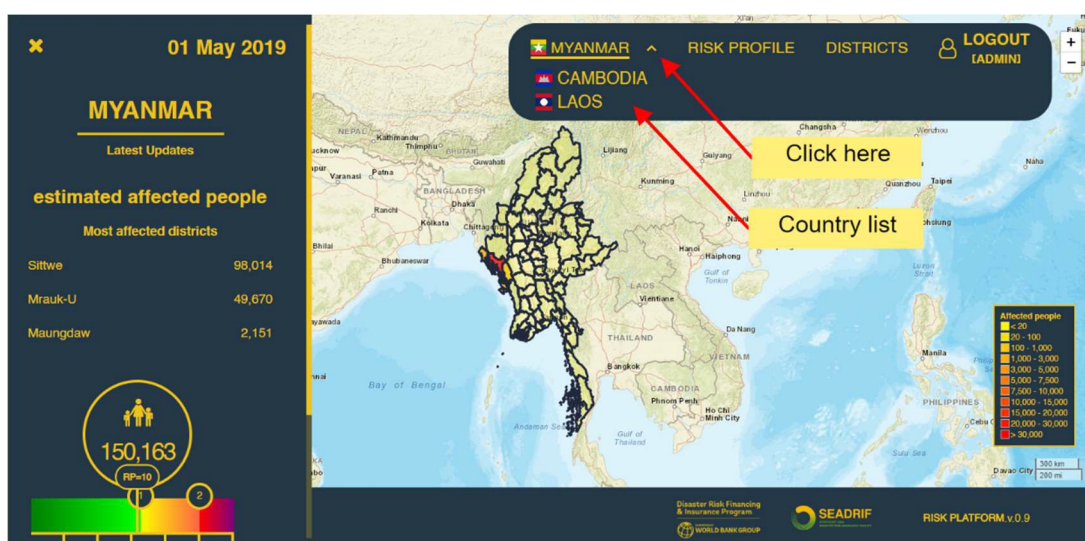

Figure 4: Choose country page.
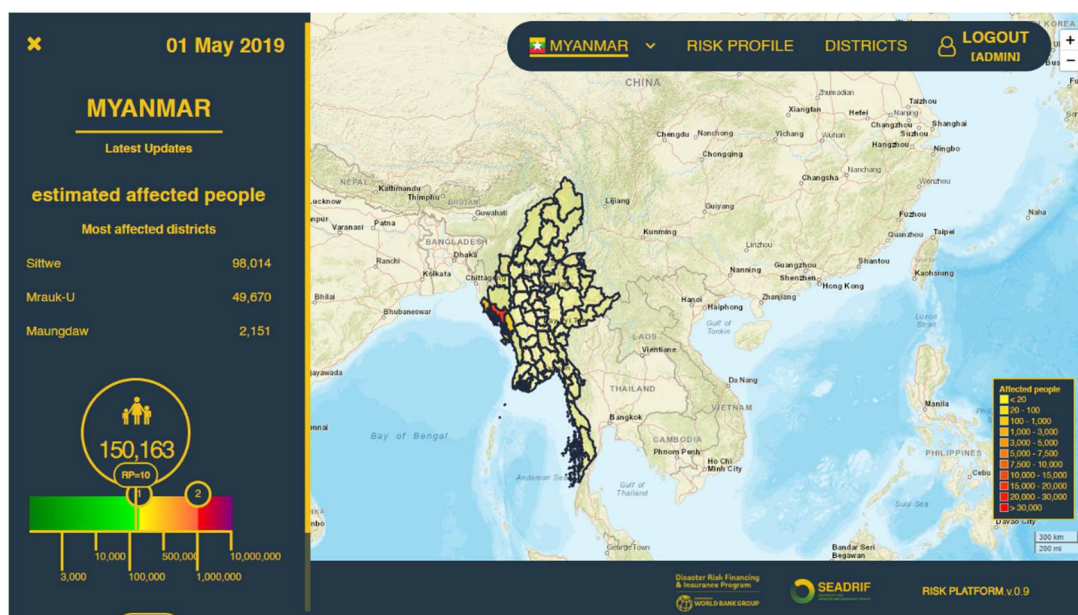
Deltares

1.5 Country Home Page

Figure 5: Country home page.

