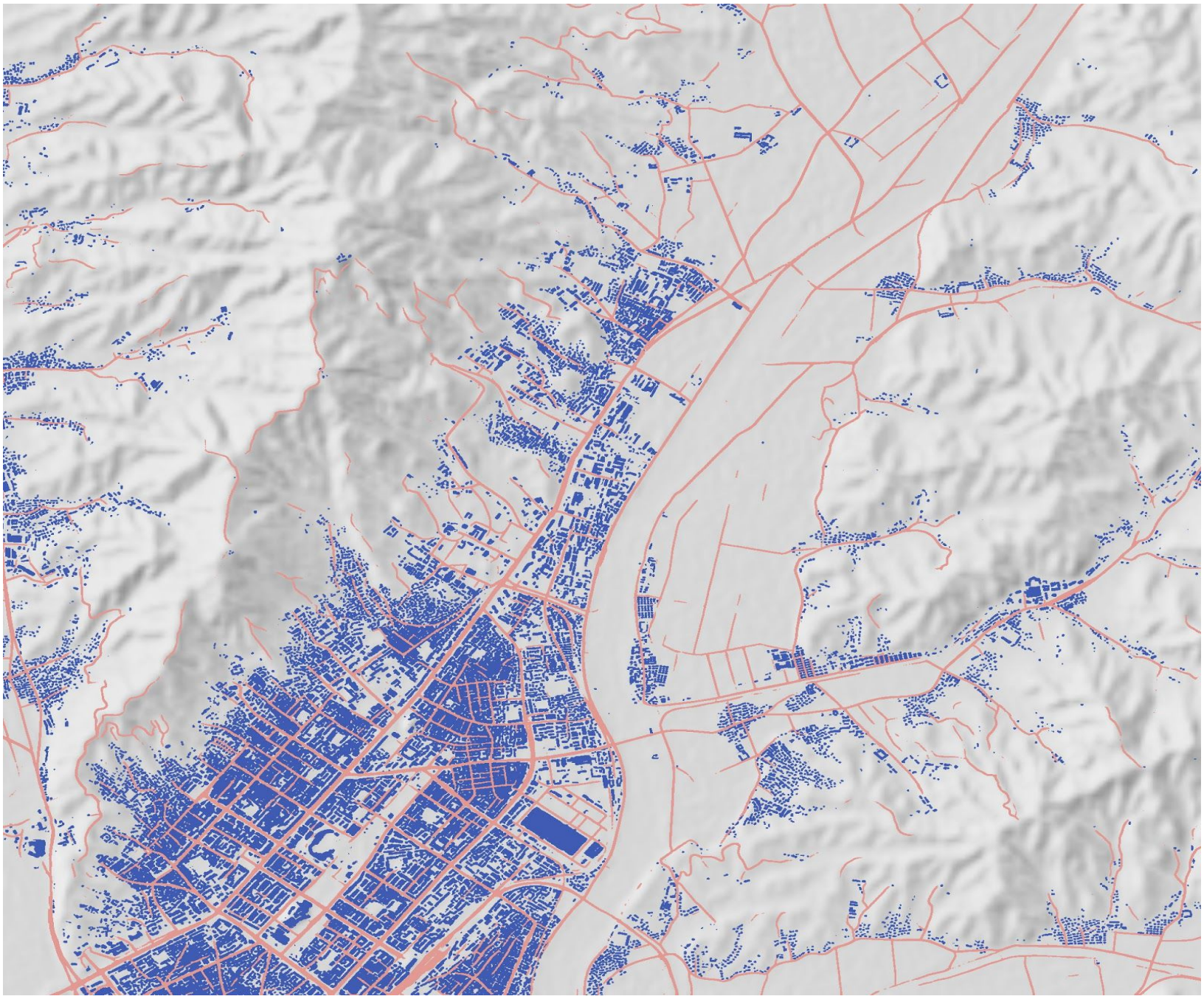

PLANET ANALYTICS
PERFORMANCE METRICS

OVERVIEW

Planet Analytics leverages computer vision to transform our imagery into Analytic Feeds that detect and classify objects, identify geographic features, and understand change over time across the globe. This user guide is intended to help users access the Analytic Feeds and leverage them to build applications and solutions.

ROAD DETECTION

Planet's Road Detection leverages a semantic segmentation computer vision model applied to Planet's Global Basemap. Semantic segmentation analyzes an image and designates a "class" for each pixel in the image. In this case, the model classifies if a pixel belongs to either the "road" or "not road" class.

The resulting classifications are merged into a single raster with the same resolution as the imagery. This raster is packaged as a GeoTIFF file and is available for download through the Analytics API or to be streamed into a GIS tool like QGIS through Planet's Web Map Tile Service.

Feature extracted	Roads Defined as any path a truck could drive on
Model Type	Semantic segmentation
Input	Planet Global Basemap
Output	GeoTIFF
Refresh	Monthly
Delivery	Analytics API WMTS

PERFORMANCE

Because Planet's models are generalized to work globally, the standard performance metrics used to analyze computer vision models can be misleading. A global precision, recall, and F-1 score can be significantly different from how a model performs in a specific location. The table below describes how Planet's Road Detection performs globally based on land cover.

Land Cover	Precision	Recall	F1
Barren			
Urban			
Shrublands			
Croplands			
Forests			
Grasslands			

BUILDING DETECTION

Planet's Building Detection leverages a semantic segmentation computer vision model applied to Planet's Global Basemap. Semantic segmentation analyzes an image and designates a "class" for each pixel in the image. In this case, the model classifies if a pixel belongs to either the "building" or "not building" class.

The resulting classifications are merged into a single raster with the same resolution as the input image. This raster is packaged as a GeoTIFF file and is available for download through the Analytics API or to be streamed into a GIS tool like QGIS through Planet's Web Map Tile Service.

Feature extracted	Buildings Defined as any structure that a person could stand beneath
Model Type	Semantic segmentation
Input	Planet Global Basemap
Output	GeoTIFF
Refresh	Monthly
Delivery	Analytics API WMTS

PERFORMANCE

Because Planet's models are generalized to work globally, the standard performance metrics used to analyze computer vision models can be misleading. A global precision, recall, and F-1 score can be significantly different from how a model performs in a specific location. The table below describes how Planet's Building Detection performs globally based on land cover.

Land Cover	Precision	Recall	F1
Barren			
Urban			
Shrublands			
Croplands			
Forests			
Grasslands			

VESSEL DETECTION

Planet's Vessel Detection leverages an object detection computer vision model applied to Planet's PlanetScope imagery. Object detection is a computer vision approach that analyzes an image and generates a "bounding box" around the relevant object.

The bounding boxes are recorded as vector data, which represent geographic coordinates for the object's location. This vector data is packaged in a FeatureCollection GeoJSON file format and is available for querying through the Analytics API.

Feature extracted	Maritime Vessels Defined as man-made objects designed to move through the water
Model Type	Object Detection
Input	3-band PlanetScope scenes
Output	GeoJSON Feature Collection
Refresh	Daily
Delivery	Analytics API
Scale	Global ports and coastlines less than 15 km offshore

PERFORMANCE

Because Planet's models are generalized to work globally, the standard performance metrics used to analyze computer vision models can be misleading. A global precision, recall, and F-1 score could be significantly different from how a model performs in a specific location. The table below describes how Planet's Vessel Detection performs based on vessel size.

Size (m)	Precision	Recall	F1
0-45			
46-90			
91-150			
150+			
All			

GET IN TOUCH

We're Here to Help
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