

Digitization Takes Flight

Sharon Janzen, Brock University

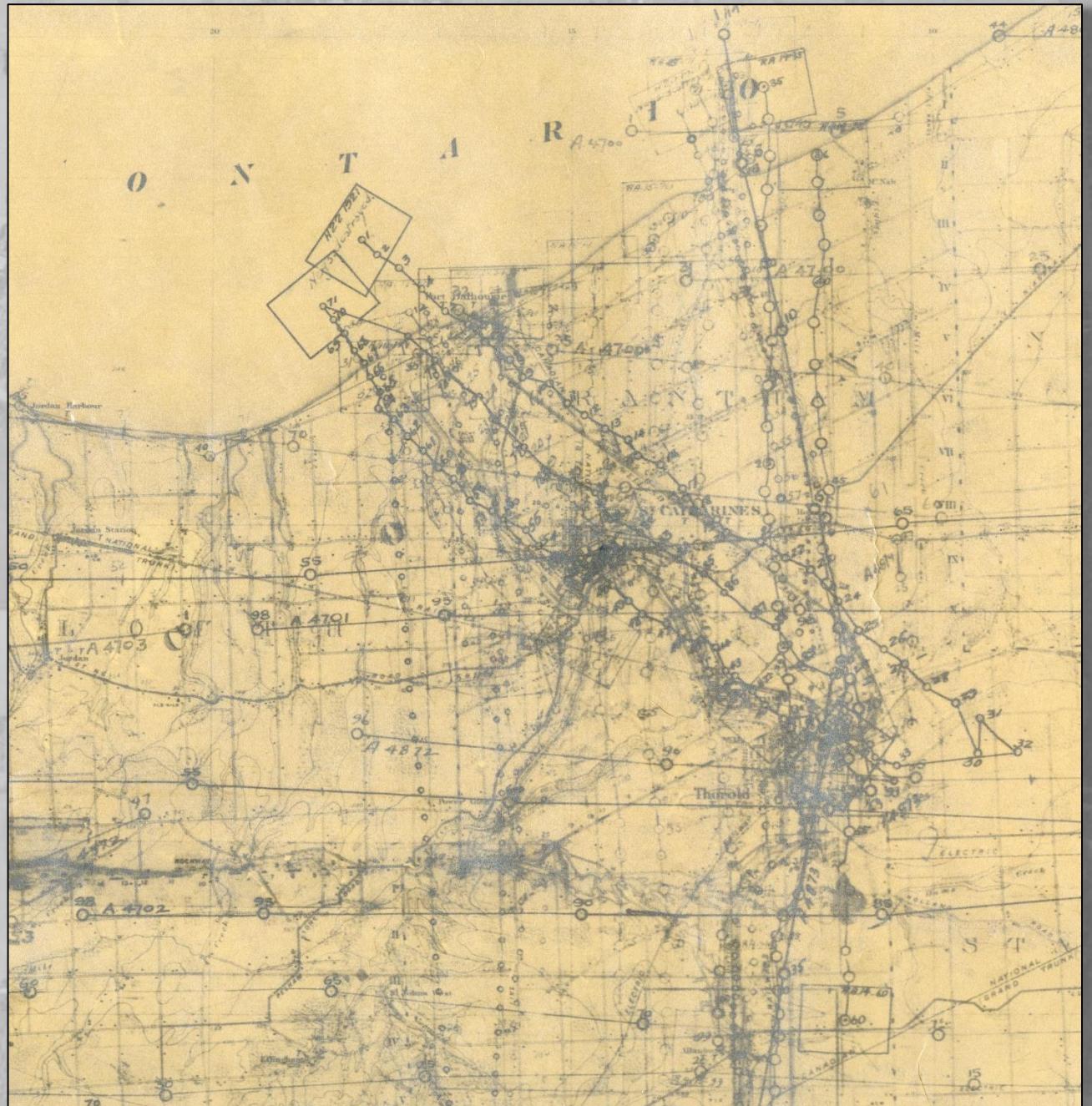
A Snapshot in Time

- Undisputed changes in landscape
- Historic Welland Canals
- 1921 – Flight over Niagara



