

What's New in Visualyse Professional in 2022

Abstract: As we start the New Year, we look back at the old one, and in case you missed it, here are some of the new features we introduced in Visualyse Professional during 2022.

Introduction

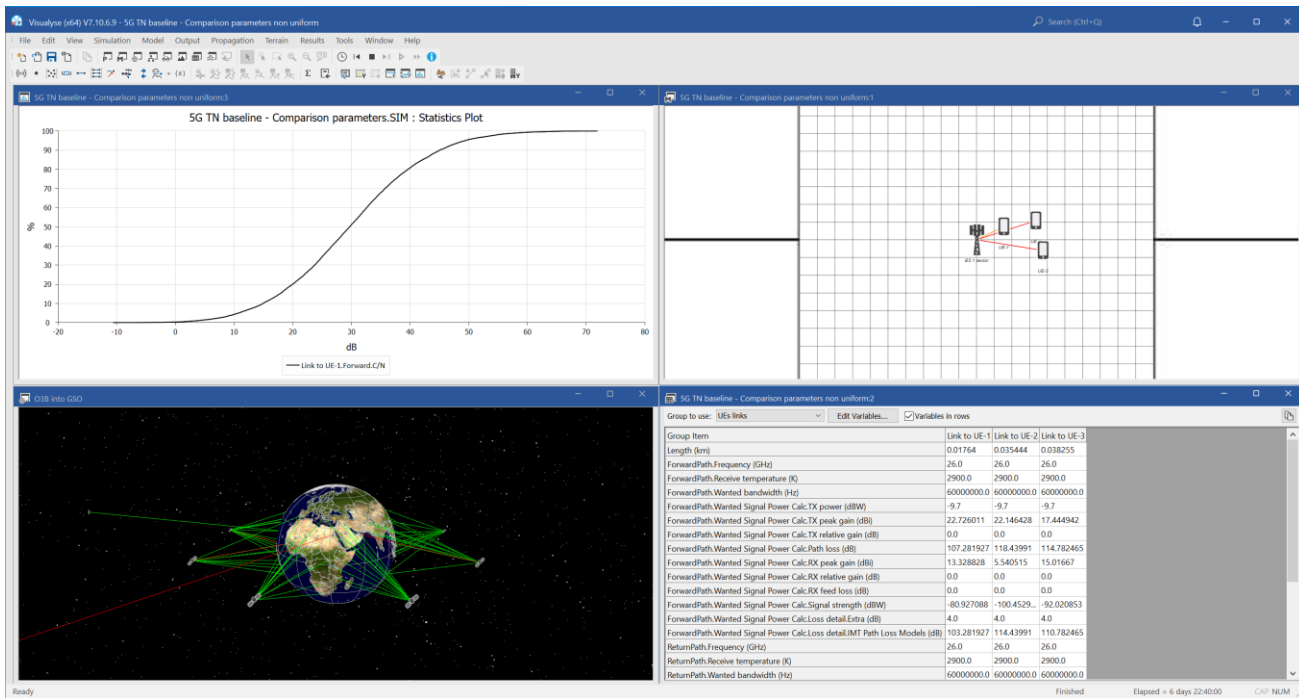
Some of the new features in Visualyse Professional that were added during 2022 include:

1. Full release of Version 7.10 of Visualyse Professional
2. Generic GeoTIFF Terrain and Surface Format Interface
3. Elevation Dependent Clutter Loss
4. Updates to Propagation Models
5. Extended number of Gain Tables for Beamforming Antennas
6. New Notification Centre and Search Tool.

These are described further below. Full information including a complete list of new features is available from the Maintenance History documents available from the Help Menu. We are already working on new features for 2023. If you have any suggestions or preferences for what we work on next, please send us an email.

Full release of Version 7.10 of Visualyse Professional

In 2022 the new user interface version of Visualyse Professional was formally released as Version 7.10. This has a new look and feel, with improved icons, ability to handle high resolution displays and, for the first time, available in a 64-bit version allowing larger terrain areas to be included in your simulations:



We recommend that all users with valid Annual Maintenance and Support (AMS) update to the version 7.10.x releases using the install available from our web site here:

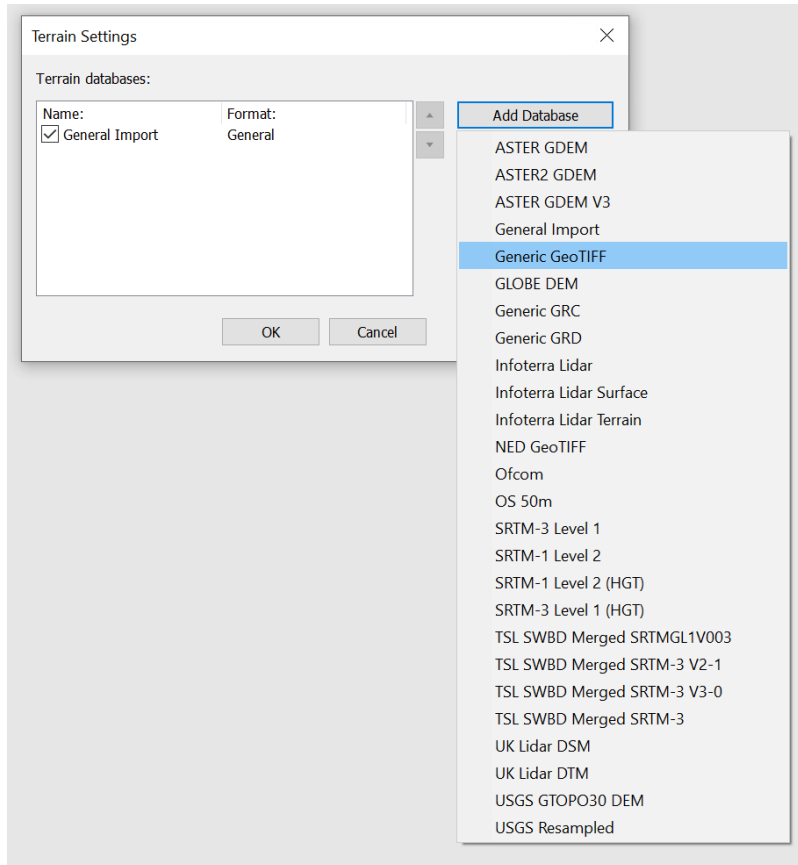
https://www.transfinite.com/MaintenanceRelease/Visualyse_Professional_V7_10

Email us at info@transfinite.com or visit our web site at <https://www.transfinite.com>



Generic GeoTIFF Terrain and Surface Format Interface

A new generic interface to high resolution terrain and surface data in GeoTIFF format was included in 2022. This can be added from the Terrain settings dialog:

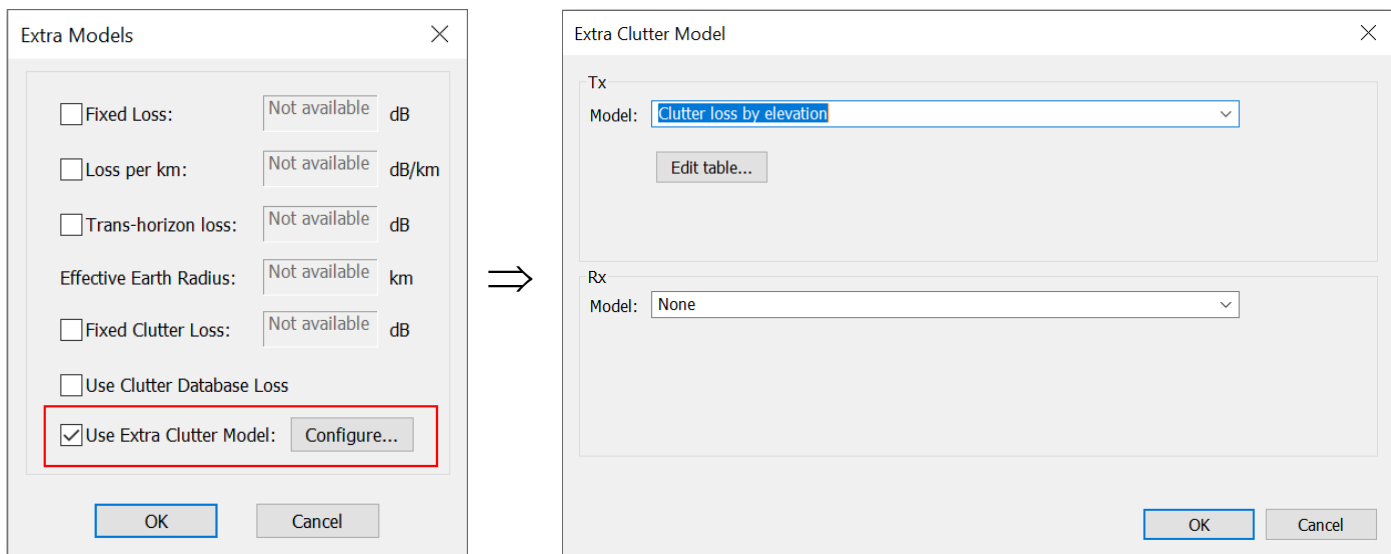


Elevation Dependent Clutter Loss

In some situations, the clutter loss can vary depending upon elevation angle. Examples include:

- For ground to air and ground to space paths, where the amount of clutter loss varies depending upon the heights of nearby obstructions such as trees and buildings and hence elevation angle at the Earth or terrestrial station
- For air to ground paths, where the attenuation due to the fuselage loss varies by elevation angle at the aircraft.

