Seattle

A City Seen from Space

Seattle, from another distance

Think of a place you know well: the bend in a road, the water beside a park, the way a familiar block rises. Now try to find it from far above.

This book starts with a Landsat observation of the Seattle region made on October 6, 2010. Its invitation is simple: look slowly, keep track of what the image actually records, and carry a question back to the ground.

The pages that follow are for reading a landscape. The pages after them are for keeping your own record.

First-edition reading proof / 48 interior pages

Sources 2 · full references at the back of the essay

A CLOSER LOOK

Begin with a place you know

Open the locator and choose one large feature you recognize. Follow its outline before looking for smaller details. Write the name, then make a quick sketch without tracing.

On the satellite plate, look for the same shape. Before comparing, check how each view is oriented; do not assume the top of every image points north. A street map and a satellite image describe a place in different ways.

Keep three kinds of note: something you can see, something you infer, and something you still need to check. A good observation can be modest. A dark patch, a straight edge, or a repeated shape is enough to begin.

01 I can see…

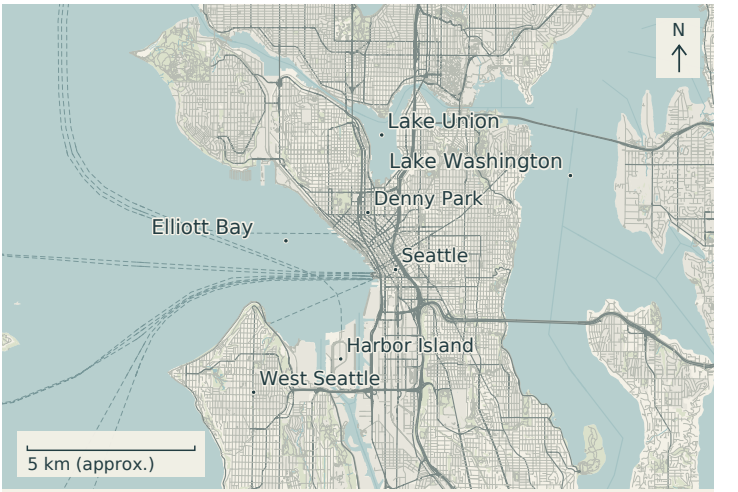
02 I think this might be…

03 I could check it by…

Sources 6 · full references at the back of the essay

A CLOSER LOOK

Finding Seattle



Present-day locator. Map data © OpenStreetMap contributors. This map is not a historical reconstruction.

Use this present-day locator to orient yourself. It is a companion to the dated satellite scene, so its streets and water outlines should not be read as a record of conditions in 2010.

Choose one body of water and one part of the city as reference points. Mark both in your notes before moving to the image.

Sources 9 · full references at the back of the essay

Seattle, October 6, 2010

SOURCE PLATE PENDING

The documented USGS image is specified but not yet downloaded. This proof cannot establish its appearance or print quality.

Seattle region, October 6, 2010. Landsat 5, Collection 2 surface reflectance; published bands 4/3/2. US Geological Survey. Public domain.

One pass of one satellite gives this page its date. USGS identifies the source as a Landsat 5 observation of the Seattle region.

Let your eyes follow the large shapes first. Where do broad, continuous areas give way to finely divided textures? Find an edge you want to understand and draw it on a notes page. Add the acquisition date beside the drawing.

Sources 3 · full references at the back of the essay

A CLOSER LOOK

Color is a choice with a key

A satellite can record light beyond the range our eyes see. A false-color display assigns some of those measurements to visible colors, making differences easier to examine. Read the key before deciding what a color means.

For the surface-reflectance image specified here, USGS lists Landsat 5 bands 4, 3 and 2. Those correspond to near-infrared, red and green measurements. Displaying them as red, green and blue produces a view whose colors differ from everyday sight.

Choose two patches with different colors. Describe their shapes and surroundings as well. Color gives you a clue; context helps you ask a better question.

01 Display red ← near-infrared measurement

02 Display green ← red measurement

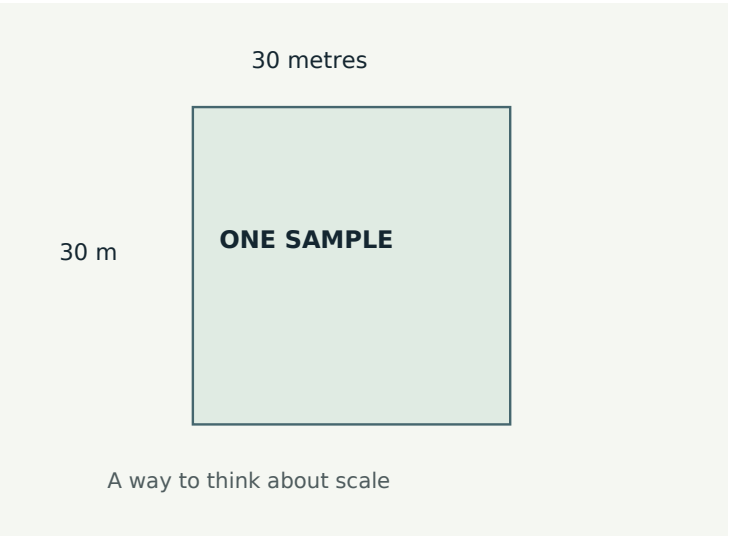
03 Display blue ← green measurement

Sources 7, 5, 3 · full references at the back of the essay

DIGITAL PROOF · NOT RELEASED

A CLOSER LOOK

What fits inside a pixel?



