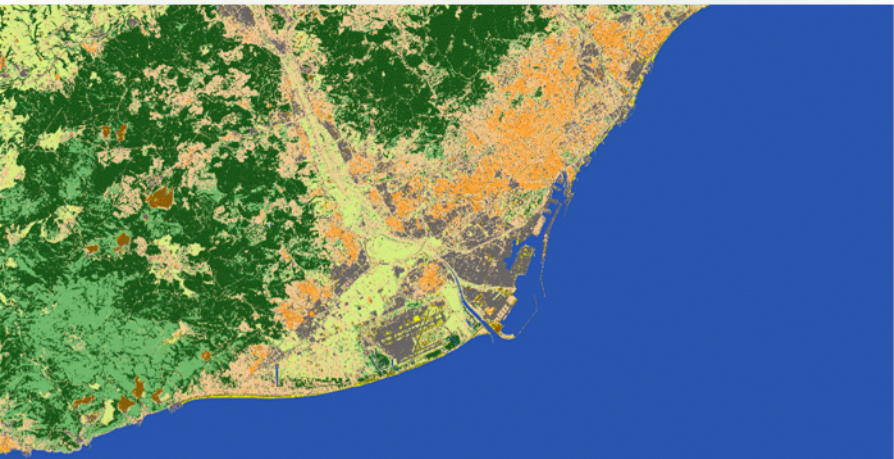# Waterline Quality Control
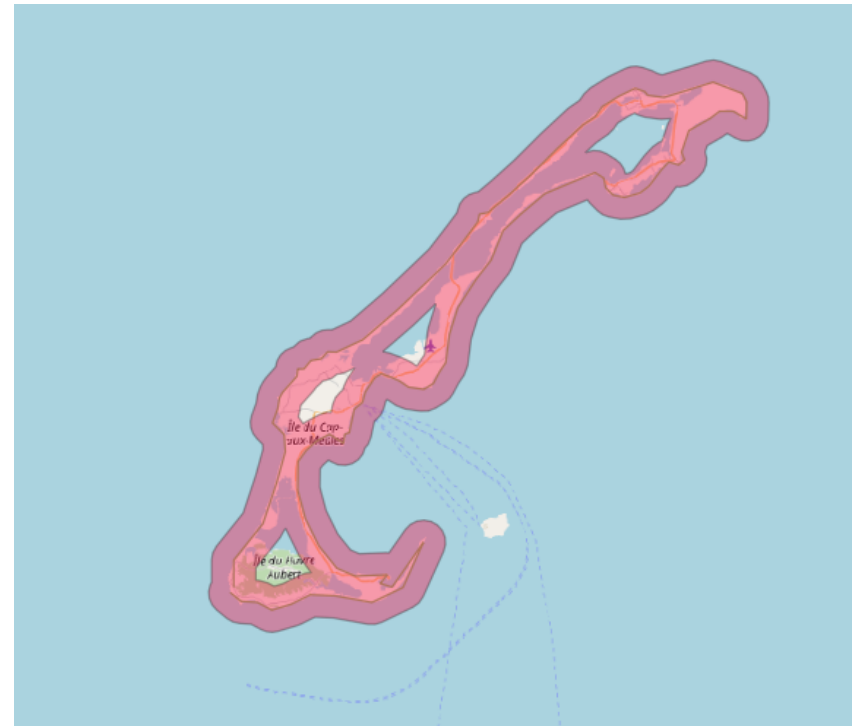
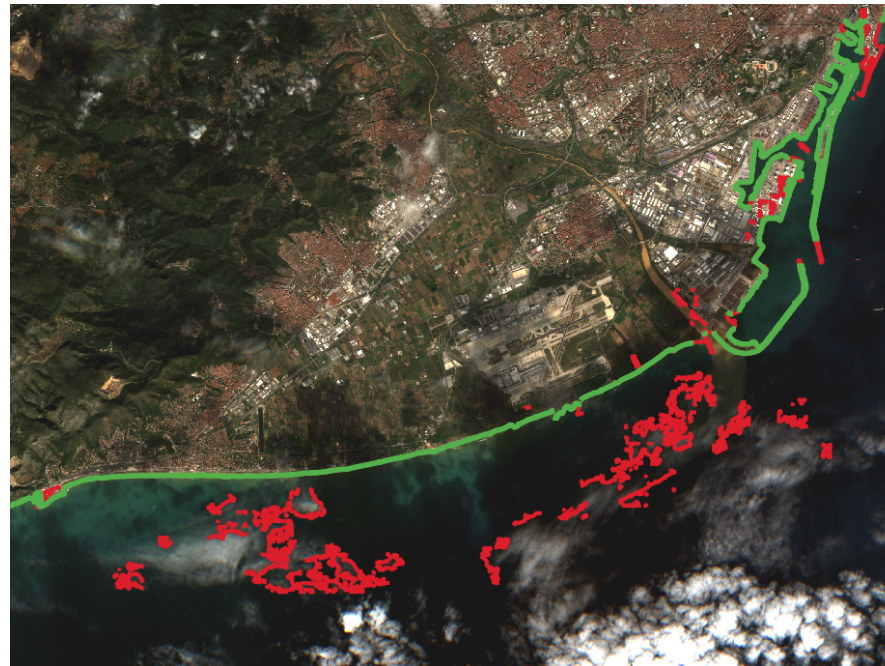# Internal Quality Control

Waterline: Internal Quality Control.

