The Landsat Chamber Orchestra

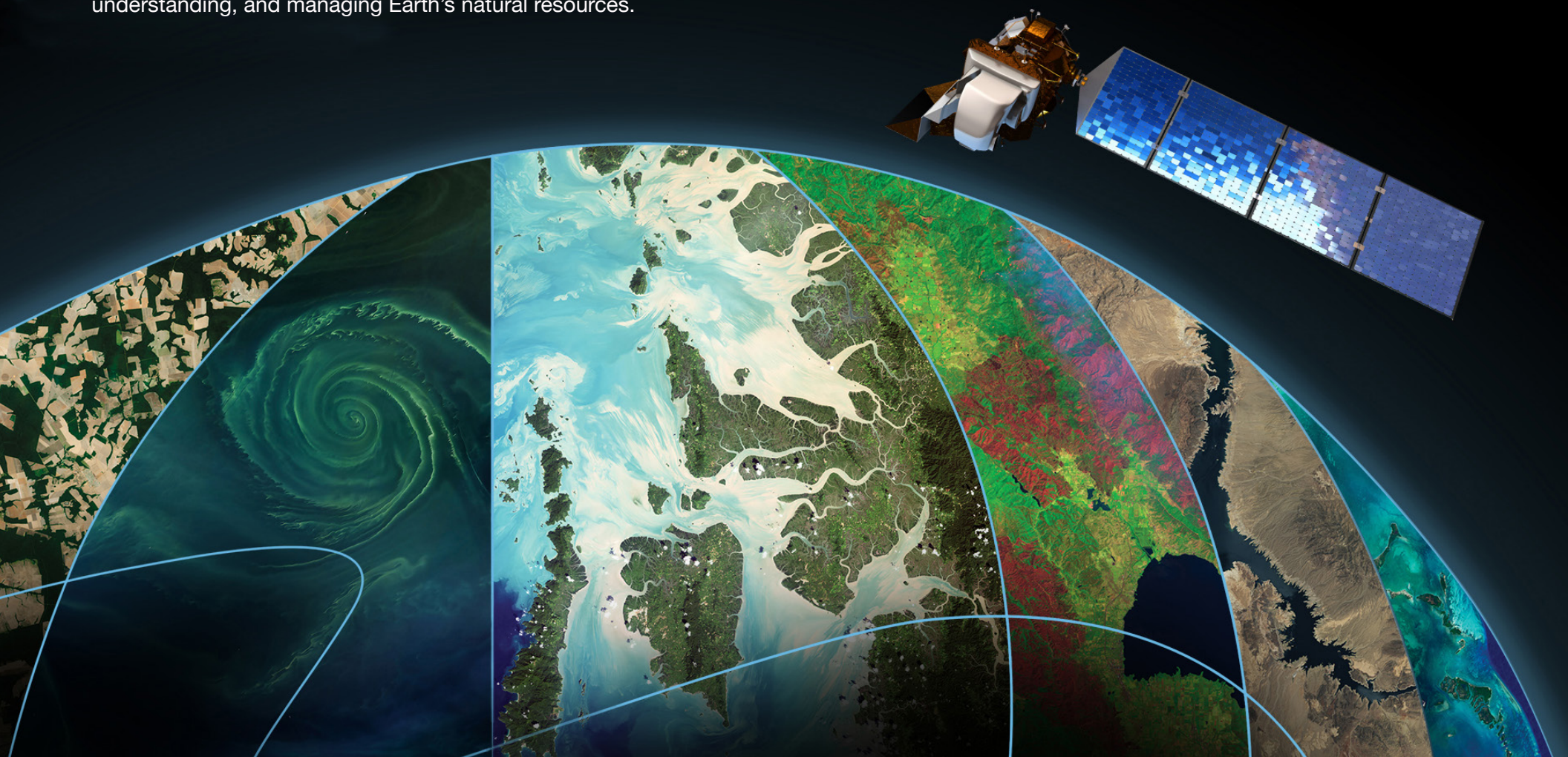
presents

Landsat 50th Anniversary Concert

An audio/visual choreography of
music and Landsat imagery
October 15, 2022
NASA Goddard Visitor's Center

USGS
science for a changing world

Landsat is a partnership between the National Aeronautics and Space Administration (NASA) and the U.S. Geological Survey (USGS) and continues the Landsat program's critical role of repeat global observations for monitoring, understanding, and managing Earth's natural resources.



