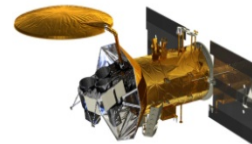


MWR

Sea Ice Concentration

Sergio Masuelli, Héctor Salgado

E-mail: sergio.masuelli@conae.gov.ar



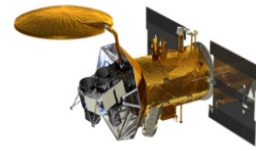
L2 Algorithm developed by
CONAE, SHN and CFSRL.

CFRSL prototype: 2010.

First version: 2012.

ATBD: 2012.

Second version: 2014.

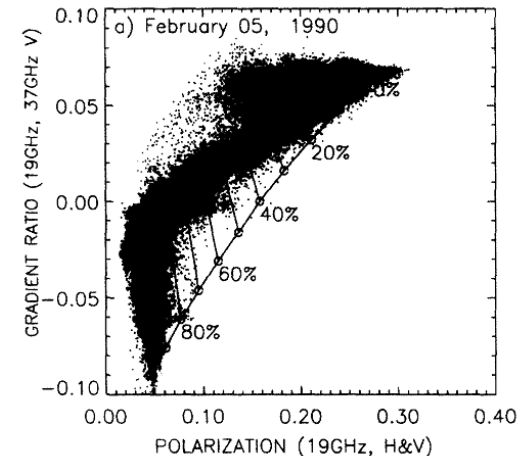
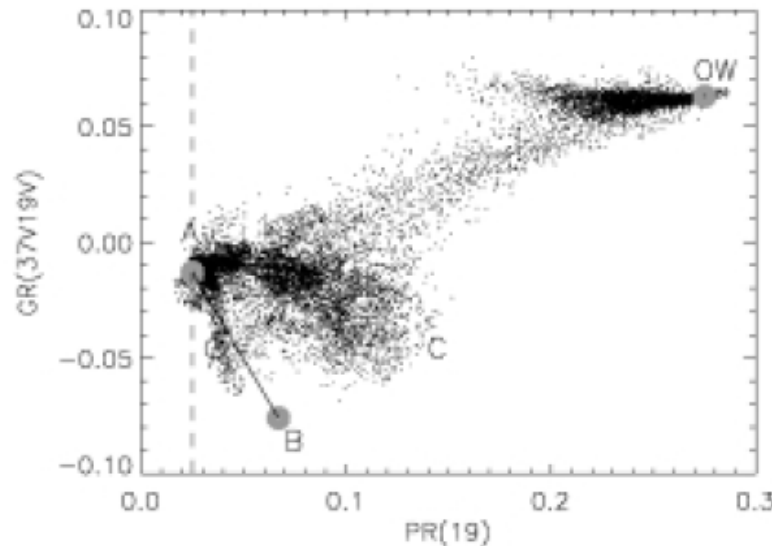


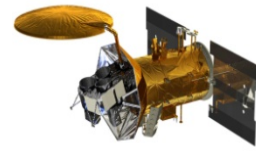
Baselines of the first version of L2 Algorithm.