- ## Buffer region flagging.
  - Remove any waterline outside a buffer zone around coastline.

- ## Short line flagging.
  - 75 x 75 pixel kernel size.
  - Flag any line shorter than 75 pixel length.
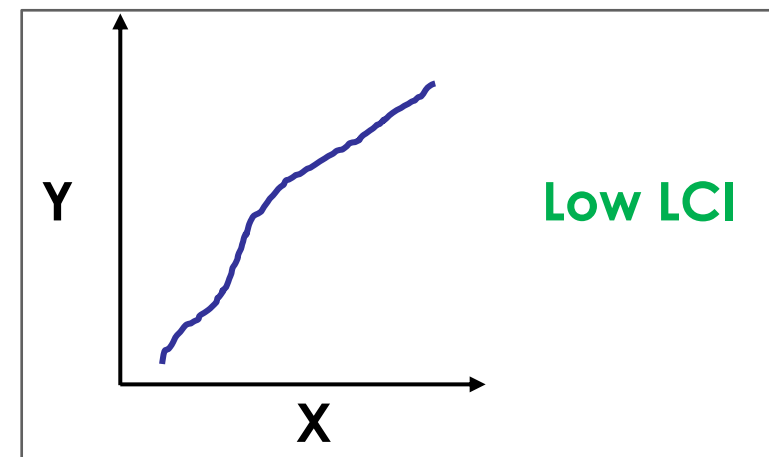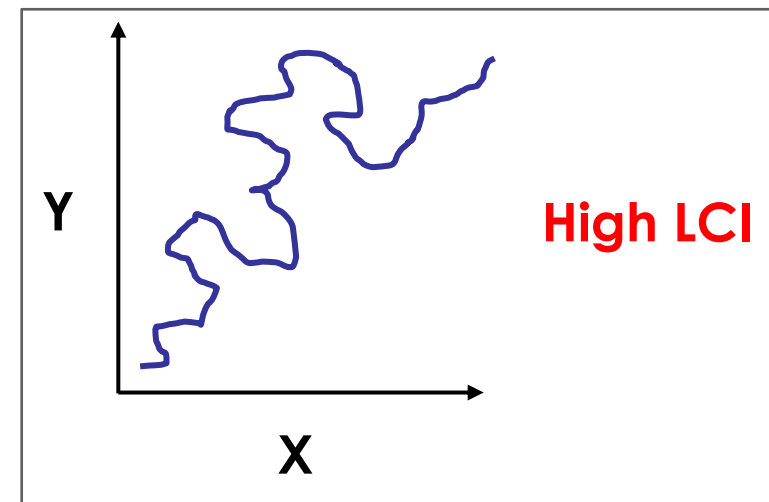
Waterline: Internal Quality Control.

- ## Pathfinding methodology.

    - Exploits small breaks in waterline.

