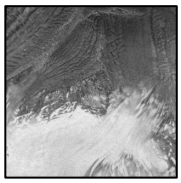
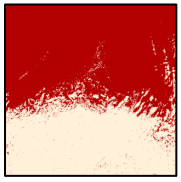
PREPROCESSING

Reference data

Sentinel-1

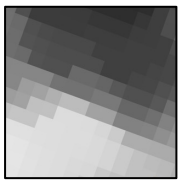


Subtract $\overline{\sigma^0_{winter}}$
Binary thresholding

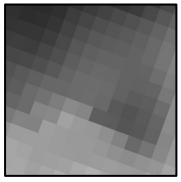


Input features

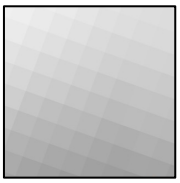
1. ASCAT



Subtract $\overline{\sigma^0_{winter}}$
Normalize

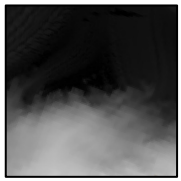


2. SSMIS

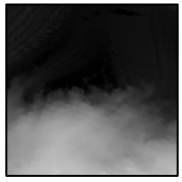


Subtract $\overline{T_{B,winter}}$
Normalize

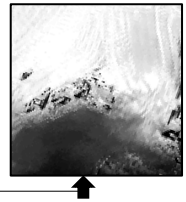
3. Elevation



Normalize

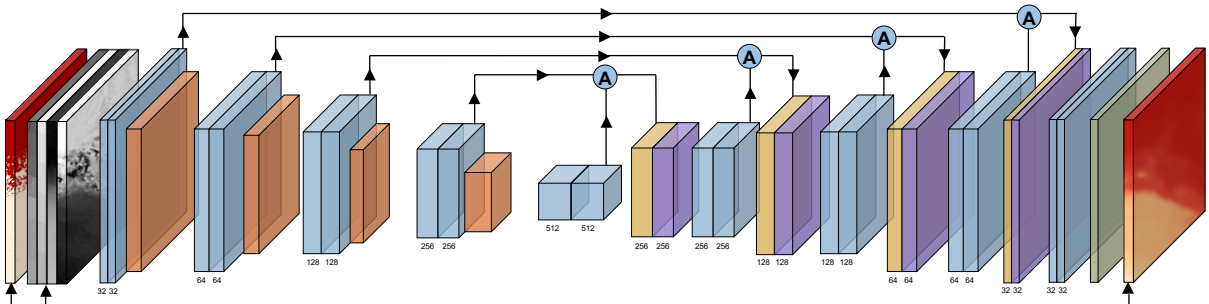


4. Sentinel-1 climatology



Compute monthly climato-logy

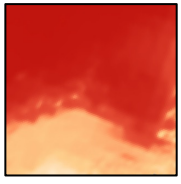
TRAINING



ASSESSING & APPLYING

I. Postprocessing

$UMelt_{continuous}$



Threshold (0.7)

$UMelt_{binary}$

II. Testing

Testing on Shackleton Ice Shelf

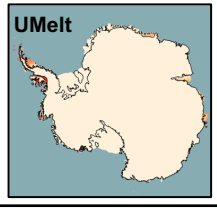
- $UMelt_{LOMSO}$ → Leave-one-melt-season-out
- $UMelt_{LORO}$ → Leave-one-region-out

Testing on Larsen C Ice Shelf

- $UMelt_{Transferability}$

III. Applying

Apply trained U-Net Antarctic-wide



IV. Comparing

Compare UMelt (individual images + summer melt occurrence) to other remote sensing data