



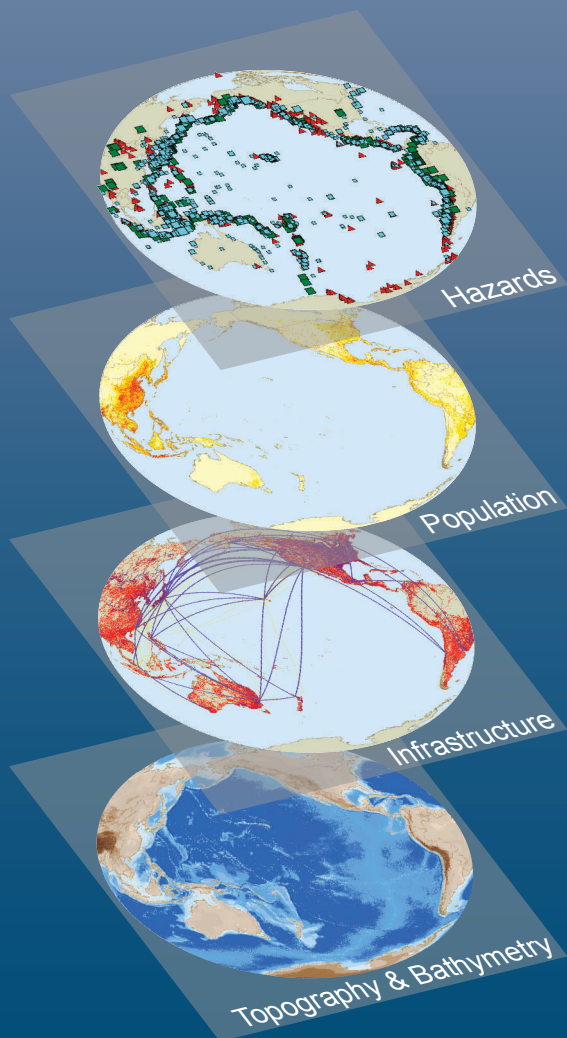
HAZPAC

An Interactive Map of Pacific Rim
Natural Hazards, Population, and Infrastructure

What Is HAZPAC: An Introduction to HAZPAC GIS Maps

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Prepared in cooperation with: American Red Cross, Circum-Pacific Council, *and* Stanford University



Digital Data Series DDS-76
Version 1.0

2002

U.S. Department of the Interior
U.S. Geological Survey



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<http://www.crowdingtherim.org>

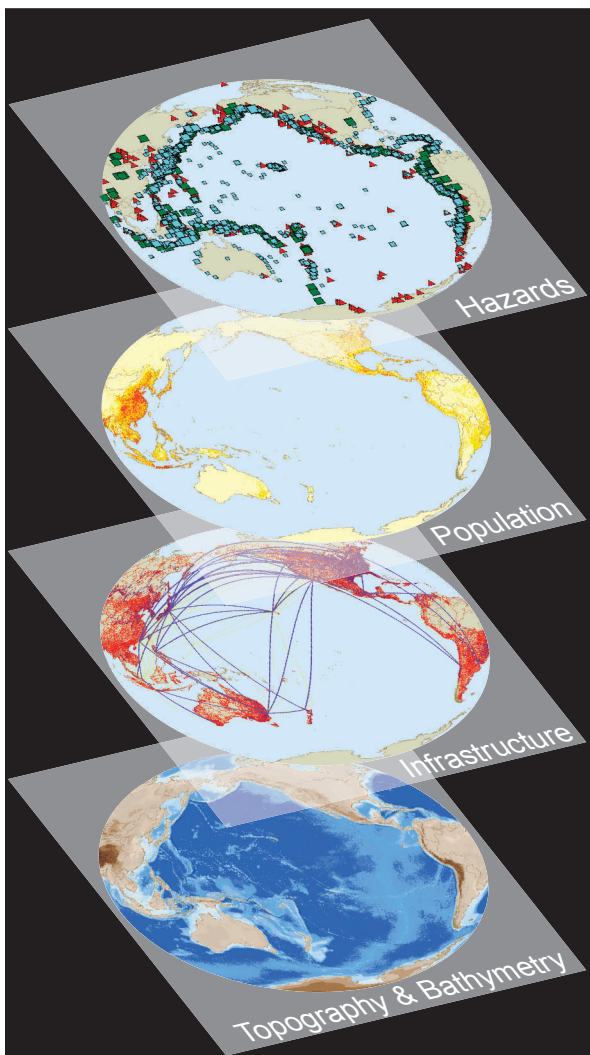
HAZPAC is a computer-based map about natural hazard risk in the Pacific Rim region. It communicates to a broad audience the ideas of *Crowding the Rim*, an international public-private partnership fostering collaborative solutions for regional risks.

