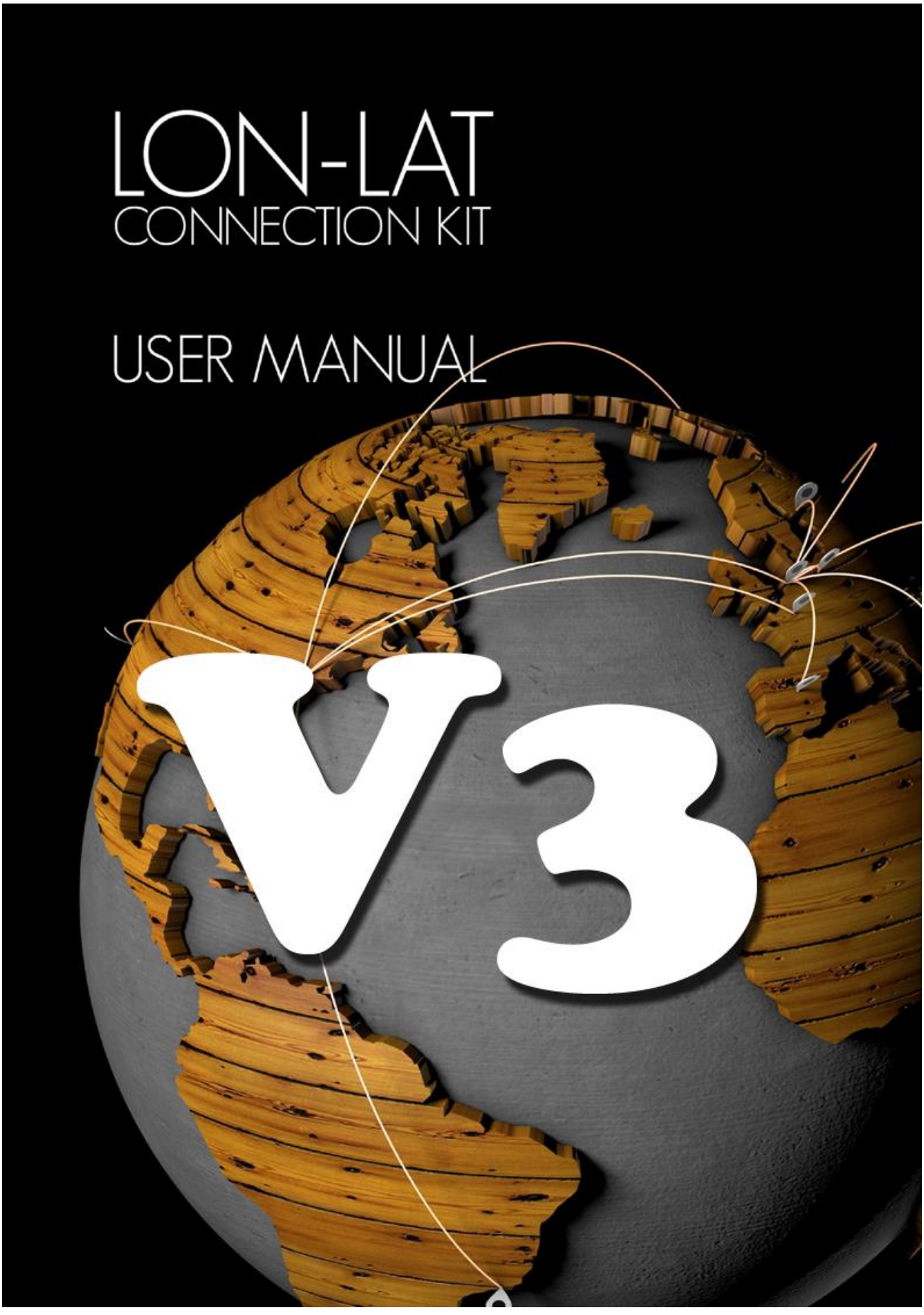
LON-LAT CONNECTION KIT

USER MANUAL



LON-LAT Connection Kit V3

Thank you for working with the LON-LAT Connection Kit.
We have put a lot of effort in making this plugin, so we hope you'll make great stuff with it.
If you can, please send us some examples of your work, we really would like to see what you do with it.

Table of Contents

Installing the LON-LAT Connection Kit

- unzip the downloaded file
- copy the plugin directory “LON-LAT Connection Kit V3” to your Cinema 4D plugins directory
- copy the LON-LAT Connection Kit Library to your Cinema 4D library\browser\ directory
- copy your license.lic file to the plugins\LON-LAT Connection Kit V3 directory
- After installing the plugin and library, restart Cinema 4D

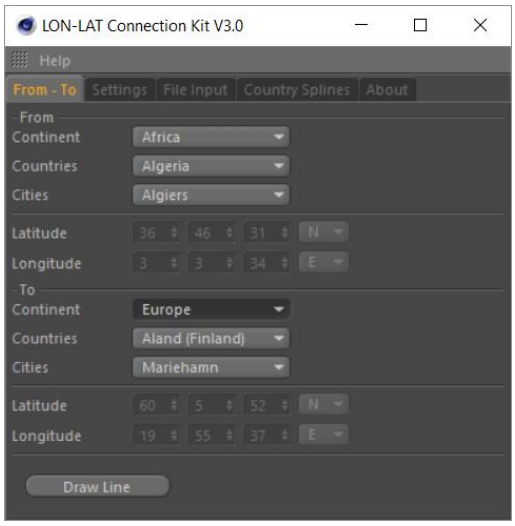
The plugin automatically looks for the license file. If the license is not found, you are notified and a message is displayed where to get a license.

