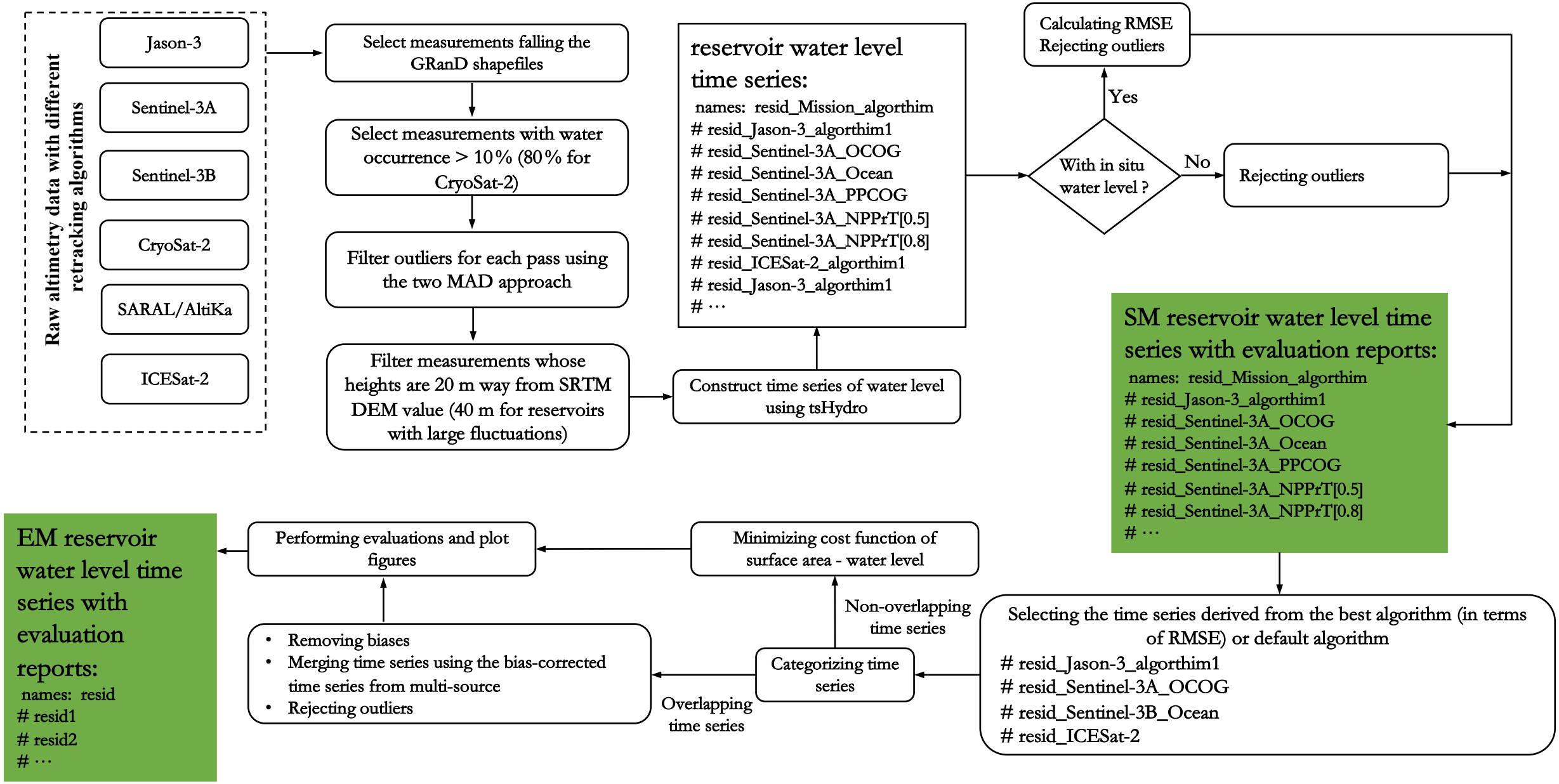
Raw altimetry data with different retracking algorithms
Jason-3
Sentinel-3A
Sentinel-3B
CryoSat-2
SARAL/AltiKa
ICESat-2
Select measurements falling the GRanD shapefiles
Select measurements with water occurrence > 10% (80% for CryoSat-2)
Filter outliers for each pass using the two MAD approach
Filter measurements whose heights are 20 m way from SRTM DEM value (40 m for reservoirs with large fluctuations)
Construct time series of water level using tsHydro
reservoir water level time series:
names: resid_Mission_algorthim
resid_Jason-3_algorthim1
resid_Sentinel-3A_OCOG
resid_Sentinel-3A_Ocean
resid_Sentinel-3A_PPCOG
resid_Sentinel-3A_NPPrT[0.5]
resid_Sentinel-3A_NPPrT[0.8]
resid_ICESat-2_algorthim1
resid_Jason-3_algorthim1
…
With in situ water level ?
Yes
Calculating RMSE
Rejecting outliers
No
Rejecting outliers
SM reservoir water level time series with evaluation reports:
names: resid_Mission_algorthim
resid_Jason-3_algorthim1
resid_Sentinel-3A_OCOG
resid_Sentinel-3A_Ocean
resid_Sentinel-3A_PPCOG
resid_Sentinel-3A_NPPrT[0.5]
resid_Sentinel-3A_NPPrT[0.8]
…
Selecting the time series derived from the best algorithm (in terms of RMSE) or default algorithm
resid_Jason-3_algorthim1
resid_Sentinel-3A_OCOG
resid_Sentinel-3B_Ocean
resid_ICESat-2
Categorizing time series
Non-overlapping time series
Overlapping time series
Minimizing cost function of surface area - water level
• Removing biases
• Merging time series using the bias-corrected time series from multi-source
• Rejecting outliers
Performing evaluations and plot figures
EM reservoir water level time series with evaluation reports:
names: resid
resid1
resid2
…