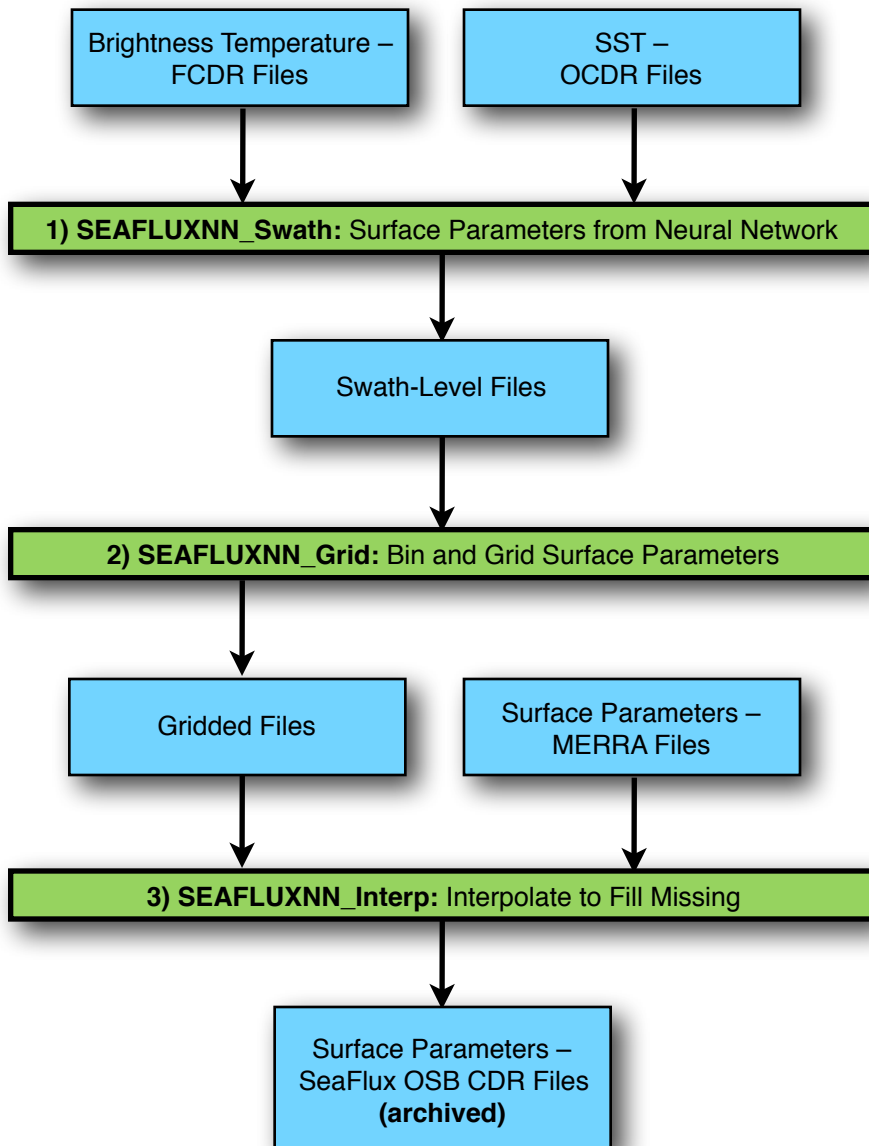


SeaFlux OSB CDR Processing Flow Chart Ocean Near-Surface Properties



Processing Steps

1) SEAFUXNN_Swath: Code to calculate surface parameters (air temperature, specific humidity, and wind speed) from the neural network (NN). Inputs to the NN are brightness temperature and colocated sea surface temperature. Swath-level files are daily for each satellite (F08, F10, F11, F13, F14, F15, F17, and F18). Except for F08, each satellite has its own pair of NNs to calculate surface parameters, one each for clear and cloudy sky conditions.

2) SEAFUXNN_Grid: Code to combine surface parameters across all satellites. Data are then separated into eight, 3-hourly bins for each day. The data are then binned and averaged to a $0.25^\circ \times 0.25^\circ$ grid.

3) SEAFUXNN_Interp: Code to fill missing locations for each surface parameter during each 3-hourly period. Missing parameters for each location are estimated using a model-based-interpolation scheme with MERRA data. Sharp gradients are removed with a spatio-temporal-smoothing filter. Output are the final CDR files for surface parameters in NetCDF.

NOTE: Quality control measures are enacted to remove nonphysical values (e.g., negative wind speed) returned by the NN (step 1) and model-based interpolation (step 3).