Note: An Internet connection is required to use the OSM search and to get access to this manual using the Help command

Using the LON-LAT Connection Kit V3 Plugin

When you open LON-LAT Connection Kit (Plugins > LON-LAT Connection Kit V3) the plugin menu is displayed in the attribute manager. If you like, you can undock the menu using standard commands. The Plugin menu contains five tabs: From-To, Settings, File Input and About.

FROM - TO Tab



In this tab you can manually create your locations and connections. Simply select the continent, country and city to find the location you need.
Whenever you need a location that is not in the list, you can enter it manually by choosing ‘Custom’ as Continent. Now you can enter the Latitude and Longitude coordinates to define your location.
When done, click ‘Draw Line’ to create the locations as well as a path between them.

The plugin will create two location objects and an arc between the chosen locations. The location objects will be named according to the selected city or the LON-LAT coordinates, e.g. “New York City” or “Custom 0:0:0 N - 0:0:0 E”.
This will allow to have labels that will dynamically display the locations name. The created connection will be named “1st location - 2nd location – distance [Km]”, e.g. “New York City - Amsterdam - 5900”.

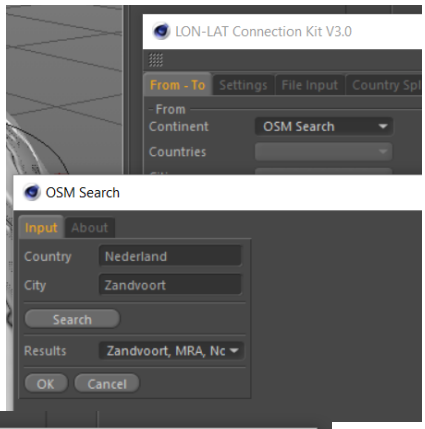
Note: Locations will be created only once. Thus if a location was already created, no new location will be created.

Note: The height of the arc is related to the distance. The longer the distance between the locations, the higher the arc will be.

Alt Key
If the Alt key is pressed when “Draw Line” is clicked, the selected connection is written to an output file and can be used to copy to your own connections file.
The output file is named after your c4d scene name + “.txt”.
For example: when you would be working in “scene.c4d”, the output file will be “scene.c4d.out”.

If the scene is not yet stored, the output is stored in your c4d preference folder.

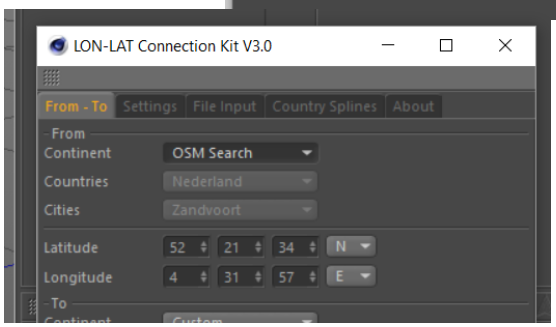
Using Open Street Model (OSM) to select country - city.



When the country – city cannot be found in the standard option, you can use OSM search to select your country – city.

In the From – To dialog, select OSM Search. The OSM dialog will then be opened. Here you can specify the country – city you are looking for.
Click “Search” and select the option you are looking for.
Then click “OK”

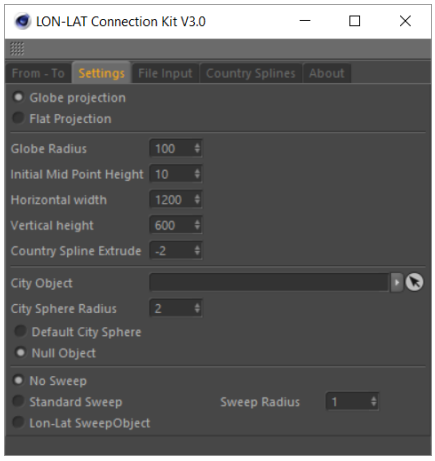
The results, including Longitude and Latitude, will be filled in the FROM – TO dialog.



