



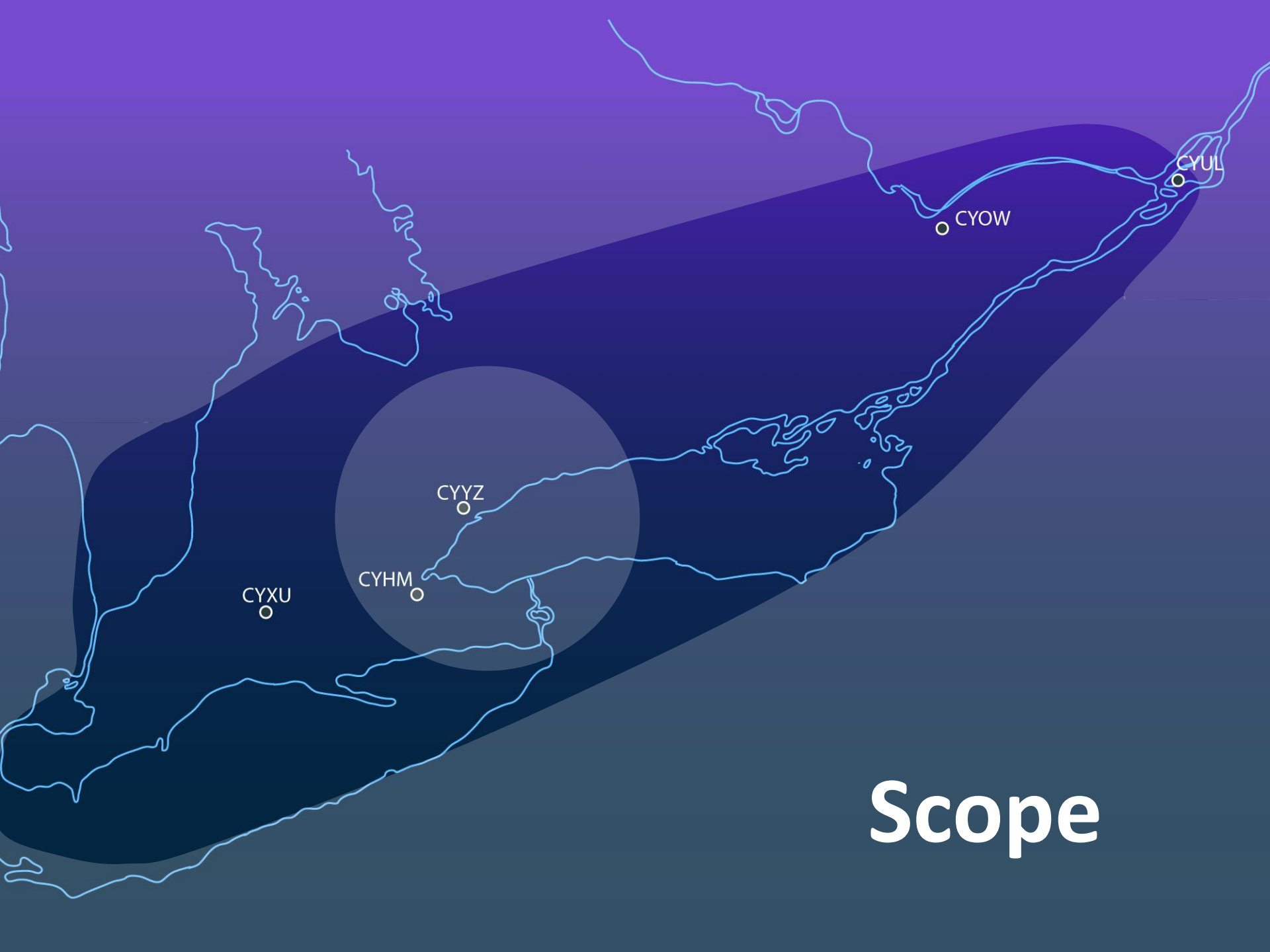
A map of Southern Ontario, Canada, with a blue background and white outlines of the province and its major water bodies. The cities of Montreal, Toronto, and Windsor are labeled in large, bold, white text. The IATA codes CYOW, CYUL, CYXU, and CYHM are also shown in smaller white text. A diagonal title 'Airspace & Services Review' is overlaid on the map.