    - Finds the shortest path from start to end points of the waterline.
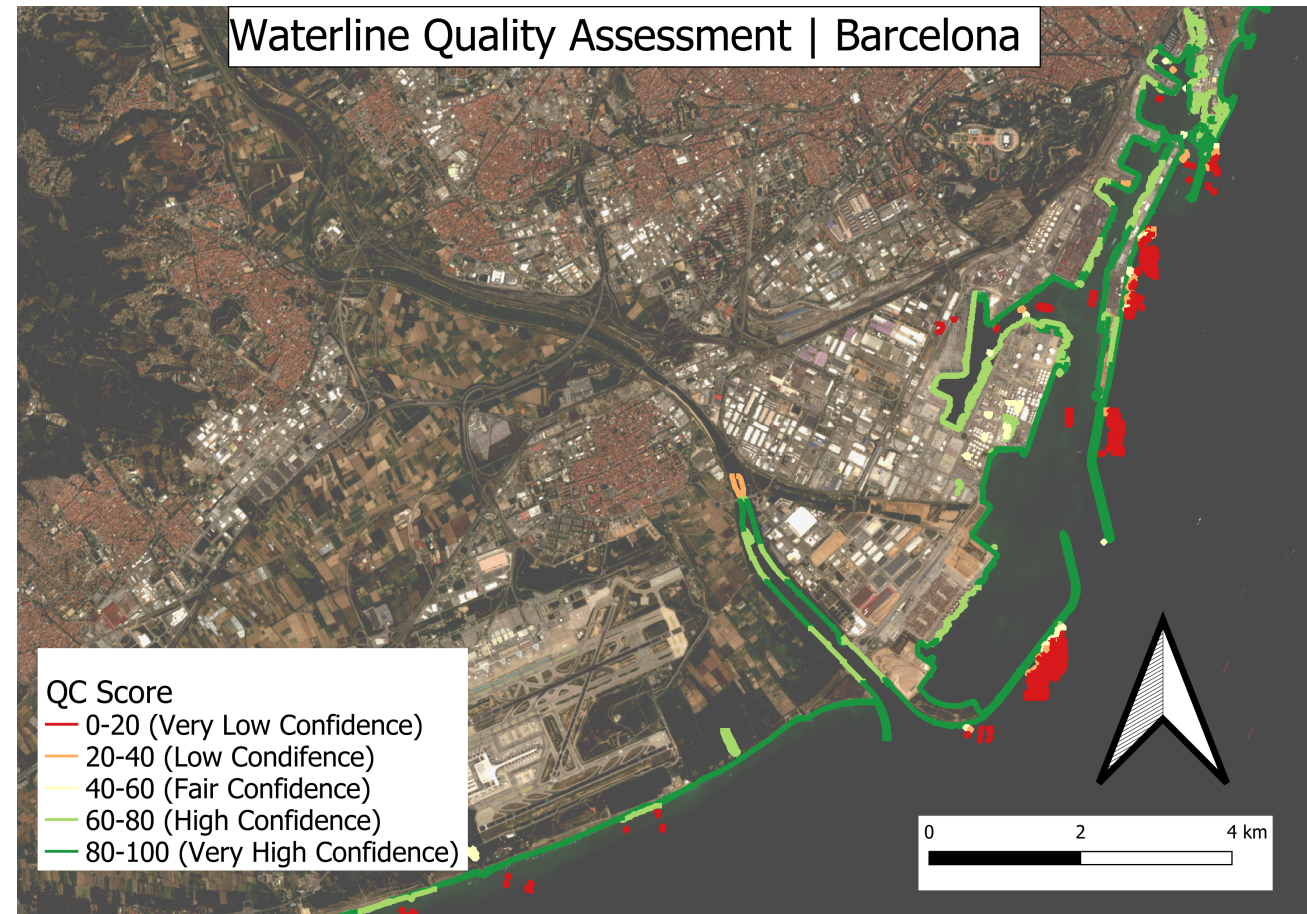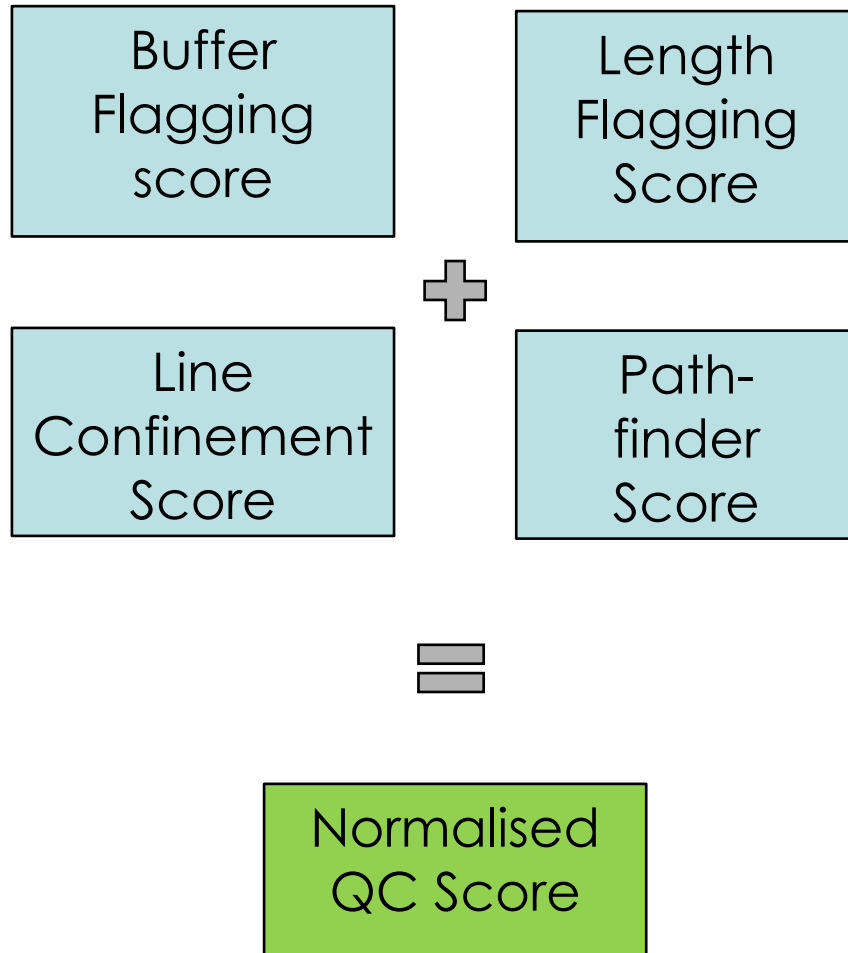
    - Flags any line segment not on the path.

