AWWAIS reference	First date of implementation in operation	Level modified	Main changes since the previous version	Impact on the products
4.1.0		Nadir part of L2	Optimization of nadir configuration	
		L0	Correction of AOCS angles (definition domain between 0, 2p)	
		L1A_CAL	Correction of a multiplying factor to compute instrumental gain	
4.1.1	18/12/18	L1A	Correction of job ordering (L1A not processed if L0 in error)	
		L1B	Correction of inconsistency between L1b and L1B_EXP products	
4.1.2				
4.2.0		L1A	Correction on the elevation computation (small error before)	elevation angles corrected
			Correction of pseudo-mispointing (calculated from nadir waveform) quality flag definition (erroneous use of AOCS angles instead of reference mispointing angles)	More accurate description of pseudo-mispointing and mispointing flags, and better correction of sigma0 from the antenna gain
			Correction of estimated mispointing (calculated from all beam echoes) quality flag definition (same comment)	
			Correction of the use of the most accurate mispointing angle for antenna gain correction, according to values of the previous quality flag	
		L0_CAL	Correction of azimuth calculation in calibration mode (resulted in errors in calibration data)	Instrumental gain computation corrected, no impact on L1A products
		Nadir part of L2	Format Correction	Correction on the time (s) of the L2 nadir product
4.2.1	12/03/19	Nadir part of L2	Updated nadir processing taken into account	
		L1A	Correctly reads the calibration parameters in the calibration file (before correction : calibration parameters from ground tests / after correction : latest valid calibration sequence)	normalization of sigma0
4.2.2	17/04/19	L0	Parameter was added and the calculation of the azimuth was corrected to compensate correctly the cell migration compensation during on-board time integration	Correct Wave spectra (not filtered) in all directions instead of only around 45° (+/- 180°)
		L1A	L1A Correctly reads the latest coherent instrumental gain and rejects instrumental gain if inconsistent data is detected	Sigma0 calculation and following level processing available continuously
4.3.0/4.3.1	16/07/2019	L0	Correction of the flag : flag availability (worth 4 after a given calibration mode and left to 4 afterwards until the next TM flow, which results in no available data during tracking mode from the current flow)	Sigma0 values available
		L1A	New variable called "reliable_swath_x" (x: beam number) indicating the efficient swath indices (within the 3dB antenna gain aperture)	Accurate Sigma0 values (well corrected from the antenna gain)
			Computation of the thermal noise using the estimation of the noise floor from the 2° beam echo instead of the nadir echo	Reduced error on thermal noise estimation at all beams => reduced error on sigma0 at all beams
			Output of linear values of sigma0 instead of values in dB, no data filtering for negative sigma0 values	Sigma0 values available over sea ice and over ocean even if signal is under noise floor
		L1B	Modification of the flag : "flag_sigma0_slope"' definition (indication on the slope of the sigma0 fit, and no longer any indication on the curvature). Addition of a new flag indicate abnormal curvature of the sigma0 profile.	
			New output "flag_sigma0_shape" to flag invalid sigma0 with curvature out of specifications	
			Implementation of an new speckle calculation method (dependent on azimuth direction) as a new possilbe option. This option is available but not activated in products.	no impact on products as the option is not activated
		Nadir part of L2	Correction of the mispointing angle used as retracking algorithm's input	
			Correction of the nadir-estimated rain flag	
			Selection of reliable swath given in L1A products for processing	
		L2	Mask applied on the radial spectra in order to cancel the perturbing effects of speckle noise in the along-track directions. This solution was temporary adopted , while waiting for a better speckle noise correction	L2 wave spectrum provided with masked sectors (about ±15° with respect to the satellite track), partitions and wave parameters calculated on the masked spectra . The original wave spectrum (unmasked) is still provided in the products.
4.3.2	29/07/2019	L1A	New LUT used to prescribe the pre-calculated antenna gain pattern integrated over the azimuth direction	reduces the number of concave sigma0 profiles at the spectra beams
		L2	bugs corrected on phi_orbit_box, nadir_swh_box and nadir_sigma0_box	
5.0.1	24/06/2020	L1A	New variable called "echo_l1a_swath_scale_variability" : large scale variability of the sigma0 profile within the swath (in W)	new parameter available for measurements qualification
			New variable called "flag_echo_l1a_anomaly" : flag on sigma0. Flag showing the swaths impacted by a loss of power in the L0 signal due to a loss of pulses in the onboard received signal Flag values : =0 if signal not impacted by the anomaly ; =1 if signal impacted by the anomaly (loss of power)	Identification of degraded measurments
		L1B	Activation of a new speckle model (taking into account variability in latitude, sea state, and azimuth position of the maximum of speckle noise pertubations with respect to the uptrack/downtrack direction and ascending/descending modes), see Hauser et al, 2020 for more detail	
			New variable (flag_valid_sigma0) combining the following information: - sigma0 value under/over a given thtreshold - sigma0 variability within the swath under/over a given threshold - sigma0 impacted by a loss of power in the L0 signal sue to a loss of pulses in the onboard received signal (new "flag_echo_l1a_anomaly" parameter in the L1A products) Activated option: selection of cycles according to the value of the flag_valid_sigma0 flag.	New Quality parameters in L1B product
