



Google Earth Engine processing

**Source data:
Sentinel-2 L2A**



Filter & masking:
Cloud presence < 10 %
S2cloudless cloud mask

NDVI calculation
 $(NIR - R) / (NIR + R)$

NDSI calculation
 $(G - SWIR) / (G + SWIR)$



Masking:
BSI ≥ 0.0 (bare soil)
NDWI ≥ 0.2 (water)

SWIR resampling
(nearest-neighbour)
20 m \rightarrow 10 m

Snow presence determined by:
NDSI ≥ 0.4
R ≥ 0.2



Final analysis products

Annual
NDVI
series

SMOD map

Aggregated into
15d periods

Pixel-wise SMOD calculation

Pixel-wise time series
of snow presence

Full sequence

Yes

15 d of snow &
15 d no snow?

No

SMOD =
last day of snow

Yes

Partial sequence

7 d of snow &
7 d no snow?

No

no SMOD \rightarrow empty pixel