Nasa Team Algorithm

$$PR = \frac{T_{19}^V - T_{19}^H}{T_{19}^V + T_{19}^H}$$

$$GR = \frac{T_{37}^V - T_{19}^V}{T_{37}^V + T_{19}^V}$$





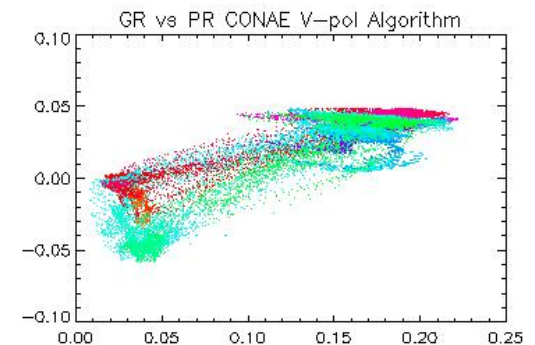
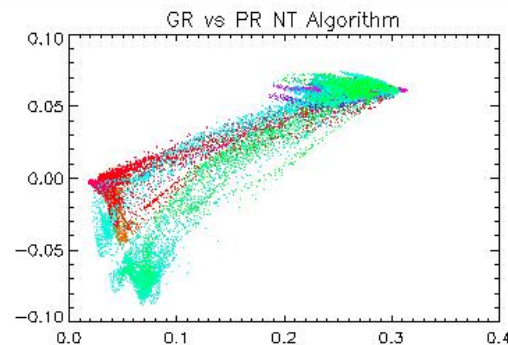
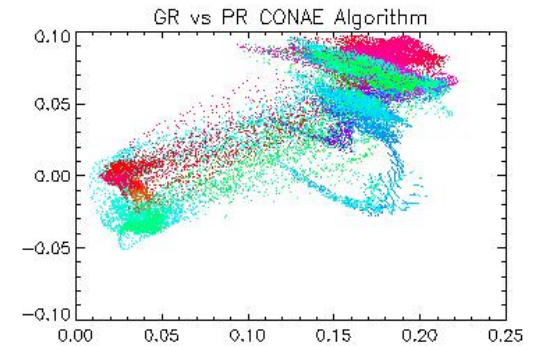
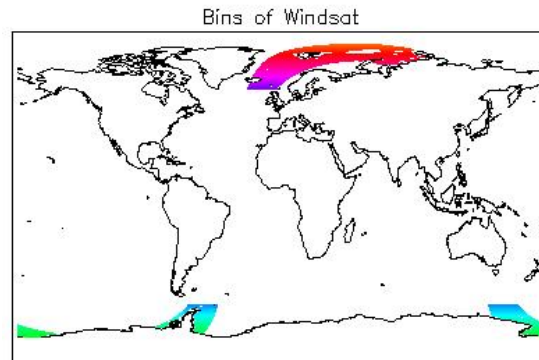
Baselines of the first version of L2 Algorithm.

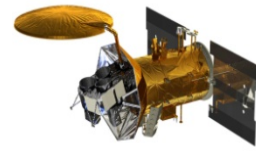
Test using Windsat data

CFRSL Algorithm adaptation

$$PR = \frac{T_{37}^V - T_{37}^H}{T_{37}^V + T_{37}^H}$$

$$GR = \frac{T_{37}^V - T_{23}^V}{T_{37}^V + T_{23}^V}$$



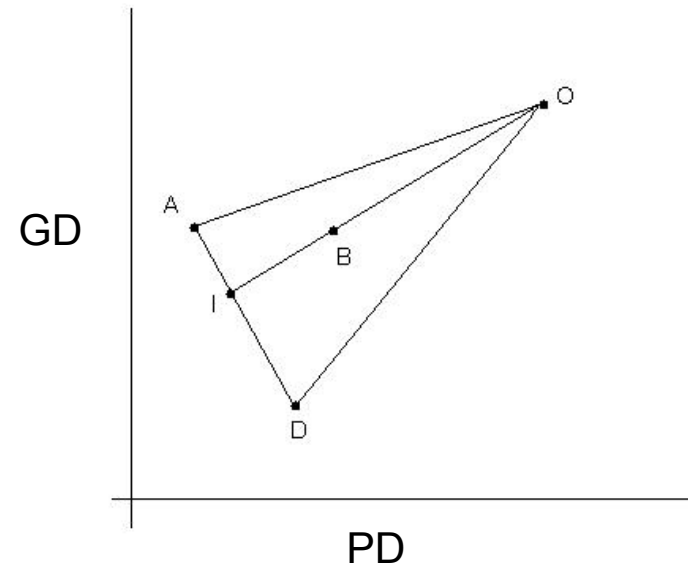


First version of L2 Algorithm.

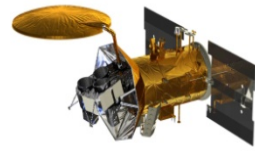
Conae Algorithm

$$PD = T_{36.5}^V - T_{36.5}^H$$

$$GD = T_{36.5}^H - T_{23.8}^H$$



$$SIC = \frac{(GD - GD_O) + (PD - PD_O)\alpha}{GD_M - GD_O + (PD_M - PD_O)\alpha}$$



First version of L2 Algorithm.

Calibration:

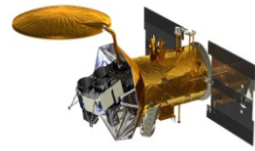
Step 1: PD and GD calculation.

Step 2: Scatter plots construction.

Step 3: Reference points calculation.

Step 4: Sea Ice Concentration estimation.

5 days (30 Aug to 2 Sep 2011)



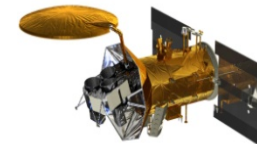
First version of L2 Algorithm.

Summary of problems:

Artifacts due to Smear Effect.

Over estimation over open sea areas.

Very sensitive to atmospheric variables.