Flight-line Indexes

- A plot of points
- The “old way” of airphoto retrieval
- Digitized and morphed



Digitization Takes Flight

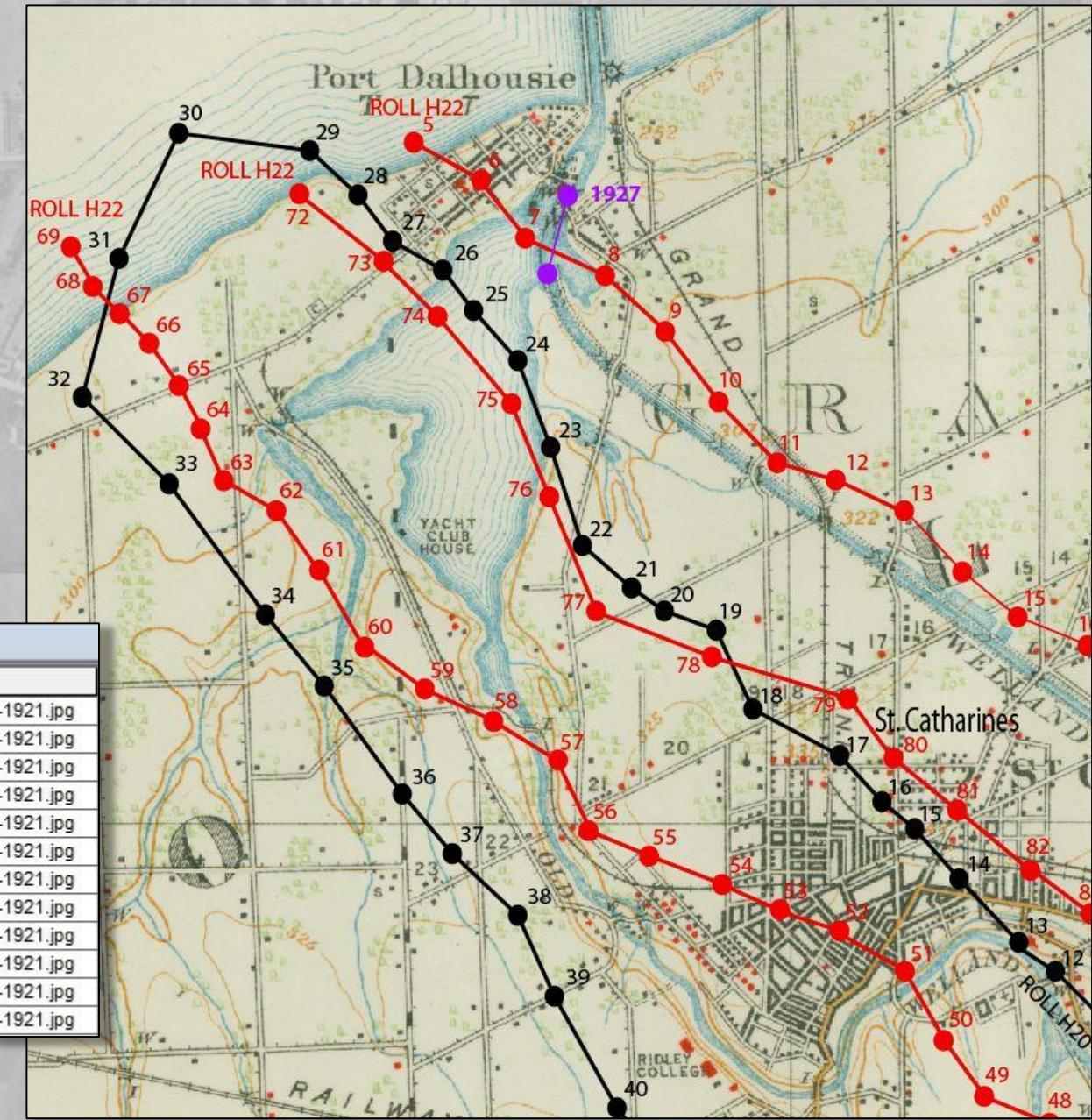
- Fragile artifacts
- Scanning specs
 - 600 dpi
 - TIFF, no compression