HAZPAC, which stands for "HAZards of the PACific," uses interactive mapping technology to help people visualize the socio-economic connections and shared hazard vulnerabilities among Pacific Rim countries, and to explore the nature of risk.

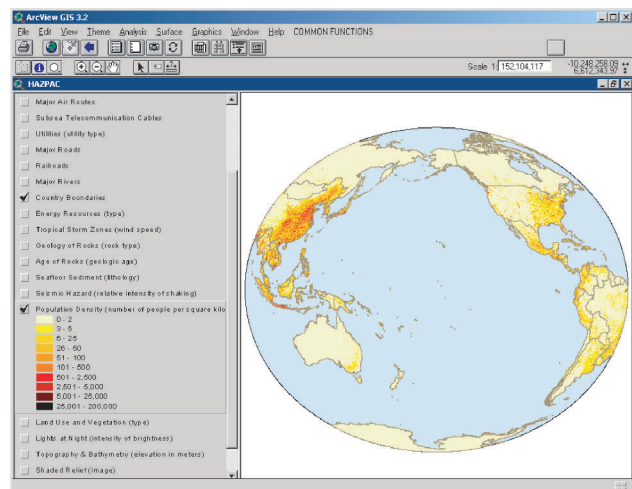


HAZPAC is a Geographic Information System (GIS), or a digital map composed of layers of information that users can manipulate. Imagine a set of map transparencies about an area, with separate transparencies for elevation, population density, infrastructure, and historic hazard events. You can overlay all the transparencies on top of one another as depicted at left, choose to view just one layer, or create any combination of layers.

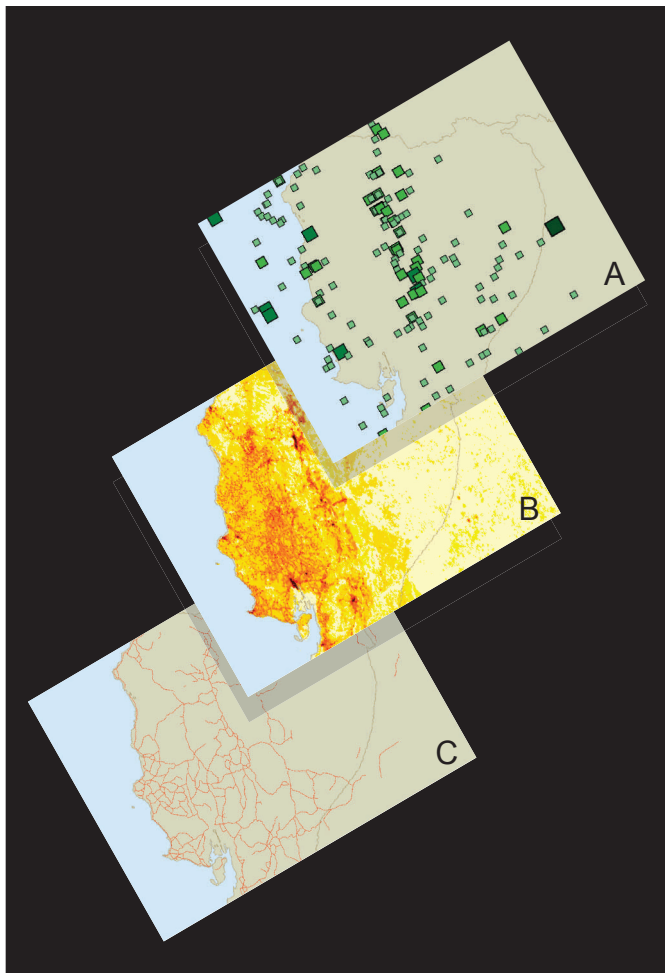
Unlike a static paper map, HAZPAC allows you to choose the scope and format of the information to be displayed. The HAZPAC interface is shown below. The legend on the left of the screen indicates all available layers that can be displayed. The example map below displays the population density layer for the entire Pacific Rim region.



