Interactive Hazard Curve Tool User Guide

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The first homogeneous region-wide long-term Probabilistic earthquake-induced Tsunami Hazard Assessment (PTHA) for the coastlines of the North East Atlantic, the Mediterranean, and connected seas.

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Document Revisions

Date	Version Number	Document Changes
29/03/2017	1.0	Initial Draft

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1 Introduction

1.1 Scope and Purpose

Interactive Hazard Curve Tool is a TSUMAPS-NEAM (Probabilistic TSUnami Hazard MAPS for the NEAM Region) product which is EU funded project. TSUMAPS-NEAM's main objective is developing the first homogeneous region-wide long-term Probabilistic earthquake-induced Tsunami Hazard Assessment (PTHA) for the coastlines of the North East Atlantic, the Mediterranean, and connected seas (NEAM region), and triggering a common tsunami-risk management strategy in the region.

TSUMAPS-NEAM Interactive Hazard Curve Tool represents online hazard maps for different hazard probability/average return periods, and online probability maps for different tsunami surface height and run up, derived from the mean, median, 2nd, 16th, 84th and 98th percentiles hazard curves.

The tool is an interactive platform for achieving capacity building through interactive analysis of PTHA results. The general structure of the tool is designed to interact with the user providing an interface with a map where they can select a point of interest for obtaining PTHA results, and for extracting them as curves, or as hazard maps for different average return periods and probability maps for different maximum inundation heights.

This user guide has been prepared for giving information about TSUMAPS-NEAM Interactive Hazard Curve Tool and its usage.

More information about the TSUMAPS-NEAM project can be found at:
http://www.tsumaps-neam.eu

1.2 Process Overview

TSUMAPS-NEAM Interactive Hazard Curve Tool displays hazard curves, probability and hazard maps using the database developed within the TSUMAPS-NEAM project.

The tool imports XML files (generated during the project) which contain locations of POI, return period, mean, median, 2nd, 16th, 84th and 98th percentiles hazard curves related to different MIH values.

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On a base map, POIs are displayed as circles with color grading from green to red which means less to more probability. According to which tab (Probability or Hazard) the user is currently on, the user can select different MIHs or probabilities from the dropdown menu on the legend. The tool changes circles' color grading and legend based on the selected MIH or probability value.

The user can select a point on the base map with mouse left click to get related hazard curves. The tool directly finds the nearest POI to clicked location by the user, and pop ups a window that contains hazard curves.

In chart pop up window, the user can filter hazard curves from the chart. Interactive tool removes filtered curves from the chart or redraws unfiltered curves.

The tool also generates PNG and CSV files for each POI and users can download them using the links on chart pop up window.

2 Terminology

Indicator	Definition
MIH	Maximum Inundation Height
PoE	Probability of Exceedance
ΔT	Return Period
PoI	Point of Interest