An explanatory 30 m square. Original diagram; not a map of a particular Seattle site.

Landsat 5's Thematic Mapper samples reflective bands at 30 metres; its thermal band is coarser, at 120 metres.

Imagine a square covering 30 metres on each side in a place you know. What might share that space: pavement, a roof, trees, shadow? Sketch and label your imagined ingredients.

This exercise explores scale. It does not identify the contents of a particular satellite pixel.

Sources 5 · full references at the back of the essay

A CLOSER LOOK

A date belongs to every view

1972

The Landsat program begins its record of Earth's land.

September 16, 1973

Landsat 1 records a Seattle–Tacoma scene.

March 1, 1984

Landsat 5 launches.

October 6, 2010

Landsat 5 records the Seattle scene used for this edition.

Landsat's record begins in 1972. Seattle appears in that record across different spacecraft and instruments. Keep the image date separate from the date a website published or updated it.

These entries identify records in the source list. They do not form a measured sequence of urban growth.

Sources 1, 4, 5, 2 · full references at the back of the essay

A CLOSER LOOK

Two pictures need more than two dates

An older view can make us eager to tell a story of change. First check whether both images cover the same ground, at the same orientation and comparable scale. Then examine the season, clouds, shadows and color treatment.

USGS uses surface-reflectance processing to reduce atmospheric effects when comparing observations. A pair of attractive web images is not automatically a pair of equivalent measurements.

The 1973 Seattle–Tacoma record is a useful starting point for further looking. This book makes no claim about a percentage of growth, lost vegetation or changed shoreline from that image and the 2010 scene.

01 Same ground?

02 Comparable scale and processing?

03 Could weather or season explain the difference?

Sources 8, 6, 4 · full references at the back of the essay

DIGITAL PROOF · NOT RELEASED

Make a small image inventory

Choose a section of the satellite plate and divide a notes page into four boxes. Sketch one feature in each: a long edge, a branching pattern, a patch with a uniform tone, and a place whose identity is uncertain.

Give each sketch a plain descriptive name before giving it a geographic one. For example, write 'curved dark edge' before deciding that it is a shoreline.

Beside each box, write one observation and one possible explanation. Return to the locator or the source image to see which explanation you can support. Keep the unresolved sketch; uncertainty is part of your record.

01 Edge

02 Branch

03 Patch

04 Question

FIELD NOTES

Bring the question down to earth

Choose a place you already know or can observe from a public place. Before you go, write a prediction about its shape or surroundings based on the image. Include the image date.

At ground level, record something the satellite view helped you notice and something it could not tell you. Sound, movement, a small sign, or a change in surface may matter more to your experience than the broad pattern above.

Afterward, compare your notes. Was the prediction wrong, was the image too coarse, or might the place have changed since the observation? Keep those explanations separate until you have evidence.

01 Before: my prediction

02 At the place: my observation

03 After: what I would check next

A CLOSER LOOK

Keep the frame with the picture

When you save an image, save its context too. Record the source, satellite, acquisition date and the kind of display. Note whether you are looking at a whole scene or a crop. Leave a line for anything you have not established.

Use this short record for the plate in this book, then repeat it for another image that catches your attention. If an image arrives without a date or a reliable source, that absence is worth recording.

A view from above can begin a story. Your notes can preserve the questions that make the story worth investigating.

01 Source and image title

02 Satellite and acquisition date

03 Display or band combination

04 Whole scene or crop

05 One unresolved question

DIGITAL PROOF · NOT RELEASED

Sources & image notes

1. Landsat mission overview
NASA

2. Seattle region, Landsat 5, October 6, 2010
US Geological Survey

3. Seattle surface-reflectance example, October 6, 2010
US Geological Survey

4. Seattle–Tacoma region, Landsat 1, September 16, 1973
US Geological Survey

5. Landsat 5 instruments and mission
US Geological Survey

6. How to interpret a satellite image
NASA Earth Observatory

7. How to interpret a false-color satellite image
NASA Earth Observatory

8. Landsat surface reflectance
US Geological Survey

9. Copyright and license
OpenStreetMap

https://www.openstreetmap.org/copyright

Full references, source records and image credits:

originbooks.com/places/seattle/landsat

YOUR OBSERVATIONS