

# The Global TanDEM-X High Resolution Coastline Product

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While the coast generally describes the transition zone between land and ocean, a coastline demarcates the exact boundary between the two spheres. The coastline as a feature is required in a wide variety of coastal, littoral or marine applications.

In particular, a coastline is required to edit the digital elevation model (DEM) of the TanDEM-X mission, as it defines where ocean heights are to be filled in. To obtain a global 10 meter resolution coastline tailored to the TanDEM-X DEM (Fig.1), an automatic approach has been developed, which is completed with manual corrections (Fig.2).

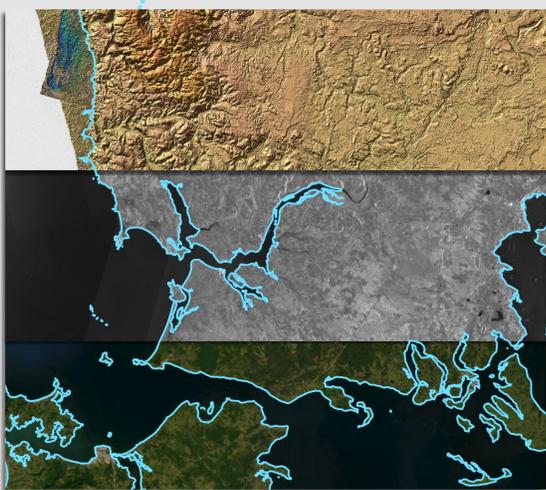


Fig.1: TanDEM-X DEM and Amplitude overlaid with the resulting coastline in the Los Lagos region in Chile.

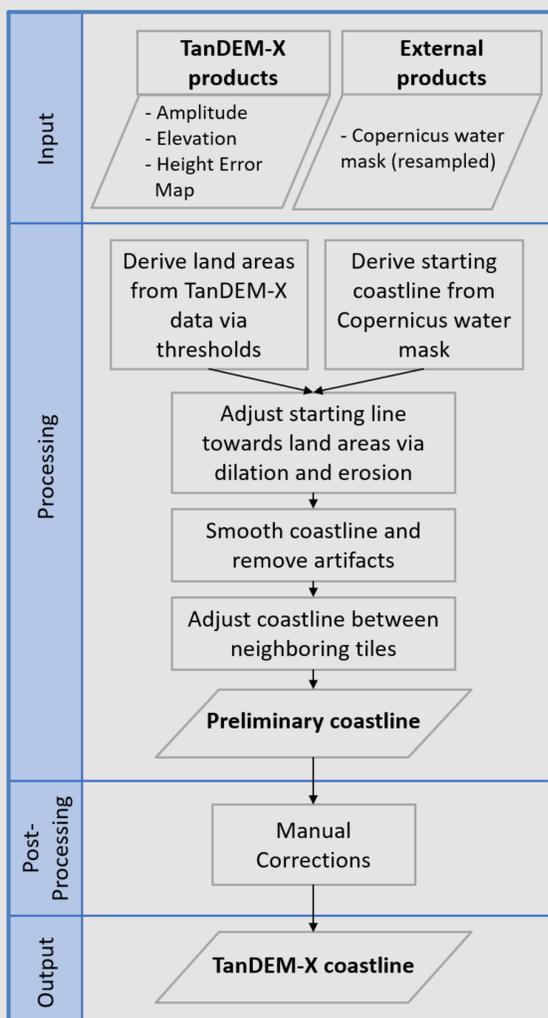


Fig.2: Workflow of the semi-automatic coastline processing.

## Methodological Approach

To achieve a consistent coastline, the preliminary coastline was manually corrected after the automatic processing. This was especially important at the transition from inland water to ocean, i.e. at estuaries and river deltas.



Fig.3: The examples show the consistency of our coastline in comparison to the more inconsistent Open Street Map coastline at the Amazon (a) and Yukon (b) river deltas.

## Coastal Types Around the World

Different coastal types present different challenges to an automatic approach. While steep coasts (c) required less manual editing, for example tidal flats (d) or mangrove forests (e) were more demanding.



Fig.4: Different coastal types in comparison to the preliminary coastline without manual corrections: Fjords in Norway (c), tidal flats in Frisia (d) and the Sundarbans National Park in India & Bangladesh (e).

## Data Availability

The coastline is in the process of being published and will be available soon on [geoservice.dlr.de](https://geoservice.dlr.de) under a CC-BY 4.0 licence. The coastline of Antarctica has already been published and can also be accessed on [download.geoservice.dlr.de](https://download.geoservice.dlr.de)



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