Second version of L2 Algorithm.

Improvements:

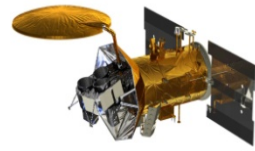
L1 with Smear Effect corrected.

Better land mask (GG).

Reference Points for each beam.

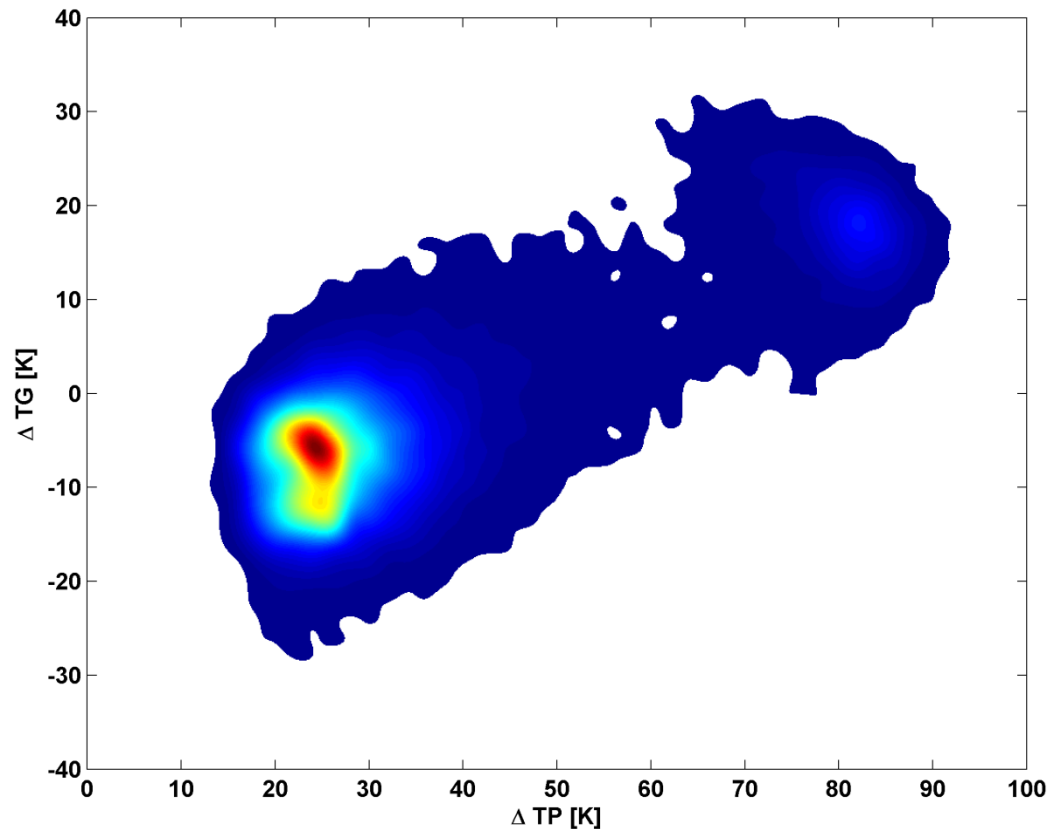
Atmospheric filter (GDAS).

Calibrated using six months of data.

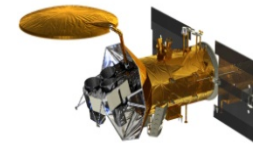


Second version of L2 Algorithm.

Step 2: Scatter plots construction.