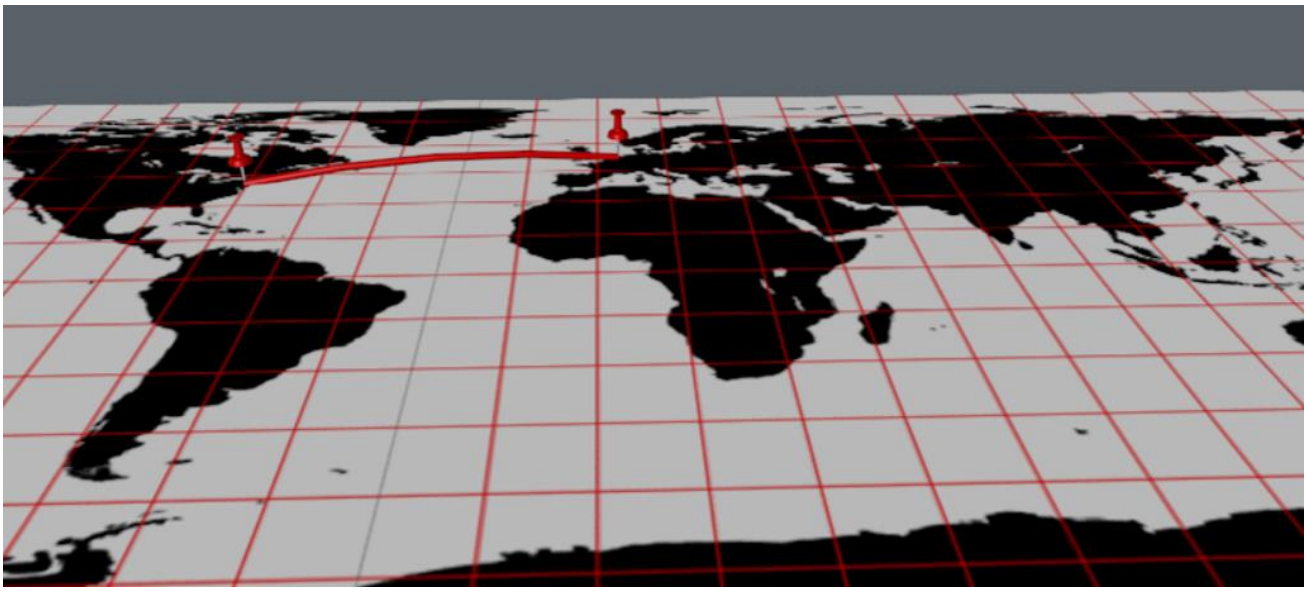
Note: An Internet connection is required to use the OSM search!

Settings Tab

This is where the settings are for the creation of the locations and the path between them.



- Globe projection / Flat projection.
  Globe projection: Cities and connection arc will be placed according a globe with radius setting “Globe Radius”.
  Flat projection: Cities and connection arc will be placed in the XZ plane using settings “Horizontal width” and “Vertical height”.



Example: Flat projection FROM Netherlands, Amsterdam TO USA, New York City.

Note: A flat earth scene is provided with LON-LAT Connection Kit V3.0.

- Globe Radius: the radius of the globe, used to calculate the LON-LAT coordinates on the globe.
- Initial Mid-Point Height settings: The maximum height of the Arc. The longer the distance between the locations, the higher the arc will be.

Example: Globe projection with Mid-Point Height = 0. This way “straight” lines can be made.
Note: A simple (low res) globe scene is provided with LON-LAT Connection Kit V3.0.

Example: Globe projection with Mid-Point Height = 20.

- City object: this setting defines what object will be used when creating the locations on the globe. If “City Object” is left empty, you can use the radio button to select a standard Sphere, or a Null object.

Note: In above examples the Modern Pushpin marker is used. Markers can be found in the LON-LAT Connection Kit V3 library.

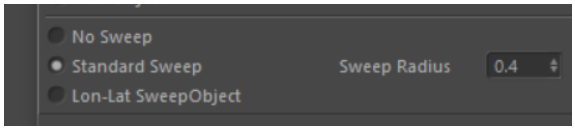
- City Sphere Radius: defines the radius of the Default City Sphere when selected.

Note: If you want to change the location objects at a later time, you can use an Instance object pointing to an empty Null. By putting child objects into this Null object, the locations will appear differently.

Note: Country Spline Extrude setting is discussed in chapter “Country Splines”.

Sweep Settings.

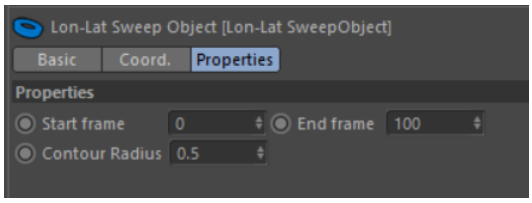
For the connection an Arc is created. By default, the arc is not put under a Sweep Object.
This can be changed using the Sweep Settings.