		Nadir part of L2	- Wf_surf_ocean_index_1Hz, Wf_surf_ocean_index_nsec, Wf_surf_ocean_index_box : percentage of ocean surface measurements in the compression - nadir_rain_index_1Hz, nadir_rain_index_nsec, nadir_rain_index_box : percentage of rain flag raised in the compression	new parameters available in L2 product
			- wind determination modification : Calculation via interpolation in a table (function of SWH and Sigma0) - New variables implementation : nadir_wind_native, flag_valid_wind_native	better wind speed restitution thanks to table estabilshed via cross over calibration
			- sigma0 data selection for compression evolution: suppression of data impacted by microcuts	improvement of sigma0 and wind restitution
			-Nadir rain flag determination improvment : elimination of the coastal data in the rain detection process. - New value of the Wf_surf_Flag : 0: ocean, 1: ice, 2: land, 3: coastal	improvement of rain flag
			- update of the nadir chinese processing : same algorithme as nadir french processing	
		L2	- improvement of the computation of latitude/longitude associated to each box (elimination of some incoherent values)	
			- New sampling of the wave number dimension, over which are defined the wave spectra : 32 wave numbers instead of 65 initially	
			New variables implementation: - time_nadir_1Hz, lat_nadir_1Hz(n_nad_1Hz); lon_nadir_1Hz, nadir_swh_1Hz, nadir_swh_1Hz_std, nadir_swh_1Hz_used_native, flag_valid_swh_1Hz, nadir_wind_1Hz, flag_valid_wind_1Hz, nadir_sigma0_1Hz, nadir_sigma0_1Hz_std, nadir_sigma0_1Hz_used_native, flag_valid_sigma0_1Hz, nadir_sigma0_1Hz_l1a_coher, nadir_atmo_cor_1Hz, nadir_atmo_cor_1Hz_std	new parameters available in L2 product
5.1.1	10/12/2020	all products	change in products name : "OP05" instead of "OPER"	
		L1B	modification of the MTF calculation method (MFT3 instead of MTF1) to compute the wave slope spectrum - MTF1 : azimuth dependent with an analysis of sigma0 over several beams (0°-10°) for each azimuth - MTF3 : using the SWH from L2a nadir products to normalize the energy of the spectrum	Better consistency wave parameter SWH compared to model
		Nadir part of L2	modification of the rain flag computation : correction to avoid over flagging	
5.1.2	16/11/2020	Nadir part of L2	modification of the rain flag computation : adaptation for satellite track with no valid ocean data (software robustness)	Software robustness improvement
		L2	use of parameter swim_echo_l1a_anomaly to filter sigma0 before computation of sigma0 mini-profiles (variable sigma0_mini_profile)	Improvement of sigma0 profiles restitution
5.2.0	27/07/2021	L0	Modification of the time variable to FillValues for incomplete macrocycles at begining and/or end of file	
		L1A	Antenna gain pattern calibration	impact on sigma0 profiles
			correction of values of echo_l1a_swath_scale_variability (values not valid up to now) by modifying the window size of the smoothing function of sigma0 profiles .	no impact of sigma0 profiles
		Nadir part of L2	Correction of values of nadir 1Hz compressed values, the values avreaged are now centered on the round second	Improvment in compressed data consistency
		L2	Correction of bug in partition direction estimation in some specific cases	Improvment of direction estimation
			Computation of sigma0 mini profiles only if statistics on sigma0 profiles within a box follow specific conditions	improvement of sigma0 mini profiles estimation
6.0.0	27/06/2022	L1A	Swath Scale Variability forced to fill_value for nadir beam Evolution of the micro cuts detection algorithm	Improvement of micro cuts detection, and impacted signals identification.
		L1B	Propagation of the echo_l1a_swath_scale_variability parameter to L1B product evolution of the processing for macrocycles rejection : specific processing depending on surface : Ocean and sea-ice evolution of the flag sigma0_slope	New parameter available in L1B Improvement of macrocycle rejection before processing Improvement of sigma0_slope flag significance
		L2	Filtering of sigma0 profiles before mini profiles generation Normalization of the sigma0_fit_quality parameter	Improvement of sigma0 mini profiles quality Simplification of quality index exploitation
		Nadir part of L2	Evolution of the nadir_sigma0_native parameter : atmospheric correction taken into account New parameter nadir_atmo_cor_native added in the product	All nadir sigma0 parameters consistent, taking into account the atmospheric correction, given as a parameter
6.0.2		L1B	Evolution of filtering (more permissive) : RMA signal taken into account	Data gain in RMA period, improvment of spectral data
6.1.0	17/01/2023	L1B	Modification of the apodisation window centering (consistent centering implementation)	Improvement of waves peak wavelength, when compared to MFWAM
		L2	Modification of all_pp_omni, CI_inf_omni, CI_sup_omni calculation, fill values management modification	Improvment of variables significancy
7.0.0	07/10/2024	L1A	Upgrade of the L1a processing f for SWIM data acquired in the "Speckle acquisition mode"	improvment of variables significancy for instrument speckle acquisition mode
		L2	Parasite peaks filtering in the wave spectra	improvment of wave spectra and wave parameter
		Nadir part of L2	new Look Up Table to estimate wind speed from sigma0 and SWH	improvment of nadir wind speed restitution
7.0.1		L1B	Correction of the speckle model in across-track direction	Improvement in the consistency between the SWIM omnidirectional spectra and those of the MFWAM model for low wind and small wave height conditions
		L2	Update of parasitic pic filtering thresholds (following speckle model correction)	Continuity in results