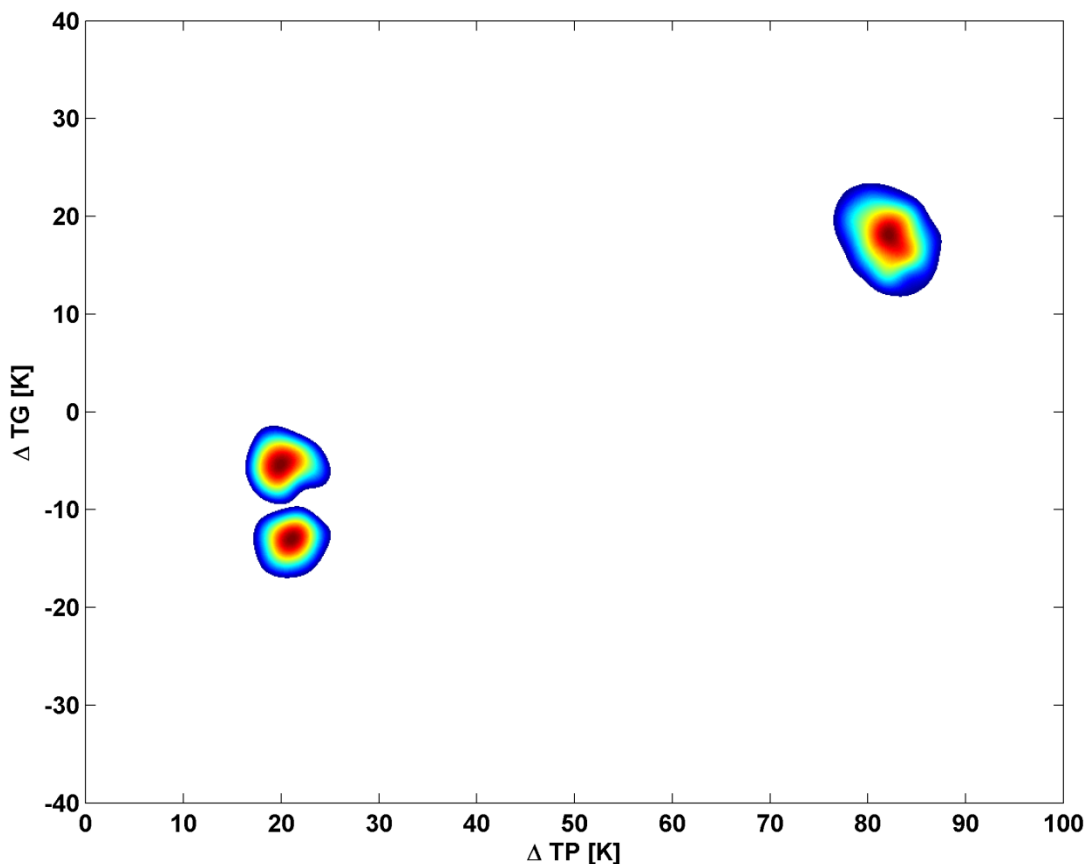
Scatter plot for
all data

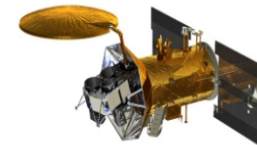


Second version of L2 Algorithm.

Step 3: Reference points calculation.

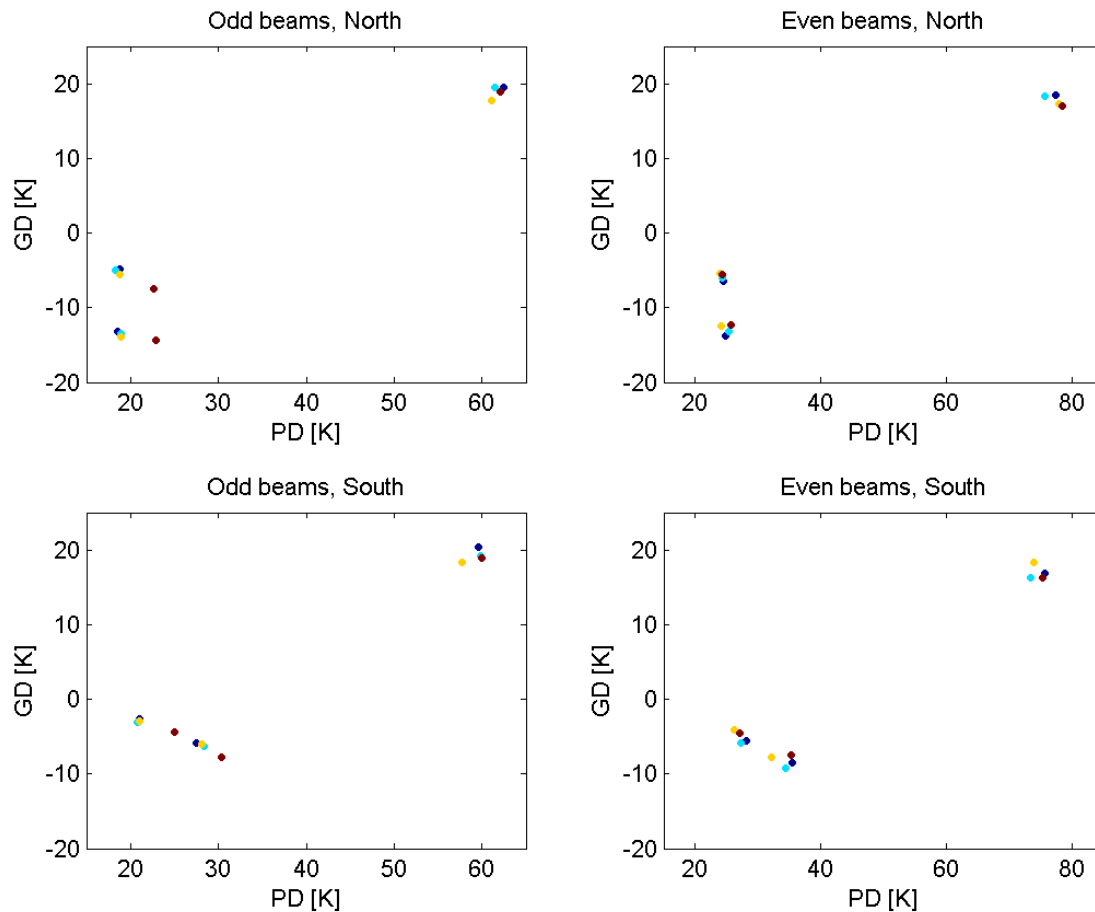
Scatter plot for filtered data (date and latitude, SST, etc.)

