

Chapter 12. QASEM and Ground Truthing the Results

QASEM the Quick Assessment Event Monitoring tool, allows **HAZUS** to automatically run real-time scenarios on computers equipped with a **REDI-CUBE** system.

Given a correctly installed **REDI-CUBE** system, when an earthquake occurs, **QASEM** automatically launches **HAZUS**, creates a study region of the appropriate size, defines a scenario with the parameters (location, magnitude) of the earthquake which has just occurred, and runs the analysis. All steps do not require any intervention from the user.

To use **QASEM** correctly, the following requirements should be met:

1. The **REDI-CUBE** system should be installed and working correctly as per the instructions that came with the system.
2. **QASEM** should be installed. Since the **HAZUS** setup program *does not* install **QASEM** by default, the **QASEM** option has to be selected specifically.
3. **QASEM** should be running at all time. By default, the **HAZUS** setup program adds the **QASEM** shortcut to the user's startup folder so that **QASEM** is launched automatically every time Windows is launched.

12.1 Launching QASEM

By default, **QASEM** runs every time Windows is launched. If **QASEM** is not running, launch it by selecting **Start|FEMA Risk Assessment System|QASEM** (this assumes that the default group "FEMA Risk Assessment System" was used during the setup.)

12.2 QASEM Options

Like **HAZUS**, **QASEM** includes pre-set options for most of its parameters; however, these options must be edited to reflect the correct user's choices.

12.2.1 The Pager File

There is no default to this option. When started, **QASEM** will always display the message shown in Figure 12.1. To correct the error, click the **Specify...** button for **REDICUBE pager data file**, and select the pager file used by your **REDI-CUBE** system.⁷



Figure 12.1 Error message about

⁷ QASEM has been tested with version 2.5 of the pager file format.

12.2.2 Monitoring Type

Whenever an earthquake event occurs in California that can be picked up by the **REDI-CUBE** system, the signal is sent to the pager and will be picked up by **QASEM**. The monitoring type option allows filtering of the events based on the location.

Select the **All events** option if you want **HAZUS** to be launched for all the events that can be picked up by **REDI-CUBE**. Select **Only those within the boundary** option to pick up only the earthquake events that occur inside a given boundary. Specify the boundary map by clicking the **Specify...** button.

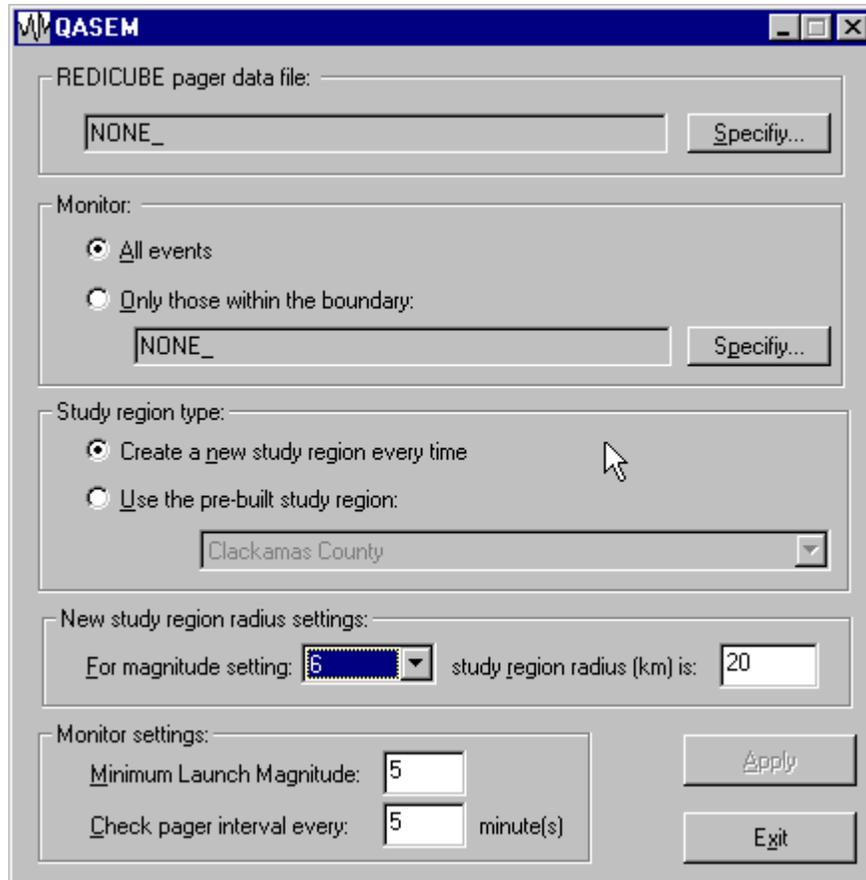


Figure 12.2 QASEM Options

12.2.3 Study Region Type

This option controls what type of study region will be used. The option **Create a new study region every time** will have **HAZUS** create a new region for each new earthquake event. The region boundaries are controlled by the **New study region radius settings** as follows:

- The epicenter of the earthquake event will be used as the centroid of the study region
- **HAZUS** will include all of the census tracts that lie within the radius of that epicenter. The radius of the circle is the value specified under **New study region radius settings**
- The option **Use the pre-built study region** makes **HAZUS** use the specified study region (which was pre-built). This option comes in handy in the case the user cares only about his region, which he/she has already created and enhanced. To define the pre-built region to use, simply select from the combo-box (**QASEM** will list automatically all the regions which are pre-built.)