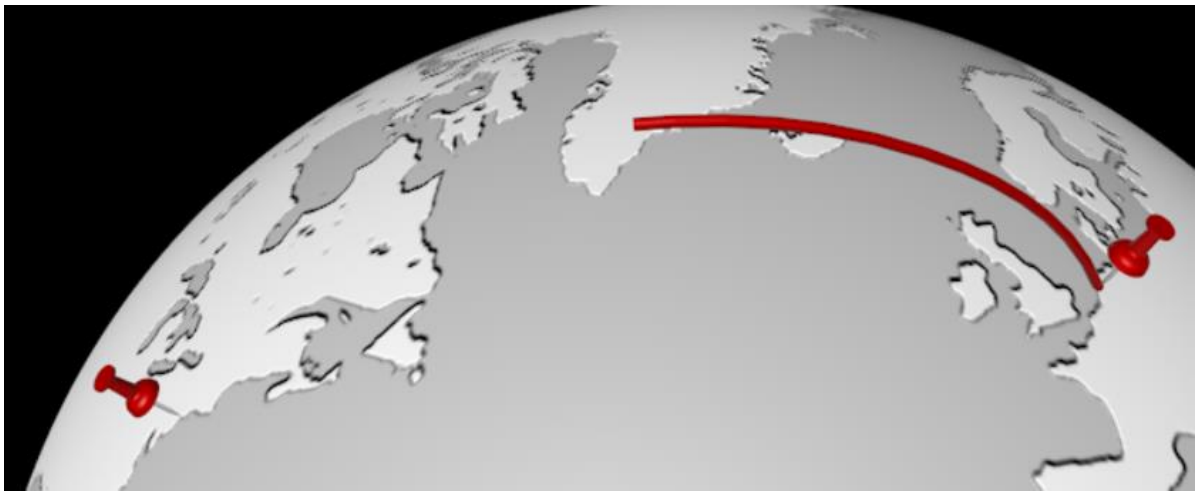


- No Sweep.
  This is the default setting. The arc is not placed under a Sweep Object.

- Standard Sweep.
  The arc is placed under a standard Sweep Object.
  The cross-section Spline is a circle. The radius of this circle can be set using the “Sweep Radius” setting.

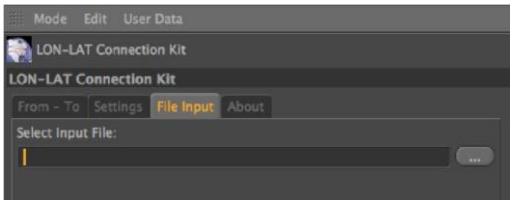
- LON-LAT Sweep Object.
  When selected a special object is added.
  Using this object the sweep over the arc can be animated.
  The Sweep End Growth is animated. At the given “Start frame”, End Growth is 0%. At the given “End frame”, End Growth is 100%





File Input Tab

Use this tab to import a text file with connections.
Once selected the file will be parsed, and the locations and connections will be created. The text file should be a flat “.txt” file without any markup.



This file has the following format.

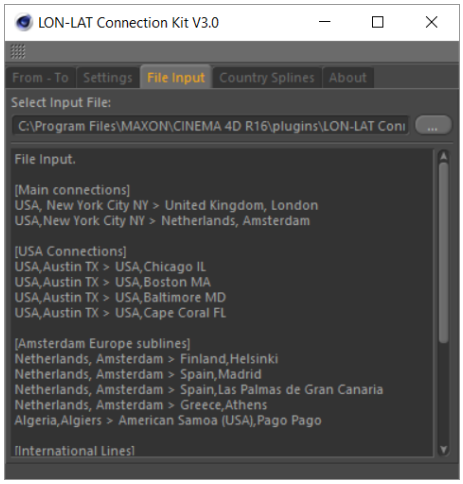
[Groupname1]
Country1, City1 > Country2, City2
Country3, City3 > Country4, City4

[Groupname2]
Country5, City5 > Country6, City6
Country7, City7 > Country8, City8

Groupname defines a group with connections and/or cities. A Null will be created with this name and all given location and connections will be placed as child of this Null.
When only one country + city is given (e.g. USA, Washington DC), then a City object will be created without an arc.

Example input file (example is provided and can be found in the Lon-Lat folder):

[Main connections]
USA, New York City NY > United Kingdom, London
USA, New York City NY > Netherlands, Amsterdam
[Amsterdam Europe sublines]
Netherlands, Amsterdam > Greece, Athens
Netherlands, Amsterdam > Finland, Helsinki
Netherlands, Amsterdam > Spain, Madrid
[US Cities]
USA, New York City NY
USA, Washington DC

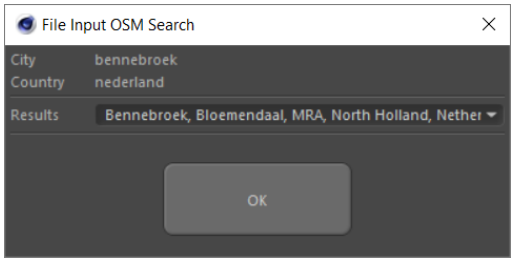


Note: Locations (cities) will be created only once. Thus if location (city) "Amsterdam" already exist, no new location will be created.

During processing, progress will be shown in the dialog. Here given and processed input is shown

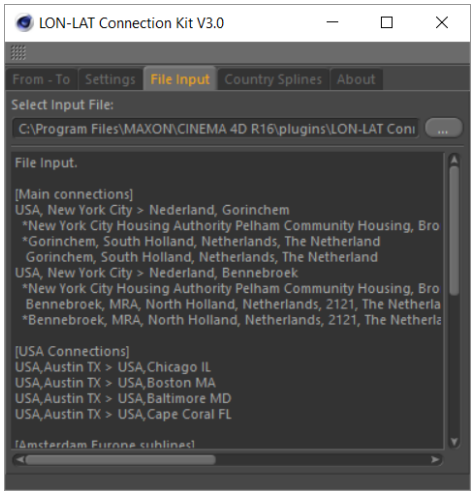
If a given country – city is not found, OSM will be used to search for the given country – city. When more than one option is found, the OSM dialog is used to select the correct found option.

