

DAILY ASSESSMENT FORMAT

Date:	01 July 2020	Name:	Karegowda kn
Course:	Satellite photography and its applications.	USN:	4a16ec029
Topic:	Concepts of satellite photography	Semester & Section:	6 sem B sec
Github Repository:	Karegowda-courses		

FORENOON SESSION DETAILS

Report – Report can be typed or hand written for up to two pages.

- Satellite Derived Bathymetry (SDB) is being adopted as a cheaper and more spatially extensive method for bathymetric mapping than traditional acoustic surveys, with research being conducted by the Canadian Hydrographic Service under a Government Related Initiatives Program (GRIP) of the Canadian Space Agency.
- Established SDB methods involve either an empirical approach, where a regression between known depths and various color indexes is developed; or a physics-based Radiative Transfer Model (RTM) approach, where light interactions through the water column are simulated.
- Both methods have achieved vertical accuracies of around 1 m. However, the empirical approach is limited to areas with existing in-situ depth data, and has limited applicability in heterogeneous benthic environments, while the physics-based approach requires precise atmospheric correction.
- This paper proposes a through-water photogrammetric approach which avoids these limitations, in heterogeneous seafloor environments, by using feature extraction and image geometry rather than spectral radiance to estimate bathymetry.
- The method is demonstrated in Coral Harbor, Nunavut, Canada using a WorldView-2 stereo pair. A standard photogrammetric extraction was performed on the stereo pair, including a blunder removal and noise reduction.
- Apparent depths were then calculated by referencing under-water points to the extracted elevation of the water-line.
- Actual in-image depths were calculated from apparent depths by applying a correction factor to account for the effects of refraction at the air-water boundary.
- A tidal reduction brought depths to local chart datum, allowing for validation with Canadian Hydrographic Service survey data showing a mean error of 0.031 m and an RMSE of 1.178 m.



- The method has a similar accuracy to the two established SDB methods, allowing for its use for bathymetric mapping in circumstances where the established methods are not applicable due to their inherent limitations.
- Photogrammetry is used in fields such as topographic mapping, architecture, engineering, manufacturing, quality control, police investigation, cultural heritage, and geology.
- Satellite images are one of the most powerful and important tools used by the meteorologist. They are essentially the eyes in the sky.
- These images reassure forecasters to the behavior of the atmosphere as they give a clear, concise, and accurate representation of how events are unfolding.
- Photogrammetry is primarily concerned with making precise measurements of three-dimensional objects and terrain features from two-dimensional photographs.
- Two general types of photogrammetry exist: aerial (with the camera in the air) and terrestrial (with the camera handheld or on a tripod).
- The Photogrammetry is a surveying and mapping technique which has several applications in the Transportation Department.
- The photogrammetric process consists of proper project planning, image retrieval, image processing, control data for image adjustment, data accumulation and presentation of an end product results, involves estimating the 3D coordinates of points on an object (the face, in our case), employing measurements made in two or more photographic images taken from different positions.
- The image is calculated from a collection of points obtained along an x, y, and z coordinate systems.