# Montreal

# Toronto

# Windsor

Airspace & Services Review



**Scope**

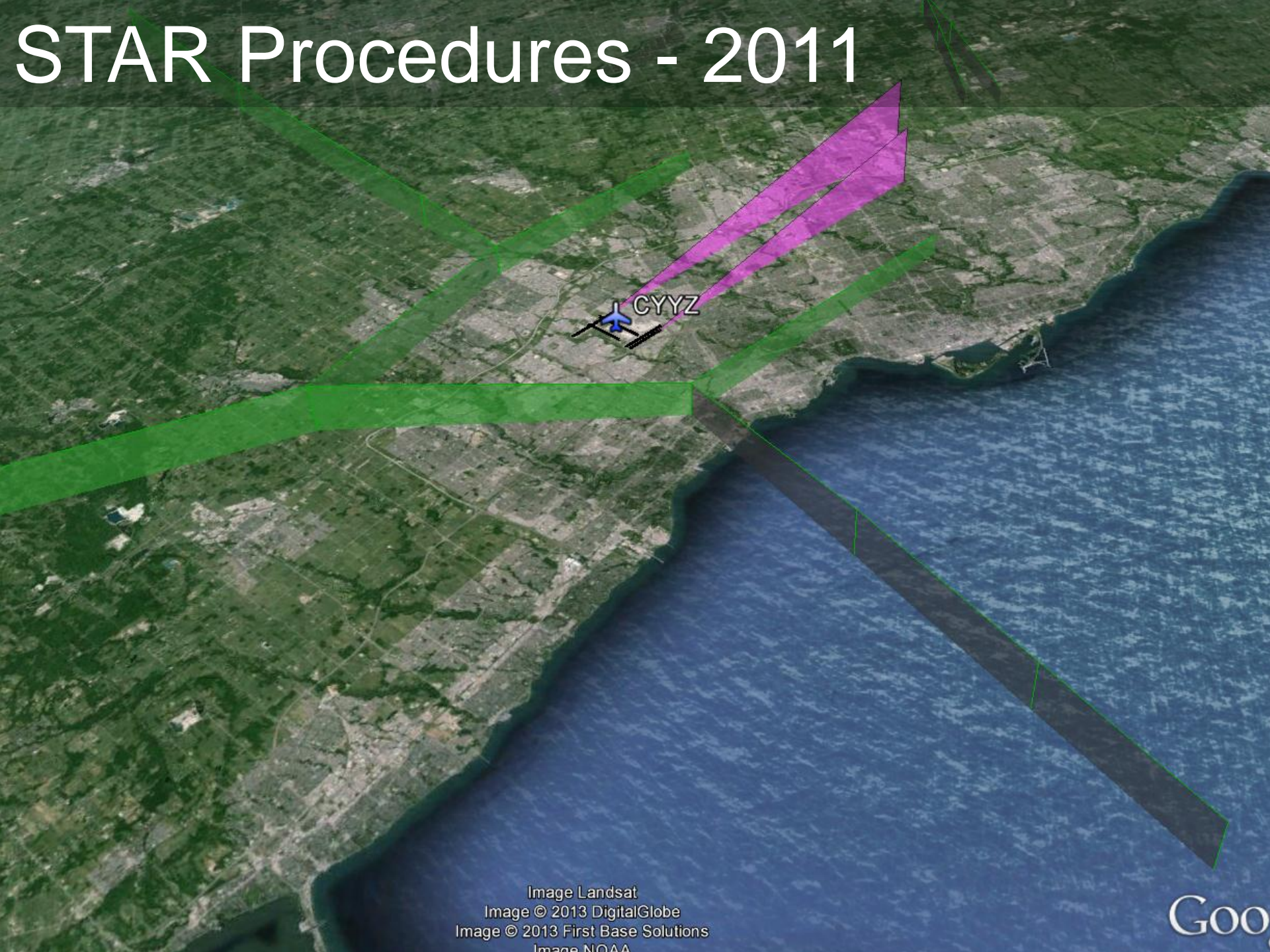
# Project Objectives

A stylized map of Canada is visible in the background, rendered in light blue lines. Several airport codes are marked with small yellow circles: CYUL in the northeast, CYOW in the east, CYVZ in the central region, CYHM in the west, and CYD in the southwest.

- Align the airspace design with the aircrafts capability
- Create a predictable environment that supports On Time Performance
- Reduce low altitude flat segments
- Make an already safe system even safer