The country home page (Figure 5, example showing Myanmar) has two main sections:
- Map control
- Country details

1.5.1 Map control

The map control displays all the districts of the Country.
The bottom panel contains a buttons toolbar, with specific functionalities associated with each button. Starting from the left, the user can find:
- *Affected people*: represents the impact in terms of people affected;
- *EO*: represents where the impact of the flood occurred;
- *Model*: indicates the depth of the flood water in each place in [m];
- *EO / Model*: crossing of EO and Model data for predictions of the probability and / or risk of flooding;
- *Download Data*: downloading of the platform data in a specific format (GeoTIFF / CSV) depending on the data. In addition, it is also possible to download a zip file containing the run data and configurations that concurred to produce the data layers above mentioned and a CSV file (Logbook) with the registration of users' sessions and activities (Figure 6).

A Legend in the lower right corner of the map container changes according to the selected button.

Download data details.

The download data menu enabled the download of several datasets that are connected with the specific date and country selected. Specifically, the list of downloadable datasets are the following:
- Affected People: a .csv file that reports all affected people figures in the different districts
- EO map: a classified raster file in geotiff format reporting permanent water and flooded pixels/areas
- Model map: a classified raster file in geotiff format reporting flooded pixels/areas characterized by the maximum water dept per each pixel expressed in meters

Deltares

- EO/Model map: EO map: a classified raster file in geotiff format reporting permanent water and flooded pixels/areas as detected both by satellite and estimated by the model, or detected by one of the two sources. Indexes give an idea of the confidence that we have in that specific area to be flooded.
