

## Investigation of Glacier Activity Using Optical and Radar Data in Zardkooh

**Authors :** Mehrnoosh Ghadimi, Golnoush Ghadimi

**Abstract :** Precise monitoring of glacier velocity is critical in determining glacier-related hazards. Zardkooh Mountain was studied in terms of glacial activity rate in Zagros Mountainous region in Iran. In this study, we assessed the ability of optical and radar imagery to derive glacier-surface velocities in mountainous terrain. We processed Landsat 8 for optical data and Sentinel-1a for radar data. We used methods that are commonly used to measure glacier surface movements, such as cross correlation of optical and radar satellite images, SAR tracking techniques, and multiple aperture InSAR (MAI). We also assessed time series glacier surface displacement using our modified method, Enhanced Small Baseline Subset (ESBAS). The ESBAS has been implemented in StaMPS software, with several aspects of the processing chain modified, including filtering prior to phase unwrapping, topographic correction within three-dimensional phase unwrapping, reducing atmospheric noise, and removing the ramp caused by ionosphere turbulence and/or orbit errors. Our findings indicate an average surface velocity rate of 32 mm/yr in the Zardkooh mountainous areas.

**Keywords :** active rock glaciers, landsat 8, sentinel-1a, zagros mountainous region

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