12.2.4 Study Region Radius

This option is used when the **Create a new study region every time** option was selected (as explained in the above section.) Since the extent of the region affected by an earthquake is a function of the magnitude of the event (large events affect larger regions), **QASEM** allows settings different values for different magnitudes and will interpolate correctly the radius for any event size.

12.2.5 Monitor Settings

This option controls at what point **QASEM** is triggered. The **Minimum launch magnitude** filters the events based on their size, i.e. all events that are less than the value specified will be ignored. The **Check page interval every x minutes** controls how often **QASEM** probes the **REDI-CUBE** system. To have **QASEM react** to an event real-time, set the interval to a low value like 1 or 2 minutes. The downside is that this will burden the machine⁸.

12.3 QASEM Results

When an earthquake event that meets the criteria specified in the all the options described above, **QASEM** launches **HAZUS**.

HAZUS then creates a new study region (or use a pre-built one) depending on the study region type option set, defines a scenario with the parameters of the event, runs the analysis using a pre-defined set of options, and then shuts down⁹.

The results for a **QASEM** analysis are summarized into a QAS (Quick Assessment Summary Report) that can be accessed in **HAZUS** through the option **Results|Summary Reports|Other|Quick Assessment Report** as shown in Figure 12.3.

⁸ In a typical environment, a machine should be dedicated exclusively to **REDI-CUBE** and **QASEM** and therefore the interval should be set to the minimum (1 minute) for real-time monitoring.

⁹ **HAZUS** always shuts down at the end so that any after-shock events can be picked up and analyzed too.

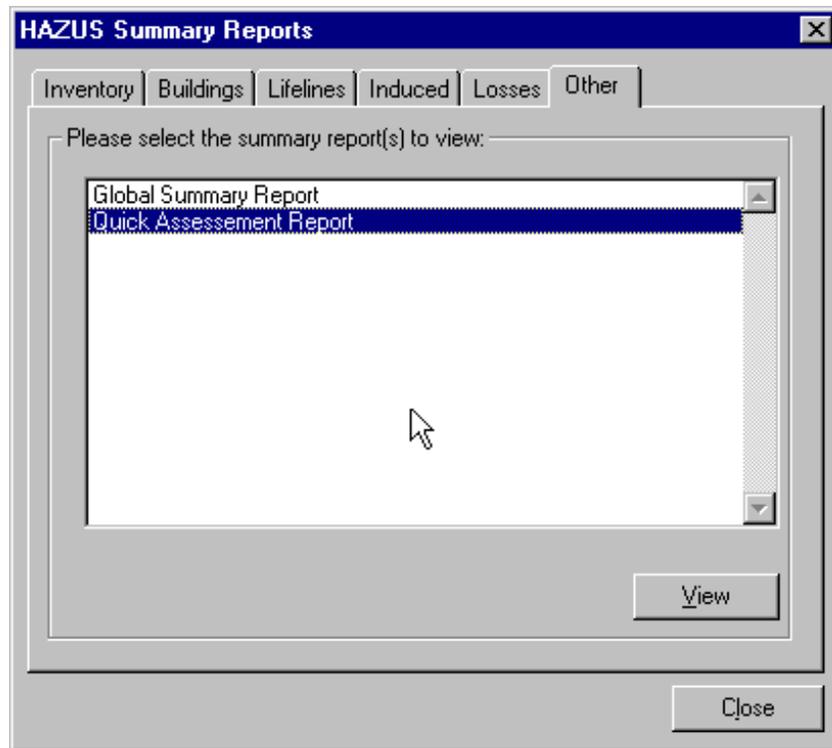


Figure 12.3 Accessing the QAS Report

References

Note to users: Many of these references are difficult to find. However, most of them can be obtained from the libraries maintained at the National Center for Earthquake Engineering Research at Buffalo, the Earthquake Engineering Research Center at the University of California, Berkeley, the National Hazards Research and Applications Center of the University of Colorado and the Natural Hazards Research Program of the American Institute of Architectural Research, AIA/ACSA in Washington D.C.. Publications by Applied Technology Council, Association of Bay Area Governments, the Federal Emergency Management Agency, US Geological Survey, US Census Bureau and other government agencies can be obtained directly from these organizations.

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