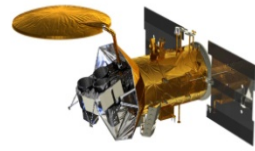




Second version of L2 Algorithm.

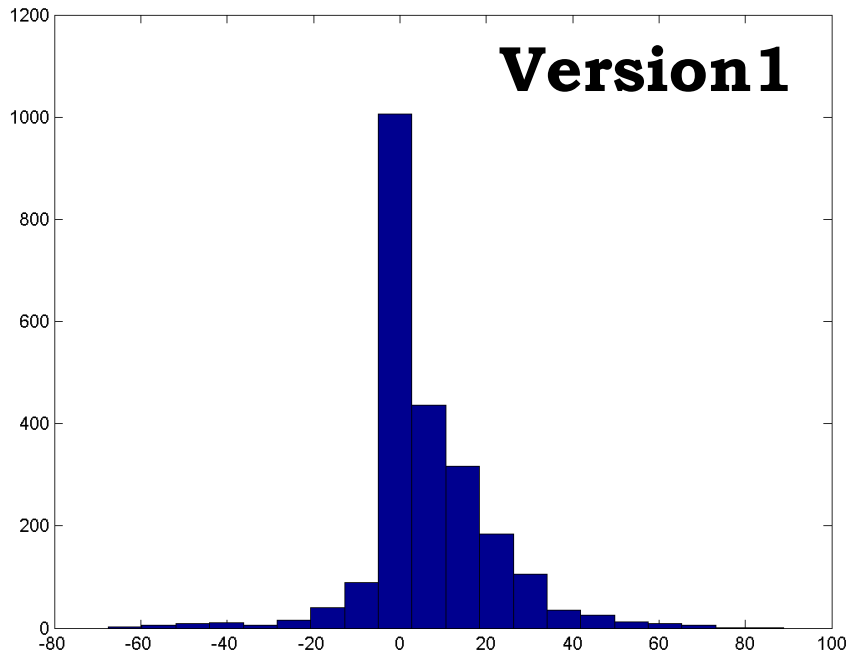
Step 3: Reference points calculation.



