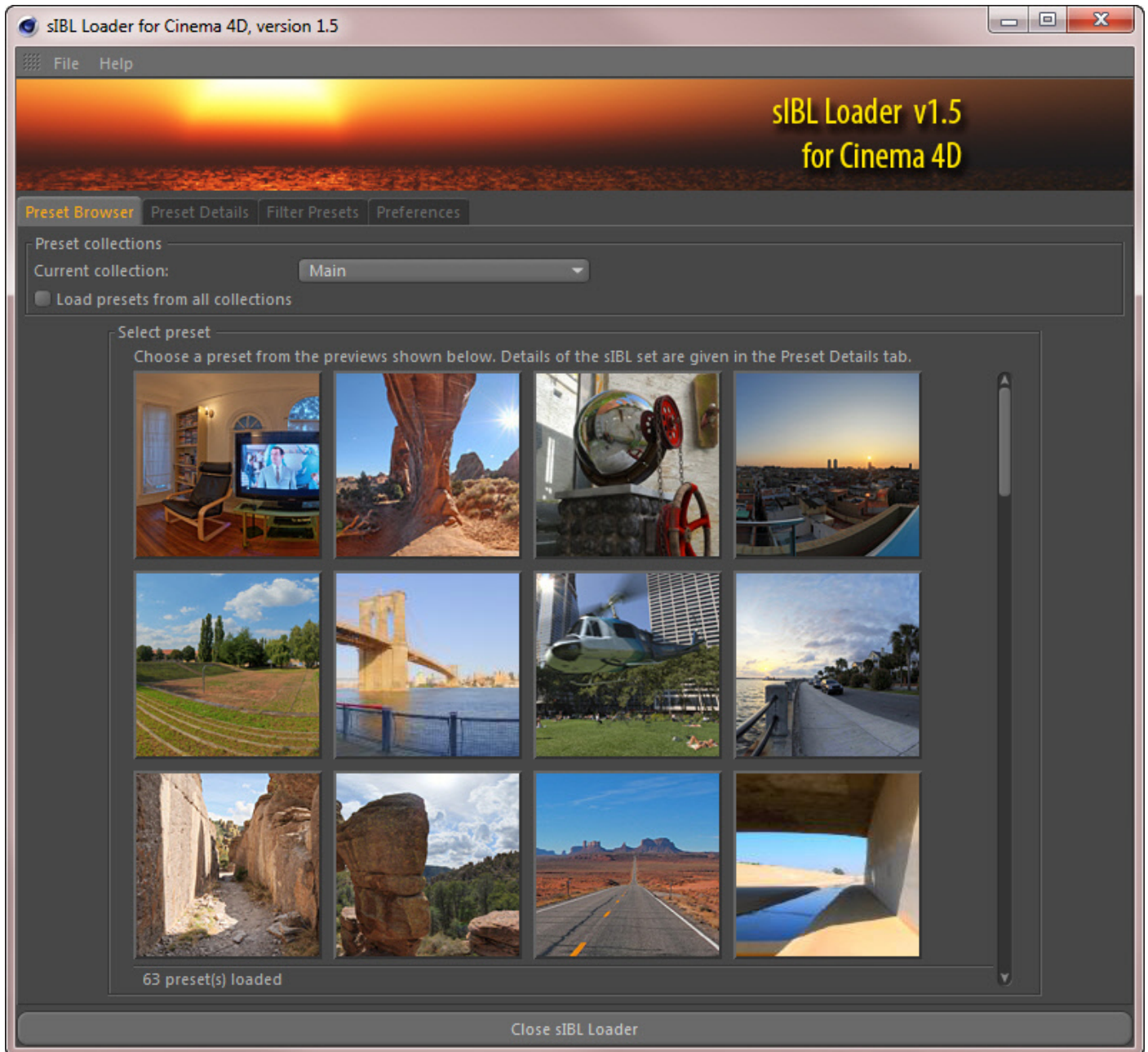


Smart IBL Loader

A plugin for Cinema 4D



Manual for version 1.5 (Cinema 4D R12/13/14)

Copyright (c) Steve Pedler, November 17th 2012

Introduction	3
Changes since version 1.2	3
System requirements	4
Installation	4
Using the SIBL Loader	6
The Preset Browser tab	6
The Preset Details tab	8
The Filter Presets tab	13
The Preferences tab	16
Using multiple collections	18
Lightsmith	19
Implementation notes	20
Vray for C4D implementation	22
Linear workflow implementation	23
Additional notes	24
Menu and button reference	26
Contact details	27
Legal stuff	27

Thank you for downloading the Smart IBL Loader plugin for Cinema 4D. This plugin provides a graphical browser for the smart IBL presets on your system and allows you to apply them easily to a scene.

Introduction

Image-based lighting (IBL) is a highly realistic way of lighting a computer graphic scene. However, it can be tedious and time-consuming to set up a scene with good IBL. The Smart IBL system (sIBL), developed by the folks at HDRLabs.com, is a method for making it very easy to apply IBL lighting rigs to a scene.

For full details of sIBL, please refer to the HDRLabs website (<http://www.hdrlabs.com/sibl/index.html>). In brief, the system provides for:

- image files for background, lighting, and reflection
- creation of the necessary skydomes to hold these images
- creation of sun objects for outside scenes, including alignment, colour, and brightness
- creation of multiple lights for interior scenes, again including alignment, colour, and brightness
- inclusion of GPS data so the user can see exactly where an image set was shot
- easy (often one-click) insertion of all images, lights, and objects into a scene

These parameters are controlled by a text file with the extension 'IBL'. This file, plus the associated image files, makes up an sIBL 'set'. A user may have multiple sets and from the loader choose which one to apply to the scene.

Freeware loader scripts or plugins exist for several high-end 3D graphics applications (Max, Maya, XSI, Modo and Lightwave), and of course for Cinema 4D.

Changes since version 1.2

Version 1.5 adds full support for Cinema 4D R14, improves compatibility with Vray for C4D, and implements the new 'Lightsmith' addition to the sIBL format.

Since the proportion of users who use C4D R11.5 or earlier is now very small, and because the Maxon SDK for Cinema changed very significantly from R12 onwards, version 1.5 of the sIBL loader only supports C4D releases R12, R13, and R14. The earlier versions which supported C4D down to R10.111 will remain available but do not include the above changes.

I have also decided to release sIBL Loader v1.5 under the GNU General Public Licence. For details of what that allows you to do, please see <http://www.gnu.org/copyleft/gpl.html>. Among other things, the full source code is included in the downloaded archive, and you may change and recompile the plugin as desired.

If you do make any changes to the plugin, I would be very happy to see them!

Changes since version 1.15/1.2

The following changes have been made:

- sIBL files in which the sun light has been incorrectly implemented are now scanned to load a proper sun light (an infinite light) rather than a spotlight as in previous versions
- the ability to remove an sIBL set from a scene has been added
- in Vray the reflection HDRI is now added to the Vray environment refraction tab as well as the reflection tab (this can be disabled if desired)
- in Advanced Render, if spheres are used to hold the HDRIs and background, rather than Sky objects, a phong tag is added to the background sphere to prevent a faceted appearance in the editor (this never affected the render, only the viewport appearance)

- in Advanced Render, if spheres are used to hold the HDRIs and background, rather than Sky objects, the 'Render Perfect' option is disabled on the sphere holding the reflection HDRI, to prevent large black artefacts appearing on rendering (this was never seen if Sky objects were used)
- if you have multiple folders with sIBL files in them (i.e. if you have multiple collections) there is now the ability to set one of the collections as the default one to be loaded when the plugin is run
- in Advanced Render and Vray, you can now choose to implement non-sun lights either as omnis or spotlights (in earlier versions they were always spots)
- there are also several other interface enhancements and minor bug fixes

Changes since version 1.0

Considerable extra functionality has been added since the original release. New features include:

- compatibility with Vray for C4D (R11/11.5/12 only – not implemented for C4D R10/10.5)
- ability to add an editor background when using Vray
- ability to filter sIBL sets to find the set you want
- the loader can now use multiple collection folders rather than using one large folder to hold your sIBL sets
- an option to apply an sIBL set with linear workflow

In addition there are a number of bug fixes and interface tweaks, and more of the parameters in the .ibl file are now implemented.

Important: please be aware that the sIBL Loader for C4D R11 and higher now includes a new channel shader called 'Bitmap Transform' which you will see in your material editor. It has been added specifically for use with Vray, and can be ignored if you aren't using the loader with Vray, although it will still work in ordinary materials (but the layer shader would normally be preferred). This shader is not present in the version for R10/10.5.

System requirements

For this version of the plugin you need:

- Cinema 4D release 12 or later
- Windows XP, Vista, or Windows 7, 32- or 64-bit, or Mac OSX 10.4 or later (10.7 or later for R14)
- optionally, Vray for C4D version 1.2.6.2 or later (earlier versions will not work correctly – please use the latest version, which is a free upgrade from the developers for registered users)

And, of course, you need some sIBL sets to try it out!

Head over to the sIBL archive (<http://www.hdrilabs.com/sibl/archive.html>) and you will find numerous sIBL sets with high-quality HDR images. Download a few of these.

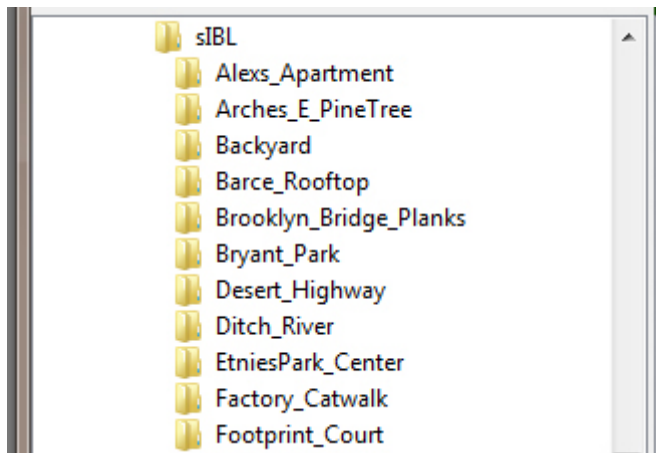
The latest addition to the smart IBL standard is the introduction of a new technique called 'Lightsmith'. Version 1.5 of the loader now supports the use of Lightsmith sets in both the C4D inbuilt renderer and Vray for C4D.