Waterline: Internal Quality Control.

- ## Line Geometry flagging.

  - Line Confinement Index (LCI):

    $$\frac{Line\ Length}{|\Delta X|+|\Delta Y|}$$

  - Measure of 'Squiggliness'

Waterline: Internal Quality Control.

Buffer Flagging score

Length Flagging Score

Line Confinement Score

Path-finder Score

+

=

Normalised QC Score

Waterline Quality Assessment | Barcelona

QC Score
— 0-20 (Very Low Confidence)
— 20-40 (Low Condifence)
— 40-60 (Fair Confidence)
— 60-80 (High Confidence)
— 80-100 (Very High Confidence)
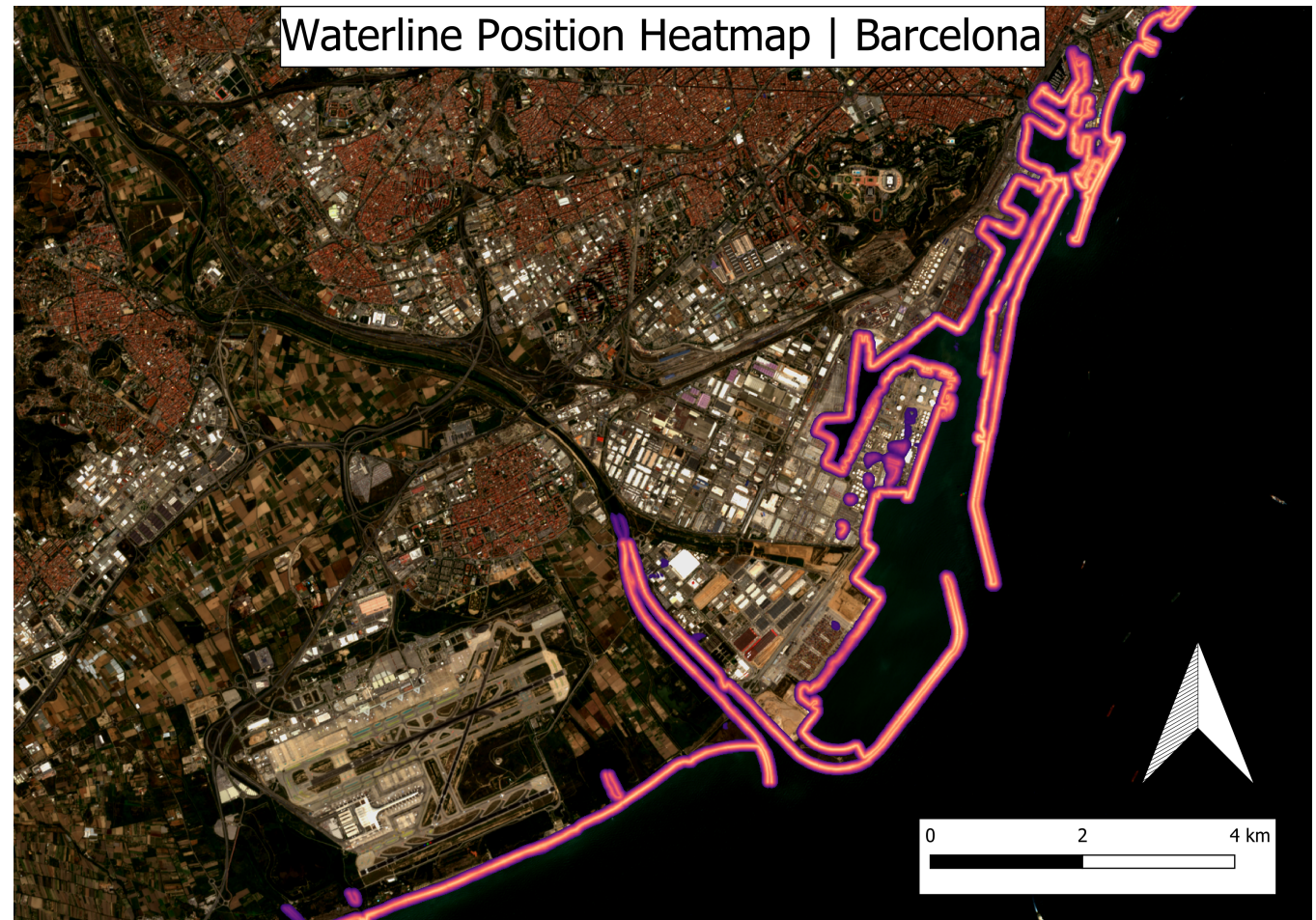
0   2   4 km
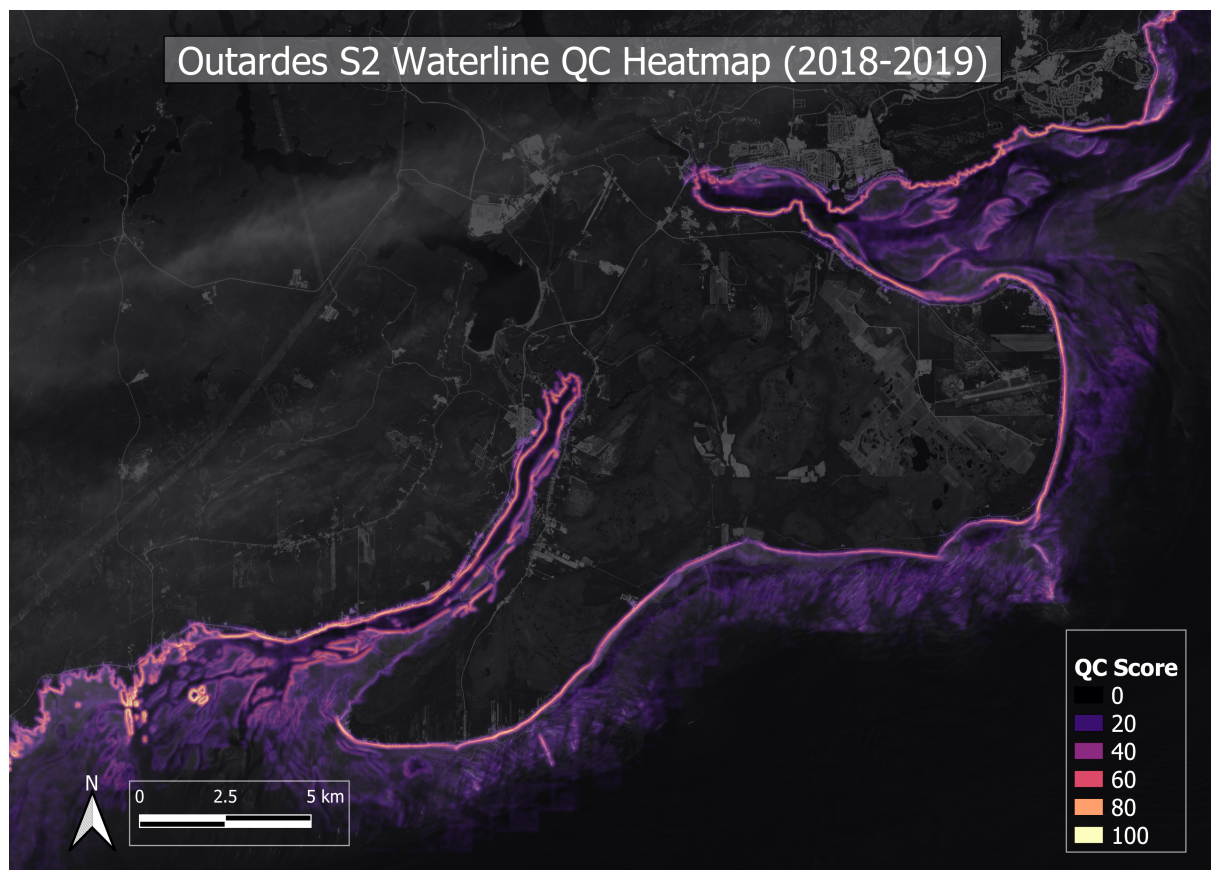
External Quality Control

Waterline: External Quality Control

- ## Waterline Heatmap

  - Also applicable for Shorelines.

  - Based on overlapping waterline positions.

