



MAHESHKHALI RESEARCH & DEVELOPMENT CENTER

মহেশখালী গবেষণা ও উন্নয়ন কেন্দ্র

莫赫什卡利研发中心

MRDC Research Assistant: GIS & Shoreline Change Analysis

MRDC is conducting a project-based research study on the long-term coastline change of Maheshkhali using satellite imagery and GIS.

Project Goal

The main goal of this project is to understand how the coastline of **Maheshkhali Upazilla, Cox's Bazar** has changed over approximately the last 50 years, with particular focus on:

- coastal erosion;
- coastal accretion;
- shoreline movement;
- major erosion/accretion hotspots; and
- long-term coastal change patterns.

The findings will later support MRDC's broader work on environment, livelihoods, infrastructure, local communities, and sustainable development in Maheshkhali.

What We Expect from the Research Assistant

The selected Research Assistant will mainly work on the technical GIS and remote-sensing component of the project.

The expected work includes:

- Collecting suitable historical satellite images of Maheshkhali;
- Using Landsat and other available satellite datasets;
- Selecting approximately 5–7 reference years covering the period from the 1970s to 2026;
- Extracting/digitizing historical shoreline positions;
- Comparing shoreline positions over time;
- Identifying major erosion and accretion areas;
- Calculating basic shoreline-change rates using GIS, DSAS, or another suitable method;
- Preparing clear maps and simple statistical outputs;
- Identifying 3–5 major coastline-change hotspots;
- Briefly comparing the results with previous published studies on Maheshkhali;
- Explaining the main limitations and uncertainties of the analysis.

Expected Outputs:

The final work should ideally include:

- 1 historical shoreline map showing different years;
- 1 erosion/accretion map;
- 1 shoreline-change rate map;
- 3–5 hotspot maps;
- a simple summary table of shoreline change;
- an approximately 8–12 page technical report; and
- all editable GIS/project files and data used in the analysis.



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Important Technical Considerations

The researcher should pay attention to:

- differences in satellite resolution;
- tidal conditions;
- seasonal differences;
- shoreline definition;
- image alignment/georeferencing;
- uncertainty in older satellite imagery; and
- avoiding unsupported conclusions about the causes of erosion or accretion.

The project is mainly about identifying where and how the coastline changed, not proving whether a specific development project caused the change.

Who We Are Looking For

We are looking for a 3rd-year/final-year undergraduate or Master's student studying Geography; Oceanography; Environmental Science; or a related discipline.

Experience with the following is preferred:

- GIS;
- QGIS/ArcGIS;
- remote sensing;
- Landsat/Sentinel satellite imagery;
- coastline/shoreline analysis;
- DSAS;
- Google Earth Engine;
- Python/R; and
- AI-assisted research tools.

Previous coastline-analysis experience is a plus, but it is not mandatory if the candidate has strong GIS and remote-sensing skills and is willing to learn.

Working Arrangement

- Project-based
- Primarily remote
- Regular online coordination with MRDC
- Remuneration will be discussed based on experience and project scope

Important

This is a focused student research assignment, not a full academic consultancy. We are looking for someone who can produce a clear, scientifically reasonable, and reproducible coastline-change analysis within a limited project scope.

Interested candidates may send their CV to info@mrdcbd.org before October 25, 2026.