You can also find excellent HDRI images, already arranged into Smart IBL sets, at Bob Groothuis' web site, <http://www.bobgroothuis.com/>. I recommend taking a look at Bob's site and what he has to offer.

Installation

Unzip the plugin archive file into your C4D plugins folder. This can be in the main C4D application folder, or more properly into the plugins folder in user data folder. You can find where the user data folder is located within C4D by choosing Preferences... from the Edit menu and in the Interface tab, the folder is shown at the bottom of the dialog box.

Now create a folder somewhere on disk. It can be named whatever you like and the location is not important. This is your sIBL collection folder. Unzip all the sIBL sets you downloaded into the folder you just created. The final structure should have the collection folder with each set in its own folder as a sub-folder of the collections folder, like this:



Important: do not nest the sIBL folders! The browser will not be able to find them if you do that. Also, do not simply unzip all the files into one folder. Each sIBL set **MUST** be contained in its own folder. For information, each sIBL set usually consists of the following files:

- a file with the extension .ibl, this is a text file giving information about the set (the format of this file can be found at the HDRI Labs web site)
- a small HDRI file, in .hdr or .exr format, which is used for the global illumination environment lighting
- a larger HDRI file used for reflections
- a very large panoramic file, usually in .jpg format, used for the backdrop
- a small thumbnail of part of the backdrop, used in the loader's preset browser
- and a larger preview version of the full backdrop

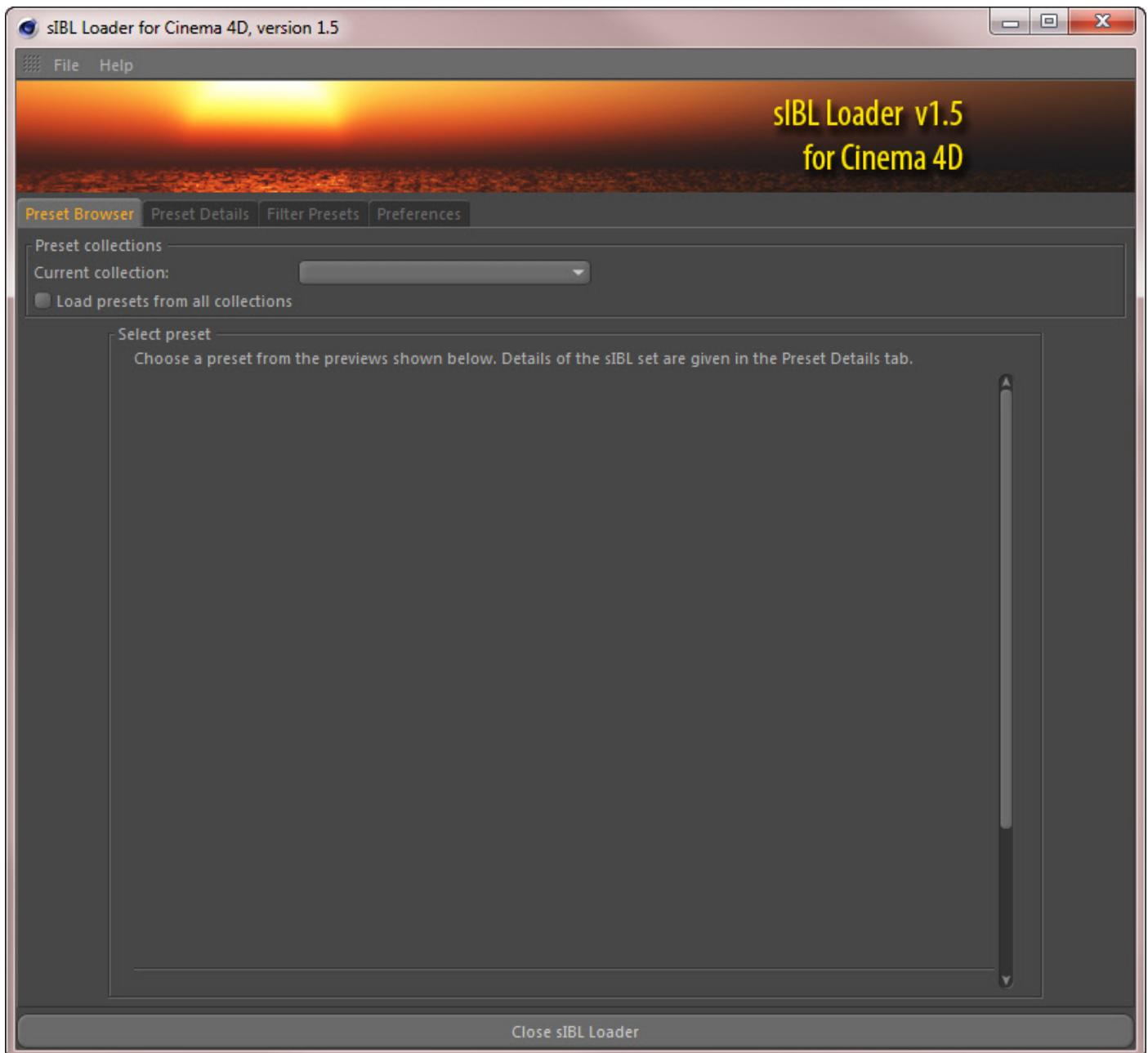
To repeat, for each set all the above files **MUST** be in a folder which is a sub-folder of the collection folder. Different sets cannot share the same folder.

That completes the installation.

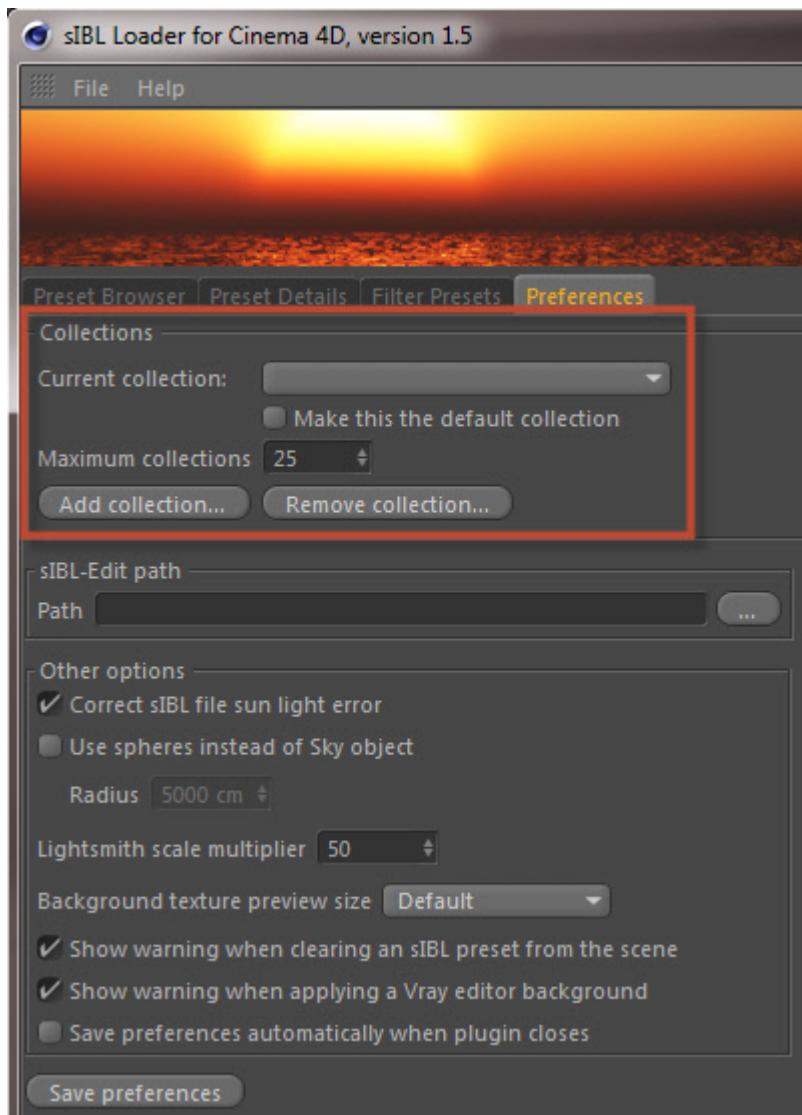
Using the sIBL Loader

The Preset Browser tab

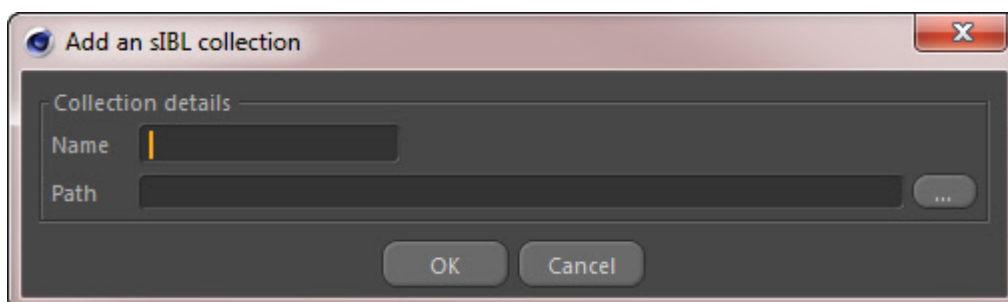
Run Cinema 4D, and from the Plugins menu choose sIBL Loader. The first time you do this, a blank dialog box appears, like this:



It is blank because you haven't told the loader where the collection of sIBL sets is yet. So, the first thing to do is to switch to the Preferences tab and locate the 'Collections' area:



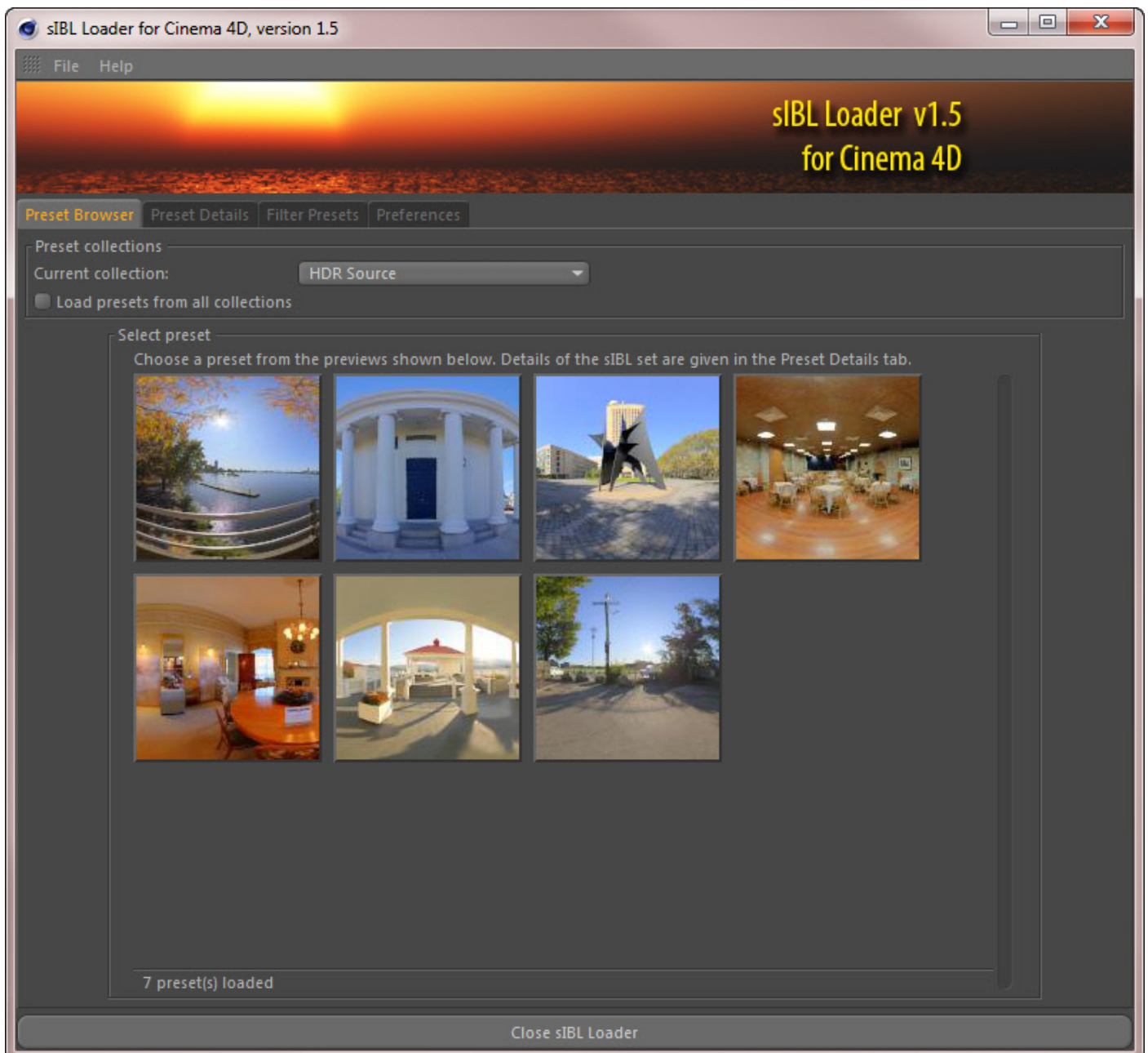
To add an sIBL collection, click the button 'Add collection...'. A small dialog appears which looks like this:



Type in a name for this collection. It can be whatever you like, but you cannot leave this field blank as this name appears in the drop-down menus which allow you to switch between collections. Then either type the full path to the collection folder you created during installation, or click the little button with three dots to bring up a directory browser. When you have typed in or navigated to a folder, click the 'OK' button.

The loader will then scan the selected folder looking for sIBL sets. It will then switch to the Preset Browser tab where, assuming it found some sIBL sets, it will show thumbnails of the sets it found.

In the example below a sampler collection of sIBL sets from HDR Source (<http://www.hdrsource.com>) was selected. This contains seven sIBL sets:



Browse through the available sets. As you hover over each one, its name is displayed in the C4D main status bar.

When you find one you like, click on it and the loader will switch to the Preset Details tab, where some information about the set is displayed.

Also note that you can add multiple collections and switch between them quickly. For more on this, see 'Using multiple collections' below.

Note: when you save your preferences, the loader will save the collection folders you entered and automatically load sIBL sets from those folders in the future.

The Preset Details tab

Some or all of the following information about the currently selected set will be shown in this tab.

Preset list

Firstly, note that the list of sets is displayed on the left of the dialog box:



You can choose a different set from this list if you like, but all you see is the name of the set – to see the full range of thumbnails, switch back to the Preset Browser tab.

Details

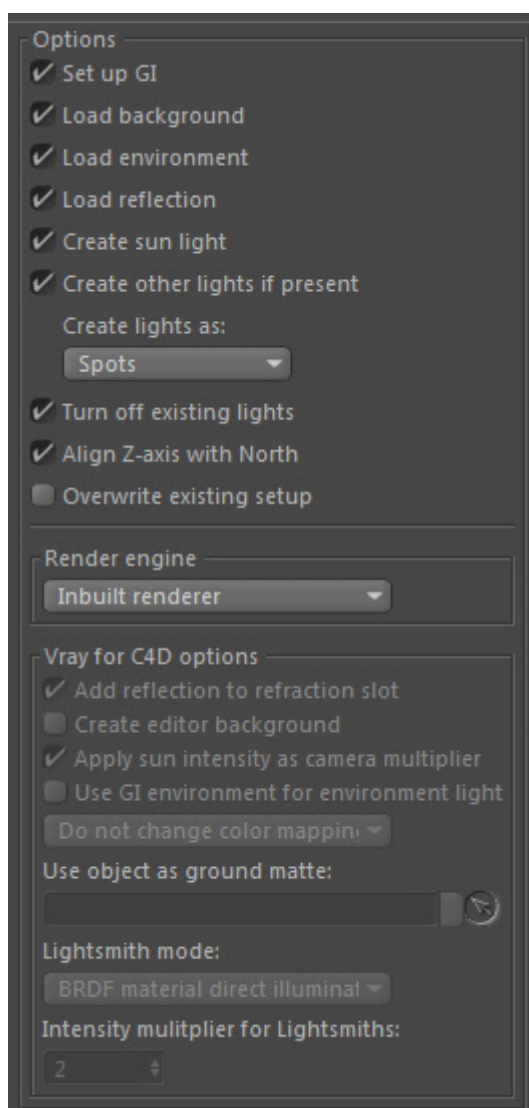
Not all sets contain all the information that can be included in the .ibl file. If some details are missing, the loader ignores them and a blank field is shown. The available fields are:

Field	Information
Preview	A thumbnail of the images used in the set. This is the same thumbnail shown in the Preset Browser. To see a reduced-size view of the complete background image, click the 'Show preview...' button, which opens a new window to show the preview image. (Note: not all sIBL sets include a preview image. If a set does not have one, the 'Show preview...' button is disabled.)
Name	The name of the set, as it appears in the list to the left of the dialog box.
Author	The set's author.
Location	The location of the shoot.

Source	A link to the source of the sIBL set. This can be a web link but could also be an email link, for example. Clicking a web link will send your web browser to the specified location.
Comment	A comment added by the author with some more information about the set.
Latitude	The latitude of the shoot location.
Longitude	The longitude of the shoot location.
Date	The date of the shoot.
Time	The time of the shoot.
Additional lights	The number of lights in the set (in addition to the Sun light, if there is one).
Sun color	The colour of the Sun light, if there is one.
Lightsmiths	The number of Lightsmiths in the set, if any.

Options

There are a number of options which can be set. These are:



Option	Explanation	Default setting
General options applicable to all render engines		
Set up GI	If this option is checked, the loader will add GI to the scene with the default parameters. If GI has already been enabled for the scene, this option has no effect (i.e. it will not alter existing GI settings). See the 'Implementation notes' below for more details.	On
Load background	If checked, the high-resolution .JPG used as the background image will be loaded when the set is applied to the scene. Usually, you will want to leave this enabled, but you can turn it off, in which case the background won't be loaded.	On
Load environment	As for 'Load background' except that it refers to the .HDR file used for lighting the scene.	On
Load reflection	As for 'Load background' except that it refers to the .HDR file used for reflections in the scene.	On
Create sun light	If the set specifies a sun light, checking this option will cause a light to be added to the scene to act as a sun. If there is no sun light in the set, this option has no effect.	On (Off if using Vray)
Create other lights if present	As for the sun light, except that it refers to any other lights in the set. If there are none, this option has no effect.	On
Create lights as:	If there are other lights in the scene, they can be created either as spot lights or as omni lights.	Spots
Turn off existing lights	If the scene already has lights in place before adding the preset, checking this option will turn them all off, so that the only active lights are those specified by the sIBL set.	On
Align Z-axis with North	This option will rotate the entire lighting setup so that the Z-axis of the 3D world is aligned with north in the image files.	On
Overwrite existing setup	This is useful if you have already applied an sIBL set to a scene and now want to change to another one. If this option is checked, the new set will replace the existing ones. If it is unchecked, a new set will be added to the scene – this can be convenient if you want several sets loaded simultaneously, in which case you can switch between them fairly easily by clicking the editor and render dots in Cinema's object manager. Important – see the 'Implementation notes' section below for more information about this option.	Off
Render options		
Render engine	Choose between the C4D inbuilt renderer or Vray for C4D. The Vray option is not available if Vray is not installed on your system.	Off
Options specific to Vray for C4D		
Add reflection to refraction slot	If this option is on, the reflection HDRI from the sIBL set will be added to the refraction environment as well as to the reflection environment.	On
Create editor background	When using Vray the loader will add the background image to the Vray bridge environment settings. Unfortunately in this case the background is not visible in the C4D editor display. If this option is selected, a Sky object, which does not render in Vray, will be created with the same background image. This is purely for user convenience and does not affect the rendered result.	Off
Important: see the caveat regarding this feature in the section on Vray		

implementation below.