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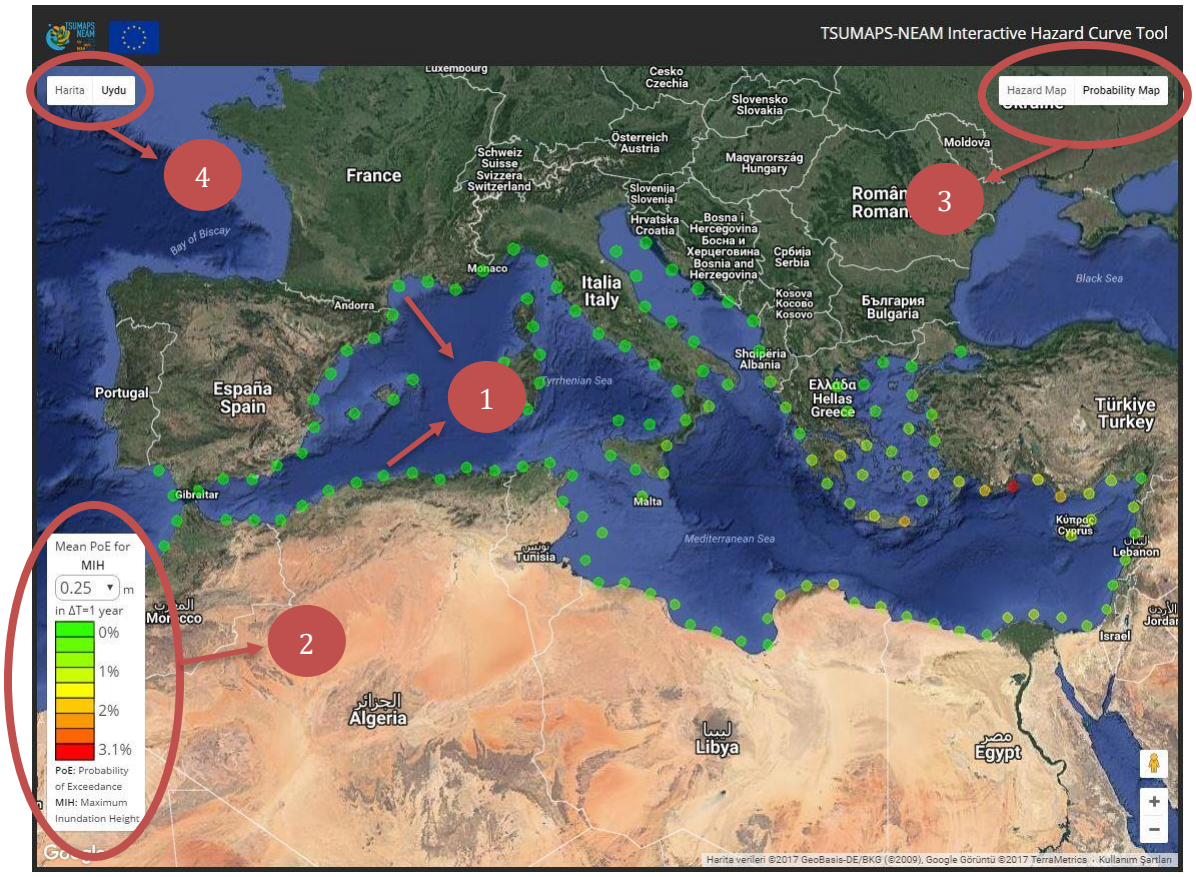
3 Processes

In this section, explanations on how to access to all feature of the tool and layouts are made.

3.1 Explanation of General Layout

There are two main layouts for the tool which are the base map where hazard and probability map are displayed on and pop up window where hazard curves displayed on.