Here an example: Nederland – Bennebroek is not found using the standard options. OSM is started and two options are found.
The user should now select an option and click ok.



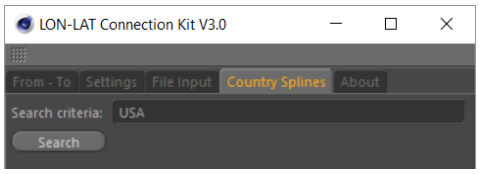
To indicate which option was selected, the dialog will show a "*" before the selected option.

Note: Default the first option is selected.



Here you can see, that the second option for Nederland – Bennebroek was selected.

Country Splines



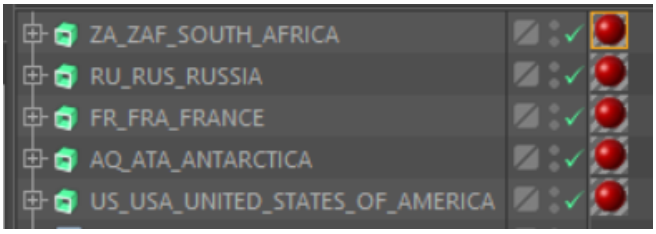
Using the “Country Splines” dialog, detailed vector borders for counties are inserted.

Here an example, when USA is entered.
It will result is an Extrude object named US_USA_UNITED_STATES_OF_AMERICA.

Counties are defined three ways:
- Two character code
- Three character code
- Full name

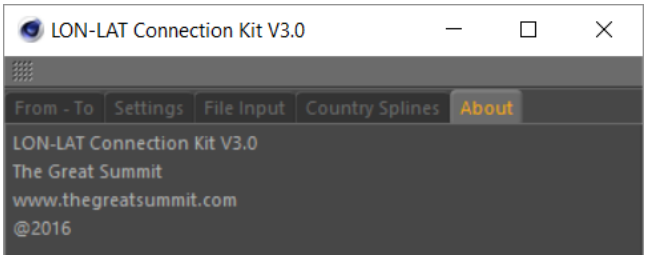
So for this example US, USA or United States of America could be entered.
See appendix 1 for an overview of all countries.

Following settings apply to country splines:
- Country Spline Extrude.
  Default this values is set to -2.
- Globe projection / Flat projection.
  Below an example of a flat projection of the following countries:



About Tab

This is where version and other information about the plugin is displayed.



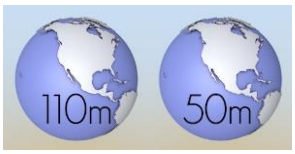
Help menu

Here you can download / view this manual using the Internet.

Using the LON-LAT Connection Kit Library

Once installed the library can be found in the Content Browser. It contains three folders: Base Globes, Lines and Location markers and Labels.
To select an item from the library, simply drag it into your scene. A globe object and 3 corresponding materials for the core, landmass and coastlines will be added to your scene.

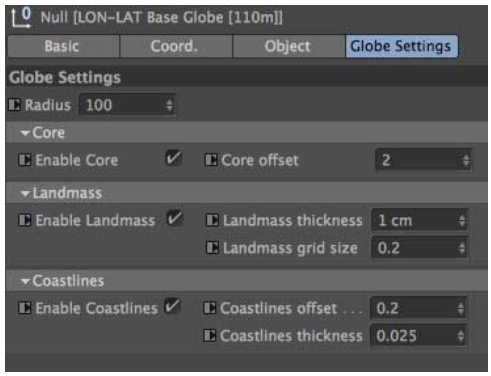
Base Globes



The Base Globes folder contains two vector globes, one in a 110m resolution, and one in a 50m resolution, and a textured globe, in an 8k resolution.

Please keep in mind that the vector globes will use quite some memory. If you don't zoom in very much, it is wisely to use the 110m resolution.

When you select the globe in the Objects viewer, the Attributes viewer will display some user settings in the Globe Settings tab:



- Radius: the radius of the landmass.
- Enable Core: switch the core on or off
- Core offset: the difference in the landmass and the core radius
- Enable Landmass: switch the landmass on or off
- Landmass thickness: the thickness of the landmass
- Landmass grid size: the size of the grid to create the landmass. Lower numbers will make the scene react faster, but also give render errors
- Enable Coastlines: switch coastlines on or off
- Coastline offset: the difference in the landmass and the coastlines radius
- Coastline thickness: the thickness of the coastline

Location Markers

In the location markers folder you will find some predefined markers for marking the location on the globe.

Some of these markers, Label – Simple Line and Label – Plain, are rigged with Xpresso, so that the text in the label will display the name of the parent object.
When these markers are selected, the Attributes viewer will display settings for them in the Label Settings tab.