Apply sun intensity as camera multiplier	The sun will be implemented as a physical sun if you are using Vray and if the option 'Create sun light' is on. The sun intensity from the .ibl file is applied as a multiplier for the standard and physical cameras. When using Vray, this often results in a sun which is too bright, so by default this setting is turned off. You can activate it by checking this option. Alternatively, just adjust the multiplier parameter in the Vray light tag.	Off
Use GI environment for environment light	By default the HDRI bitmap used for lighting the scene is placed into an area dome light as this gives significantly better results. If you would prefer that the bitmap is placed into the GI environment slot in the Vray bridge 'Environment' section instead, check this option. See the section on Vray implementation below for more information.	Off
Linear workflow drop-down menu	Lets you choose whether linear workflow is used with Vray, and if so, the type of implementation. See the section on Vray implementation below for more information.	Do not change color mapping
Use object as ground matte:	You can drag an object from the scene into this field and the plugin will add a compositing tag to that object and set the tag attributes to act as a ground matte.	Empty field
Lightsmith mode	When adding a Lightsmith preset and using Vray, you can either opt to use the direct illumination mode in the Vray BRDF material or use the luminosity channel only. See the section on Vray implementation below for more information.	Direct illumination
Intensity multiplier for Lightsmiths	When using Lightsmiths in Vray, the light intensity often needs to be increased. This multiplier will be applied to the brightness setting from the .ibl file when the BRDF material is created.	2

Buttons

Finally, this tab contains four buttons. These are:

1. Reload collection

Suppose you have the plugin dialog open and then you want to add a new set. You download the set and unzip it into the collection folder, but of course the set doesn't appear in the preset list. To show it there, you could close the plugin dialog and reopen it, which forces the plugin to rescan the collection, but a quicker way is simply to click this button, located at the bottom of the preset list. The loader will rescan the collection and refresh the list (it will also make the first plugin in the list the active one). The same button can be used if you remove a set from the collection while the dialog is open – simply click the button to show the updated list.

This function is also available from the dialog File menu, which is convenient if you are in the Preset Browser tab – you can use the menu to update the browser without switching to the Preset Details tab.

2. Reload preset

This button reloads the current preset from disk. Not the entire collection, just the current preset details.

Why would you want to do this? You might want to edit the preset file (the .ibl file) while the loader is displayed. You can't do that within Cinema, but you can using a text editor or (on a PC) the sIBL-Edit software (see below). Once you edit the file, you need to reload it to show the updated details.

This function is also available from the dialog File menu.

3. Edit with sIBL-Edit (PC only)

Although the .ibl file is a simple text file, it's much more convenient to edit these files using the sIBL-Edit standalone software, which you can download from <http://www.hdrlabs.com/sibl/sibl-edit.html>. Click this button and sIBL-Edit will run and load the current preset file, ready for editing. Once you finish your edits, use the 'Reload preset' button to show the updated preset details. For this to work, you must have told the sIBL Loader where sIBL-Edit is located on your system, which you can do in the Preferences tab (see below).

This function is also available from the dialog File menu.

Sadly, sIBL-Edit is not available for the Mac, so if you are using a Mac, this button and menu entry are disabled.

4. Apply preset to scene

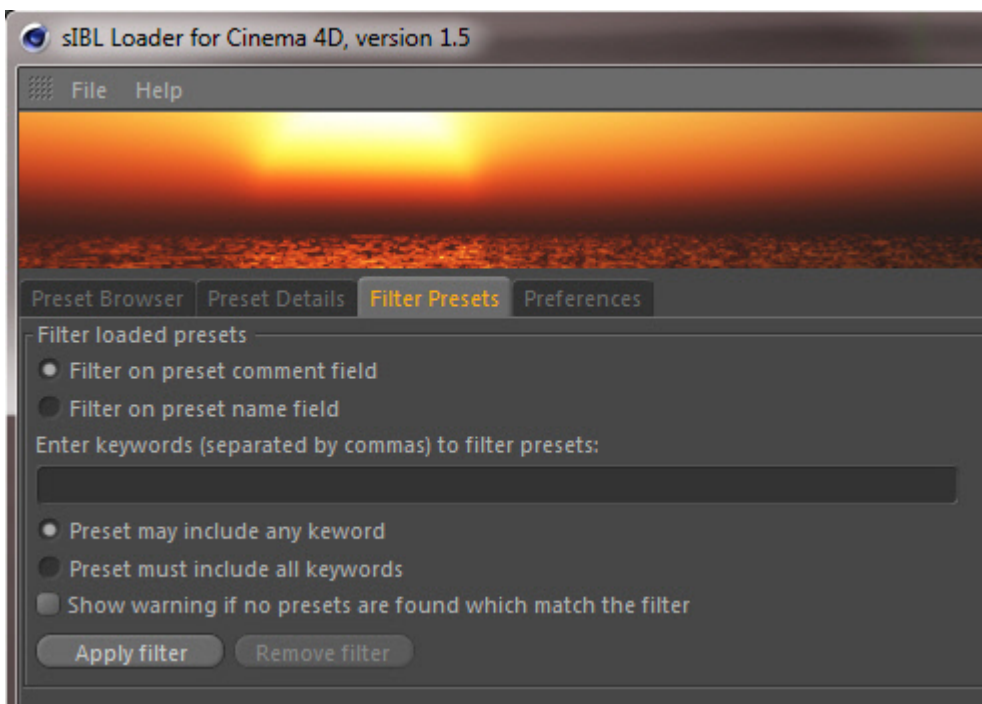
This is the *raison d'être* of the plugin. Click this button to apply the sIBL set to your scene with the options you selected. Note that it may take a few moments – this is due to the very high resolution background images, which take a noticeable time to load.

Once the scene is applied, the dialog box automatically closes.

This function is also available from the dialog File menu.

The Filter Presets tab

This tab allows you to search for a specific preset:



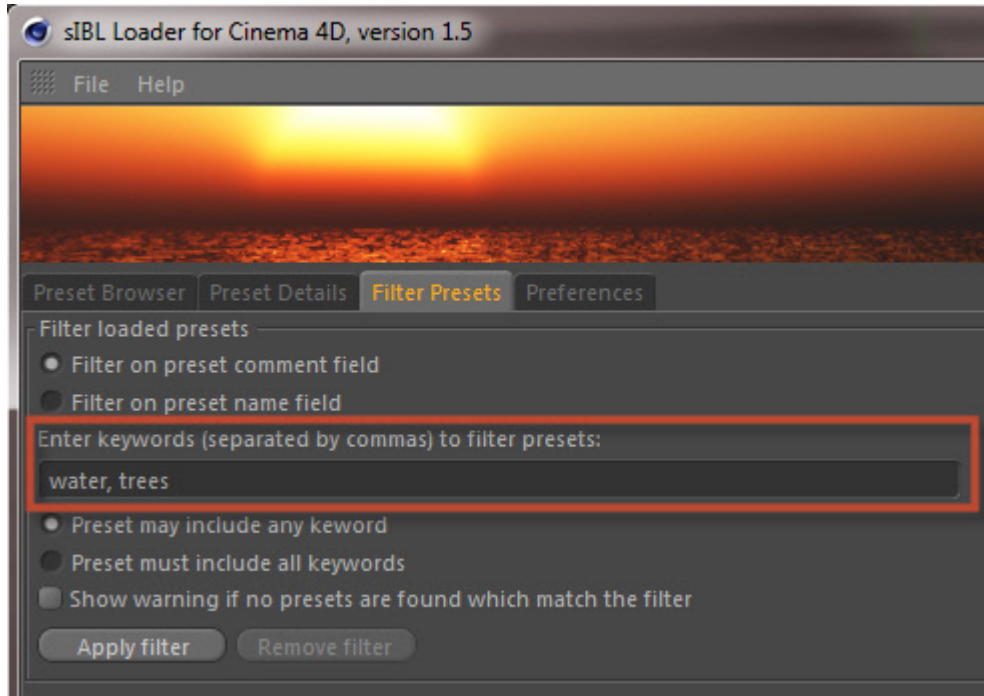
As you accumulate sIBL sets, it can become increasingly difficult to find the set you need. You can find presets matching criteria you specify using this tab.

There are two fields in the sIBL set (i.e. in the .ibl file) which are useful for this purpose. Firstly, you can search on the comment field, and many sIBL set creators have added keywords to this field to enhance searching. Alternatively, it may be that you remember some or part of the name of the set (not the file name, the set name given in the .ibl file). You can search on either of these fields.

First, choose whether you want to filter by name or comment field. In most cases the comment field will be more useful; the name field is useful when you remember part of the name of a specific file.