HAZPAC allows you to overlay many layers of information.



HAZPAC's user interface, with the legend at left, and map at right showing population density.

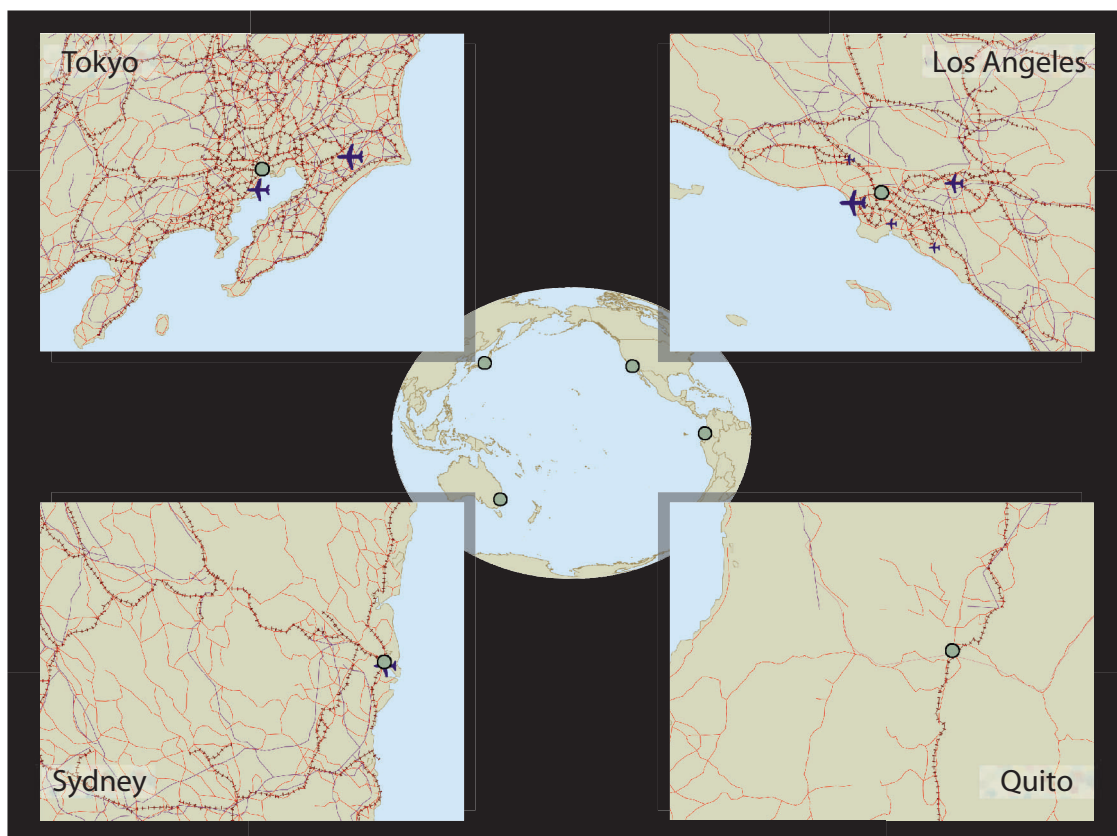


You can examine a particular region of a *HAZPAC* map in greater detail. You might choose to "zoom in" on one area to get a closer look at its major roads, population, and historic earthquakes, as shown on the left for the city of Quito, Ecuador.