About the Landsat Chamber Orchestra

This GSFC club orchestra is an all-volunteer assembly of musicians from the DC-MD area, that perform with other community orchestras and chamber groups. While a few are professional musicians, most have or had careers as civil servants, contractors, parents, educators, pastors, etc. with organizations including NASA, SSAI, NIH, UMD, CNN, U.S House of Representatives, “Simplicity Patterns,” Fairhaven United Methodist Church, to name a few. This D&I ensemble came together by word-of-mouth, sharing a passion for music and “cool NASA stuff.”

About Landsat

The NASA/USGS Landsat Program provides the longest continuous space-based record of Earth’s land in existence. Landsat data give us information essential for making informed decisions about Earth’s resources and environment.

On July 23, 1972 the first Landsat satellite launched from Vandenberg. Since then, 8 more satellites were launched creating an archive of over 10 million images – an archive and historical record of our planet going back 5 decades. Tonight’s performance includes just a handful of these Landsat images choreographed to works from four different composers.

While Landsat instruments sense visible light, they also sense wavelengths beyond the visible spectrum – in the infrared. By processing infrared data into colors that we CAN see, we get what we call “false color” images that help scientists study our planet beyond what our eyes can see. Sometimes images are processed purely for artist reasons creating stunning visuals revealing our planet through a lens of abstract art.

Acknowledgements

Landsat images:

The images presented in tonight’s performance we curated from NASA and USGS sources. We would like to thank the visualizers and animators for creating such wonderful images visual accompaniment to this performance.

NASA’s Earth Observatory
https://earthobservatory.nasa.gov/

USGS EROS Earth as Art Gallery
https://eros.usgs.gov/media-gallery/earth-as-art

NASA Goddard Media Studios
https://svs.gsfc.nasa.gov/Gallery/Landsat.html

List of Landsat Images:

For a listing of images used in tonight’s performance, along with links to learn more, visit:

https://bit.ly/3CZKDRP

With Thanks To

NASA Visitors Center:

Catherine (Cate) Maynard (Director)

Cate has been at the Goddard Visitor Center for 12 years, and recently became Visitor Center Director in March 2022. She is responsible for overseeing all operations, and helped to introduce new virtual platforms used to engage with the public during the pandemic. Early in her career, Cate was an outdoor education instructor with Living Classrooms in DC, focusing on local Earth science and STEM topics, as well as a virtual instructor in English composition.

The Landsat Outreach Team:

Ginger Butcher (image selection & choreography)

Ginger is an award-winning science communications and public engagement specialist with 25 years working at NASA Goddard and Headquarters. Much of her work focuses on creating unique education products such as storybooks, games, and online interactives to teach NASA science concepts to young children. She is currently the public engagement lead for NASA's Landsat project at Goddard.

Ross Walter (video production)

Ross is a recent graduate from Virginia Tech with a degree in multimedia production. He started working with the Landsat program as an intern in 2021 and continues to develop videos and animations to engage young audiences with Landsat science.

Allison Nussbaum (image creation & choreography)

Allison started as an intern on the Landsat Outreach Team in 2018 before earning her bachelors in Geospatial Information Science. She creates outreach products for both print and the web and produces Landsat images for a variety of channels including NASA's Earth Observatory. She is now working on her Masters in GIS from University of Maryland.

Program

Saturday Night Waltz (from Rodeo) Aaron Copland

With the launch of Landsat 9, we begin our program with a view of American landscape from space.

Lyric Pieces Op 54, No. 3 "March of the Trolls" Edvard Grieg

Take a tour around our planet with these Landsat images of the seasons.

Suite in D-Major for Wind Instruments Arthur Bird
(Allegro Moderato, Adagio Moderato)

Landsat has observed dramatic changes over its 5 decades of observations. This presentation shows the impact of change on our planet from both natural and anthropogenic causes.

Lyric Pieces Op 40, "Holberg Suite" Edvard Grieg

From volcanic eruptions and fires to hurricanes and floods, Landsat provide a unique view of these disasters and recovery.