Next, type in either the keywords to search for; if you enter more than one, separate them by commas. Spaces are not regarded as keyword separators, so that (for example) 'New York' is regarded as one keyword, not two, whereas 'New, York' would be two keywords.

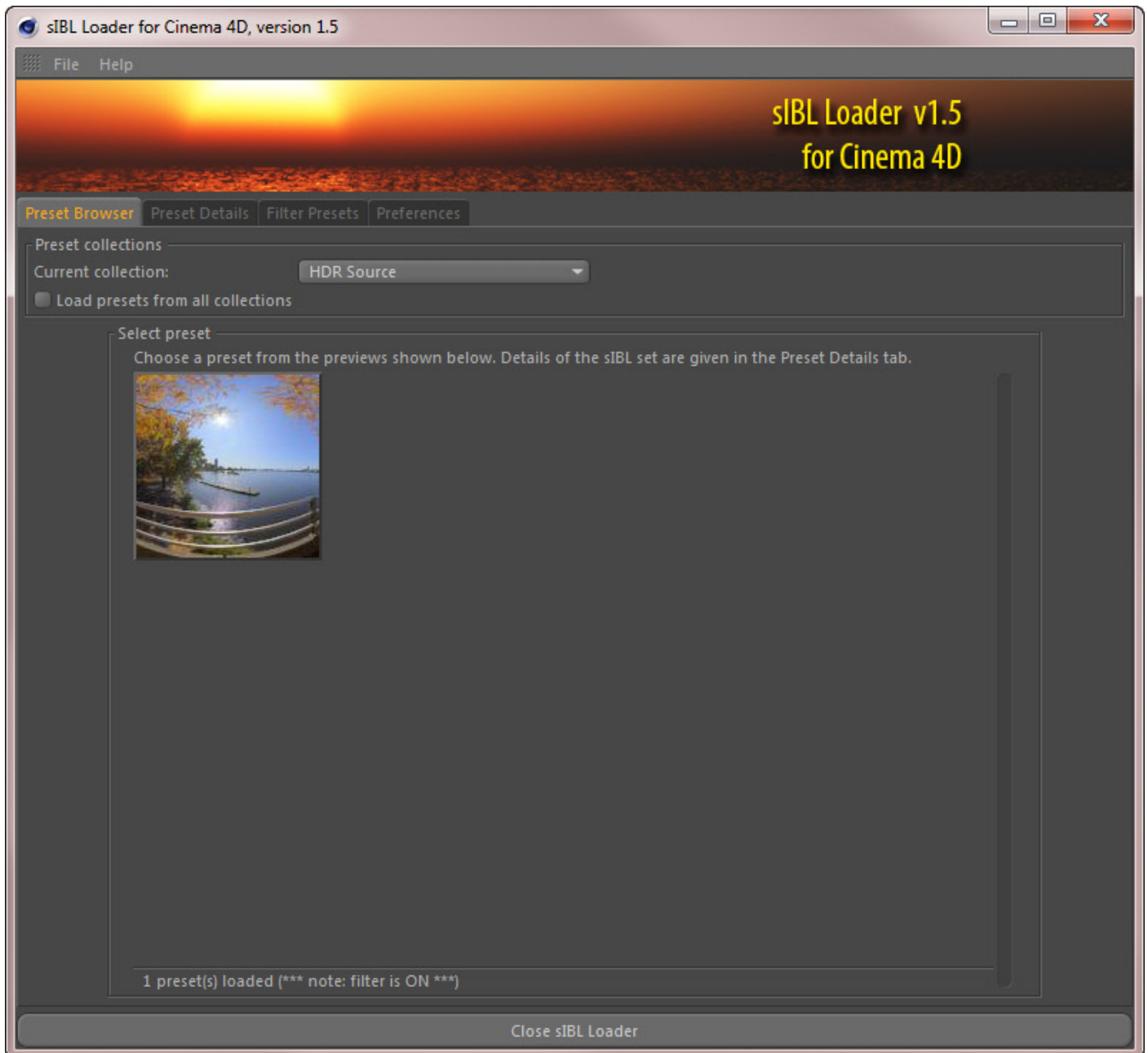
As an example, suppose you want to look for sets with water and/or trees in them, you would do this:



Finally, choose whether you want to find sets with any of the keywords (i.e. in the above example the set must have either the word 'water' or the word 'tree' in the comment field) or whether the set must contain all of the keywords. This can produce quite marked differences. For example, using these two keywords, my three collections totalling 61 sIBL sets produced 13 matches with 'any keyword' selected, but only one match when 'all keywords' was selected.

There is a final option titled 'Show warning if no presets are found which match the filter'. By default, if the loader can't find any matching presets, it simply presents an empty box in the Preset Browser tab. You might wonder why this has happened, so if this confuses you, check this option. It will force the loader to display a message if no matches are found.

Then click the 'Apply filter' button. The loader will search through all the sIBL sets *currently in memory* and then show the Preset Browser with only those sets which match your search criteria. As usual, the browser will show how many presets are loaded, but with an additional note indicating that a filter has been applied (see screen shot below):



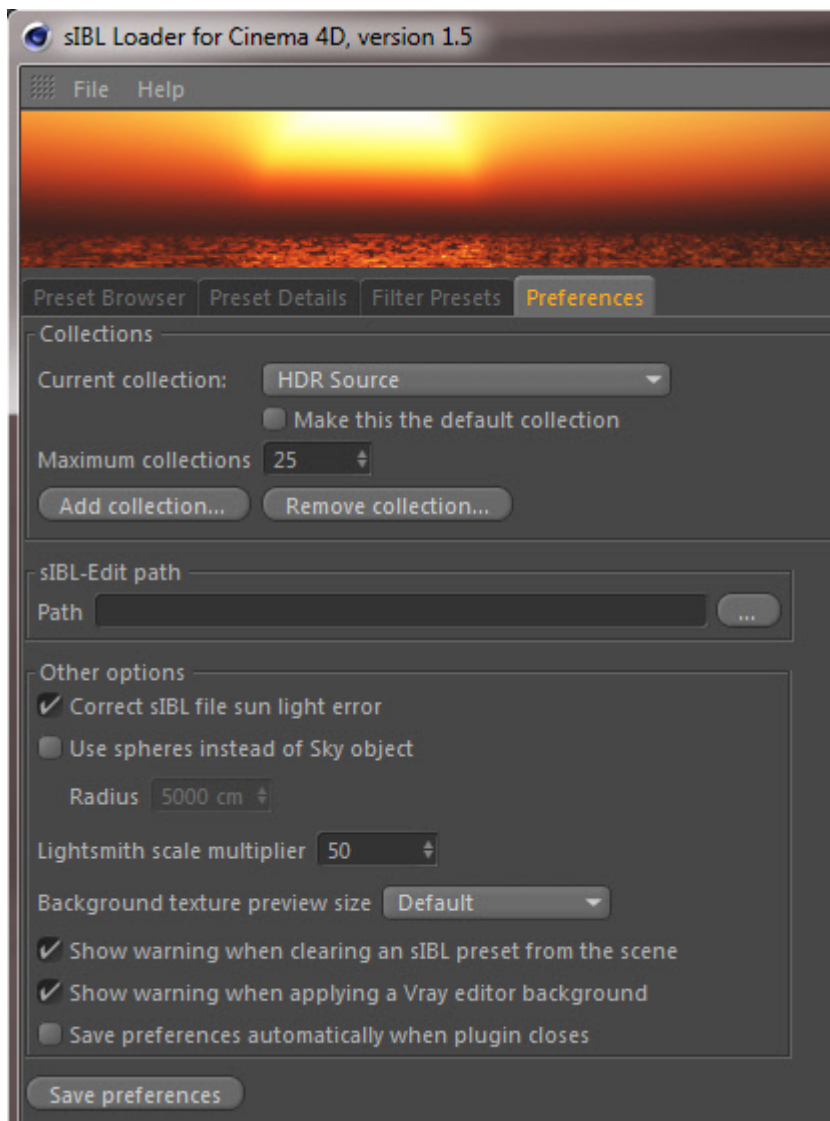
At that point if you go back to the Filter Preset tab, you will see that the 'Apply filter' button is disabled and the 'Remove filter' is enabled.

To remove the effect of the filter, simply click the 'Remove filter' button and the browser will show all the loaded presets again.

There are two important points when using this function.

1. Once a filter has been applied, the search criteria cannot be changed. If you want to carry out a new search, remove the existing filter and enter your new search criteria.
2. It is important to remember that the loader only searches the presets held in memory. If you have (say) three collections, and the 'Load presets from all collections' switch in the Preset Browser is turned off, only the presets from the current collection are held in memory and therefore only those are searched when you apply a filter. If you want to search through all the sets you have, first check the 'Load presets from all collections' box, *then* apply the filter. Alternatively, apply the filter, then check the 'Load presets from all collections' box. You will get the same results either way.

There are a number of preferences which can be set here and then saved for future sessions. These are:



1. Collections

The 'Current collection' drop-down menu holds a list of all the sIBL collections you have told the loader about (see 'Using multiple collections' below for more information). Use this menu to switch between your collections of sIBL sets. This menu is the same as the one on the Preset Browser tab; it is reproduced here for convenience, so that you can see which collection is active, which can be useful if you add or remove a collection.

Note that if you activated the 'Load presets from all collections' box on the Preset Browser tab, all sIBL sets from all collections are loaded and this menu is then disabled, since it is no longer relevant.

The 'Maximum collections' box, which is 25 by default, gives the maximum number of collections you can have. Decreasing this will save a little memory. Increasing it will let you have more collections but at the cost of more RAM usage. For most purposes 25 should be fine. Please note that if you change this value you must first save your preferences, then close and re-open the loader (not C4D itself) for the new value to take effect.