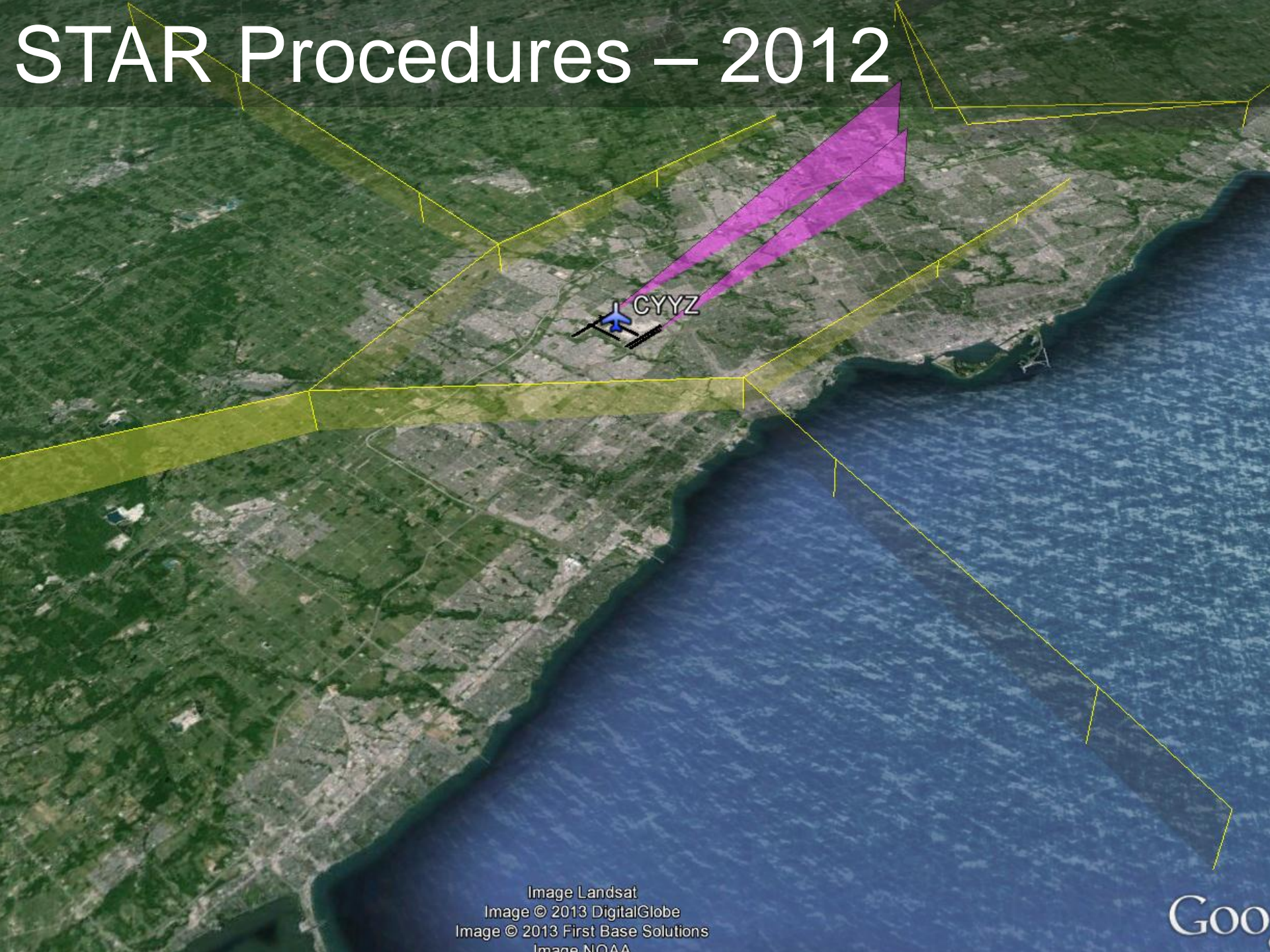


# STAR Procedures - 2011



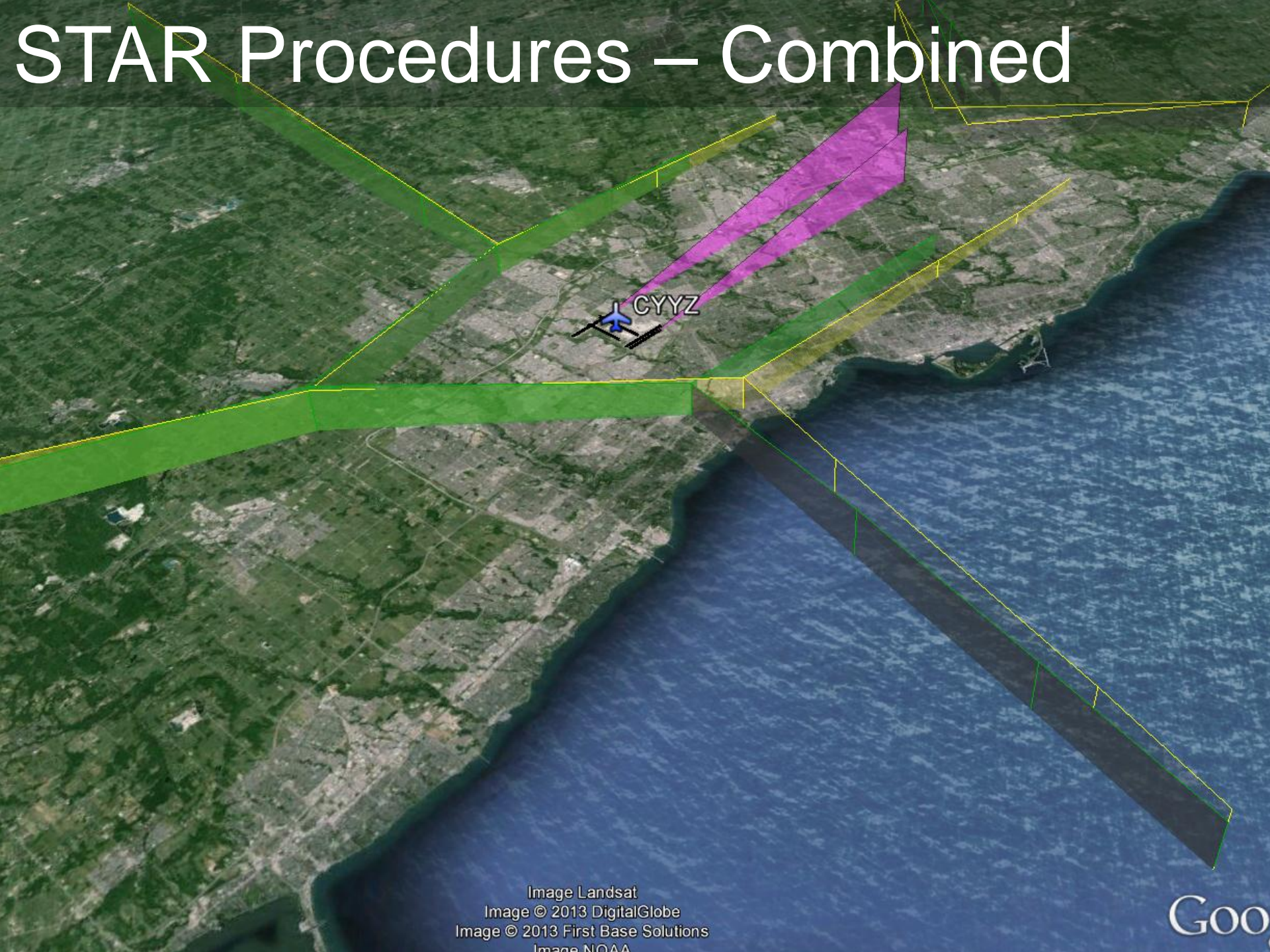


# STAR Procedures – 2012



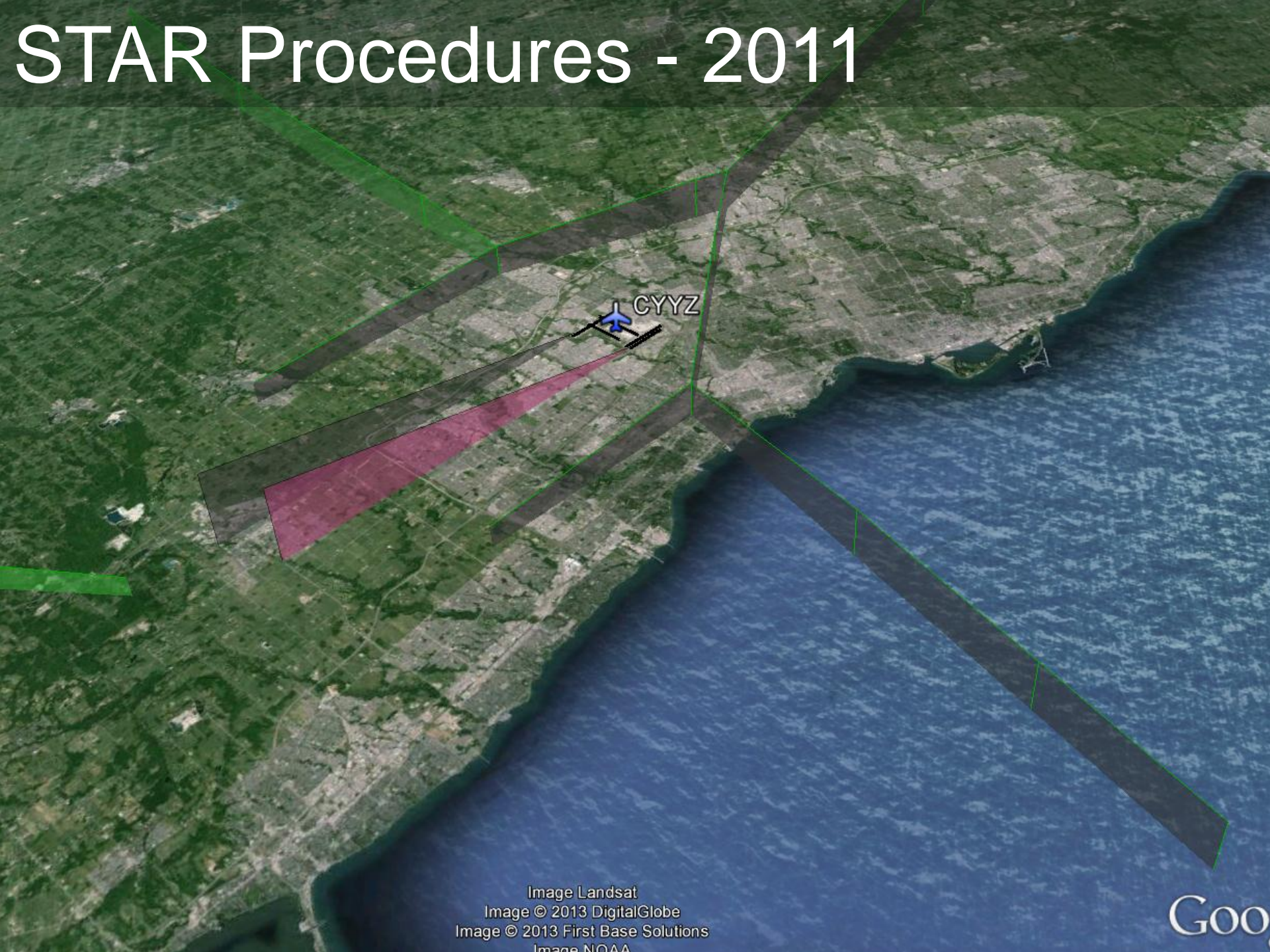


# STAR Procedures – Combined





# STAR Procedures - 2011





# STAR Procedures – 2012

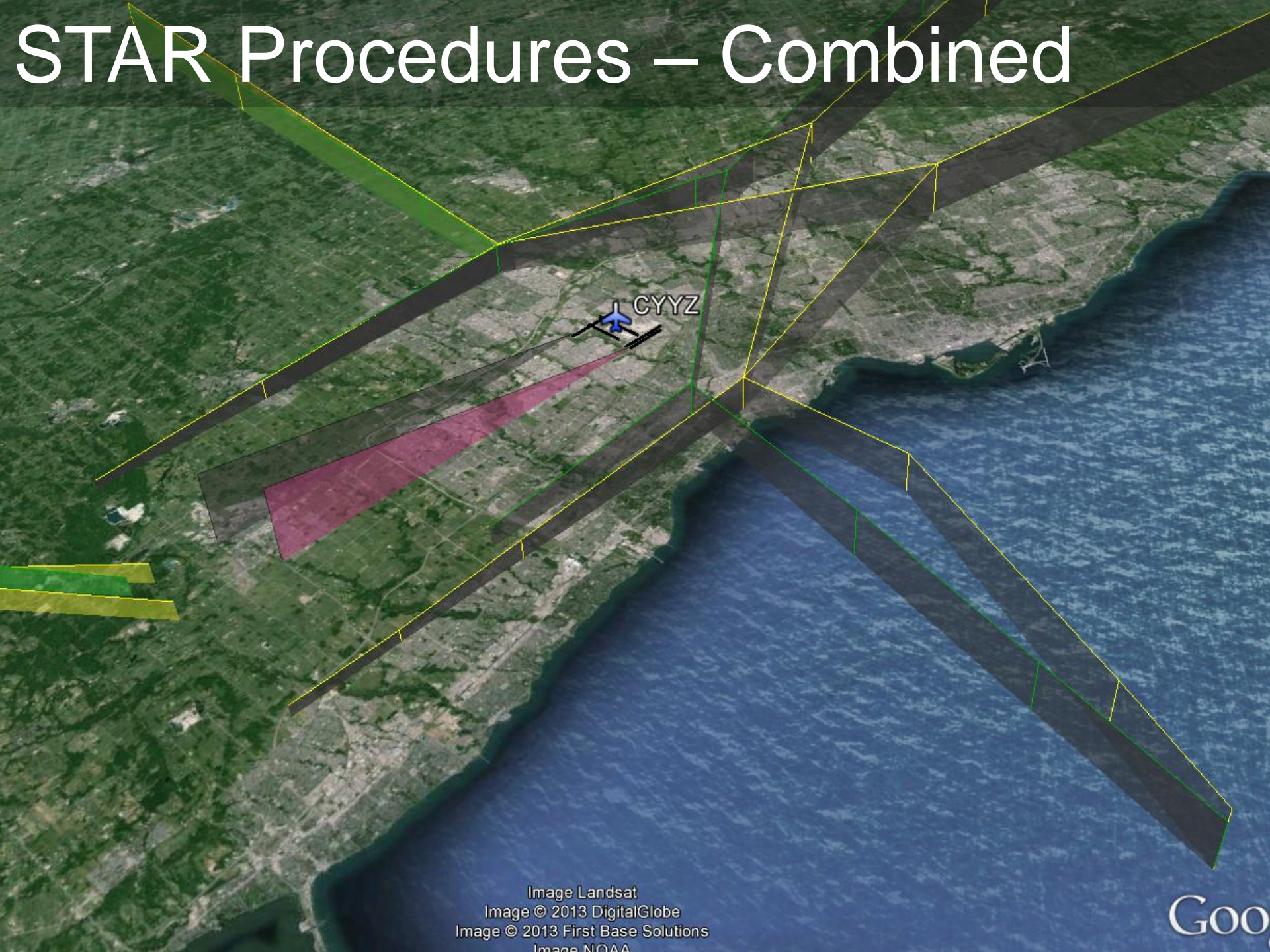


Image Landsat  
Image © 2013 DigitalGlobe  