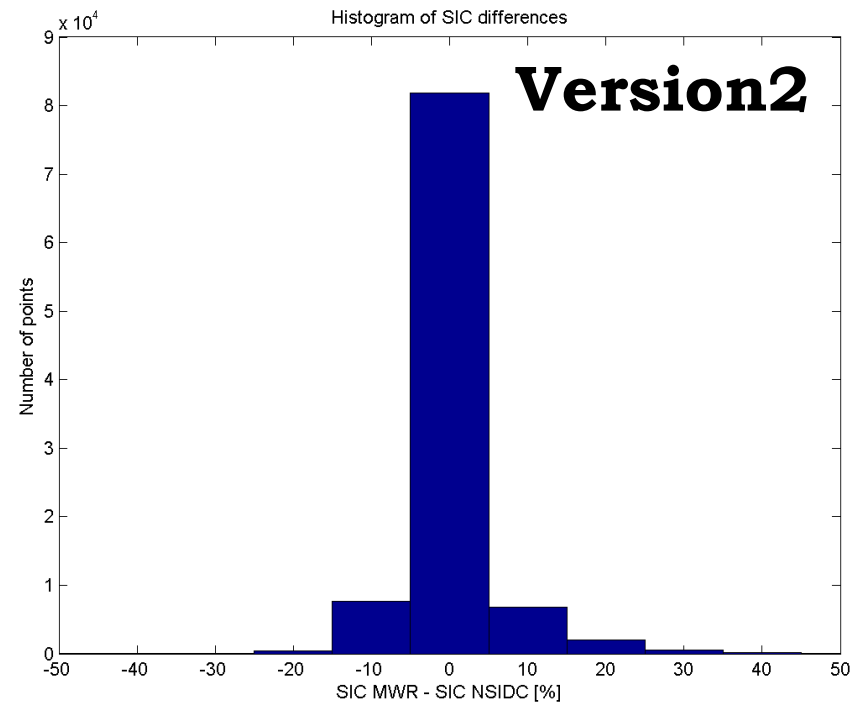


Comparisons between versions 1 and 2.

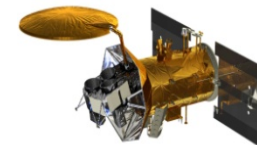
Error estimation



$\Delta IC = 14\%$

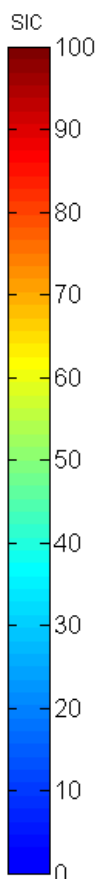
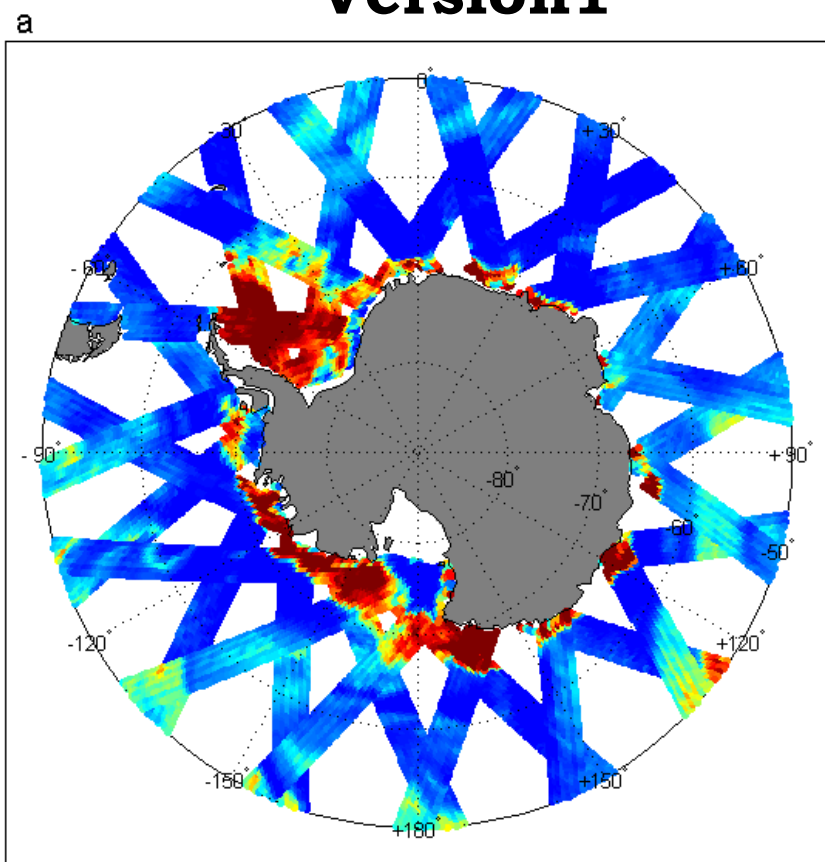