Symphony No.99 in E-flat Major Josef Haydn

This collection of images are from the Earth As Art gallery created by USGS's Earth Resources Observation and Science (EROS) Center. There are currently six image collections of stunning artistic interpretations of Landsat images.

Aaron Copland (1900 –1990)

Born in Brooklyn, New York, Copland was an American composer, composition teacher, and a conductor of his own and other American music. Copland was referred to by his peers as "the Dean of American Composers". His composition, Rodeo, is a ballet choreographed by Agnes de Mille, which premiered in 1942. Saturday Night Waltz, is the 4th of 5 ballet sections including Buckaroo Holiday, Corral Nocturn, Ranch House Party and Hoe-Down.

The natural-color image above was cropped from the very first one taken by Landsat 9 on October 31. It shows the Coronation Islands along the Kimberly coast in the state of Western Australia. The image below shows the metropolitan area around Detroit, Michigan (U.S.) and Windsor, Ontario (Canada), along with neighboring Lake St. Clair and Lake Erie.

- NASA Earth Observatory

The Landsat Chamber Orchestra

Music Director and Conductor, Richard Scerbo

Violin

Wenli Mo (Principal)
Jonathan Kunjummen
Alex Chang
Helena Amberger
Gabrielle Liverpool

Violas

Amelia Colarco
Carson Bear

Cello

Jonathan Taylor
Courtney Kaita

Bass

Fred Talcott

Flute

Ellen Ensel
Teri Manolio

Oboe

Susan Ashmore
Andrea Schewe

Clarinet

Karin Caifa
Andy Tangborn
Ed Kaita

Bass Clarinet

Ed Kaita

Bassoon

Leila Duman
Jonathon Zepp

French Horn

Edith Gilmore
Ken Hawes

Trumpets

Len Morse
Bill Sturgis

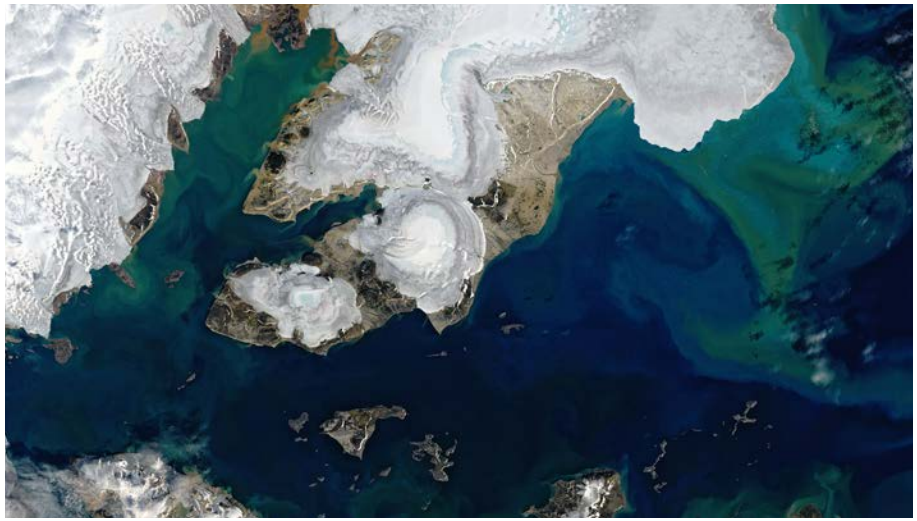
Richard Scerbo (Conductor)

With a Masters Degree in Music from UMD, Richard maintains an active career in music , as conductor, performer/bassoonist, teacher and arts administrator. His vast list of accomplishments include: Serving 7 years as Music Director and Conductor with the NIH Community Orchestra; Founding the "Inscape Chamber Orchestra" based in Washington DC. This ensemble has gained prominence for its diverse chamber repertoire including over 25 commissioned and premiered works; Serving as Co-Artistic Director of the Jackson Hole Chamber Music Society; Serving as Artistic Director of the National Orchestral Institute, which trains orchestral musicians on the threshold of their musical careers; Attending international conducting programs working with the International Festival Orchestra, Kromeriz, and the Bohuslav Martinu Philharmonic.