To add a new collection, click the 'Add collection...' button. To remove the currently-displayed collection, click the 'Remove collection...' button. These buttons are active whether or not the 'Load presets from all collections' box in the Preset Browser is active.

Important: if you add or remove collections, these changes take effect immediately and will be retained when you close the loader. To make the changes in the collections permanent, click the 'Save preferences' button.

2. sIBL-Edit path (PC only)

Here you specify the path to the sIBL-Edit program. Either type the full path to the sIBL-Edit folder, or more conveniently, click the little button with three dots to bring up a directory browser.

Because sIBL-Edit is not available for the Mac, this field is disabled in the Mac version.

3. Other options

3.1 Correct sIBL file sun light error

The sIBL format standard specifies that sun lights are identified in the .ibl file in their own section. Unfortunately not all sIBL set creators followed this standard, so that the sun is identified as an ordinary light with the name 'Sun'. This causes the loader to implement the sun light incorrectly, as a spot or omni light. If this option is on, the loader will create any light named 'Sun' as a sun light. It is recommended that this option is left on unless you have a good reason to turn it off.

3.2 Use spheres instead of Sky object

(This option is not applicable if you are using Vray.) For each image to be loaded (background, environment, and reflection) a separate Sky object will be created with a compositing tag added. If you would prefer that sphere primitives are used instead of Sky objects, check this option. Once checked, you can change the desired radius of the sphere, which by default is set to 5000 scene units.

3.3 Lightsmith scale multiplier

The objects in the Lightsmith sets are very small, as they were created in software other than C4D. This is a scale-up factor for those objects, which is applied automatically on loading the set. In most cases it makes the Lightsmith objects a similar size to the C4D primitive objects.

Some objects are larger and some smaller, depending on the sIBL set, so if an object comes in too large or too small, you will have to rescale it manually.

3.4 Background texture preview size

(This option is not applicable if you are using Vray unless you have turned on the option 'Create editor background'.) By default Cinema shows bitmaps in the editor at low resolution, to save memory. This results in a very blurred image in the editor. You can increase this in the material editor, and this setting is a workflow convenience so that you don't have to do that manually.

Select the preferred preview size from the drop down menu. These are the same preview sizes as are used in the C4D material editor. For a background image of, say, 8000x4000 a preview size of 2048x2048 is a good compromise, but note that this uses 16Mb of RAM.

Note that only the background image is affected by this setting and of course, it has no effect on render quality, just the appearance of the bitmap in the editor.

3.5 Show warning when clearing an sIBL preset from the scene

If this option is on, a warning is displayed before an sIBL preset is removed from the scene. If you don't want this warning to appear, turn this option off and if desired save your preferences to make it permanent.

3.6 Show standard warning when applying a Vray editor background

(Only applicable when using Vray.) If selected, this option will cause the loader to display a warning when you apply a preset, are using Vray, and the option 'Create editor background' is selected. The reason for this is to avoid the issue explained in point 8 of the section on Vray implementation (see below). If you don't want to see this warning again, turn off this option and if desired save your preferences to make it permanent.

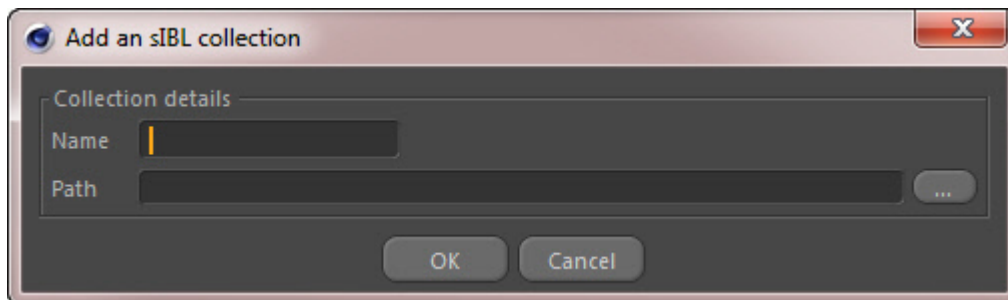
3.7 Save preferences automatically when plugin closes

If this box is checked, all the preferences (but not the options on the Preset Details tab) are saved and will be reloaded when the plugin is next used. By default this setting is off. You can save your preferences manually at any time by clicking the 'Save preferences' button or by choosing 'Save preferences' from the dialog's File menu.

Using multiple collections

The loader can utilise multiple collections. This means that you don't have to keep all your sIBL sets in one folder. You simply tell the plugin where the various collections are, and you can move between them with a simple drop-down list. Also, once you save your preferences the list of collections is saved permanently until you remove them.

To add a new collection, click the button 'Add collection...'. A small dialog appears which looks like this:



Type in a name for this collection. It can be whatever you like, but you cannot leave this field blank as this name appears in the drop-down menus which allow you to switch between collections. Then either type the full path to the collection folder you created during installation, or click the little button with three dots to bring up a directory browser. When you have typed in or navigated to a folder, click the 'OK' button.

The loader will then scan the selected folder looking for sIBL sets. It will then switch to the Preset Browser tab where, assuming it found some sIBL sets, it will show thumbnails of the sets it found.

Your new collection appears in the drop-down list on the Preferences tab and for convenience this is replicated on the Preset Browser tab. To use a particular connection, just click on its name in the list. The Preset Browser tab will be displayed with thumbnails of the presets from that collection.

By default you can have up to 25 different collections, which should be enough for most purposes. If you need more, increase the value in the 'Maximum collections' field. Then save your preferences (click the 'Save preferences' button) and close, then restart, the plugin to apply the new value.

If you have multiple collections, you might want one of them to be the collection which is displayed by default when you open the plugin. To do this, turn on the option 'Make this the default collection' and save your preferences. From now on, that collection will be the one which is shown when you next open the plugin. You can change it at any time by repeating the above steps.

Important: your list of collections is saved automatically when you close the plugin. You can also save them at any time by saving your preferences manually.

What if you want to see all the sIBL sets from all the collections you have? Go to the Preset Browser tab and select the option 'Load presets from all collections'. Now all the presets are loaded and you can select any of them. When you activate this option, the drop-down lists of the collections is disabled – because it is no longer relevant. When you deactivate the 'Load presets from all collections' option again, the collection which was the active one before you chose that option will become the current collection again.

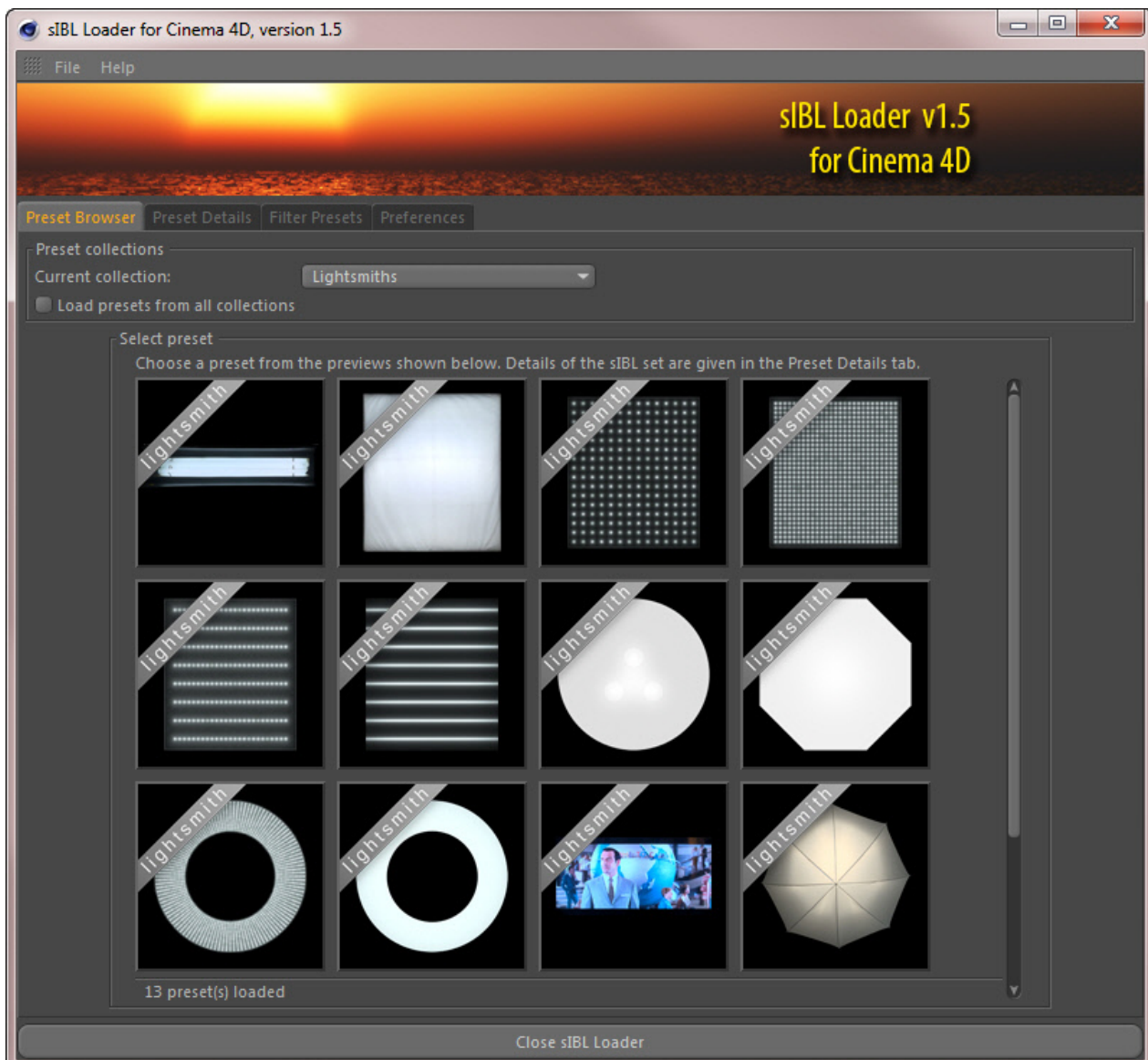
To remove a collection from the list of collections, click the 'Remove collection...' button on the Preferences tab. You will be asked if you really want to do this. Once you confirm the action, the collection is removed. Be sure to save your preferences if you want to make this change permanent.