- Run data: is a compressed .zip archive that contains all relevant files used as input by the current run of the platform, it also includes some relevant outputs of the current run. Here the details:
    o AAAA-MM-DD_alternative_sources.csv: sources for alternative data retrieved for that day
    o AAAA-MM-DD_baserecords_EO_sentinel.csv: matching scores and weights for the sentinel data for the different fingerprints/subareas
    o AAAA-MM-DD_baserecords.csv: matching scores and weights for the observations and model data for the different subareas
    o AAAA-MM-DD_compensator.csv: range values and correction for each subarea and data typology
    o AAAA-MM-DD_MaxBaseRecords.csv: maximum data for each sub area in the 21-day period
    o AAAA-MM-DD_refvalues.csv: reference values per each observation level for the Return Periods matching.
    o log_AAAA-MM-DD.txt: log for the daily run
    o log_deltares_AAAA-MM-DD.txt: extract for logged activities that deviate from the PELC and need to be communicated to Deltares for corrective actions
    o log_pelc_AAAA-MM-DD.txt: extract for logged activities that deviate from the PELC
    o outmatch00.txt: output of the best match algorithm, selection of the hazard maps per sub area, first best match
    o outmatch01.txt: output of the best match algorithm, selection of the hazard maps per sub area, second best match
    o outmatch02.txt: output of the best match algorithm, selection of the hazard maps per sub area, third best match
    o receipt_DMHMYA_AAAA-MM-DD.csv: list of data received by DMH
    o receipt_GLOFFIS_AAAA-MM-DD.csv: list of data received by GLOFFIS System
    o receipt_GLOSS_AAAA-MM-DD.csv: list of data received by GLOSS System
    o receipt_GLOSSIS_AAAA-MM-DD.csv: list of data received by GLOSSIS System
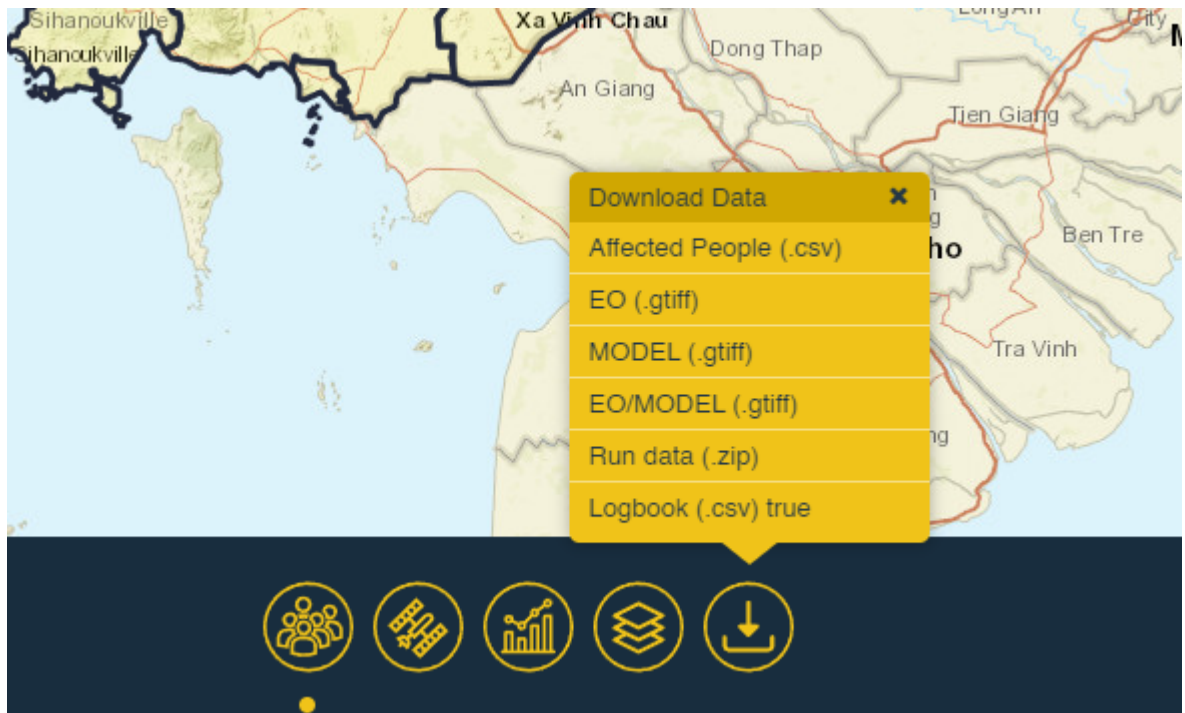   o receipt_MRC_AAAA-MM-DD.csv: list of data received by MRC