Digitization Takes Flight

- Flight-line indexes
- Georeferencing
- Digitizing
- Attributes

year	photo	roll	download URL
1921	12	H20	http://www.brocku.ca/maplibrary/airphoto/1921/H20_images/download/H20-12-1921.jpg
1921	13	H20	http://www.brocku.ca/maplibrary/airphoto/1921/H20_images/download/H20-13-1921.jpg
1921	14	H20	http://www.brocku.ca/maplibrary/airphoto/1921/H20_images/download/H20-14-1921.jpg
1921	15	H20	http://www.brocku.ca/maplibrary/airphoto/1921/H20_images/download/H20-15-1921.jpg
1921	16	H20	http://www.brocku.ca/maplibrary/airphoto/1921/H20_images/download/H20-16-1921.jpg
1921	17	H20	http://www.brocku.ca/maplibrary/airphoto/1921/H20_images/download/H20-17-1921.jpg
1921	18	H20	http://www.brocku.ca/maplibrary/airphoto/1921/H20_images/download/H20-18-1921.jpg
1921	19	H20	http://www.brocku.ca/maplibrary/airphoto/1921/H20_images/download/H20-19-1921.jpg
1921	20	H20	http://www.brocku.ca/maplibrary/airphoto/1921/H20_images/download/H20-20-1921.jpg
1921	21	H20	http://www.brocku.ca/maplibrary/airphoto/1921/H20_images/download/H20-21-1921.jpg
1921	22	H20	http://www.brocku.ca/maplibrary/airphoto/1921/H20_images/download/H20-22-1921.jpg
1921	23	H20	http://www.brocku.ca/maplibrary/airphoto/1921/H20_images/download/H20-23-1921.jpg