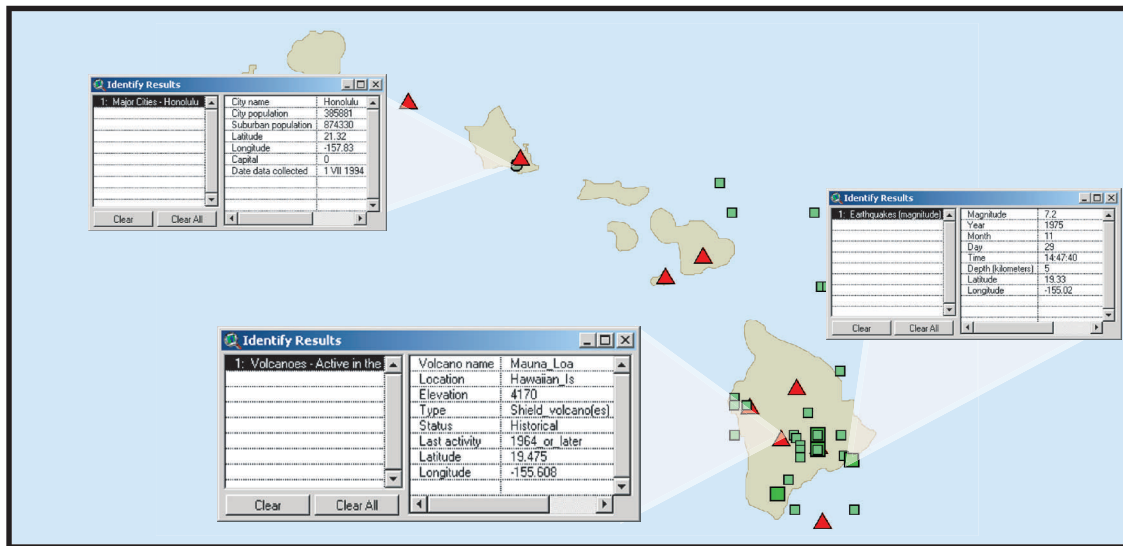
You can "zoom in" on multiple areas to compare information from different parts of the Pacific Rim region. The example below shows the major road infrastructure for the region surrounding Quito.

Left: Layers of information for Quito, Ecuador: historic earthquakes (A), with an overlay of population data (B) and major roads (C).

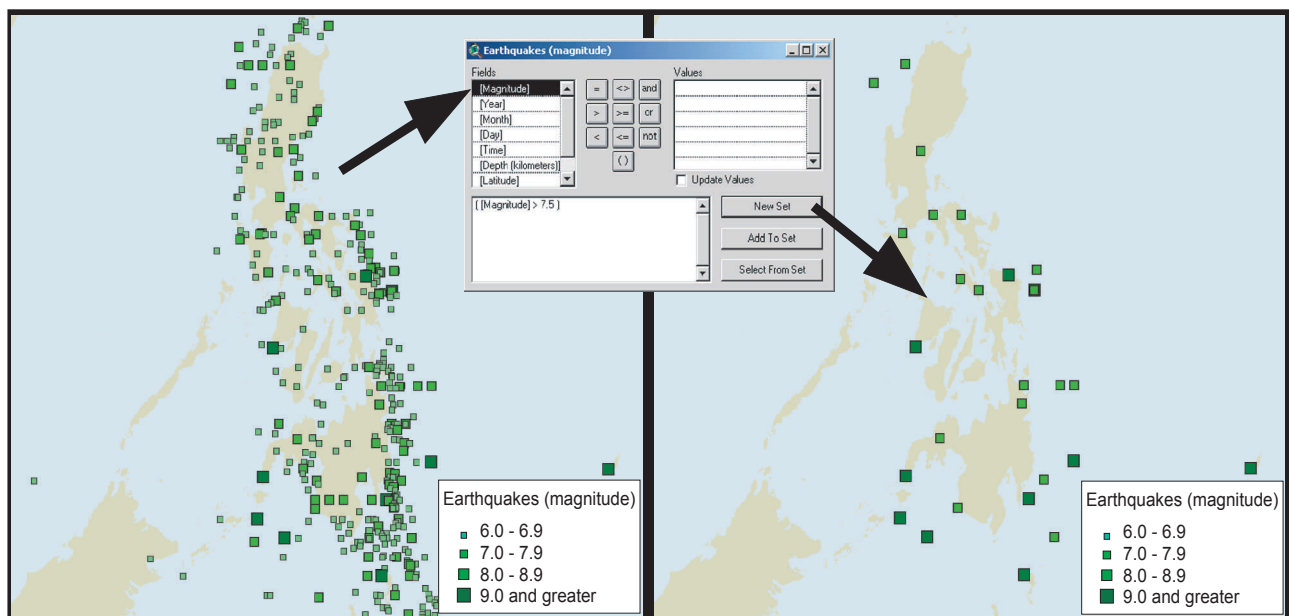
Below: Roads, railroads, utility pipelines, and major airports in four major Pacific Rim cities.



HAZPAC allows you to dynamically access the data behind the graphics display. For example, you can request that the map show information associated with a particular event or location. The map below displays detailed information for the city of Honolulu, Mauna Loa volcano, and a 1975 earthquake.