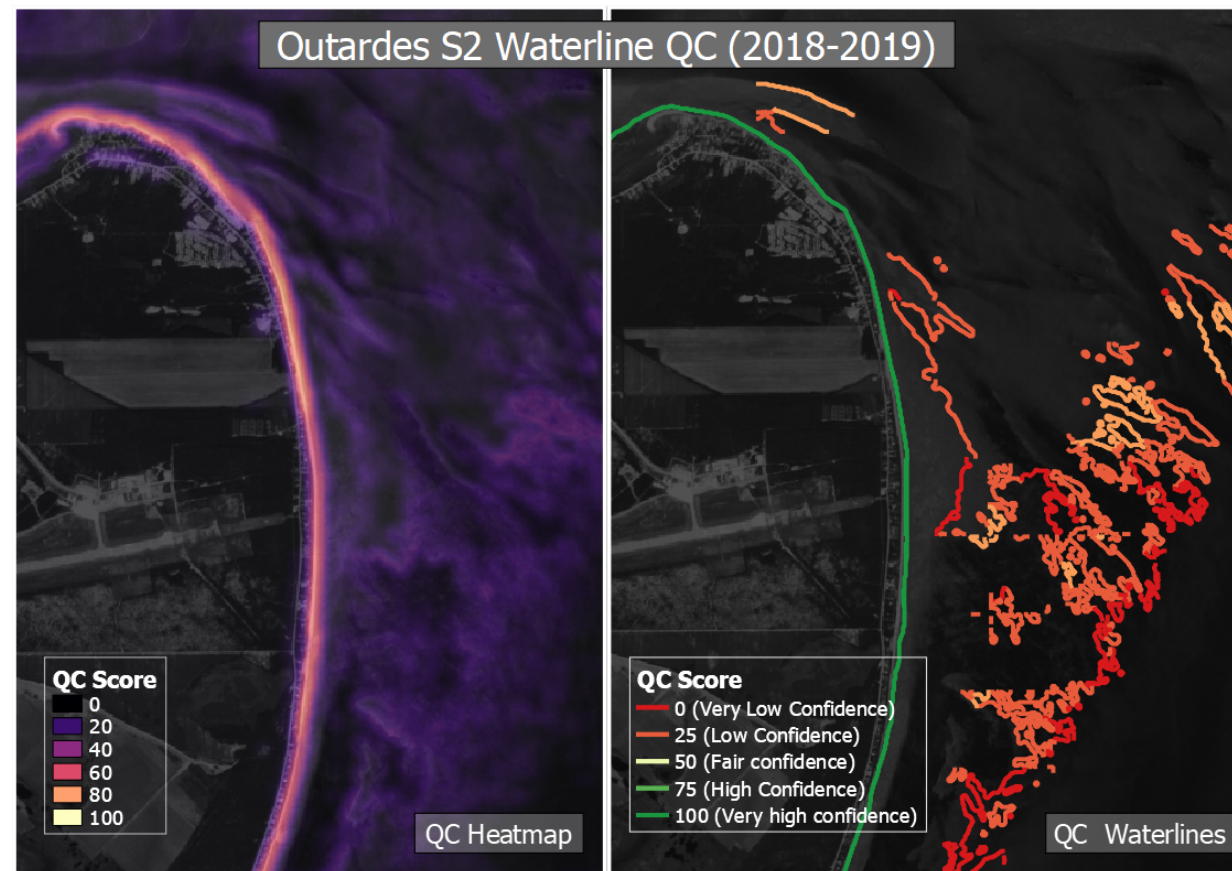 - Each segment given a QC score separate to internal QC score.