Figure 6: Home page toolbar

1.5.2 Country Details

On the left panel, the user can find some detailed information about the currently selected country, together with the '*Risk bar'* and two buttons: One to switch the system between '*Persons concerned'* and '*Emergency rescue cost'*, the other '*Download input data'* (Figure 7) to bulk download the working directory and flood risk maps.

Figure 7: Download input data.

The *'Download input data'* button opens a window allowing the user to bulk download both the working directory (WD) and the flood risk maps (Figure 8).

The download of the working directory (WD) implies the bulk download of the full directory content.

The content is fixed and should not be downloaded twice. This option is to be used only for backup purposes.

The Flood Hazard Maps can be downloaded at the country level for a series of predetermined Return Periods and consist of Geotiffs including the inundation water depth at each location in [m].
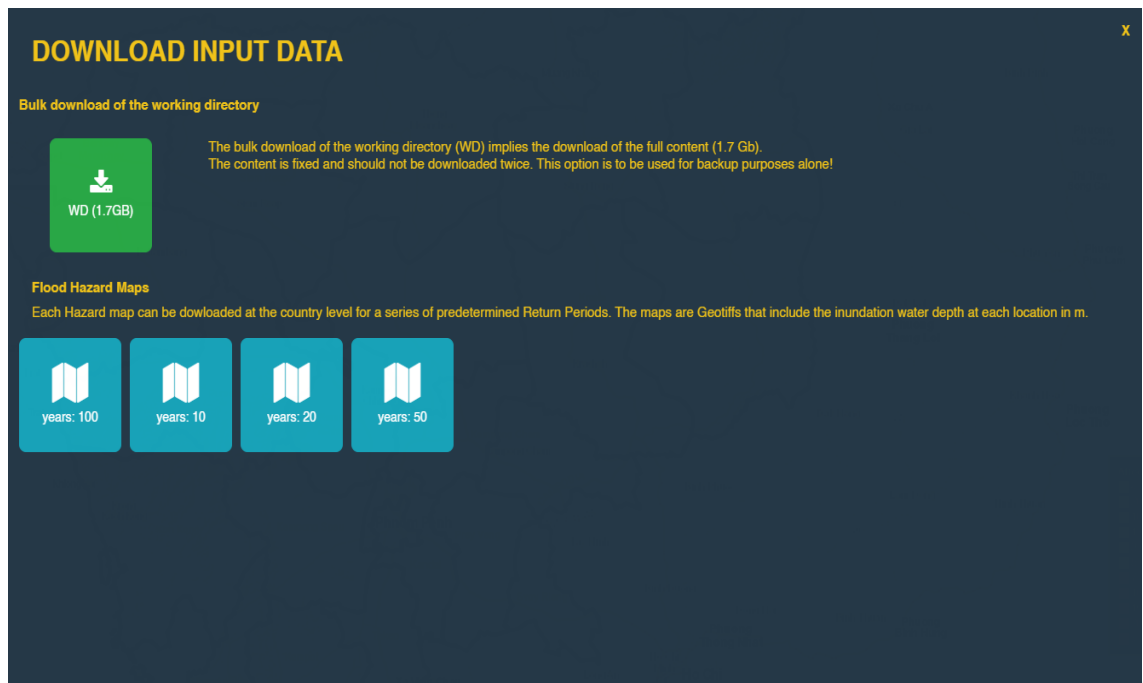
Deltares

Figure 8: Download input data window.

On the left, the user can find the detail, with the "*Risk bar*" (Figure 9) and a button to switch the system between '*People Affected'* and '*Emergency Relief Cost'* (Figure 10).
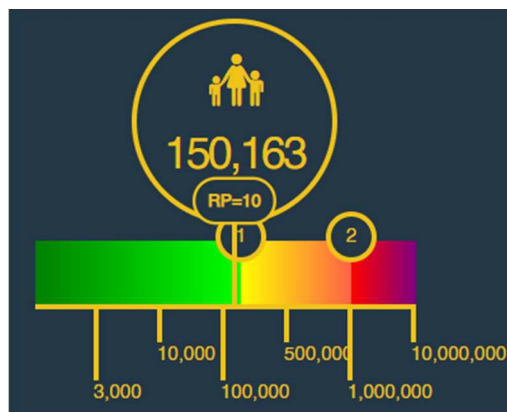

Figure 9: Risk bar.

The risk bar provides a quick look at the current situation. The bar starts from a green color and changes to yellow and red for increasing numbers of people affected. First and second pay-out thresholds are indicated on top of the bar in circles. The large circle above the bar shows the estimated number of affected people and return period (based on the best estimate flood map and JRC-GHS population grid).

Figure 10: Switch button: affected people to emergency relief cost.

The switch button (Figure 10) allows the user to change what is visualized: People Affected or Emergency Relief Cost in USD. The same switch button is available in the detailed Risk Profile page (Figure 11).

The Country home page has some additional functionality. From this page the user can:
- Change the date of analysis, by clicking on the written date on the top
- Access the Risk Profile Page (Figure 11) using the navigator on the top right
- Access the Districts page (Figure 14) using the navigator on the top right
- See the value of each district by hovering over the district with the mouse

1.6   Risk Profile

The risk profile page (Figure 11) allows a detailed analysis of the country data. The elements of the page are:

- *Title*: in the top bar the user can see the name of the Country, the value of estimated impacts (people or cost depending by the switch) and the percentage in respect to thetotal population or GDP.
- *Chart*: in the risk profile chart the user can see the estimated impact on the return period curve. The orange point is the actual estimation. The blue points are, if available, the similar past events. The user can click on the points to see the info about the relative events, simulated or registered.
- *Description*: for the estimated scenario or the historical data a brief description is available
- *Risk bar*: the same risk bar that is in the country home page is available also in the risk profile.
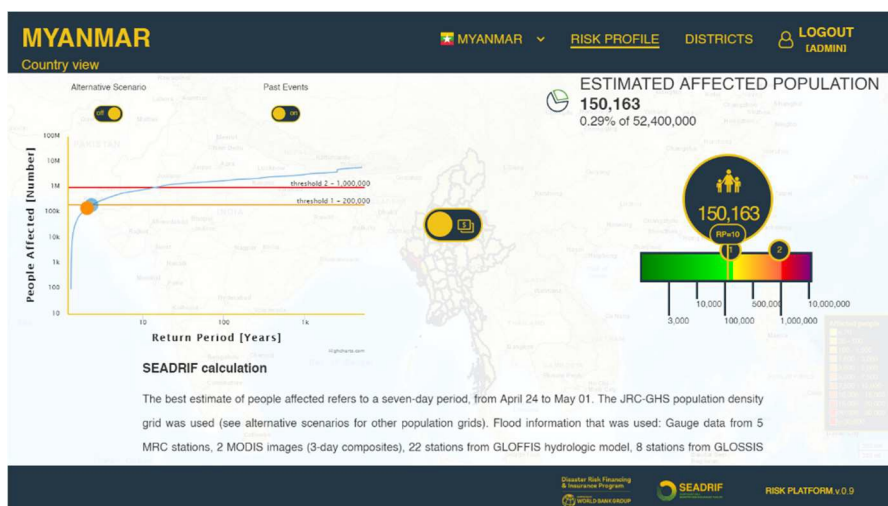- *Switch population / cost*: the user can change the output by clicking on the switch

Figure 11: Risk profile view.

For each flood impact estimation, a best scenario is visualized as default, but the user may request more information. Several alternative scenarios (second and third best flood maps, alternative population grids) are available and the system will add these points to the chart. The '*Show alternative scenario*' button (Figure 12) can switch on or off the alternative scenarios on the map in the risk profile view.
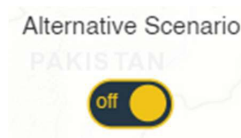

Figure 12: Switch: show alternative scenario.

The '*Show past events*' button (Figure 13) allows the user to switch on or off data for historical flood events on the risk profile. The user can also 'click' on the historical event point, which will change the background color of the risk profile page and show the data for the historical event (see example in Figure 14). The change in background color will remind the user that the data in the graph are not for the current flood but for a historical event.

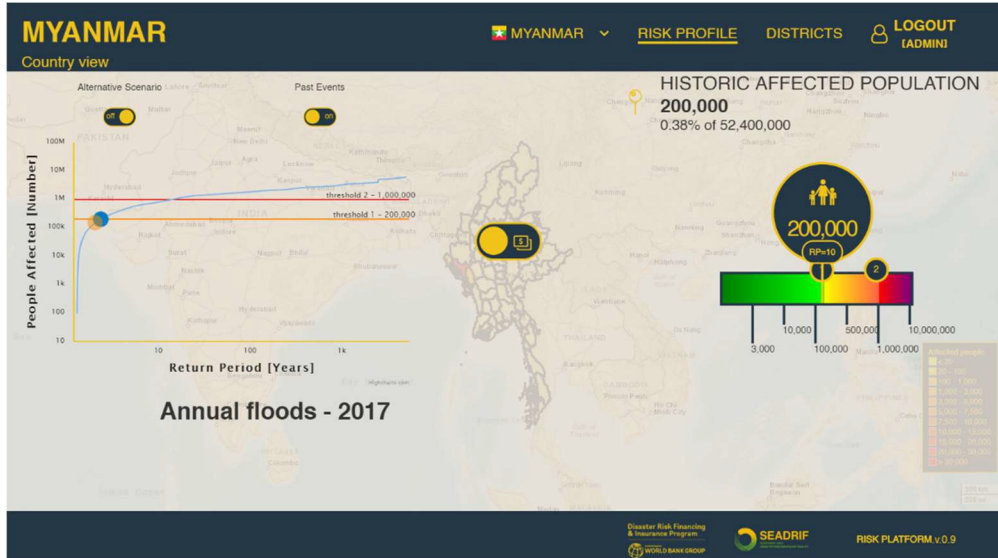*Figure 13: Switch: Show past events*

Figure 14: Risk profile view with historical event data.