Grassroots Project

- Google Maps API
- ArcGIS Online
- Interactive index
- Photo access



Using Adobe Photoshop

- Creating mosaics



60%
overlap



20%
overlap



Photomerge result



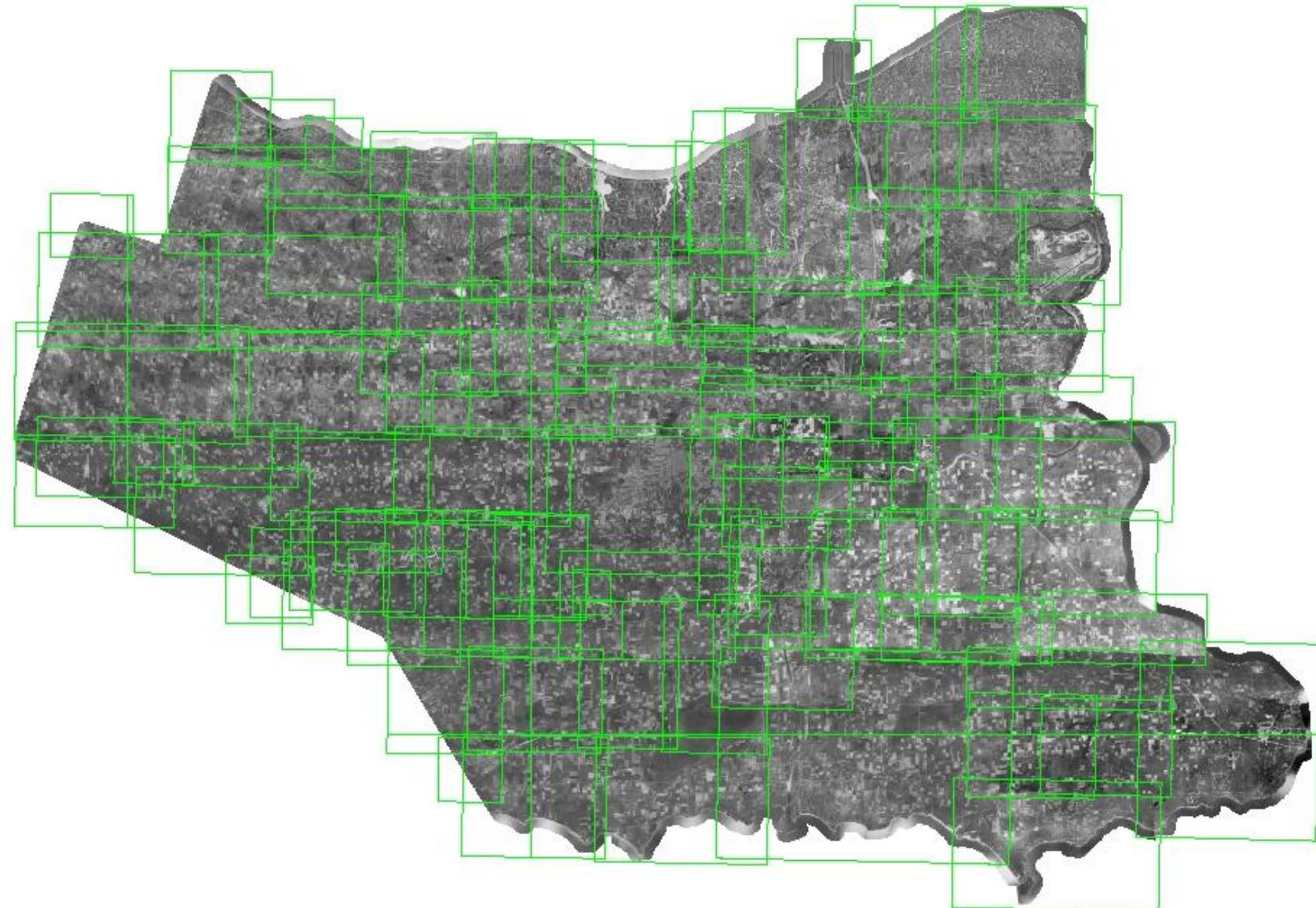
Georeferencing

- Early days – Geographic Imager in Photoshop
- Latter days – ArcGIS Desktop
- Resulting GeoTIFF
 - 10 or more points
 - Spline transformation
 - LZW compression



