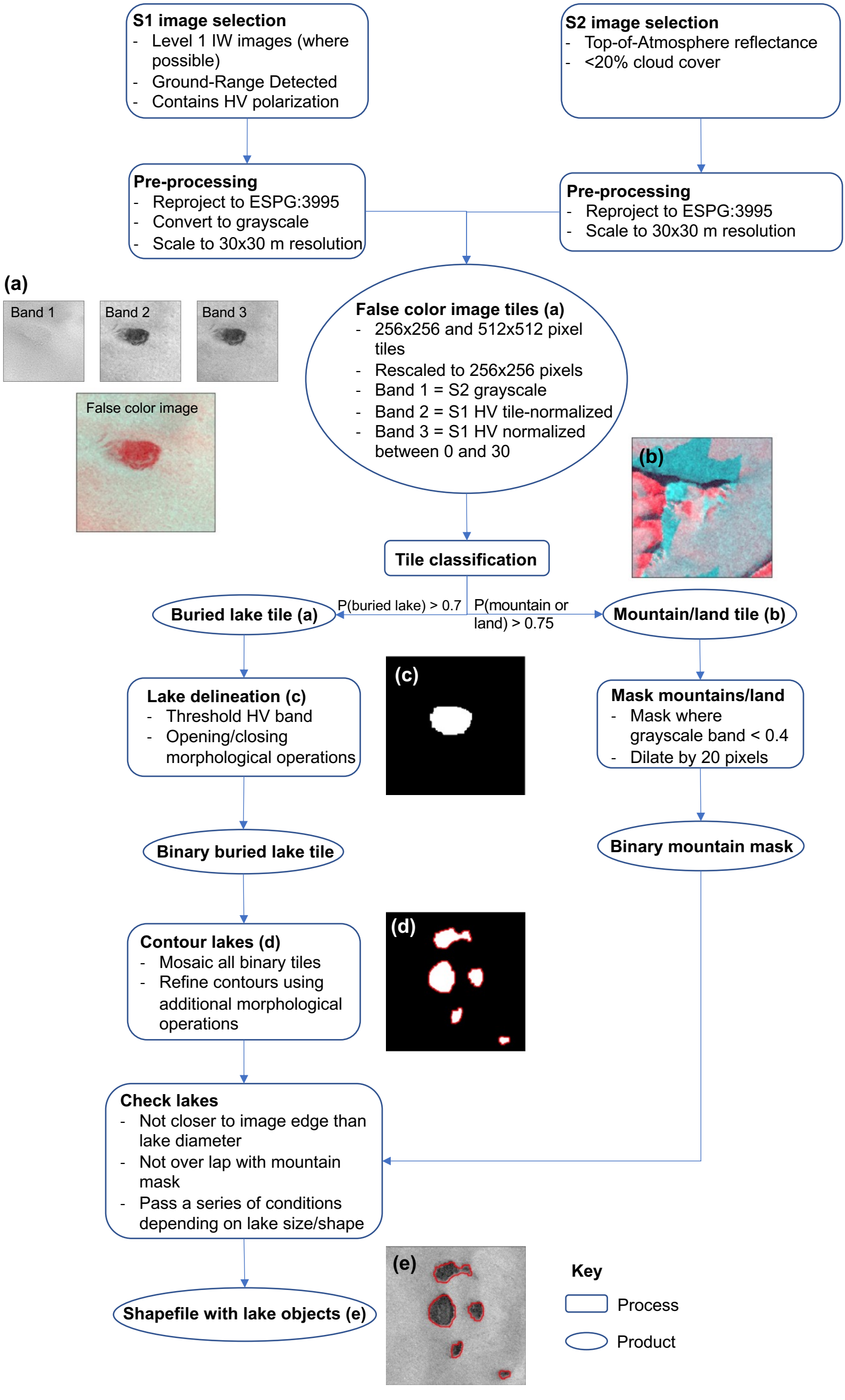
S1 image selection
- Level 1 IW images (where possible)
- Ground-Range Detected
- Contains HV polarization
S2 image selection
- Top-of-Atmosphere reflectance
- <20% cloud cover
Pre-processing
- Reproject to ESPG:3995
- Convert to grayscale
- Scale to 30x30 m resolution
Pre-processing
- Reproject to ESPG:3995
- Scale to 30x30 m resolution
(a)
Band 1
Band 2
Band 3
False color image
False color image tiles (a)
- 256x256 and 512x512 pixel tiles
- Rescaled to 256x256 pixels
- Band 1 = S2 grayscale
- Band 2 = S1 HV tile-normalized
- Band 3 = S1 HV normalized between 0 and 30
(b)
Tile classification
Buried lake tile (a)
P(buried lake) > 0.7
P(mountain or land) > 0.75
Mountain/land tile (b)
Lake delineation (c)
- Threshold HV band
- Opening/closing morphological operations
(c)
Mask mountains/land
- Mask where grayscale band < 0.4
- Dilate by 20 pixels
Binary buried lake tile
Binary mountain mask
Contour lakes (d)
- Mosaic all binary tiles
- Refine contours using additional morphological operations
(d)
Check lakes
- Not closer to image edge than lake diameter
- Not over lap with mountain mask
- Pass a series of conditions depending on lake size/shape
(e)
Shapefile with lake objects (e)
Key
Process
Product