Waterline Position Heatmap | Barcelona

Waterline: External Quality Control
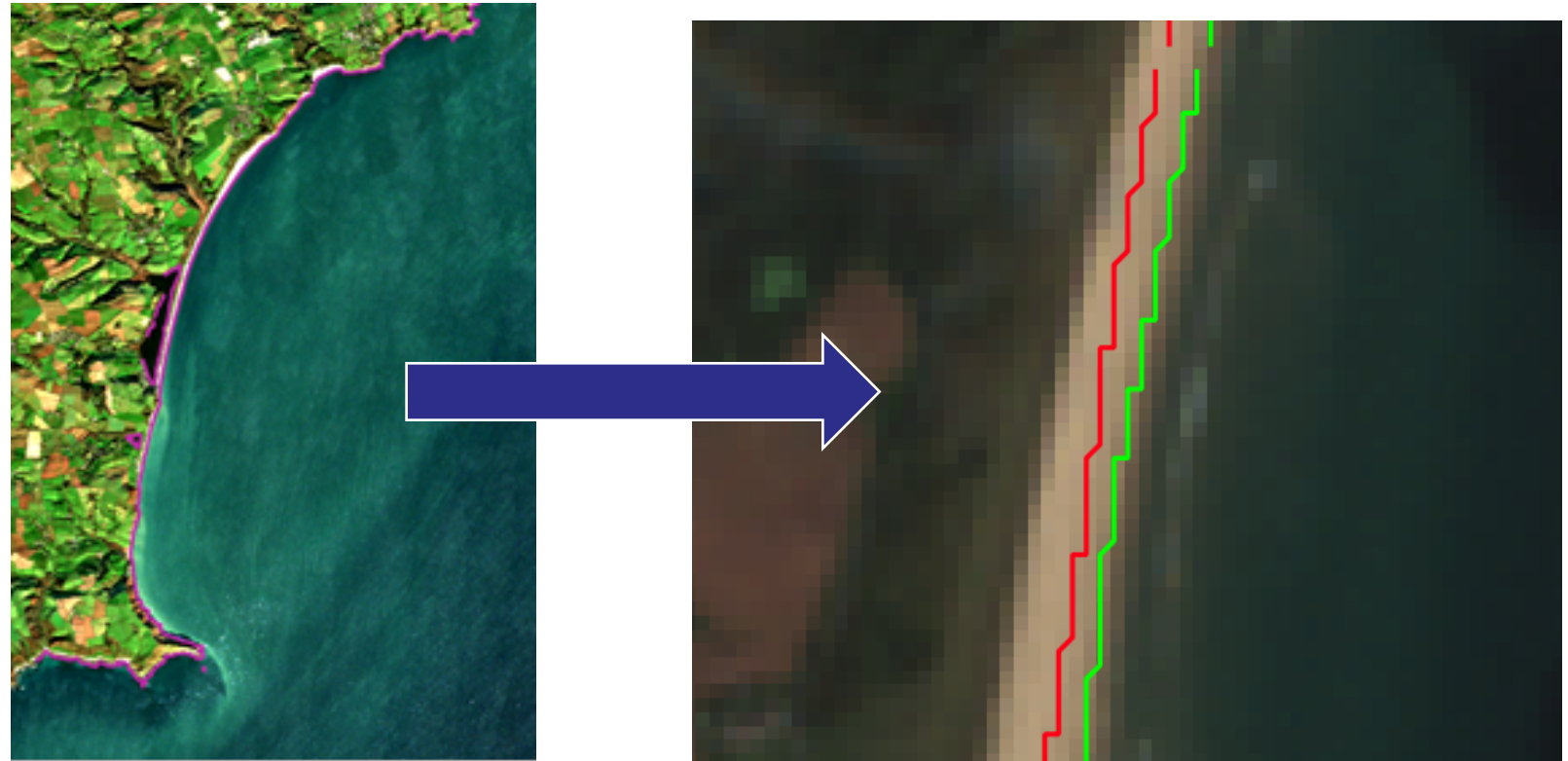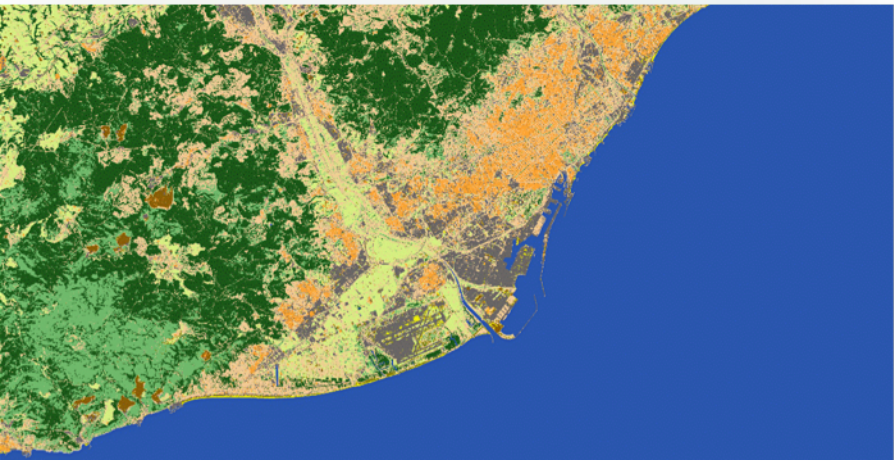
Waterline: External Quality Control

- ## By-eye analysis
  – Ensure product conforms with real world expectations.