3.1.1 Hazard and Probability Map Layout



1: PoI circles

2: Legend with MIH-PoE Switcher

3: Hazard-Probability Map Switcher

4: Base Map Switcher

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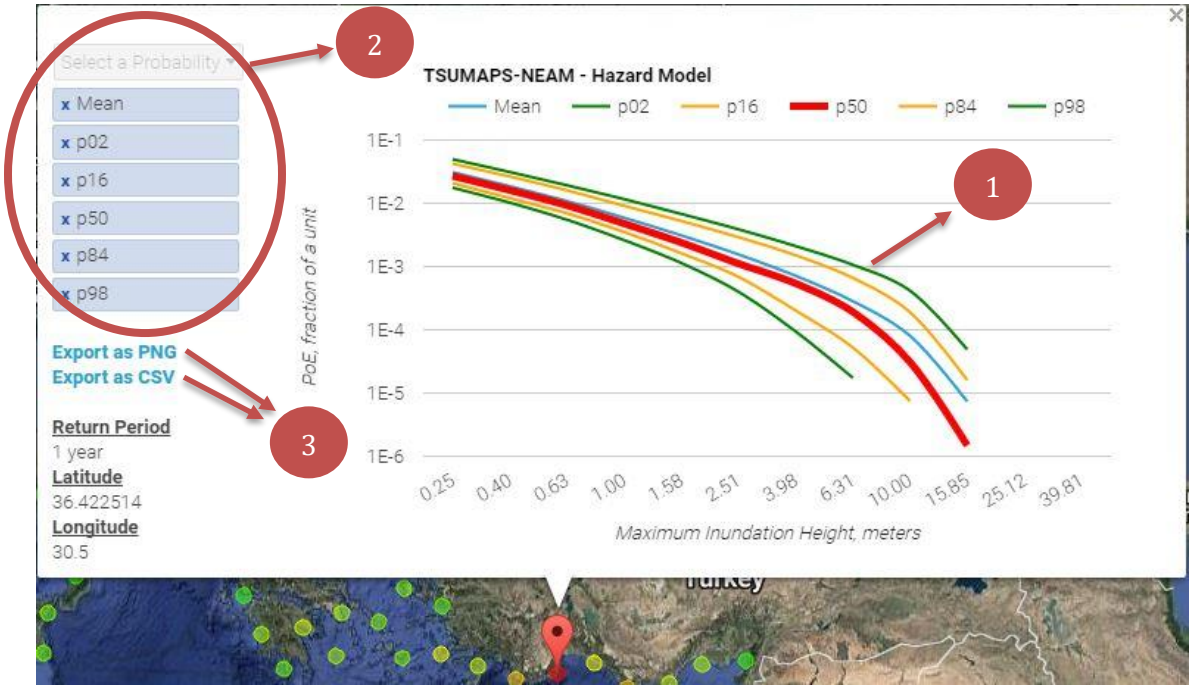
3.1.2 Probability Chart Layout



1: Hazard Curves

2: Hazard Curve Filter

3: Data Export Links

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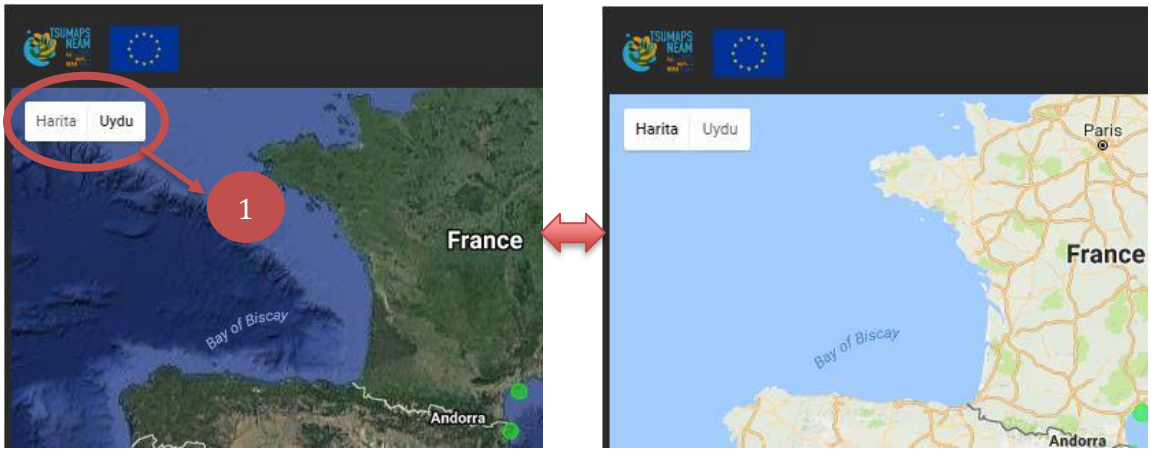
3.2 Changing Map Base Layer



1: Base Map Switcher

The user can switch base map between satellite and colored map using Base Map Switcher at the top left corner.