There are two main ways of using these markers, each with their own advantages and disadvantages:

a) Set up a null and child a marker to that null. In the LON-LAT Connection Kit Plugin drag the null object into the City Object field under Settings. Whenever a location is created, the marker is used for the location.
b) Set up a null and child a marker to that null. While the null is selected, create a instance object (Create>Modeling>Instance). Check that the Instance Object refers to the null object. In the LON-LAT Connection Kit Plugin drag the instance object into the City Object field under Settings. Whenever a location is created, the marker is used for the location. When the marker in the null object is changed, all the markers on the globe change too.

Lines

Although the Lines folder only contains one preset right now, it is one that is quite powerful.

The LON-LAT Sweep Line is simple sweep with build in animation features.
Start using it by dragging it as a child under the Arc connection you want to sweep. Now change the name of the Arc connection by adding the following arguments:

1. Transition: #SweepIn #SweepOut #CutIn #CutOut.
2. Starting Timecode: @Timecode(float)
3. Duration of the Transition: ^Duration(float) (only necessary when using #SweepIn or #SweepOut)

Example names:
Jakarta – New Delhi #SweepIn @14.5 ^4.3
will sweep the connection in with a 4.3 seconds long transition at timecode 14.5

Amsterdam – Atlanta #CutOut @34
will show the spline until 34 seconds, then cut it away

By chaining these animations after each other, you can let the connections travel around the globe:
Sydney - Port Moresby #SweepIn @1 ^0.5
Port Moresby - Jakarta #SweepIn @1.5 ^0.5
Jakarta - Singapore #SweepIn @2 ^0.5
Singapore - Phuket #SweepIn @2.5 ^0.5

The LON-LAT Sweep Line settings contains only two items:

- Line radius: this controls the thickness of the sweep
- Spline: this can be used to ease the timing of the sweep

Support and questions

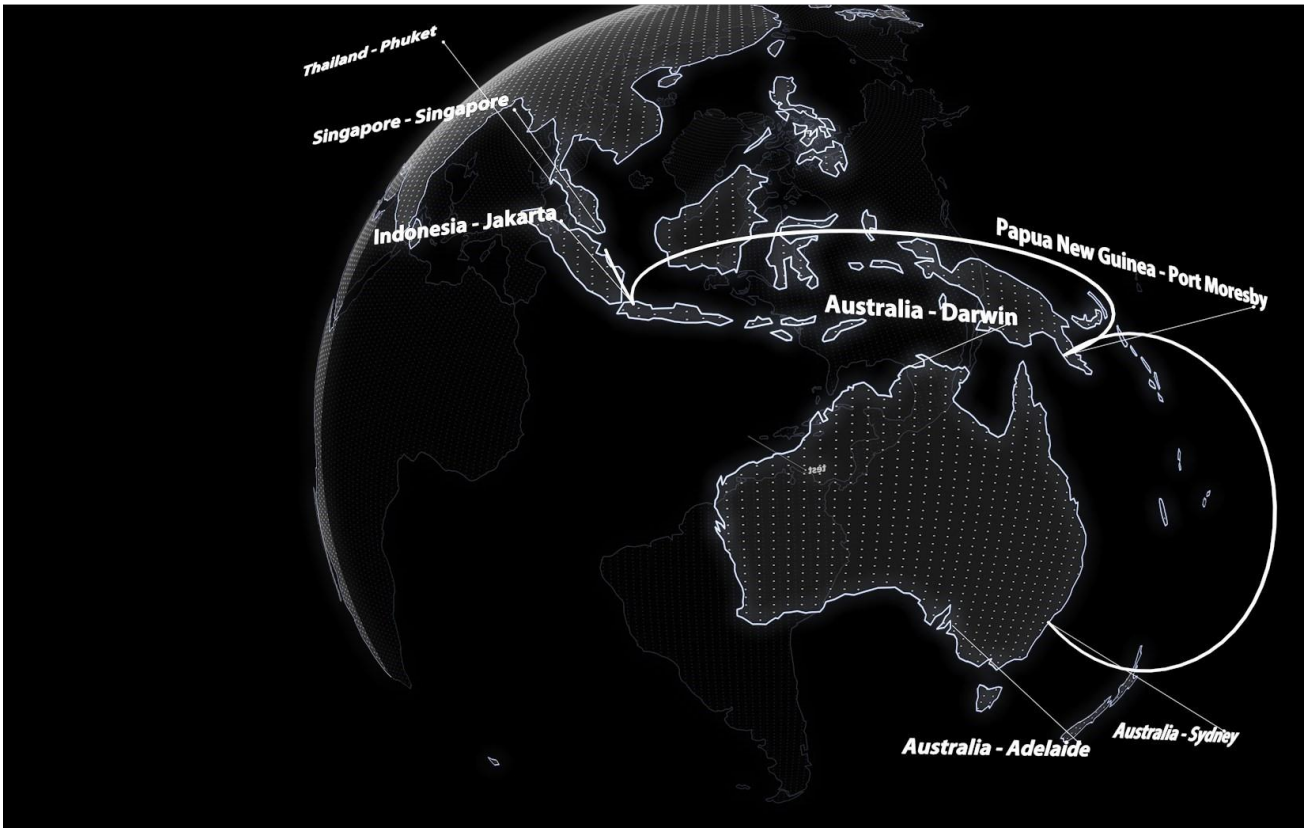
Please use contact form on our website for all your questions and suggestions.
http://www.thegreatsummit.com/contact/

Acknowledgments and links

- Texture maps are created by Tom Patterson. His website www.shadedrelief.com contains texture maps in higher resolution and maps for specular, elevation and other features.
- For even higher resolutions, visit the Blue Marble collection page on Nasa's Visible Earth website: http://visibleearth.nasa.gov/. Maps with resolutions up to 86k can be downloaded there.
- To simulate atmosphere light scattering, download the free Atmosphere Shader from http://www.welter-4d.de/fplugs/freeplugins_en.html
- Thanks to the C4D community for all the support, especially the Python forum at www.plugincafe.com and the Dutch C4D forum at www.c4dlounge.eu

Examples

Here are the first few renders we created with the plugin.



Disclaimer

License agreement

End-user license agreement (EULA) for LON-LAT Connection Kit V3

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Appendix A – Country splines

Below overview specifies all countries that have a country spline.

Counties are defined three ways:
- Two character code (first 2 characters of each line in below table)
- Three character code (character 4 -6 of each line in below table)
- Full name (Starting from character 8 to the end of the line. Underscore must be replaced by spaces.)

So US_USA_United_States_of_America shows that America can be searched by using US, USA or United States of America could be entered.

Note: If a country does not have an official two or three letters abbreviation, XX and XXX are inserted. See for example XX_XXX_Territory_of_Ashmore_and_Cartier_Islands.

XX_XXX_Territory_of_Ashmore_and_Cartier_Islands
PN_PCN_Pitcairn_Islands
NL_NLD_Netherlands
ES_ESP_Spain
GR_GRC_Greece
HU_HUN_Hungary
CZ_CZE_Czech_Republic
LU_LUX_Luxembourg
PL_POL_Poland
SK_SVK_Slovakia
RO_ROU_Romania
BE_BEL_Belgium
BG_BGR_Bulgaria
TR_TUR_Turkey
GB_GBR_United_Kingdom_Great_Britain
DE_DEU_Germany
XX_XXX_Reunion_Reunion
XX_XXX_Mayotte
XX_XXX_Guadeloupe
XX_XXX_Martinique
XX_XXX_French_Guiana
FR_FRA_France
IT_ITA_Italy
CH_CHE_Switzerland
JP_JPN_Japan
SG_SGP_Singapore
XX_XXX_Saba_Island
XX_XXX_Sint_Eustasius
XX_XXX_Kralendijk
AW_ABW_Aruba
AF_AFG_Afghanistan
AO_AGO_Angola
AI_AIA_Anguilla
AL_ALB_Albania
XX_XXX_Mariehamn
AD_AND_Andorra
AE_ARE_United_Arab_Emirates
AR_ARG_Argentina
AM_ARM_Armenia
AS_ASM_American_Samoa
AQ_ATA_Antarctica
XX_XXX_French_Southern_and_Antarctic_Lands
AG_ATG_Antigua_and_Barbuda
AU_AUS_Australia
AT_AUT_Austria
AZ_AZE_Azerbaijan
BI_BDI_Burundi
BJ_BEN_Benin
BF_BFA_Burkina_Faso
BD_BGD_Bangladesh
BH_BHR_Bahrain
BS_BHS_Bahamas
BA_BIH_Bosnia_and_Herzegovina
XX_XXX_Gustavia
BY_BLR_Belarus
BZ_BLZ_Belize
BM_BMU_Bermuda
BO_BOL_Bolivia
BR_BRA_Brazil
BB_BRB_Barbados
BN_BRN_Brunei
BT_BTN_Bhutan
BW_BWA_Botswana
CF_CAF_Central_African_Republic
CA_CAN_Canada
CL_CHL_Chile
CN_CHN_China
CI_CIV_Ivory_Coast
CM_CMR_Cameroon
CD_COD_Democratic_Republic_of_the_Congo
CG_COG_Republic_of_the_Congo
CK_COK_Cook_Islands_
CO_COL_Colombia
KM_COM_Comoros
CV_CPV_Cape_Verde
CR_CRC_Costa_Rica
CU_CUB_Cuba
XX_XXX_Curacao
KY_CYM_Cayman_Islands
CY_CYP_Cyprus
KW_KWT_Kuwait
DM_DMA_Dominica
DK_DNK_Denmark
DO_DOM_Dominican_Republic
DZ_DZA_Algeria
EC_ECU_Ecuador
EG_EGY_Egypt
ER_ERI_Eritrea
EE_EST_Estonia
ET_ETH_Ethiopia
FI_FIN_Finland
FJ_FJI_Fiji
FK_FLK_Falkland_Islands
FO_FRO_Faroe_Islands
FM_FSM_Federated_States_of_Micronesia
GA_GAB_Gabon
GE_GEO_Georgia
GG_XXX_Bailiwick_of_Guernsey
GH_GHA_Ghana
GN_GIN_Guinea
GM_GMB_Gambia
GW_GNB_Guinea-Bissau
GQ_GNQ_Equatorial_Guinea

GD_GRD_Grenada
GL_GRL_Greenland
GT_GTM_Guatemala
GU_GUM_Guam
GY_GUY_Guyana
HK_HKG_Hong_Kong
XX_XXX_Heard_Island_and_McDonald_Islands
HN_HND_Honduras
HR_HRV_Croatia
HT_HTI_Haiti
ID_IDN_Indonesia
IM_IMN_Isle_of_Man
IN_IND_India
CX_CRX_Christmas_Island_&_West_Island
MV_MVD_Maldives
IE_IRL_Ireland
IR_IRN_Iran
IQ_IRQ_Iraq
IS_IS_Iceland
IL_ISR_Israel
JM_JAM_Jamaica
JE_JEY_Jersey
JO_JOR_Jordan
XX_XXX_Siachen_Glacier
KZ_KAZ_Kazakhstan
KE_KEN_Kenya
KG_KGZ_Kyrgyzstan
KH_KHM_Cambodia
KI_KIR_Kiribati
KN_KNA_Saint_Kitts_and_Nevis
KR_KOR_South_Korea
MK_MKD_Macedonia
KW_KWT_Kuwait
LA_LAO_Laos
LB_LBN_Lebanon
LR_LBR_Liberia
LY_LBY_Libya
LC_LCA_Saint_Lucia
LI_LIE_Liechtenstein
LK_LKA_Sri_Lanka
LS_LSO_Lesotho
LT_LTU_Lithuania
LV_LVA_Latvia
MO_MAC_Macau
MF_MAF_Saint_Martin
MA_MAR_Morocco
MC_MCO_Monaco
MD_MDA_Moldova
MG_MDG_Madagascar
MV_MDV_Maldives
MX_MEX_Mexico
MH_MHL_Marshall_Islands
MK_MKD_Macedonia
ML_MLI_Mali
MT_MLT_Malta
MM_MMR_Burma_Myanmar
ME_MNE_Montenegro
MN_MNG_Mongolia
MP_MNP_Northern_Mariana_Islands
MZ_MOZ_Mozambique
MR_MRT_Mauritania
MS_MSR_Montserrat
MU_MUS_Mauritius
MW_MWI_Malawi
MY_MYS_Malaysia
NA_NAM_Namibia
NC_NCL_New_Caledonia
NE_NER_Niger
XX_NFK_Norfolk_Island
NG_NGA_Nigeria
NI_NIC_Nicaragua
NU_NIU_Niue
NO_NOR_Norway
NP_NPL_Nepal
NR_NRU_Nauru
NZ_NZL_New_Zealand
OM_OMN_Oman
PK_PAK_Pakistan
PA_PAN_Panama
PE_PER_Peru
PH_PHL_Philippines
PW_PLW_Palau
PG_PNG_Papua_New_Guinea
PR_PRI_Puerto_Rico
KP_PRK_North_Korea
PT_PRT_Portugal
PY_PRY_Paraguay
XX_XXX_West_Bank_and_Gaza,_Palestinian_territories
PF_PYF_French_Polynesia
QA_QAT_Qatar
RU_RUS_Russia
RW_RWA_Rwanda
EH_ESH_Western_Sahara
SA_SAU_Saudi_Arabia
SD_SDN_Sudan
SS_SSD_Republic_of_South_Sudan
SN_SEN_Senegal
GS_SGS_South_Georgia_and_the_South_Sandwich_Islands
SH_SHN_Saint_Helena
SB_SLB_Solomon_Islands
SL_SLE_Sierra_Leone
SV_SLV_El_Salvador
SM_SMR_San_Marino
XX_XXX_Somaliland
XX_XXX_Puntland_and_Galmudug
SO_SOM_Somalia
PM_SPM_Saint_Pierre_and_Miquelon
RS_SRB_Serbia
ST_STP_Sao_Tome_and_Principe
SR_SUR_Suriname
SI_SVN_Slovenia
SE_SWE_Sweden
SZ_SWZ_Swaziland
SX_SXM_Sint_Maarten
SC_SYC_Seychelles
SY_SYR_Syria
TC_TCA_Turks_and_Caicos_Islands
TD_TCD_Chad
TG_TGO_Togo
TH_THA_Thailand
TJ_TJK_Tajikistan
TM_TKM_Turkmenistan
TL_TLS_Turkmenistan
TO_TON_Tonga
TT_TTO_Trinidad_and_Tobago
TN_TUN_Tunisia
TW_TWN_Taiwan
TZ_TZA_Tanzania
UG_UGA_Uganda
UA_UKR_Ukraine
UY_URY_Uruguay
US_USA_United_States_of_America
UZ_UZB_Uzbekistan
VA_VAT_Holy_See_Vatican_City
VC_VCT_Saint_Vincent_and_the_Grenadines
VE_VEN_Venezuela
VG_VGB_British_Virgin_Islands
VI_VIR_US_Virgin_Islands
VN_VNM_Vietnam
VU_VUT_Vanuatu
WF_WLF_Wallis_and_Futuna
WS_WSM_Samoa
YE_YEM_Yemen
ZA_ZAF_South_Africa
ZM_ZMB_Zambia
ZW_ZWE_Zimbabwe