Image © 2013 First Base Solutions  
Image NOAA

Google



# STAR Procedures – Combined







# Design Criteria

- Aeronautical procedures must be constructed in accordance with Approved Criteria
  - Building Code
- ICAO sets out global standards for all types of procedure designs, including;
  - Approaches
  - SID/STAR
  - Air Routes
- Every 4 years, all procedures must be reviewed and updated in accordance with the latest 'in force' criteria
  - Always meeting current building code



# Flight Tracks - 2011



Image Landsat  
Image © 2013 DigitalGlobe  
Image © 2013 First Base Solutions  
Image NOAA

GOO



# Flight Tracks - 2013

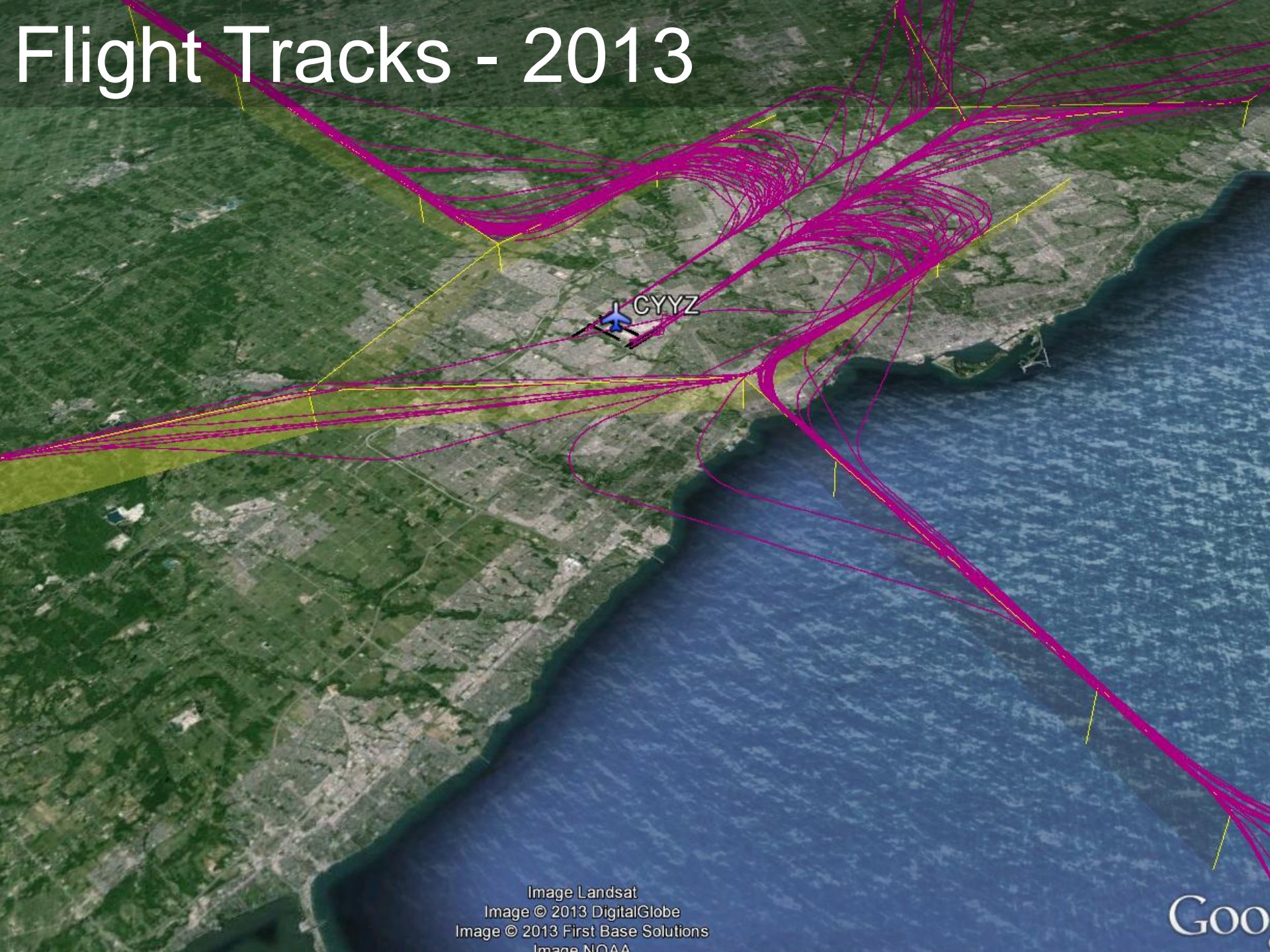


Image Landsat  
Image © 2013 DigitalGlobe  
Image © 2013 First Base Solutions  
Image NOAA