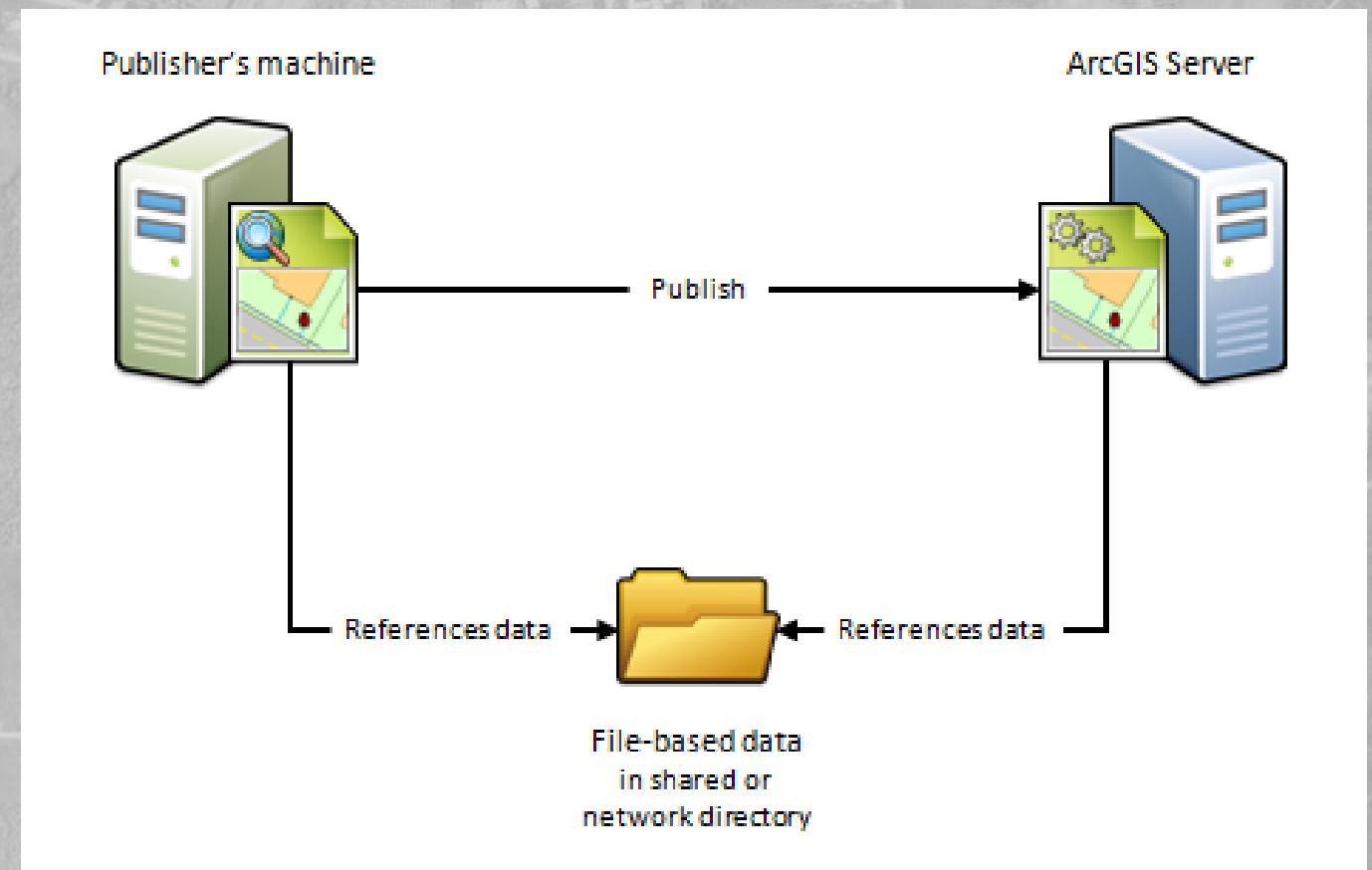
1954 Mosaic Dataset

- 150 mosaics
- Clip function applied
- Stretch function applied
- Ready for publishing



Publishing to ArcGIS Server

- ArcGIS Desktop and Server 10.6
- Publish as Map Service
- Create Cache
- Sign in & Share