Important: note that the 'Add collection...' and 'Remove collection...' buttons are still active even if you are displaying presets from all the collections.

Lightsmith

Lightsmith is a new type of sIBL set. Instead of using panoramic images to produce lighting, a Lightsmith set contains at least one object plus an HDRI file. There may be other objects as well. Lighting is then generated from a material applied to the Lightsmith illumination object.

Lightsmiths can be downloaded from the HDRI Labs web site sIBL archive. They show up in the browser in the same way as any other sIBL set and are applied in the same way. Here are some Lightsmiths sets in the browser:



When a Lightsmith preset is applied, the following actions take place:

- the Lightsmith object(s) are loaded into the scene and grouped under a null object named 'Lightsmith objects';
- the objects are scaled up by the factor given in the 'Lightsmith scale multiplier' setting in the Preferences tab (this is because most of these objects have a very small size, having been modelled in another program rather than in Cinema 4D) - you may still need to rescale the objects up or down manually after they are loaded;
- a material is created for the Lightsmith object which is to provide the illumination; if using the inbuilt renderer, the HDRI file is placed in the Luminance channel of that material and in the material's Illumination tab, the 'Generate GI' strength setting is set to the value given in the Lightsmith .ibl file;
- in some cases a masking bitmap is applied to the Alpha channel of this material;
- another material is created for each Lightsmith object which does not provide illumination.

If you are using Vray things are slightly different. The masking bitmap, if there is one, is applied to the Material Weight layer of the Vray material. The HDRI file is applied to the Luminosity layer of the material. There are two options for generating light from the Lightsmith material. These are:

- BRDF material direct illumination: in the Luminosity layer the Direct Illumination option is turned on, and the Intensity setting is set to the value in the .ibl file multiplied by the value from the 'Intensity setting for Lightsmiths' in the Vray options section in the loader plugin. This is because typically the value from the .ibl file does not result in sufficient light being generated when using Vray (you can alter the intensity later, of course);
- BRDF material luminosity: with this option, direct illumination is turned off and light is generated only by the material luminosity; the intensity is set into the 'Amount' field of the Luminosity color section.

Either method will work for Vray but in general the direct illumination mode gives better results, especially when it comes to shadows, and is therefore the default setting. There is one case where you might want to use luminosity only, and that is if the Lightsmith set contains a masking bitmap. Unfortunately Vray ignores the Material Weight layer when using direct illumination mode, so to preserve the effect you should use luminosity mode instead. That said, most current Lightsmiths do not use a mask.

Important: please note that one of the Lightsmith sets available from the HDR Labs web site has a fault which you may need to correct. This is the set named 'Umbrella A'. The illumination object in this set has reversed normals so that it does not work correctly in Vray, and will not generate light. To fix this, reverse the normals in that object before rendering. You can modify the object yourself and save it back to disk so that you don't have to do this again.

Implementation notes

These are some notes which might interest those who want to know how the plugin is implemented and therefore what limitations it has.

The loader for C4D adheres to the Smart IBL 2.0 standard, and you can find details of the valid parameters at <http://www.hdrilabs.com/sibl/formatspecs.html>. Note that the Lightsmith format is not given there yet. For the loader scripts or plugins for other applications, there is a table at <http://www.hdrilabs.com/sibl/loader.html> which shows how each implementation performs. Here is the equivalent table for current version of the C4D loader, for comparison:

Loader Script Features

Browser with Import Options	Y
Thumbnail Browser	Y

GPS Map	N‡
North direction (to rotate the environment)	Y
Filtering, Tag Search	Y
Matte - ground plane (to receive radiosity shadows)	N – C4D inbuilt renderer Y- Vray for C4D
Set Render Globals	Y
Linear / Gamma Workflow	Y
Direct link to sIBL-Edit	Y (PC only)
<i>Header information shown in the interface</i>	
ICOfile	Y
Name	Y
Author	Y
Link	Y
Comment	Y
Location	Y
GPS Data	Y
<i>Background Image</i>	
BGfile	Y
BGmap (projectiontypes)*	1
BGu,v	N‡
BGheight	N
<i>Environment Map</i>	
ENVfile	Y
ENVmap *	1
ENVu,v	N‡
ENVmulti	N – C4D Advanced Render Y – Vray for C4D
ENVgamma	Y (when using the inbuilt renderer)
<i>Reflection Map</i>	
REFfile	Y
REFmap *	1
REFu,v	N‡
REFmulti	N – C4D Advanced Render Y – Vray for C4D
REFgamma	Y (when using the inbuilt renderer)
<i>Sunlight</i>	

SUNcolor	Y
SUNmulti	Y
SUNu,v	Y
Multiple Lights	Y

* Projection types are 1...spherical, 2...cylindrical, 3...angular, 4...screen. See the IBL format specs for more.

‡ May be implemented in future versions

Other options marked 'N' may or may not be implemented in the future, depending on user feedback

Vray implementation

To use the sIBL Loader with Vray, choose 'Vray for C4D' in the render engine drop-down menu on the Preset details page. That's all you have to do to make the loader Vray-compatible. The option is not available if Vray is not installed on your machine.

When this plugin applies an sIBL set for use with Vray for C4D a number of changes in the way in which the lighting is set up are made. These are explained here so that you are aware of the changes the plugin makes:

1. In the implementation for the C4D inbuilt renderer, the background, reflection, and environment images are applied to Sky objects. In order that the image is correctly displayed in the viewport, and to ensure correct alignment with the sun light, the images are flipped (mirrored) across the X-axis. This is done using the texture tag for the material applied to the Sky object. However, in Vray the images for the background, reflection/refraction, and environment (when that option is selected by the user) are placed into the Vray bridge environment texture slots. These do not have a setting to flip the image. The obvious solution to this would be to place the bitmap in a layer shader and use that to flip the image... but the Cinema 4D SDK does not currently expose the layer shader sufficiently to allow images to be added to it under plugin control. The solution is an additional shader to allow the image to be flipped.

If you look in the Vray environment tab in the render settings once a preset has been applied, you will see that these slots now contain a shader called 'Bitmap Transform' which can accept a bitmap and allow it to be flipped across the X and/or Y axis. This shader will also show up in the list of channel shaders, and you can use it elsewhere if you wish. However, it has no advantage for you, the user, over the C4D layer shader, which you should probably use instead. It's there simply to allow the bitmaps to be added to the Vray environment and then flipped under the plugin's control. It has no other effect on the bitmap at all.

2. The background image is a large .jpg file. Because JPEGs do not have a color profile, when using 32-bit linear workflow, this background image will appear washed-out. To prevent this, the image is placed into a Cinema 4D Filter shader, and in 32-bit LWF mode, this shader is used to set the gamma to 0.4545. In all other LWF modes, the gamma is set to 1.

3. For the environment lighting, there are two options: the Vray environment, or an area dome light. The preferred option is to use a dome light, and one will be created unless you choose the option 'Use GI environment for environment light', in which case a dome light will not be created and the environment image will be found in the Vray environment tab. There is one very significant difference between these two methods. The dome light uses the medium- or high-resolution HDRI normally used for reflections, as this generates the best shadows. Using this, you can get crisp shadows without using a sun light in Vray (so the sun is normally turned off). This is a slight departure from the sIBL standard but gives the best results. However, if you use the GI environment slot a dome light is not created and instead the low-resolution HDRI is used, as specified in the sIBL standard. This gives much softer lighting with very soft shadows. This may be what you want, so both options are available.

4. The sun light is implemented as a physical sun. Note that this means that the light colour value and intensity from the .ibl file are not used (but these values are still set in case you want to turn off the physical sun and make the sun an ordinary infinite light instead). With a physical sun, the intensity can be set as a multiplier for the standard and physical cameras. Experimentation shows that this is usually too bright when the physical sun is used, so by default

the sun intensity is not applied. If you want to apply the intensity anyway, turn on the 'Apply sun intensity as camera multiplier' option (or you can adjust the multiplier manually afterwards, of course).

Important: the recommended solution for Vray is to use a dome light with a medium- or high-resolution HDRI. In this case a sun light is not required for hard shadows and the 'Create sun light' option is turned off. If you really want a sun light, turn it on again manually before applying the preset to the scene.

5. When using Vray you can select an object to act as a ground matte. This isn't possible with the C4D inbuilt renderer but the Vray compositing tag makes it easy to implement. You drag the object to act as a ground matte into the 'Use object as ground matte:' box in the Preset Details tab, and the plugin will automatically add a compositing tag to this object and set the necessary options in that tag. If you don't set an object, no ground matte is created. You only have to do this once, normally. If you apply several sets one after the other to try them out, you don't need to keep dragging the matte object into this field. If you do, the object will end up with several comp tags applied to it.

6. The plugin 'DeGamma' which works so well with the C4D inbuilt renderer doesn't live comfortably with Vray and is disabled if you apply a preset with Vray selected as the render engine.

7. For the changes made when linear workflow is implemented, please see the section 'Linear workflow implementation' below.

8. **Important note:** when Vray is used, the background and reflection images are loaded into the Vray environment slot, and you can opt to load the lighting HDRI into the Vray environment as well. If you then rotate the null object containing the sIBL set objects, such as the sun and other lights, the rotation of these objects is then different from the rotation applied to the images in the Vray environment. This means, for example, that shadows generated by the lights will not match those shown in the background image. If you do rotate the null object (the one named 'sIBL_Set' in the object manager) you must manually set the rotation of the images in the Vray environment to the same value. This is particularly important if you select the option 'Create editor background' since your background image in the editor will be different from the background in the rendered result. If that happens, you probably forgot to adjust the rotation of the environment slot images.