Google



# Flight Tracks – Combined

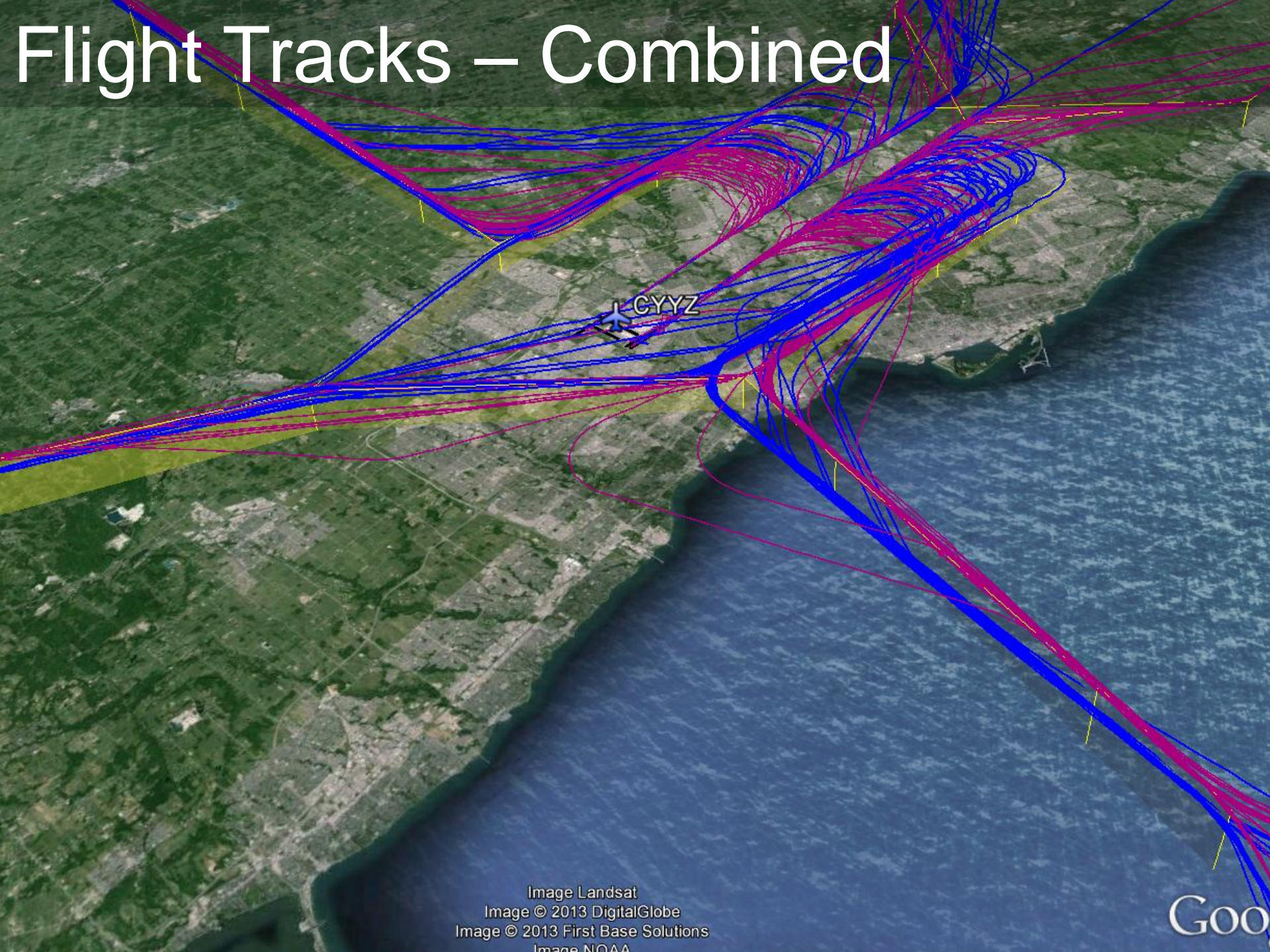


Image Landsat  
Image © 2013 DigitalGlobe  
Image © 2013 First Base Solutions  
Image NOAA

