Not sure about the **best settings** for mapping **glacier velocity** with satellite images?

GFTT has got your back.

Whyjay Zheng (whyjz@berkeley.edu, @WhyjayZ),
Shashank Bhushan, Max Van Wyk de Vries, Will Kochtitzky, David Shean

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Want to explore more? https://whyjz.github.io/glacier-ft-test/

Introduction

Large-scale glacier velocity maps are often derived from satellite images using a technique called feature tracking. Both the image pre-processing and feature tracking parameters are highly adjustable. To determine which method(s) perform best in mapping glacier movement, we develop a software package called **"glacier feature tracking test" (GFTT)** to help quantitatively compare methods and assess uncertainties.

GFTT philosophy and features

- Open source, Python ecosystem, Jupyter Notebook workflows
- Assess feature tracking performance and good input parameters
- Metrics validated using field (GNSS) data and synthetic pixel offsets
- Only requires x and y velocity component files to run
- May be used for feature tracking results from any software

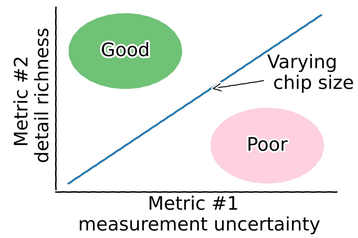

Fig 1. Using two metrics to assess good inputs: one evaluating uncertainty and the other evaluating detail richness. The blue line shows the effect of varying matching template size.

Determine ideal feature tracking parameters

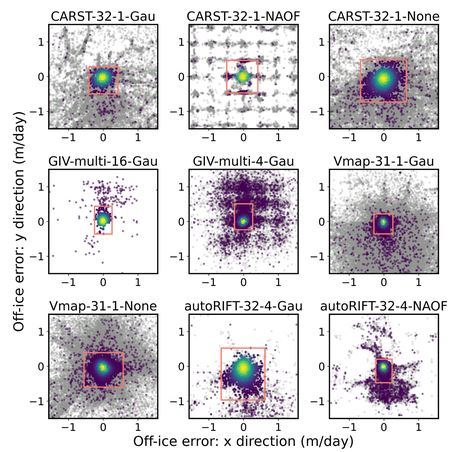

Fig 2. Representative tests for Kaskawulsh glacier, Canada, using the Landsat 8 20180304-20180405 image pair. Showing metric #1.

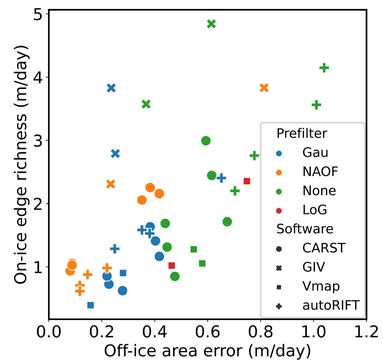

Fig 3. Same idea from Fig 1 but plotted with real data from Fig 2 and beyond (42 tests in total).

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