1) SEAFLUXNN_Swath

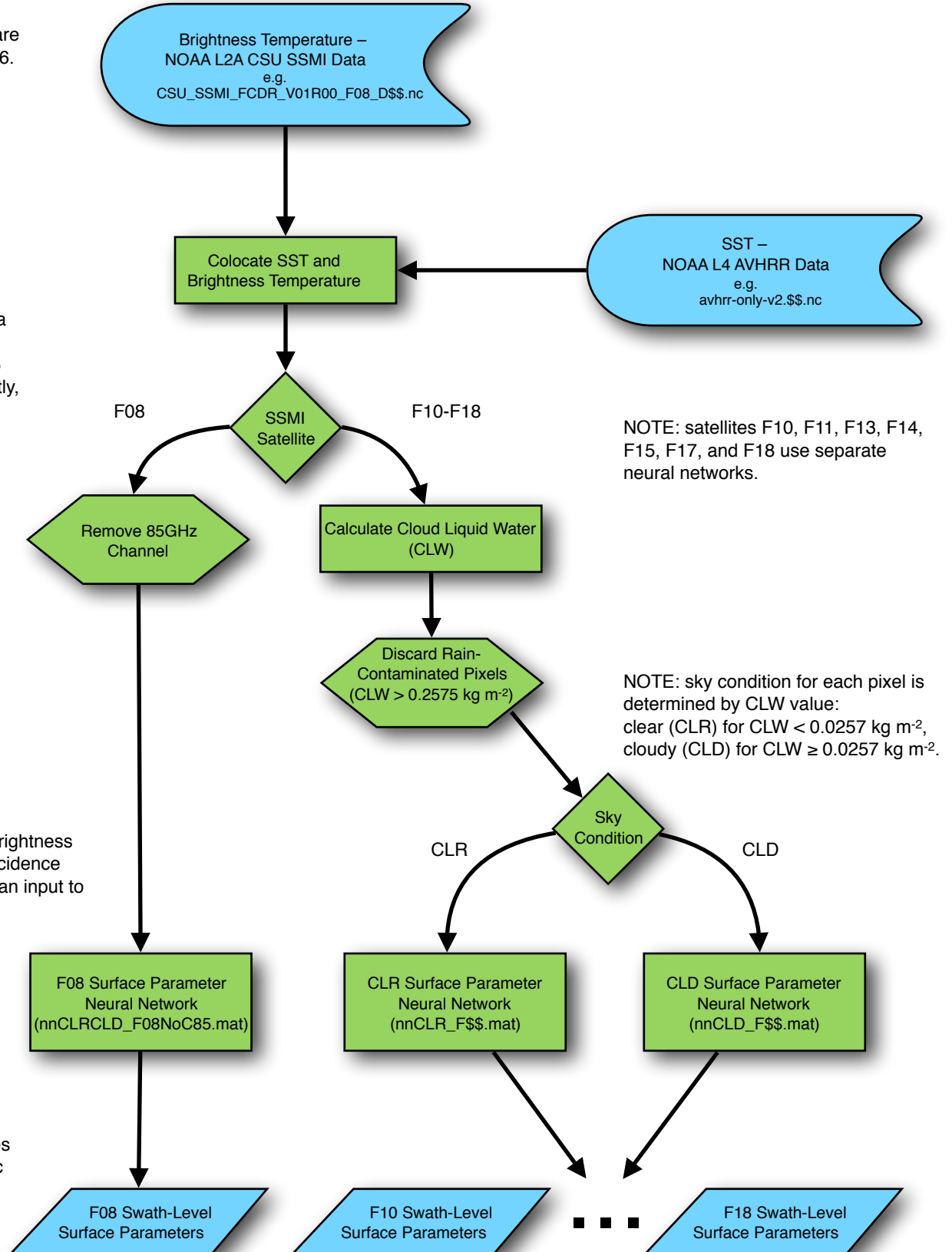
NOTE: satellite F15 data are not used after 31-Jul-2006. See CSU SSMI documentation regarding RADCAL.

NOTE: satellite F17 data are not used after 31-Mar-2016. See NASA satellite status regarding sensor failure.

NOTE: satellite F08 uses a separate neural network because of noise in the 85 GHz channel. Consequently, CLW is not an input to the neural network for F08.

NOTE: in addition to the brightness temperature, EIA (earth incidence angle) is also included as an input to the neural networks.