Shoreline Quality Control

Internal Quality Control

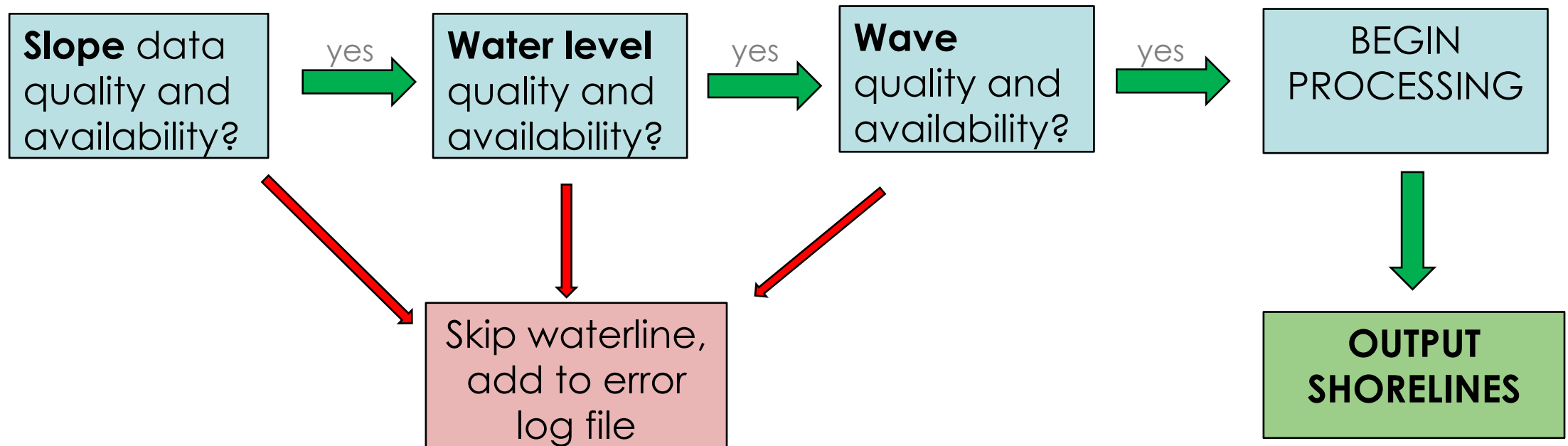# Shoreline: Internal Quality Control

- Auxiliary Data Qualitative Assessments
  - Each piece of data rated from 1-3 against subjective criteria.
  - Includes spatial/temporal ranges, data type, measurement location, etc.

Shoreline: Internal Quality Control

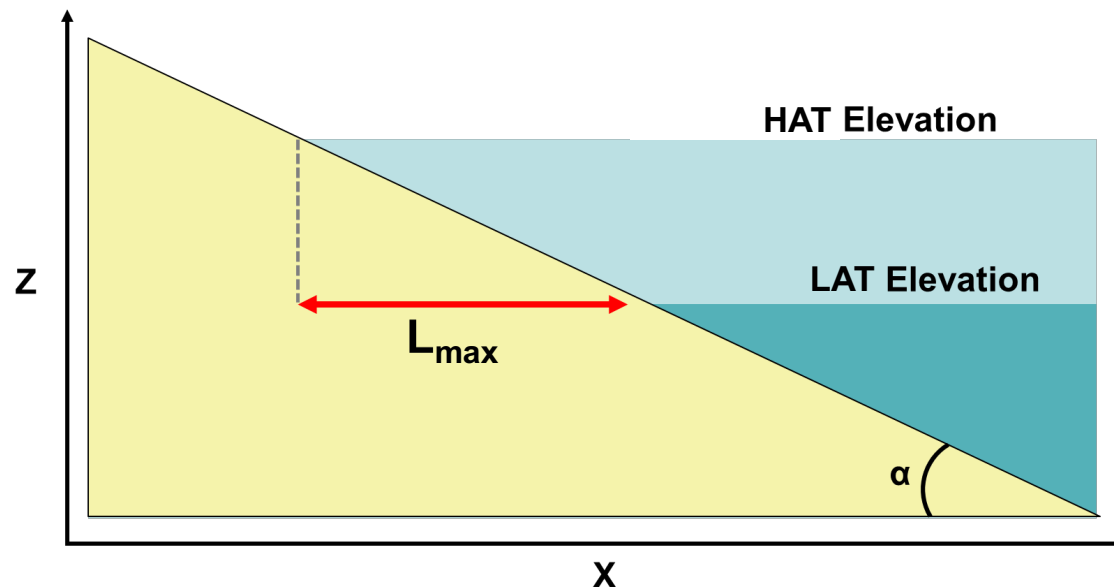| Rating	Score	Comments
GOOD	10 – 12	Good confidence in applicability of the dataset. Good data range and continuity.
FAIR	7 - 9	Fair confidence in dataset applicability, some problems may occur due to limited data range. And or notable uncertainties may develop from these datasets.
POOR	4 - 7	Low confidence in applicability of the dataset. Processing throttled by limited data range. And or large uncertainties created which cannot be ignored.

Location					
	Data Type	Location	Spatial/Temporal Range	Temporal Resolution	Final Rating
Slope	1	2	3	1	7
Wave Data	2	3	2	1	8
Water Level	2	3	2	1	8

Shoreline: Internal Quality Control

Shoreline: Internal Quality Control

- ## Maximum Waterline-to-Shoreline separation distance.
  - Any shoreline segments distanced above this value are flagged.

$$L_{max} = \frac{HAT - LAT}{\alpha}$$

External Quality Control

Shoreline: External Quality Control

- ## Comparison to known shoreline products.
  - ### Nautical charts.
  - ### Area Surveys.
  - ### GIS products.