$\Delta IC = 5 \text{ to } 8\%$

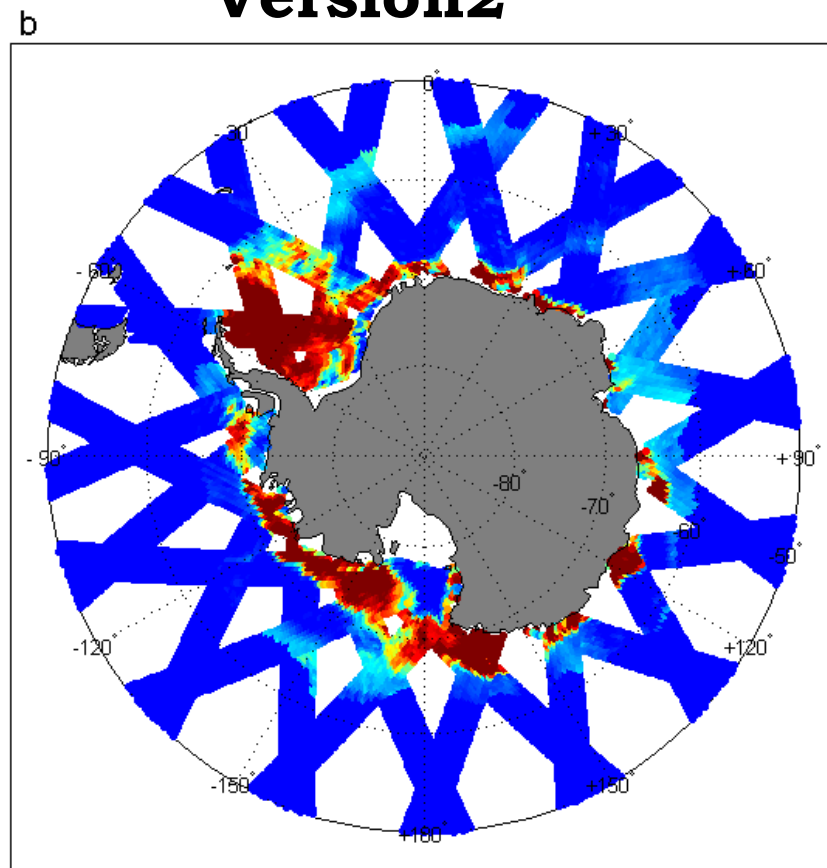


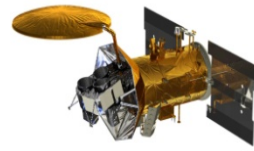
Comparisons between versions 1 and 2.

Version 1



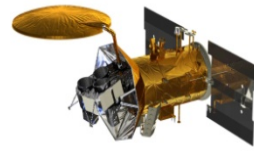
Version 2



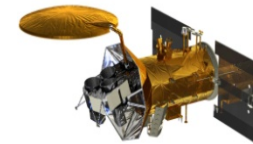


Questions? Preguntas?



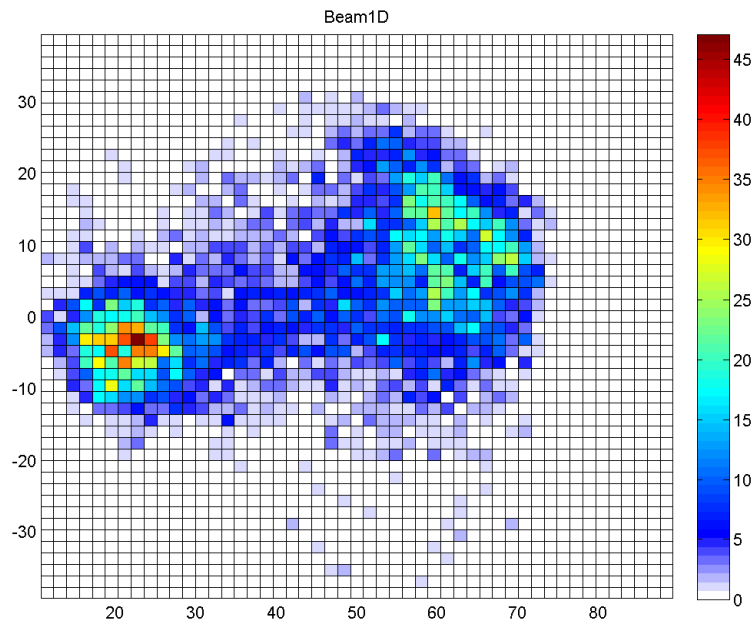
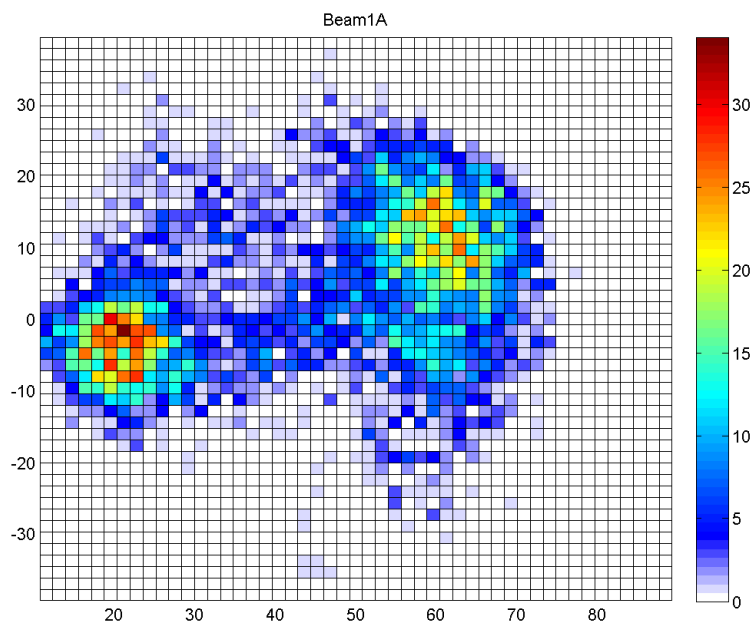