GOO



# Flight Tracks - 2011

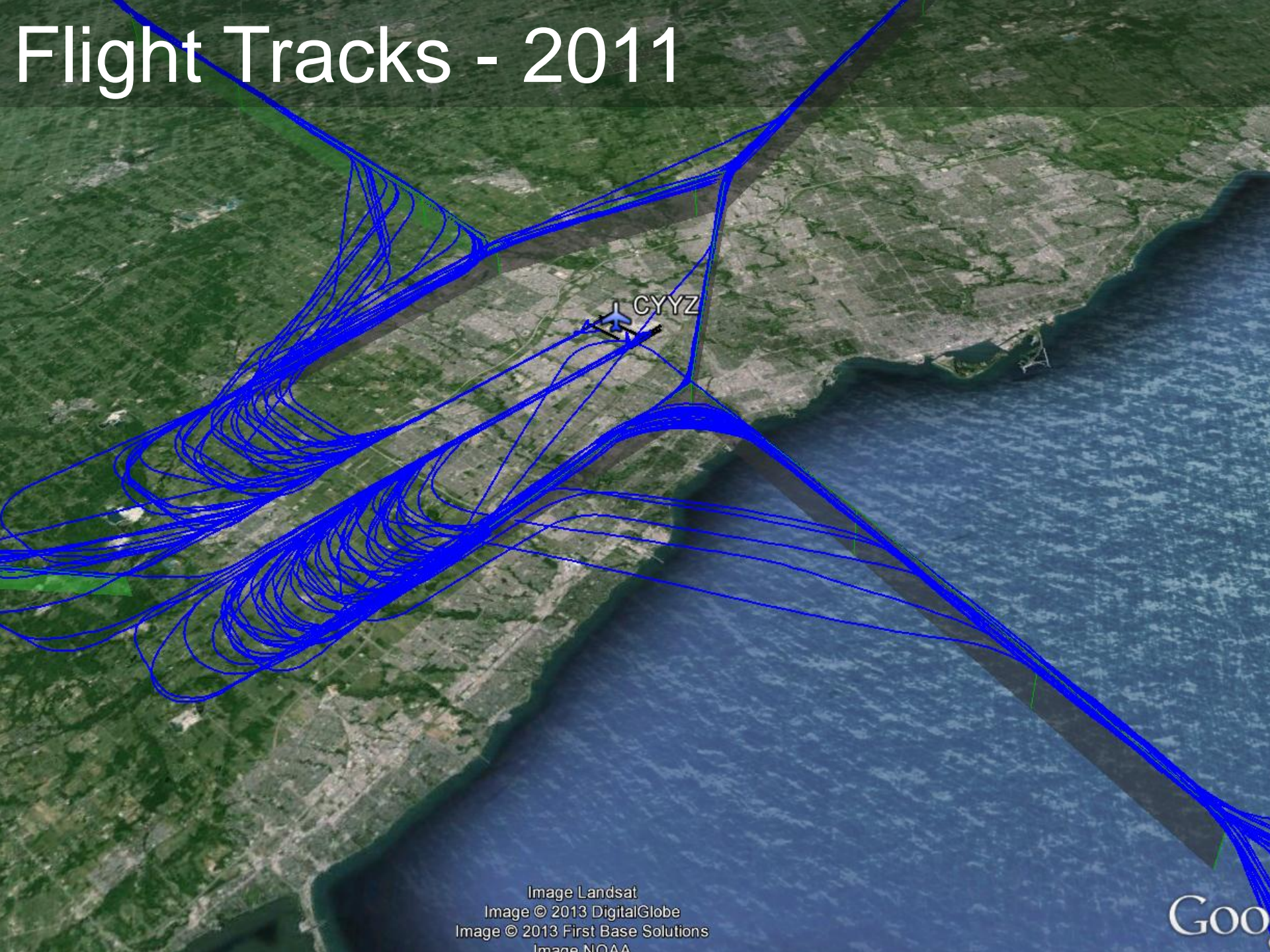


Image Landsat  
Image © 2013 DigitalGlobe  
Image © 2013 First Base Solutions  
Image NOAA