You can also search HAZPAC for more complex information. For example, you can display all of the historic earthquakes with Richter magnitudes greater than 7.5 that have occurred in the Philippines. In the image below, all known historic earthquakes are shown on the left side. The box insert shows where the HAZPAC user composes a "query" to ask a question, such as "Which of these earthquakes had magnitudes greater than 7.5?" The map at right is the answer to the query, displaying only earthquakes with magnitude greater than 7.5.



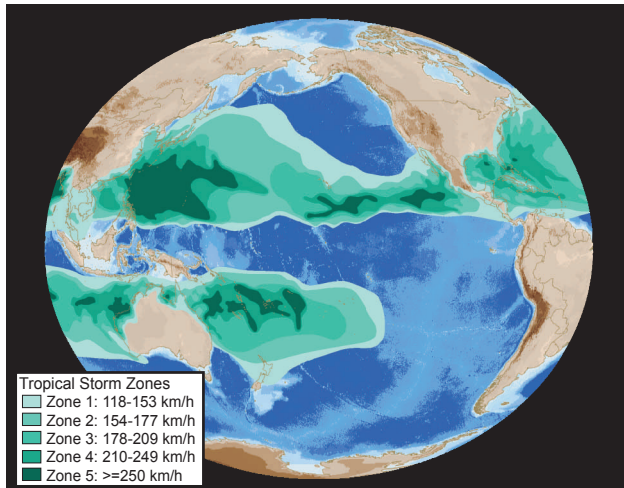
HAZPAC's layers of information fall into four categories: natural hazards, population, infrastructure, and physiography. Combined, these layers illustrate the two basic components of risk: 1) natural hazards and 2) areas of value, which can be represented in terms of population and/or infrastructure. HAZPAC users can explore different hazard/value relationships in depth. HAZPAC data include:

Natural Hazards: earthquakes, tropical storm zones, tsunamis, volcanic eruptions

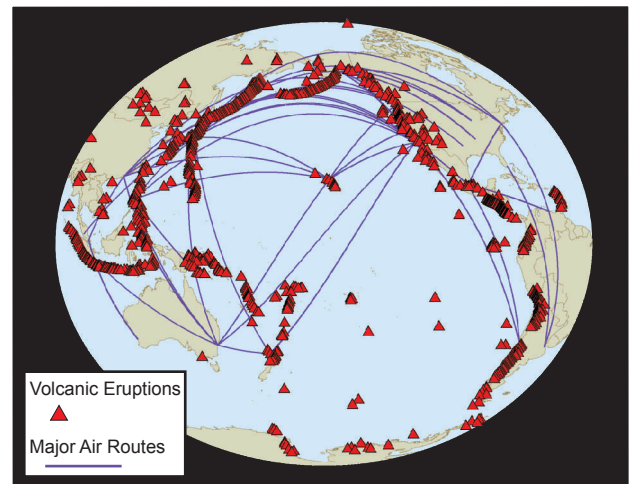
Population: countries, land use, major cities, population density

Infrastructure and Economic Value: energy resources, major airports, major air routes, railroads, major roads, subsea telecommunication cables, utilities

Physiography: geologic age and rock type, seafloor sediment, topography & bathymetry



HAZPAC map showing tropical storm zones. Storms cause roughly 30% of all financial loss due to natural hazards, according to the Munich Reinsurance.



HAZPAC map showing locations of volcanic eruptions and major air traffic routes. Volcanic ash ejected into the atmosphere can endanger airplanes.

HAZPAC is available in several different formats, including an online version accessible via the Internet and a more powerful version using ArcView software:

1. If you have an internet connection and want a brief overview of the program:

HAZPAC Online is a preliminary, demonstration version of HAZPAC with limited functionality. It is available at <http://www.crowdingtherim.org>. The demonstration version of HAZPAC Online has not been reviewed for conformity with U.S. Geological Survey editorial standards.

2. If you have ESRI's ArcView software:

You have access to the most highly functional and detailed version of HAZPAC, an ArcView project with an interface that is customized for easy use.

3. If you have a Windows computer but do not have ArcView software:

You may use the ArcExplorer HAZPAC project, which uses software you can install for free. This version of HAZPAC offers much of the functionality of the ArcView package.

4. If you have another type of GIS software:

Some of the HAZPAC data are available as export files (.e00) that can be imported into other software, such as MapInfo.