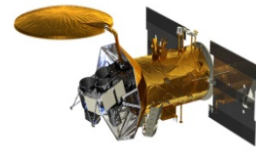
Additional Slides



First version of L2 Algorithm. Calibration Scheme

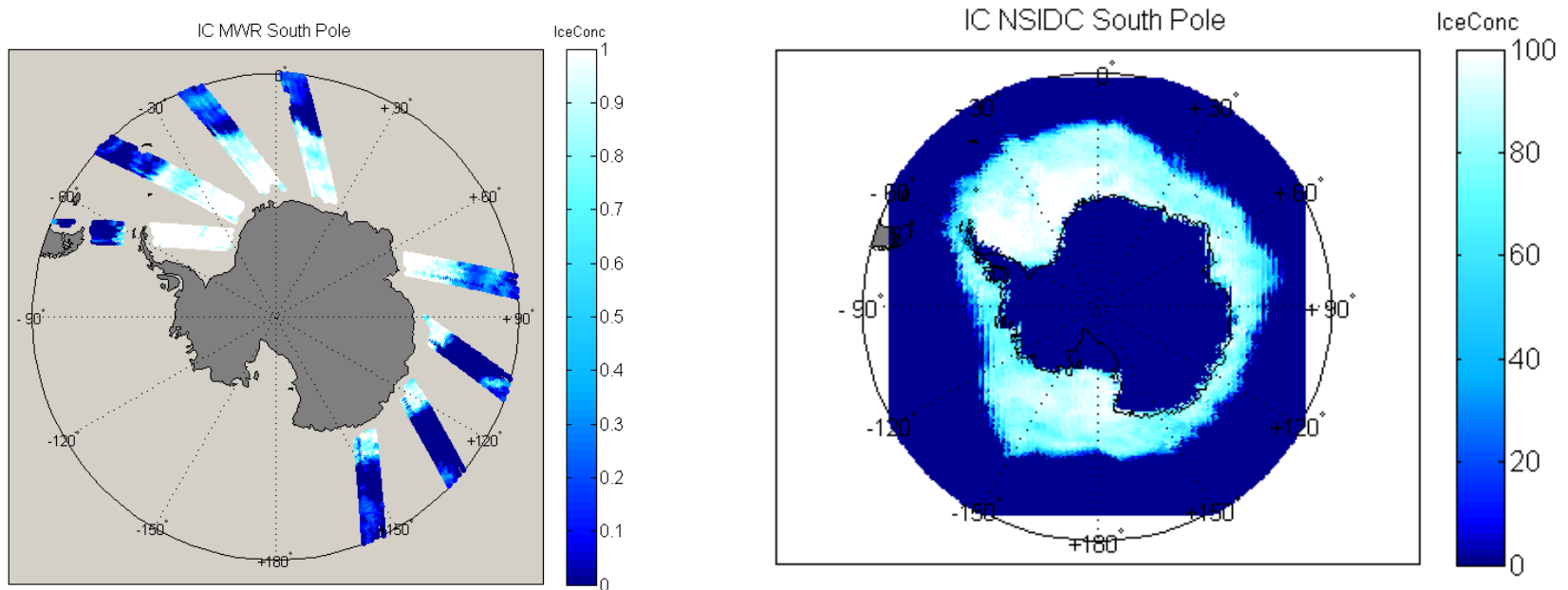
Step 2: Scatter plots construction.

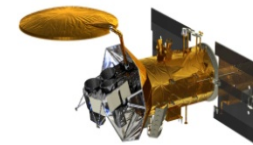




First version of L2 Algorithm.

Result and validation





First version of L2 Algorithm.

