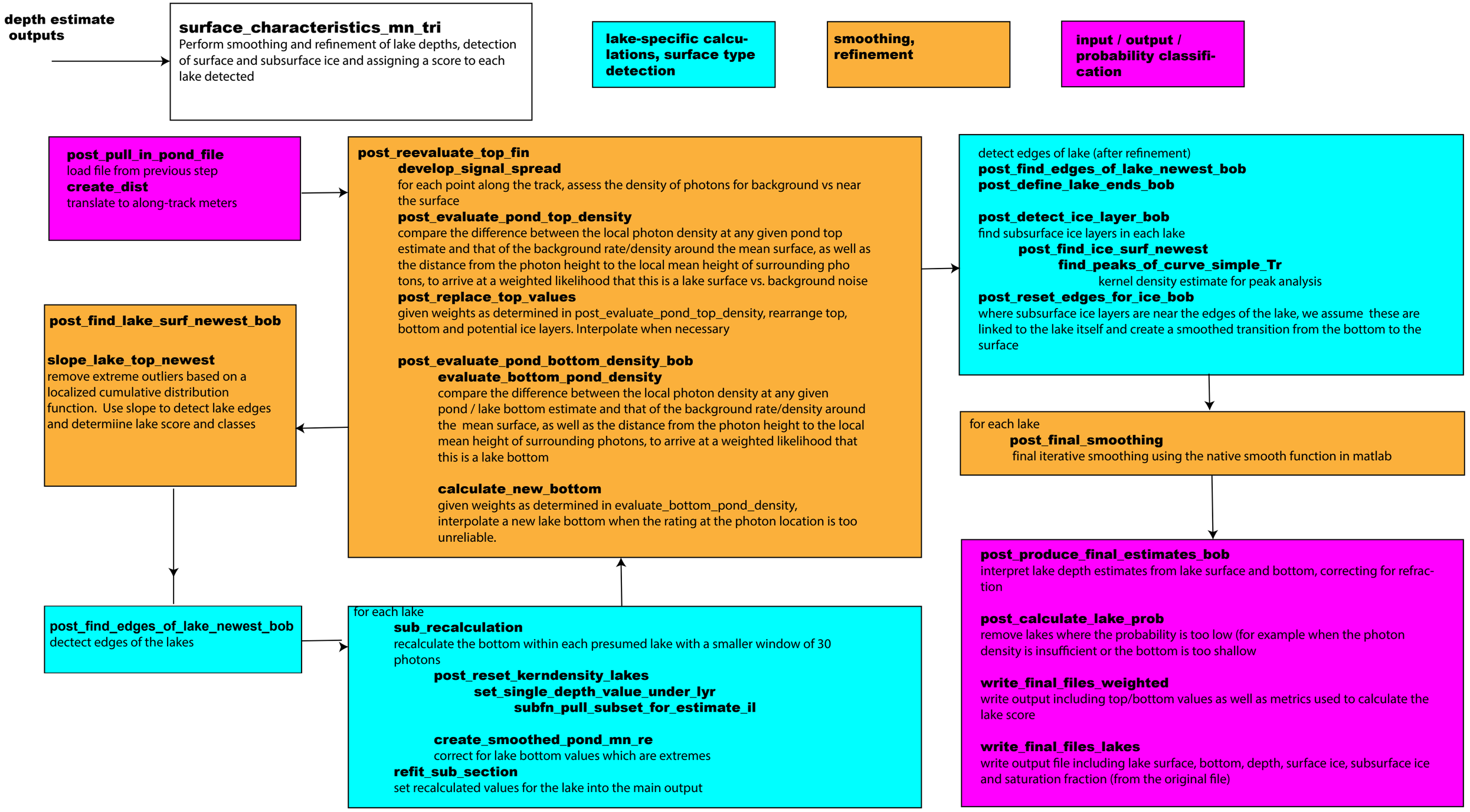
depth estimate outputs
surface_characteristics_mn_tri
Perform smoothing and refinement of lake depths, detection of surface and subsurface ice and assigning a score to each lake detected
lake-specific calculations, surface type detection
smoothing, refinement
input / output / probability classification
post_pull_in_pond_file
load file from previous step
create_dist
translate to along-track meters
post_reevaluate_top_fin
develop_signal_spread
for each point along the track, assess the density of photons for background vs near the surface
post_evaluate_pond_top_density
compare the difference between the local photon density at any given pond top estimate and that of the background rate/density around the mean surface, as well as the distance from the photon height to the local mean height of surrounding pho tons, to arrive at a weighted likelihood that this is a lake surface vs. background noise
post_replace_top_values
given weights as determined in post_evaluate_pond_top_density, rearrange top, bottom and potential ice layers. Interpolate when necessary
post_evaluate_pond_bottom_density_bob
evaluate_bottom_pond_density
compare the difference between the local photon density at any given pond / lake bottom estimate and that of the background rate/density around the mean surface, as well as the distance from the photon height to the local mean height of surrounding photons, to arrive at a weighted likelihood that this is a lake bottom
calculate_new_bottom
given weights as determined in evaluate_bottom_pond_density, interpolate a new lake bottom when the rating at the photon location is too unreliable.
detect edges of lake (after refinement)
post_find_edges_of_lake_newest_bob
post_define_lake_ends_bob
post_detect_ice_layer_bob
find subsurface ice layers in each lake
post_find_ice_surf_newest
find_peaks_of_curve_simple_Tr
kernel density estimate for peak analysis
post_reset_edges_for_ice_bob
where subsurface ice layers are near the edges of the lake, we assume these are linked to the lake itself and create a smoothed transition from the bottom to the surface
post_find_lake_surf_newest_bob
slope_lake_top_newest
remove extreme outliers based on a localized cumulative distribution function. Use slope to detect lake edges and determiine lake score and classes
for each lake
post_final_smoothing
final iterative smoothing using the native smooth function in matlab
post_find_edges_of_lake_newest_bob
dectect edges of the lakes
for each lake
sub_recalculation
recalculate the bottom within each presumed lake with a smaller window of 30 photons
post_reset_kerndensity_lakes
set_single_depth_value_under_lyr
subfn_pull_subset_for_estimate_il
create_smoothed_pond_mn_re
correct for lake bottom values which are extremes
refit_sub_section
set recalculated values for the lake into the main output
post_produce_final_estimates_bob
interpret lake depth estimates from lake surface and bottom, correcting for refraction
post_calculate_lake_prob
remove lakes where the probability is too low (for example when the photon density is insufficient or the bottom is too shallow
write_final_files_weighted
write output including top/bottom values as well as metrics used to calculate the lake score
write_final_files_lakes
write output file including lake surface, bottom, depth, surface ice, subsurface ice and saturation fraction (from the original file)