This is potentially confusing, so the plugin will display a warning to this effect whenever you apply a preset with Vray and the 'Create editor background' option is selected. You can turn this warning off permanently by unchecking the relevant option in the Preferences tab and saving your preferences.

This issue only arises if you rotate the parent null object itself – you can, of course, rotate the camera view as much as you like.

Linear workflow implementation

1. LWF with Advanced Render in Cinema 4D R12/13/14

In this version of the loader, the use of LWF is governed entirely by the Linear workflow and Input Color Profile controls of the Project Settings attributes. No changes are made by the loader to LWF or color mapping settings. This is a major simplification of LWF in version 1.5 of the loader.

2. LWF with Vray

With Vray you have several options, governed by the drop-down menu in the 'Vray for C4D options' section of the Preset Details tab in the loader. The changes these options make are shown in the table:

Mode	Color mapping						Environment background gamma	Output bit depth
	Type	Dark mult.	Bright mult.	Gamma	Adaptation only	Linear workflow		

Do not change color mapping	No changes made						1.0	Unchanged
Linear workflow disabled	Reinhard	1.0	1.0	1.0	Off	Off	1.0	8-bit
8-bit linear workflow	Linear multiply	1.0	1.0	1.0	Off	On	1.0	8-bit
32-bit linear workflow	Linear multiply	1.0	1.0	2.2	On	On	0.4545	32-bit

If you select 'Do not change color mapping' (the default setting) no changes are made to the color mapping in the Vray bridge color mapping section. This is in case you have already sent up the desired color mapping and don't want them to be altered.

'Linear workflow disabled' simply turns LWF off and sets the color mapping type to Reinhard.

With 8-bit linear workflow the bit depth for the saved file is set to 8 bits per channel in the C4D render settings. In the Vray bridge Environment tab, the gamma value for the background bitmap is set to 1.0 (see note 2 in the 'Vray implementation' notes above). This mode gives the same result when the image is rendered in the editor or the picture viewer, so is useful for editing the scene and doing test renders.

When 32-bit linear workflow is selected, the bit depth for the saved file is set to 32 bits per channel in the C4D render settings. In the Vray bridge Environment tab, the gamma value for the background bitmap is set to 0.4545, otherwise the background image is too bright and washed out (see note 2 in the 'Vray implementation' notes above). In this mode you must render to the picture viewer to see the correct result; rendering to the editor will produce an image that is too dark, but it will be correct in the picture viewer. This mode can be used for the final rendered image.

If you select the 8-bit LWF mode initially, it is a simple matter to change to a 32-bit LWF final render - just make the changes in the color mapping tab and render settings bit depth tab to match the above settings for 32-bit LWF. Don't forget also to change the gamma of the background image in the Vray bridge environment. You don't have to reapply the preset, especially since you may have tweaked the settings since it was first applied and you might not want to lose those changes.

Additional notes

1. The GPS data in the .ibl file is displayed in the preset details, but no further use is made of it. It should be possible to use this data to set up physical sky systems, rather like using Cinema's Sun expression tag. Unfortunately it hasn't been possible to do that yet, so for the time being the SUNu and SUNv parameters are used to align the sun light correctly.

2. The Sun is implemented as a C4D Infinite light (except when using Vray – see the Vray implementation notes above). It is set to cast raytraced hard shadows, on the basis that this is the most likely setting for a sun object. However, other lights are not so simple to define. Should they be spotlights, omnis, area lights or what? Should they cast shadows or not? These factors are probably scene-dependent and cannot be included in the .ibl file, so in this implementation all lights other than the sun are set up as spotlights or omnis which do not cast shadows. Of course, you can edit these after they are created.

3. Overwriting existing setups. If you have added an sIBL set to a scene, and then want to add another one, should the new one replace the old one or be added to the scene as a second set? Overwriting the old set would be advantageous if you are just changing your mind about which set to use; adding multiple sets would be useful if you want to switch between different sets without having to load them over and over again.

For this reason, you have the option to overwrite an existing set or not, which you can find in the preset details options section. Please bear in mind the following:

- if you turn on ‘Overwrite existing setup’ all the objects and materials in the existing set will be deleted and any required new ones added. **Important:** this action cannot be undone! If you overwrite an existing setup, then try to undo the action, the entire sIBL setup will be removed (you go back to the state before you applied a preset).
- if this option is not turned on, the existing objects and materials are left but any existing sIBL sets in the scene are hidden from the editor and the renderer.
- the reason that you are advised not to rename any of the objects and materials created by the loader is that if you opt to overwrite an existing set, the loader looks for objects with these names and deletes them if it finds them. If you rename them, it won’t find them so won’t be able to delete them – which may leave unwanted objects in the scene. So it’s probably best not to rename anything unless you must and you know that you won’t have to overwrite the set.
- regardless of the overwrite setting, if GI was set up in the old scene it will not be deleted or disabled in the new one, even if you turn ‘Setup GI’ off. This is because you may have fine-tuned your GI setup, which may take a lot of time, and for some plugin to come along and delete your hard work is not going to be popular! Therefore, once GI has been added to the scene it will remain there until you turn it off or remove it, and adding or replacing the sIBL set will not alter the GI settings.

4. The objects created by the sIBL Loader

When you click ‘Apply preset’ the plugin will create some or all of the following objects:

Object	Name	Created
Non-Lightsmith sets		
a null object which contains all other objects	sIBL_Set	always
a second null object	a text string warning you not to rename any of the objects in the set	always
a third null object	the set name, so you can distinguish between sets in case you have multiple sets in the scene at once	always
up to three Sky objects, one for each image in the set; these may be replaced by sphere primitives if you selected that option	sIBL_BGSKy, sIBL_ENSKy, and sIBL_RESKy	depends on .ibl file and user options; not applicable when using Vray
an infinite light to act as the sun, if the .ibl file included one	sIBL_Sun	depends on .ibl file and user options
any number of additional lights (as spotlights) if the .ibl included them	the name of the light as given in the .ibl file	depends on .ibl file and user options
up to three materials, one for each Sky object/sphere	same as the Sky/sphere objects	depends on .ibl file and user options; not applicable when using Vray
a Sky object plus Vray advanced material with the background image	sIBL_BGSKy	only in Vray, when the option ‘Create editor background’ is selected
Lightsmith sets		
a null object which contains all other objects	sIBL_Set	always
a second null object	a text string warning you not to rename any of the objects in the set	always

a third null object	the set name, so you can distinguish between sets in case you have multiple sets in the scene at once	always
a fourth null object	named 'Lightsmith objects', this null contains the objects specified in the .ibl file	always
one or more polygon objects as child objects of the fourth null	name depends on the .ibl file	at least one object is always created, often more than one
at least one material	these materials are applied to the Lightsmith objects	depends on .ibl file, but at least one must be created for the set to work

Menu and button reference

Most of these have already been covered in this file. This is a complete list:

Buttons

1. *Close sIBL Loader*

This is the large button at the bottom of the dialog box and which is available in all tabs. It simply closes the plugin without applying an sIBLset.

2. *Reload collection*

Covered in 'The Preset Details tab' above.

3. *Edit with sIBL-Edit, Reload preset, and Apply presets*

All of these are covered in 'The Preset Details tab' above.

4. *Show preview*

If the set contains a preview file of the background image, clicking this button will display the preview in a new window.

5. *Load collection*

Covered in the 'Installation' section above. This button is used when you have entered a path to the sIBL set collection. You can use the 'Reload collection' button or the 'Reload collection' menu entry to do the same thing.

6. *Save preferences*

Saves the current preferences to disk.

Menus

1. *File menu*

All but one of the entries in the File menu do the same as the button of the same name. The only other entry is 'Close Manager' which does the same as the Close sIBL Loader button.

2. *Help menu*

2.1 *Show help file (PDF)*

Shows the help file (the one you're reading!) in your default application for viewing PDFs.

2.2 *About...*

Displays a dialog box with version information.

Contact details

I hope you enjoy sIBL Loader for Cinema 4D. If you have any comments, feature requests, or (especially) bug reports, please let me know. You can use the forums at HDRlabs.com (<http://www.hdrlabs.com/cgi-bin/forum/YaBB.pl>) and send me a message there, or email me at steve@microbion.co.uk.

Thanks!

Steve Pedler
November 17th 2012

Legal stuff

I really hate these things. I make free software, you use it, what's the problem? Unfortunately we live in a world where everybody seems to reach for their lawyer at the drop of a hat. The only purpose of what follows is to emphasise that if you use sIBL Loader, you do so at your own risk, as I don't guarantee that it will or won't do anything. So please don't sue me if it doesn't work for you.

THIS PROGRAM IS PROVIDED "AS IS" AND WITHOUT WARRANTIES AS TO PERFORMANCE OF MERCHANTABILITY OR ANY OTHER WARRANTIES WHETHER EXPRESSED OR IMPLIED.

Because of the various hardware and software environments into which sIBL Loader may be put, NO WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE IS OFFERED.

Good practice indicates that any program be thoroughly tested with non-critical data before relying on it. The user assumes the entire risk of using the program and the author cannot be held liable for any damage to or loss of critical data, program or operating system files, hardware, or any other content or aspect of the user's computer system.

In plain English, this means that use of sIBL Loader is your own responsibility. If the program trashes your system, or crashes when manipulating critical data, you take the responsibility. Microbion Software and the program's author accept no responsibility for any untoward results.

Hopefully nothing like this will happen, but in today's litigious climate such disclaimers are a necessary evil.