

# Introduction

Anaqsim is an analytic element software for simulating groundwater flow. It uses subdomains as described in [Fitts \(2010\)](#), which gives it strong capabilities with respect to heterogeneity and anisotropy. It also employs high-order line elements, spatially-variable area sinks, and finite-difference time steps to allow multi-level aquifer systems and wide-ranging transient flow simulations. Anaqsim is a product of Practical Groundwater and was developed by Dr Charlie Fitts. It is coded in C#.

## Anaqsim Versions

There are two versions of Anaqsim: 'Student' and 'Licensed'. The installed software is the same for both, but the capabilities of the software vary depending on whether the software is Licensed or not.

By default the download provides you with an un-licensed version that will not solve any models.

The student version is not for commercial use, and incorporates a watermark. It can be used to run all of the tutorial models on the website.

The student version allows modeling of a wide array of situations, both steady and transient. When solving, its limits are as follows:

- Allows multi-level (3D) simulations with up to three aquifer levels.
- It allows steady state and limited transient simulations with up to two different time periods and up to five time steps in each period.
- The number of equations in the model's system of equations is limited to 2000. This allows fairly complex models, but users needing greater complexity, or for commercial use should purchase a license.

Activating a commercial license (either the free trial, monthly or annual subscriptions) allows you to solve larger, more complex models with these capabilities:

- Allows multi-level (3D) simulations with up to 15 aquifer levels.
- It allows steady state and fully transient simulations with any number of time periods and up to 20 time steps in each period.
- The number of equations in the model's system of equations is not limited, but somewhere around 40,000 to 50,000 equations is a practical upper limit based on computer memory and the time required to solve.

Anaqsim is licensed through either a monthly or annual recurring subscription that can be cancelled at any time. Please refer to [licensing section](#) for further details, and see [www.anaqsim.com](http://www.anaqsim.com) for license and pricing details.

It is possible to plot and analyse results from a model that has been solved on a licensed version of Anaqsim on an unlicensed version. See [installation-manual](#) for further details.

## System Requirements

- 64-bit Windows operating system.
- At least 500 MB of available disk space.
- At least 1 GB memory. More memory is needed for larger problems and most users have 8+ Gb.
- Microsoft .NET v 4.8 or higher.

## Installing Anaqsim

Please see the [Installation documentation](#) for details on how to install Anaqsim, and how to [activate and de-activate licenses](#). Anaqsim licenses can be purchased as either a monthly or annually recurring subscription via the [website](#).

## Release Version and History

The current Anaqsim release number and a history of Anaqsim releases, including lists of changes from one release to another, are posted on the Anaqsim [website](#). The release numbering scheme gives the year followed by the release number in that year. New releases are posted to the website and may be downloaded, installed, and run by anyone with a valid license. See the next topic about how to [update to a newer release](#).

You can see the release number of your installed Anaqsim by selecting [About Anaqsim](#) on the main menu.

## Updating to a Newer Release

As long as you are within the term of your Anaqsim license, you may upgrade Anaqsim to the current release. To update, first check that there is a newer release available from [www.anaqsim.com/version-history](http://www.anaqsim.com/version-history). If there is and you want to update:

1. Download the newer release installation file from the [www.anaqsim.com/version-history](http://www.anaqsim.com/version-history) to your computer,
2. Uninstall the older release from your computer using the Windows Control Panel -> Add/Remove Programs dialog,
3. Install the newer release as described in the [Installing Anaqsim](#) section.

Updating will not affect your license, as the Anaqsim license file is not removed by the uninstall operation.

## Help and Documentation

Help is available in many forms: this User Guide, tutorials, and example models available at the [website](#).

The Anaqsim User Guide can be accessed by selecting [Help](#) from the main menu in Anaqsim.

Three tutorials that walk the user through construction of Anaqsim models of increasing complexity are available on [www.anaqsim.com](http://www.anaqsim.com). A quick way to get familiar with Anaqsim is to work through these tutorials in sequence, building your own Anaqsim models like the ones shown in the tutorials. The tutorials lead you through creating these models step-by-step. The tutorials are pdf files with outlines at the first page that contain clickable links, so you can easily jump forward and backward to review, if needed. The completed tutorial models are included in the Documentation directory of the Anaqsim software installation:

- tutor1.anaq is the input file for a simple one-level steady model with irregular boundary conditions, a recharge basin, a river, and a well, and anisotropic K.
- tutor2.anaq is the input file for a steady model with heterogeneity and a 3D area with multiple levels.
- tutor3.anaq is the input file for a transient dewatering simulation model within a 3D area.

All three tutorials may be done with either the student or licensed Anaqsim.

## Contact and Support

Support is available for licensed Anaqsim users to make sure that Anaqsim is functioning properly on their computer. Please first check the Anaqsim User Guide (Help) and the tutorials on the website to see if your question may be answered there.

The contact information for support is [support@anaqsim.com](mailto:support@anaqsim.com)

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