1.7 Districts Page

In the district page (Figure 15), the user can see a list of country districts. If the user clicks on an item, the system zooms to the associated district on the map.
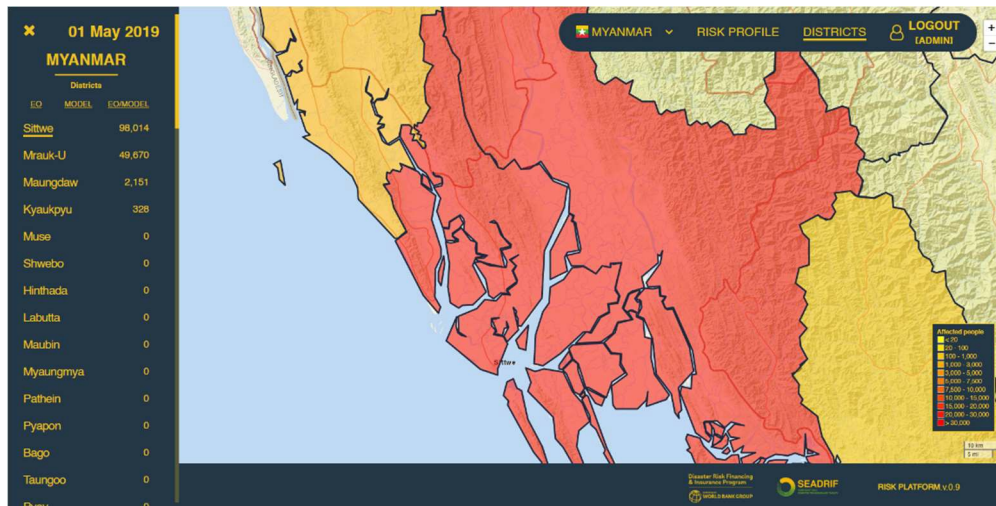

Figure 15: Districts page.

1.8   User Guide

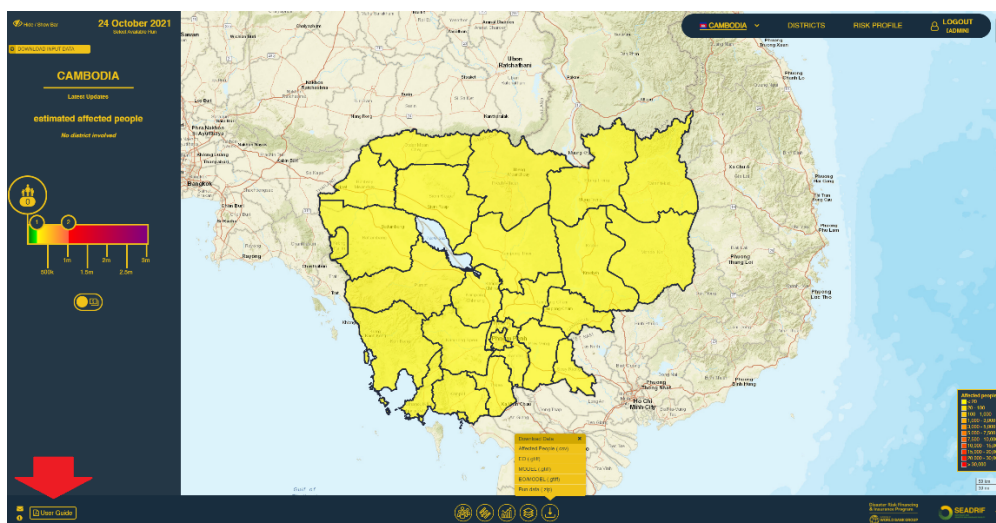The "User Guide" button (Figure 16) is available at the bottom of the Homepage, through which users can download the SEADRIFT user manual, in PDF format.

Figure 16: User Guide Button