Default: Satellite

3.3 Switching Between Hazard and Probability Maps

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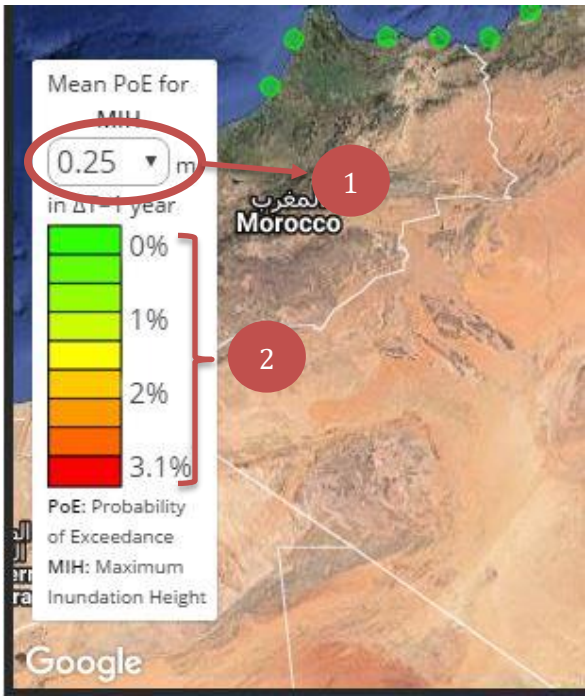
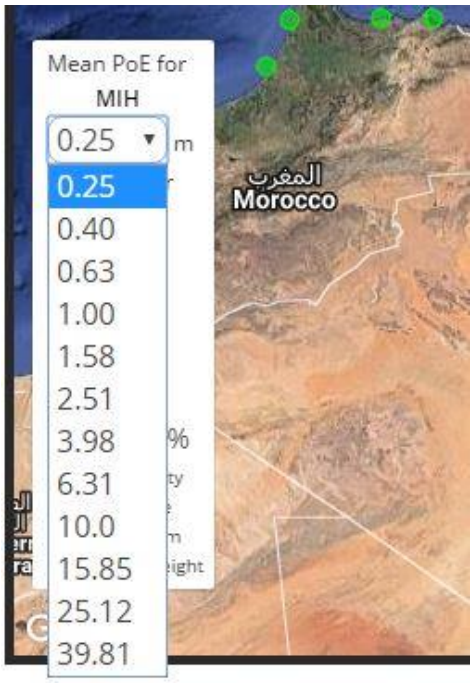
1: Hazard-Probability Map Switcher

The user can switch map type between hazard and probability. Probability map determines probability from specified MIH level. On the other hand, hazard map determines MIH from specified design probability.

Default: Probability Map

3.4 Visualizing According to Different MIH Values or PoE Values





1: MIH-PoE Selection Dropdown Menu

2: Dynamic Legend Values

The user can use the MIH-PoE Selection Dropdown Menu to visualize different levels of MIH's mean PoE or MIH obtained from specific PoE.

According to selected MIH or PoE value, legend is created dynamically using maximum and minimum values obtained from triggered data.