GOO



# Flight Tracks - 2013

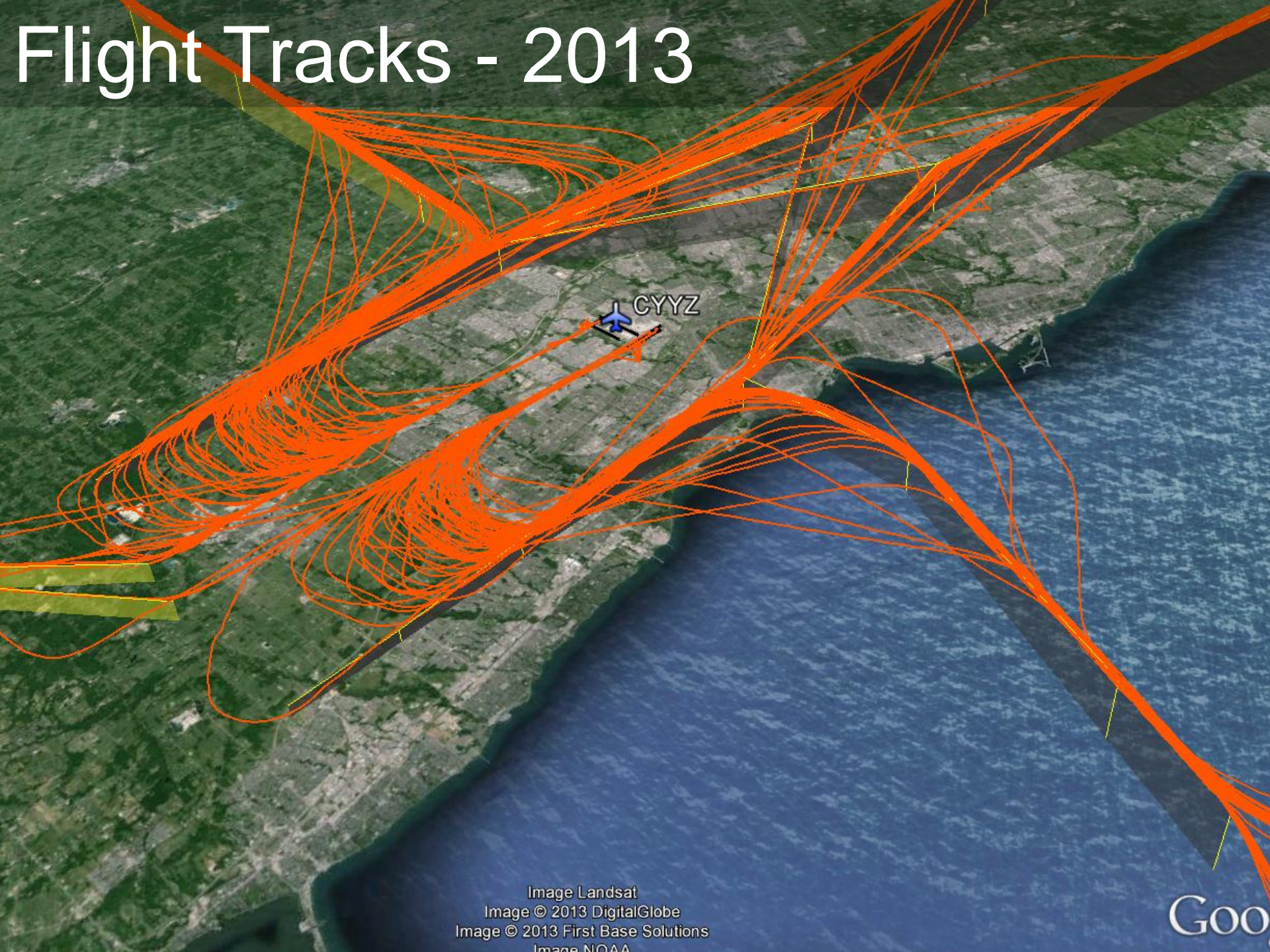


Image Landsat  
Image © 2013 DigitalGlobe  
Image © 2013 First Base Solutions  
Image NOAA

Go



# Flight Tracks – Combined

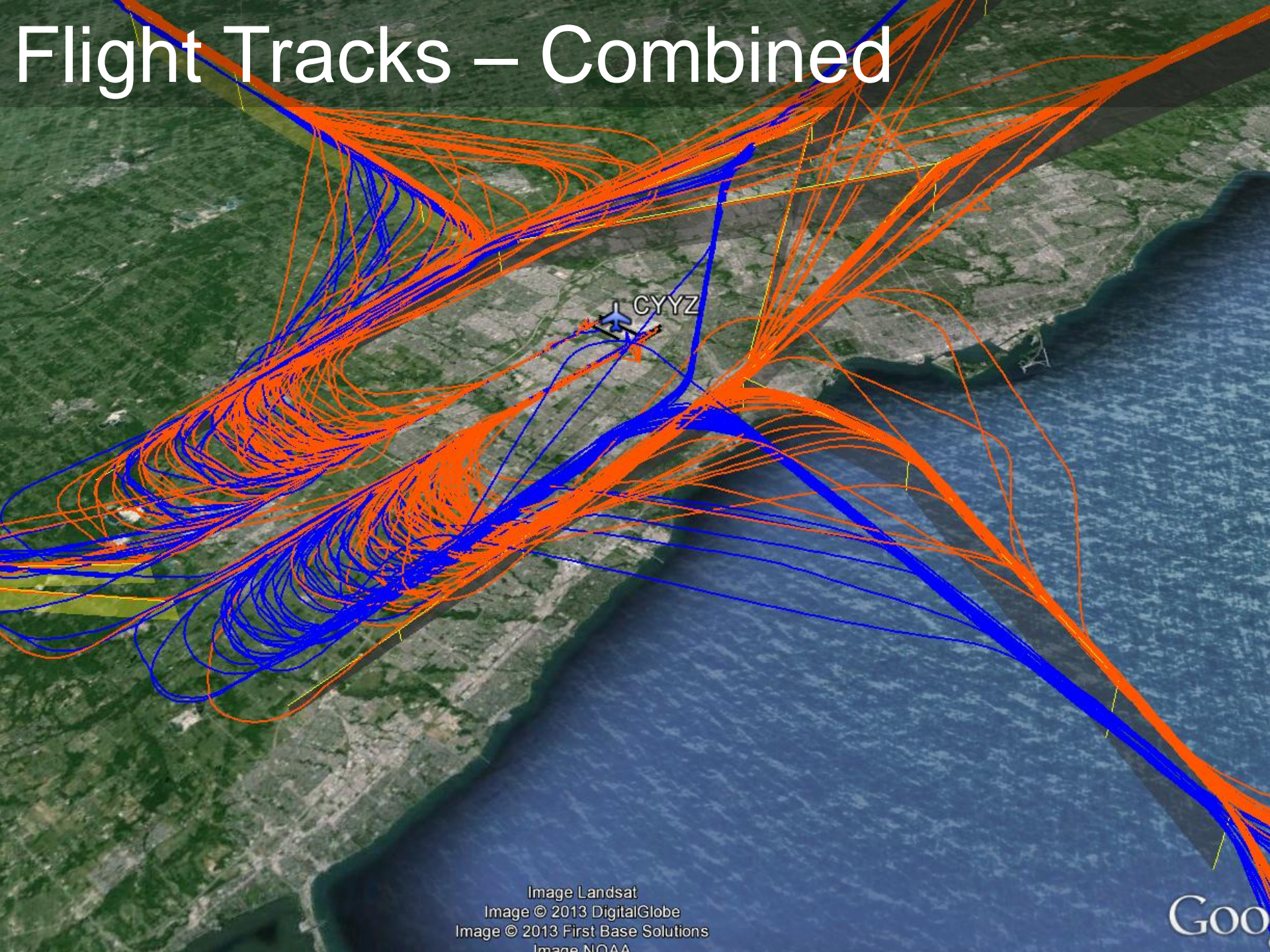


Image Landsat  
Image © 2013 DigitalGlobe  
Image © 2013 First Base Solutions  
Image NOAA

GOO



# Outcomes

- There are so many variables that affect flights  
Day to Day ♦ Month to Month ♦ Year to Year
- Several airlines have advised NAV CANADA that they have measured a consistent reduction in flight time
- One airline with the capability has released an analysis comparing flights from the 12 months prior to the changes, with the 12 months after.

Emissions reduced by > 12,800 tons GHG







S E R V I N G   A   W O R L D   I N   M O T I O N

NAV CANADA