Edvard Hagerup Grieg (1843-1907)

Born in Bergen, Norway, Grieg was a composer and founder of the Norwegian nationalist school of music. He studied at the Leipzig Conservatory, Hamburg and was influenced by the works of Felix Mendelsohn and Robert Schumann. His music is rooted in Norwegian folk traditions and noted for a “refined lyrical sense.”

Two of his more popular works include his incidental music to Peer Gynt, Suite Opus 23, of which March of the Trolls is one movement, and the Holberg Suite Opus 40, of which Air (Andante Religioso) is the 4th of 5 movements.



This natural-color image was acquired on July 29, 2022 by the Operational Land Imager-2 (OLI-2) on Landsat 9 and shows a portion of Nordaustlandet—a major island in northeast Svalbard Norway.

- NASA Earth Observatory

Arthur Bird (1856-1923)

Born in Belmont, Mass, Bird was an American composer that lived mostly in Europe. He studied piano and organ, at the Berlin Hochschule, Germany, and later studied music composition with Franz Liszt. Also known as foreign correspondent, music critic and pianist, his compositions were described as “richly harmonic, lively, buoyant, cheerful and often dance-like”

His for Winds, Opus 40 was awarded the Paderewski Prize for best chamber work by an American composer in 1901. The Andante Moderator and Adagio, are the first two of four movements.

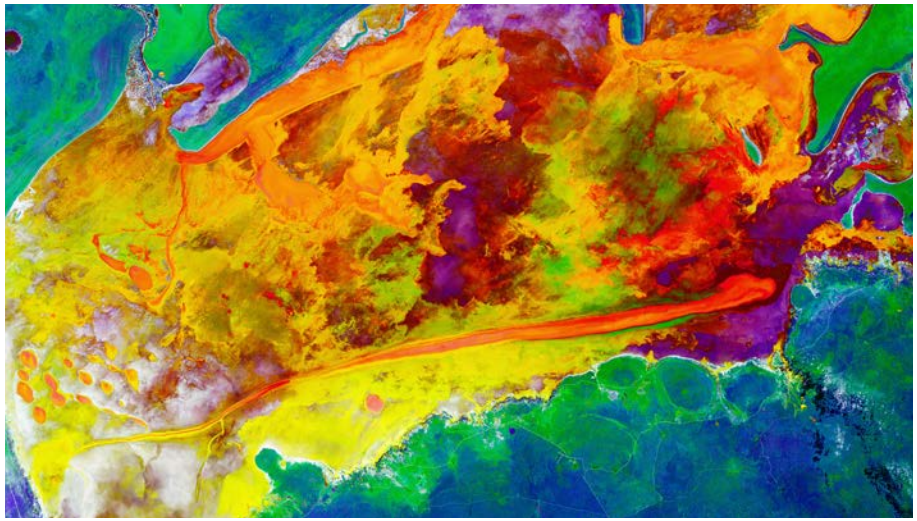
The images above and below, acquired by the Operational Land Imager (OLI) on Landsat 8, show Shasta Lake and Lake Oroville this year and in June 2019 (more typical conditions). The tan fringes around the water in 2021 are areas of the lakebed that are underwater when the reservoirs are filled closer to capacity. The phenomenon is often referred to as a “bathtub ring.”

- NASA Earth Observatory

Franz Joseph Haydn (1732-1809)

Born in Rohrau, Austria, Haydn was a composer of the Classical period during the 18th Century. He was instrumental in the development of chamber music and his prolific contributions to musical form included compositions for string quartet, piano trios, masses, operas and 108 symphonies. His long, and storied career included a close friendship with Wolfgang Amadeus Mozart, and instructorship to Ludwig Van Beethoven.

The Adagio - Vivace Assai, comprise the 1st movement of his Symphony No 99 in E-flat Major, composed during his 2nd visit to London



A vast, open expanse in Namibia is one of the largest salt pans in the world. The pan is within Etosha National Park, protected since 1907. The horizontal line across the image is the national park fence. The wild patterns in this infrared interpretation are from numerous episodes of water evaporation following seasonal rains. The salt from the water is rearranged into new patterns every time the shallow water dries out. The surrounding blue shades are dry bushland savanna.

- “Salty Desolation,” Earth As Art