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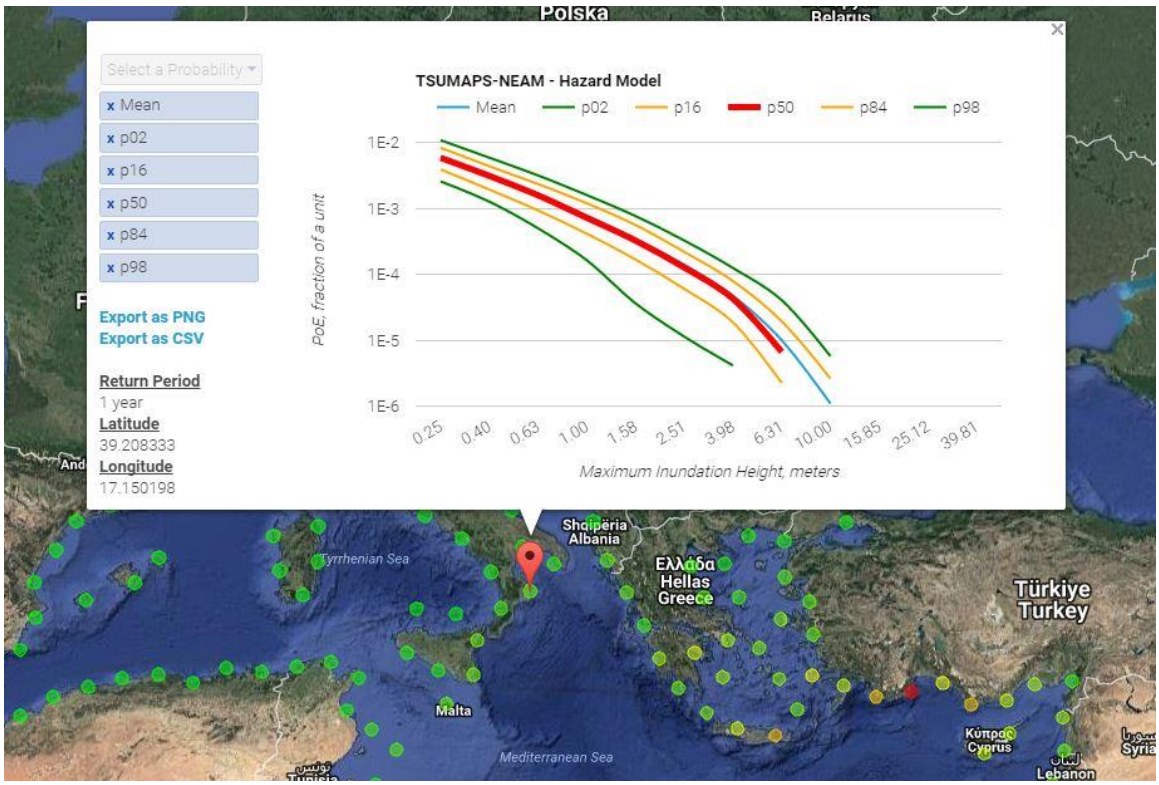
3.5 Getting Hazard Curves of POI



This online interactive tool gives freedom to the user on dragging and zoom-in-out on the map. The user can use his/her mouse to move around the NEAM region. To obtain hazard curve on the specific location on the map, the user can select a location on the map with mouse left click. The tool automatically finds the nearest PoI and display the hazard curves related to that PoI.

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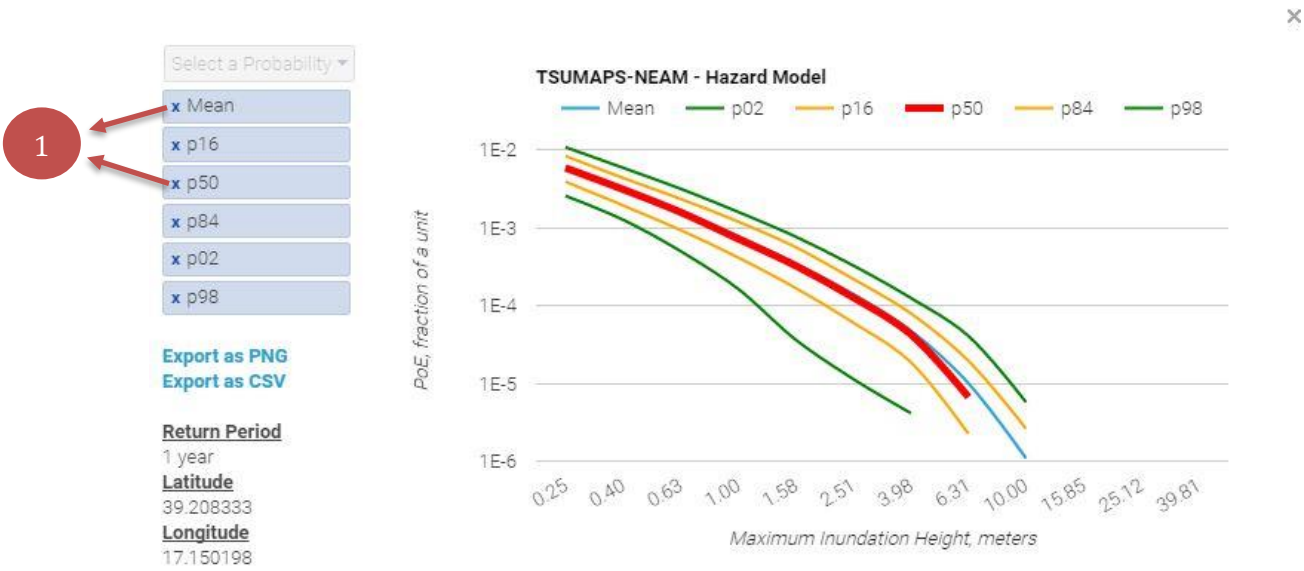
3.6 Filtering Different Probabilities on Probability Chart