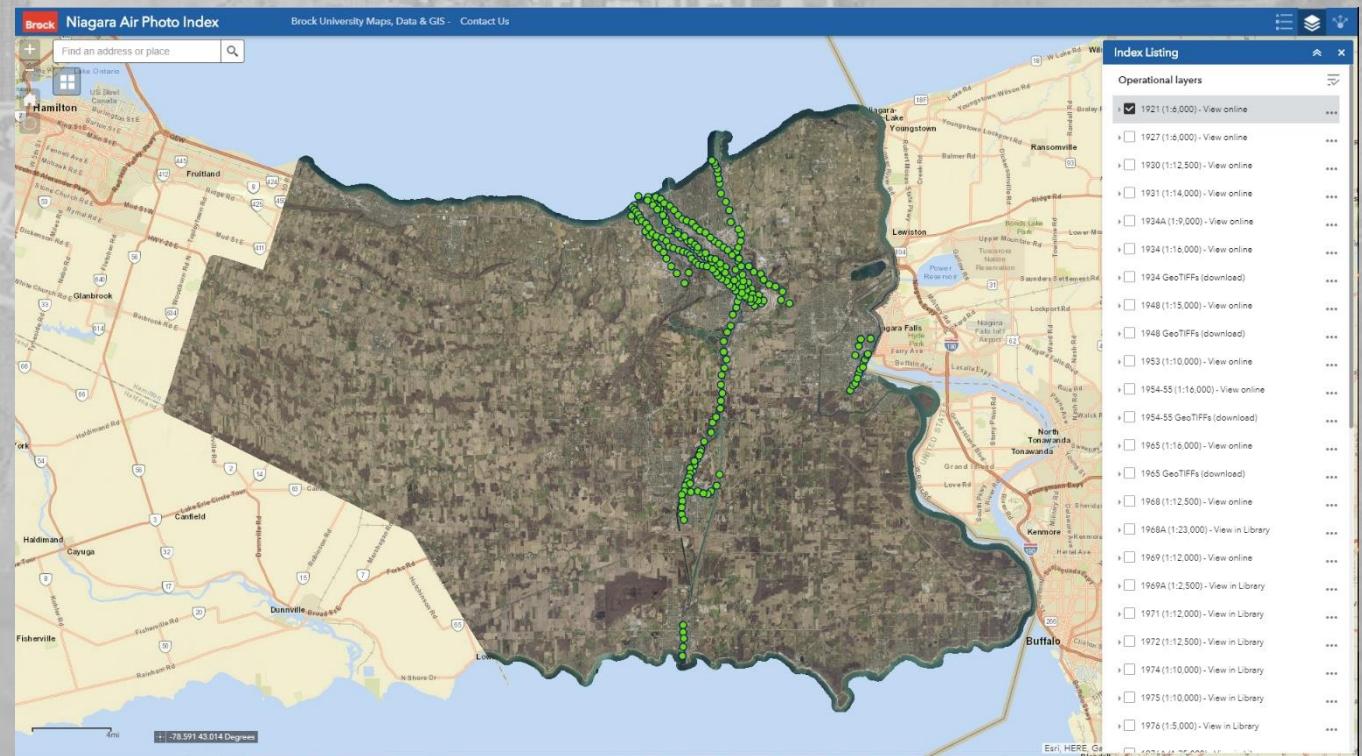
Flight-line index

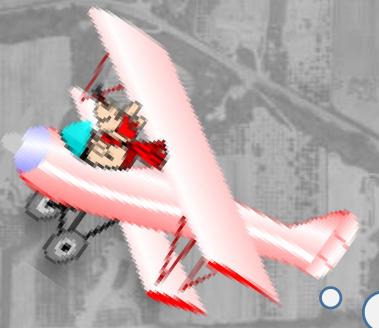
- Zipped shapefile > feature layer
- Upload to ArcGIS Online



ArcGIS Online

- Create a web map
 - Add index feature layers
 - Customize feature pop-ups
 - Add image services
 - Create web app
-
- <http://arcg.is/1WHfTC> (LIVE DEMO!)





Thank you!

Other Projects

- [Niagara topographic maps](#)
 - Mosaic dataset, clip function = seamless coverage of the peninsula
- [Fire Insurance Plans](#)
 - Mosaic dataset, overlaid with vintage air photo mosaic
- [Niagara Historical Map Gallery](#)
 - Hundreds of digitized historical maps accessed using the Public Gallery template

More information

- Mosaic Datasets: <http://desktop.arcgis.com/en/arcmap/latest/manage-data/raster-and-images/what-is-a-mosaic-dataset.htm>
- Publishing a Map Service:
<http://desktop.arcgis.com/en/arcmap/latest/map/publish-map-services/publishing-a-map-service.htm>
- History of aerial photography
http://professionalaerialphotographers.com/content.aspx?page_id=22&club_id=808138&module_id=158950
- Map Service vs. Image Service
<https://blogs.esri.com/esri/arcgis/2010/05/04/imagery-in-web-applications-should-i-use-a-cached-map-service-or-an-image-service/>