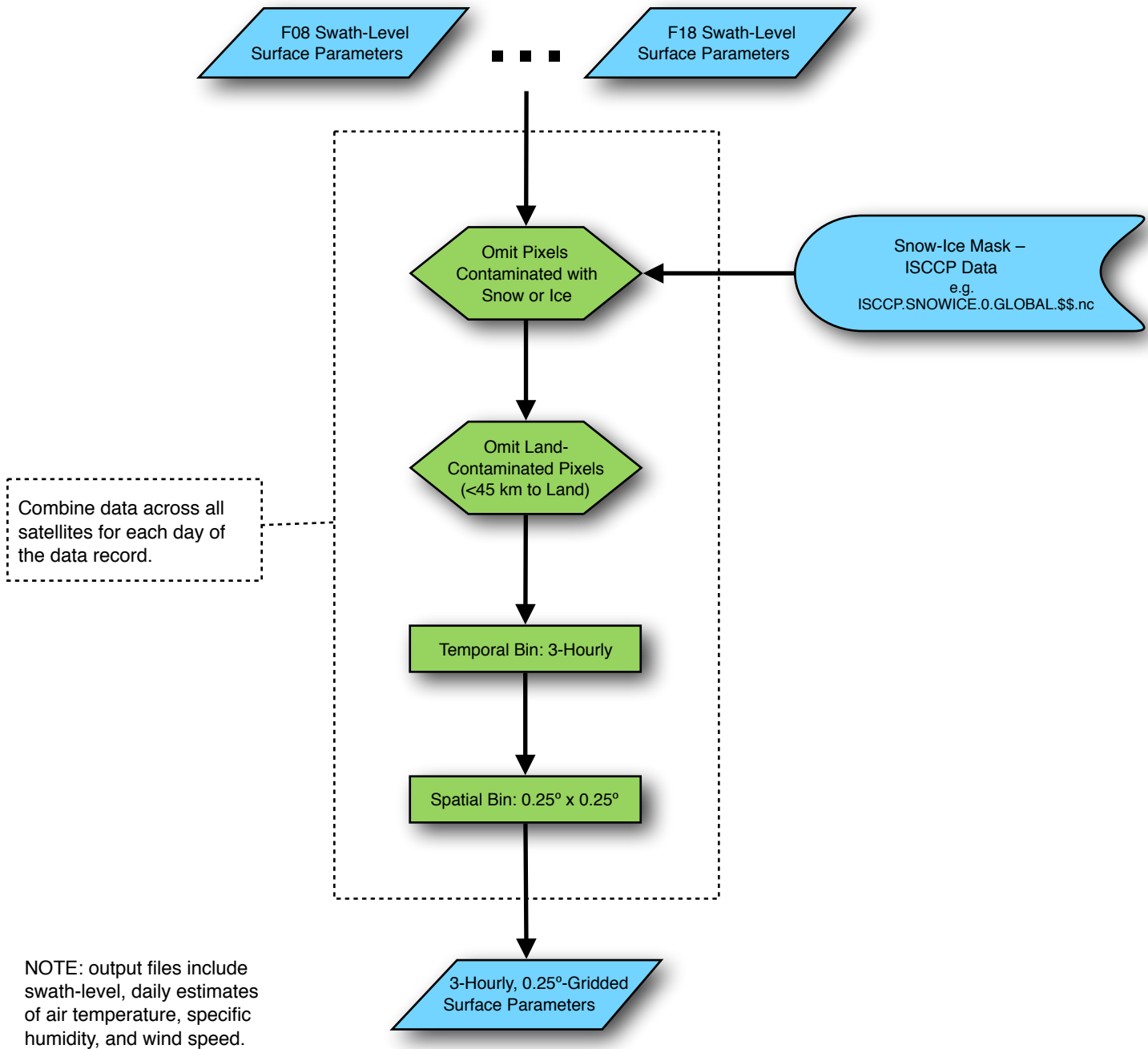
NOTE: output files include swath-level, daily estimates of air temperature, specific humidity, and wind speed.



NOTE: satellites F10, F11, F13, F14, F15, F17, and F18 use separate neural networks.

NOTE: sky condition for each pixel is determined by CLW value: clear (CLR) for $CLW < 0.0257 \text{ kg m}^{-2}$, cloudy (CLD) for $CLW \geq 0.0257 \text{ kg m}^{-2}$.

2) SEAFLUXNN_Grid



3) SEAFLUXNN_Interp