1: Remove Buttons for Hazard Curves with Different Percentiles

By default, all hazard curves are created when the user select a PoI to display. Using the filter on the pop-up window, the user can remove hazard curves from the chart.

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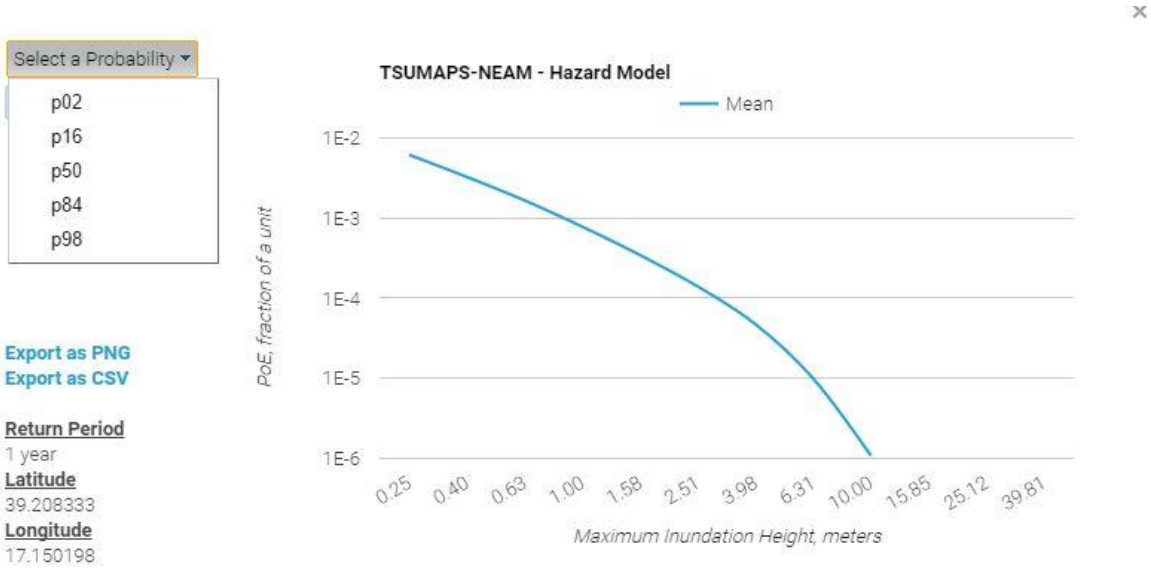
2: Hazard Curve Filter Dropdown Menu

The user can redraw hazard curve with different percentiles using the dropdown menu on filter section.



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3.7 Exporting Data From POI as PNG and CSV

1: Hazard Curve Exporting Links

The user can export data of related PoI with different formats like PNG and CSV. These links trigger the download of data files.

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4 Technical Annotations

- TSUMAPS-NEAM Interactive Hazard Curve Tool was optimized for Firefox 52, Google Chrome 52 and Internet Explorer 11 and requires JavaScript.
- PHP, JavaScript, JQuery, AJAX, HTML and CSS programming languages have been used to develop this online interactive hazard curve tool.
- Google Maps API and Google Chart API have been used inside the tool.

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