To help in these scenarios, a new clutter loss model was introduced that allows the clutter loss to vary by elevation angle at the transmit and/or receive ends of a link. This is available under the Extra Models:



The clutter loss can then be entered for a set of elevation angles using a table like this:

Elevation angle (deg)	Clutter loss (dB)
-90.0	35.0
-50.0	35.0
-35.0	25.0
-10.0	6.0
0.0	4.0

Linear interpolation is used between Clutter Loss (Elevation Angle) points.

Updates to Propagation Models

A number of ITU Propagation Models were updated during 2022 including:

- Recommendation ITU-R P.452-17 for point-to-point terrestrial paths
- Recommendation ITU-R P.528-5 for ground to air and air to air paths
- Recommendation ITU-R P.1546-6 for point-to-area terrestrial paths

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- Recommendation ITU-R P.1812-5 for point-to-area terrestrial paths
- Recommendation ITU-R P.2001-4 for Monte Carlo analysis involving terrestrial paths
- Recommendation ITU-R P.2108-1 clutter model
- Recommendation ITU-R P.2109-1 indoor-outdoor loss model.

In addition, there were updates to gain patterns and other Recommendations, such as the throughput calculation method in Recommendation ITU-R S.2131-1.

Extended number of Gain Tables for Beamforming Antennas

There has been increasing interest in using beamforming antennas for a wide range of radiocommunication systems. Not just 5G base stations, but also Earth Stations in Motion (ESIMs) and non-GSO satellite constellations are operating with beamforming antennas.

One way of modelling these types of antennas is to use the gain pattern in Recommendation ITU-R M.2101 and the optional additional extended parameters:

Edit ITU-R M.2101 Parameters ✕

Element gain: dBi

	Horizontal (columns)	Vertical (rows)	
Number of elements:	<input style="width: 80px;" type="text" value="8"/>	<input style="width: 80px;" type="text" value="8"/>	
D to Lambda:	<input style="width: 80px;" type="text" value="0.5"/>	<input style="width: 80px;" type="text" value="0.5"/>	
Beamwidth:	<input style="width: 80px;" type="text" value="65.0"/>	<input style="width: 80px;" type="text" value="65.0"/>	deg
Front to back:	<input style="width: 80px;" type="text" value="30.0"/>	<input style="width: 80px;" type="text" value="30.0"/>	dB
	-180 <= Az <= 180	-90 <= El <= +90	
Maximum scan angle:	<input style="width: 80px;" type="text" value="60.0"/>	<input style="width: 80px;" type="text" value="60.0"/>	deg
Minimum scan angle:	<input style="width: 80px;" type="text" value="-60.0"/>	<input style="width: 80px;" type="text" value="-60.0"/>	deg
Extended pattern:	<input type="checkbox"/> Subarray		
Number of elements:	<input style="width: 100px;" type="text" value="3"/>		
D to Lambda:	<input style="width: 100px;" type="text" value="0.7"/>		
Downtilt:	<input style="width: 100px;" type="text" value="3.0"/> deg		
<input style="width: 80px;" type="button" value="OK"/>			

An alternative way is to define a set of Gain (azimuth, elevation) tables, one per skew angle. This option has been extended to allow any number of tables to be entered using the Advanced Beam Options controls here:

Additional tables

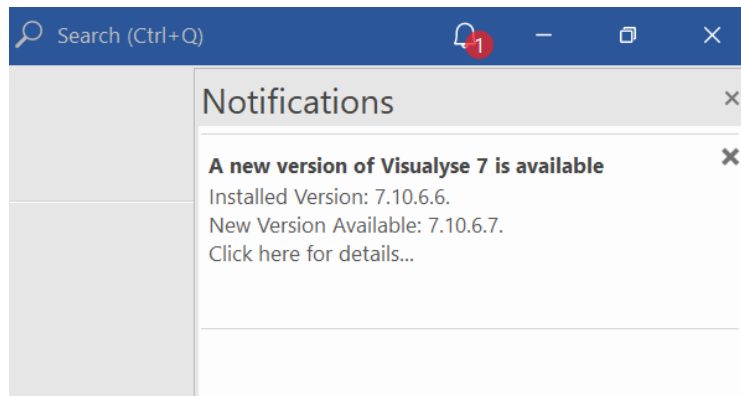
Number of Tables: ▲ ▼

Edit Table: ▲ ▼

Angle from sub-satellite point or zenith (deg):

Include new Notification Centre and Search Tool

New features for the user interface in 2022 included a Notification Centre and search tool. The Notification Centre gives updates such as when a new version is available:



The Search Tool can be used to search the user interface for specific controls, as in this example:

