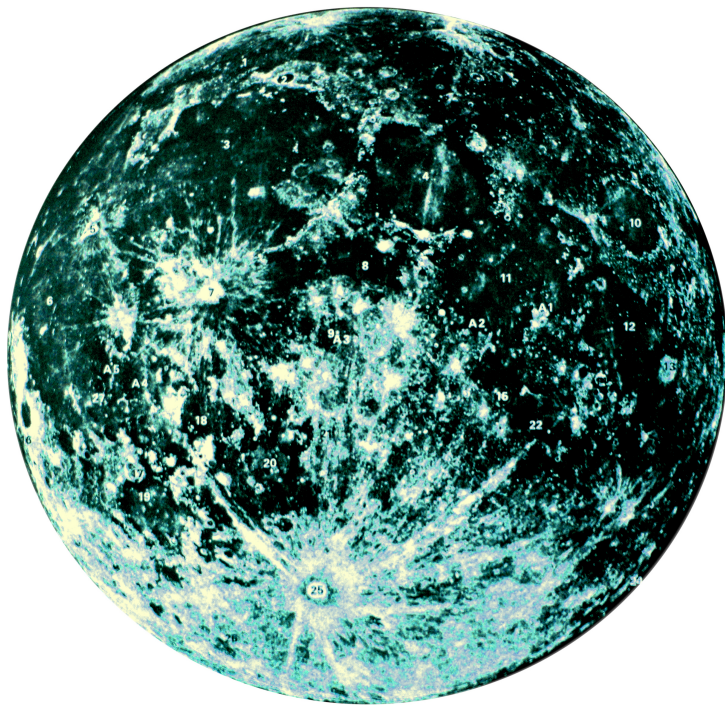# moonbell

ムーンベルは
月周回衛星＜かぐや＞からの
月面の地形情報を
音にかえて聴くプロジェクトです。

moonbell transforms
the topography
of the moon into sound,
using data from
lunar orbiting satellite
Kaguya.

http://www.moonbell.org

Lunar orbiting satellite Kaguya (SELENE) <http://www.jaxa.jp/projects/sat/selene/index_e.html>
was launched from Tanegashima Space Center on September 14, 2007 at 10:31am.
Kaguya is currently orbiting the moon, taking observations of the lunar surface with 14 different sensors.
moonbell uses data from one of those sensors, a laser altimeter, or LALT, transforming the altitude data into musical intervals.

このプロジェクトはデザイナ・アーティスト・エンジニアからなる有志チームの提案により、
JAXAとのコラボレーションで制作されています。

Selene/Kaguya lunar orbiter

公共空間において環境音・環境映像として使用された例

http://wms.selene.jaxa.jp/selene_sok/

top/launch page
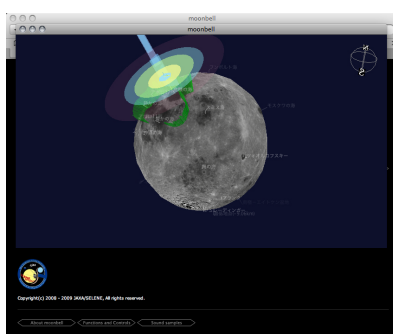
>> open

open

main program (java applet)

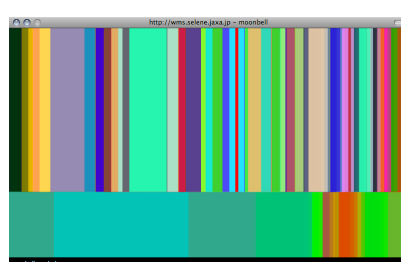japanese/english

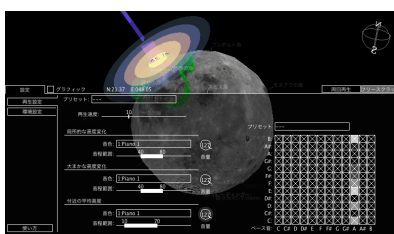### "orbit-play" mode
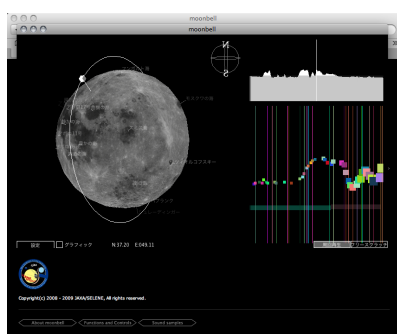
"free-scratch" mode

"graphic wall" mode
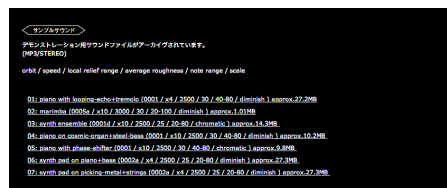

preference – パラメータ設定/ユーザ・カスタマイズ

japanese/english

user-manual/instruction

japanese/english

sample-sound archives

mp3 sound files

orbit / speed / local relief range / average roughness / note range / scale

01: piano with looping-echo+tremolo (0001 / x4 / 2500 / 30 / 40-80 / diminish) approx.27.2MB
02: marimba (0005a / x10 / 3000 / 35 / 20-100 / diminish) approx.1.01MB
03: synth ensemble (0001d / x10 / 2500 / 25 / 20-80 / chromatic) approx.14.3MB
04: piano on cosmic-organ+steel-bass (0001 / x10 / 2500 / 30 / 40-80 / chromatic) approx.10.2MB
05: piano with phase-shifter (0001 / x10 / 2500 / 30 / 40-80 / chromatic) approx.9.8MB
06: synth pad on piano+bass (0002a / x4 / 2500 / 25 / 20-80 / diminish) approx.37.3MB
07: synth pad on picking-metal+strings (0002a / x4 / 3500 / 25 / 20-80 / diminish) approx.27.3MB
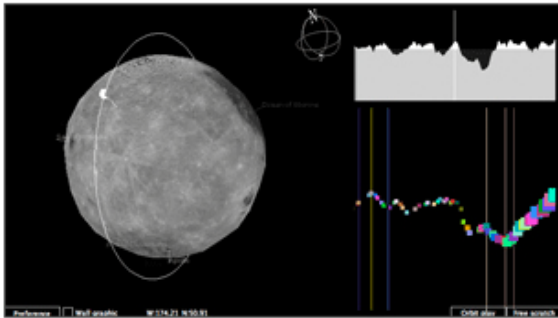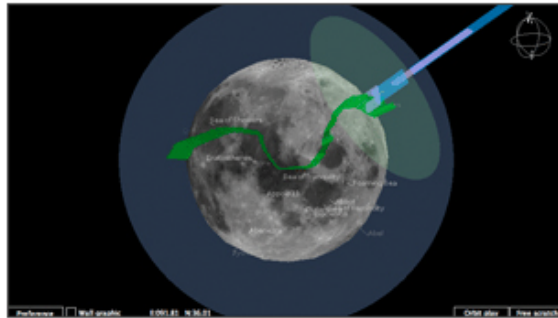
moonbell

moonbell has two playback modes, [Orbit Play] and [Free Scratch].
Additionally, you can watch the sound displayed as color patterns with the [Graphic Screen] function.

Orbit play mode

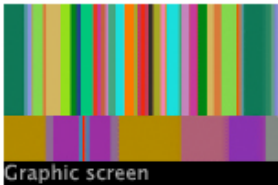Free Scratch mode

✳Orbit Play Mode

In this mode, the sound follows the topography along the satellite's orbital path.
The display shows the orbital path Kaguya flew along as it took measurements of the lunar surface, an altitude graph of the topography in cross-section, and a musical notation map.

✳Free Scratch Mode

In this mode you can draw a line anywhere on the moon's surface and listen to the sound it produces.
Just like dropping a needle onto an LP, you can rotate the moon and draw anywhere you like.

Graphic screen

✳Graphic Screen Mode
Color patterns produced from the audio data.
You can use it to create a color-changing space installation by projecting it onto a wall, or in any way you want.
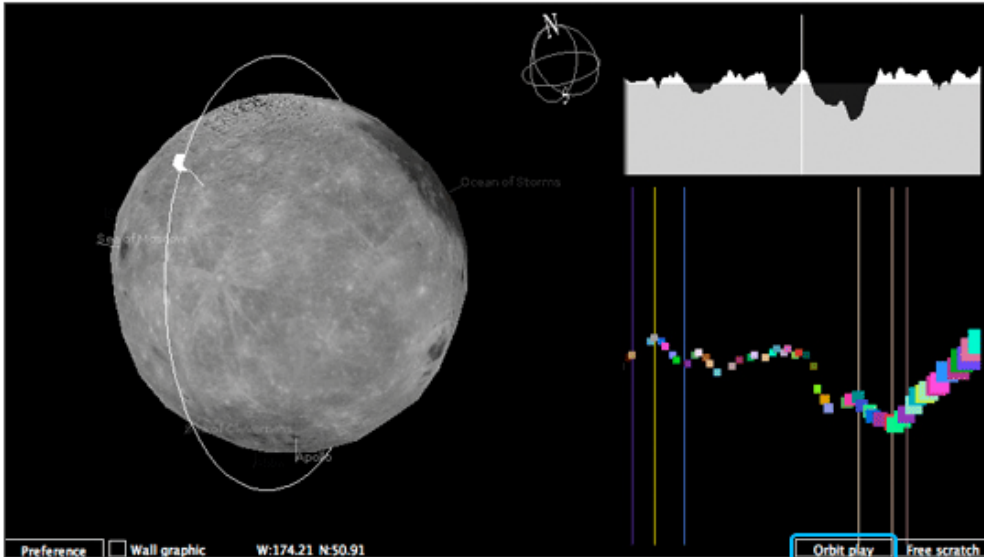
The interface

Change playback modes with the two buttons at the bottom of the moonbell screen, open the Settings panel, or display in Graphic Screen mode.

[Orbit Play] mode

In this mode, the sound follows the topography along the satellite's orbital path.
Kaguya's orbital path as it took measurements of the lunar surface, an altitude graph showing the topography in cross-section,
and a musical notation map are displayed. The graph in the top right shows the altitude, with the white area displaying
the detailed topography, and the grey horizontal line showing a broader elevation.
These are the main note (melody), and bass line.
By dragging your pointer you can rotate the moon freely.
Drag the Kaguya pointer onto the moon's surface, and moonbell will start playing from that position.

[Free Scratch] mode
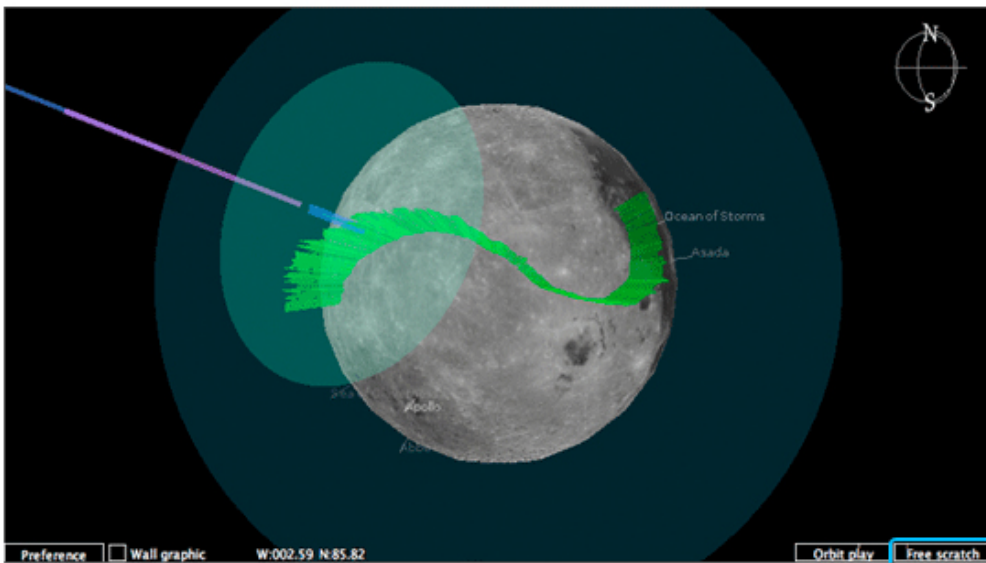
In this mode you can draw a line anywhere on the moon's surface and listen to the sound it produces.
Drag your cursor wherever you want on the moon's surface, and the sound will play in a loop, regardless of how long the line is.
Rotate the moon by dragging in the black space around the moon.
The green graph represents the main note (the melody based on the detailed altitude data), the rings that expand from the center are
the bass notes, and the background colors are the metronome note.

[Graphic Screen]

Color patterns produced from the audio data.

The screen displays the main note and bass notes, with high notes coming from the left, and low notes from the right, in changing colors.

This mode can be used to create atmospheric music and space design.

It works particularly well in fullscreen mode.
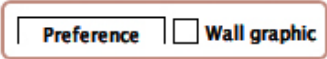
[Preference] button

Click to access the settings panel for moonbell.

You can alter the musical settings and speed, to change how moonbell expresses the altitude data.

You can use the preset settings, or change each of the parameters freely, to achieve the effect you want.

Click the tab again to close the settings panel.

Playback settings

Sound settings
Environment
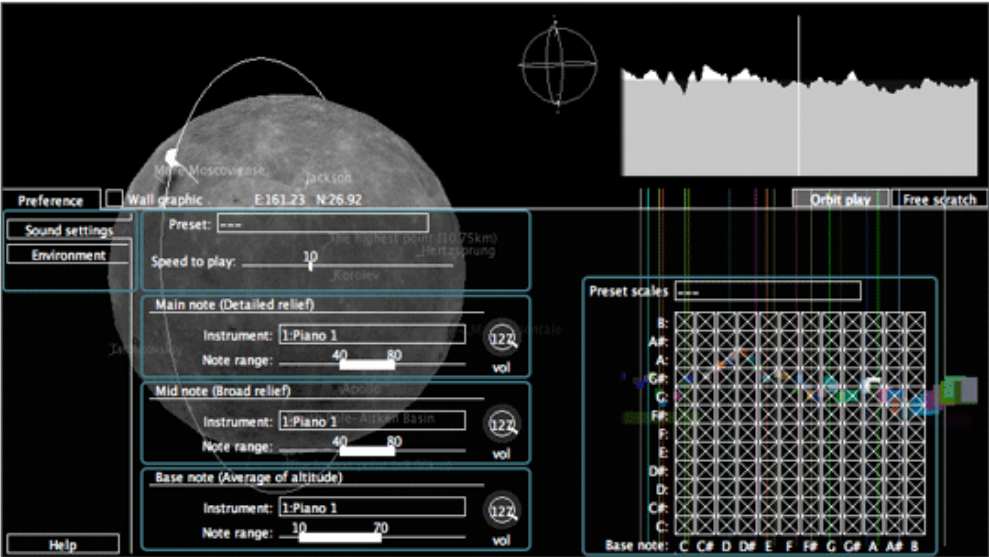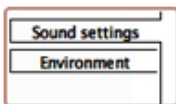
Select the area you want with the tabs on the left of the Settings panel.

Sound settings

Preset: ---
Speed to play: _____10_____

Preset mode
You can select preset combinations of instrument, musical scale and each of the other available parameters from the pulldown menu.
Choose from the preset programs to hear how the audio can be altered to achieve different effects.
By editing each parameter individually, you can customize the sound any way you want.

Speed to play
Determine how fast you want to play back your audio, from Kaguya's actual flight speed, 1, to 30 times as fast.

moonbell creates three types of sound from the altitude data.

The altitude data collected by Kaguya is transformed into musical notation, and played back via MIDI.
The sound has three parts:
Main note: The sound generated from the actual ups and downs of the moon's surface. This makes up the 'melody' line.
Mid note: A note created from the elevation of the immediate surrounding area. This becomes the mid-tones of the tune.
Bass note: A note based on a broader section of elevation. The bass line.

Main note (Detailed relief)	Mid note (Broad relief)	Base note (Average of altitude)
Instrument: 1:Piano 1 (127)	Instrument: 1:Piano 1 (127)	Instrument: 1:Piano 1 (127)
Note range: __40__80__ vol	Note range: __40__80__ vol	Note range: __10__70__ vol

Local altitude change (main note)   Broad-ranged altitude change (mid note)   Average altitude (bass note)

Instrument
Choose the instruments you want to use.
*The menu displays the default instruments for GM devices. If the MIDI device you are using is not GM, the instrument names may display incorrectly. You can change your MIDI device by selecting [MIDI settings]

Volume
Turn the sound volume up or down.

Note range
Set the musical range you desire.
The settings are MIDI note numbers, 0 to 127.

Musical Scale Programming

Preset
The most common musical scales have been preset, so there is no need to input them one by one onto the scale matrix.
The presets only effect the scale of notes, and play depending on the main settings determined in the top left.
The presets are arranged so that the bass and melody notes will play in harmony.

Programming Matrix
Program the scale you wish to be played.
The check-boxes cover 12 chromatic notes, C to B.
Check or uncheck the notes, and only the checked notes will play.
You can program the bass and melody notes to play in any scale you create.
The matrix also allows you to see what note is currently playing.

MIDI device #0:Java Sound Synthesizer

Language English

MIDI device
Choose the MIDI device for playing back audio.
*The menu will alter depending on your computer, and some options may not play back. If moonbell does not play, please choose a different device.
If the MIDI device you choose is not a GM device, the instrument menu may not match the audio.

Language
Choose your preferred language.

Sample Sounds

Several demonstration sound files are available for download.
(MP3/STEREO)

orbit / speed / local relief range / average roughness / note range / scale

01: piano with looping-echo+tremolo (0001 / x4 / 2500 / 30 / 40-80 / diminish) approx.27.2MB

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