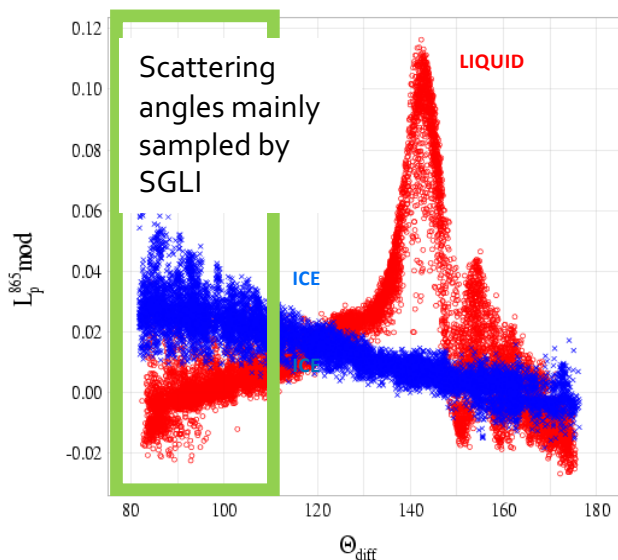


# Cloud phase determination from polarimetric observation of the SGLI/GCOM-C

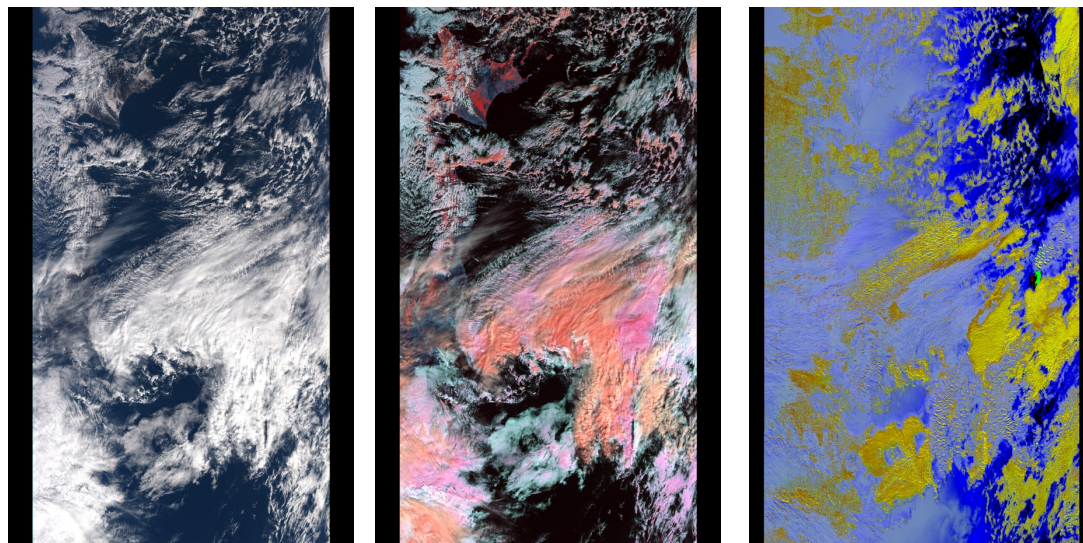
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**OUTLINE : (1)** A cloud phase retrieval algorithm is being developed using the fact that liquid cloud produce very low or negative polarisation at scattering angles typically observed by SGLI. **(2)** The polarisation derived phase index is compared to similar information available in SGLI cloud products but retrieved using multispectral information. **(3)** Collocated observations from the polarisation and VNIR/SWIR SGLI channels could improve detection of liquid phase in otherwise ambiguous conditions (thin clouds over snow/ice, large liquid droplets, mixed phase cloud or multi-layered situation...)



Due to SGLI angular sampling, the rainbow detection (used for POLDER algorithm) can not be applied to identify liquid clouds.

However the negative polarisation produced by liquid clouds for scattering angles below 110 can be detected by SGLI allowing unambiguous detection of liquid phase.

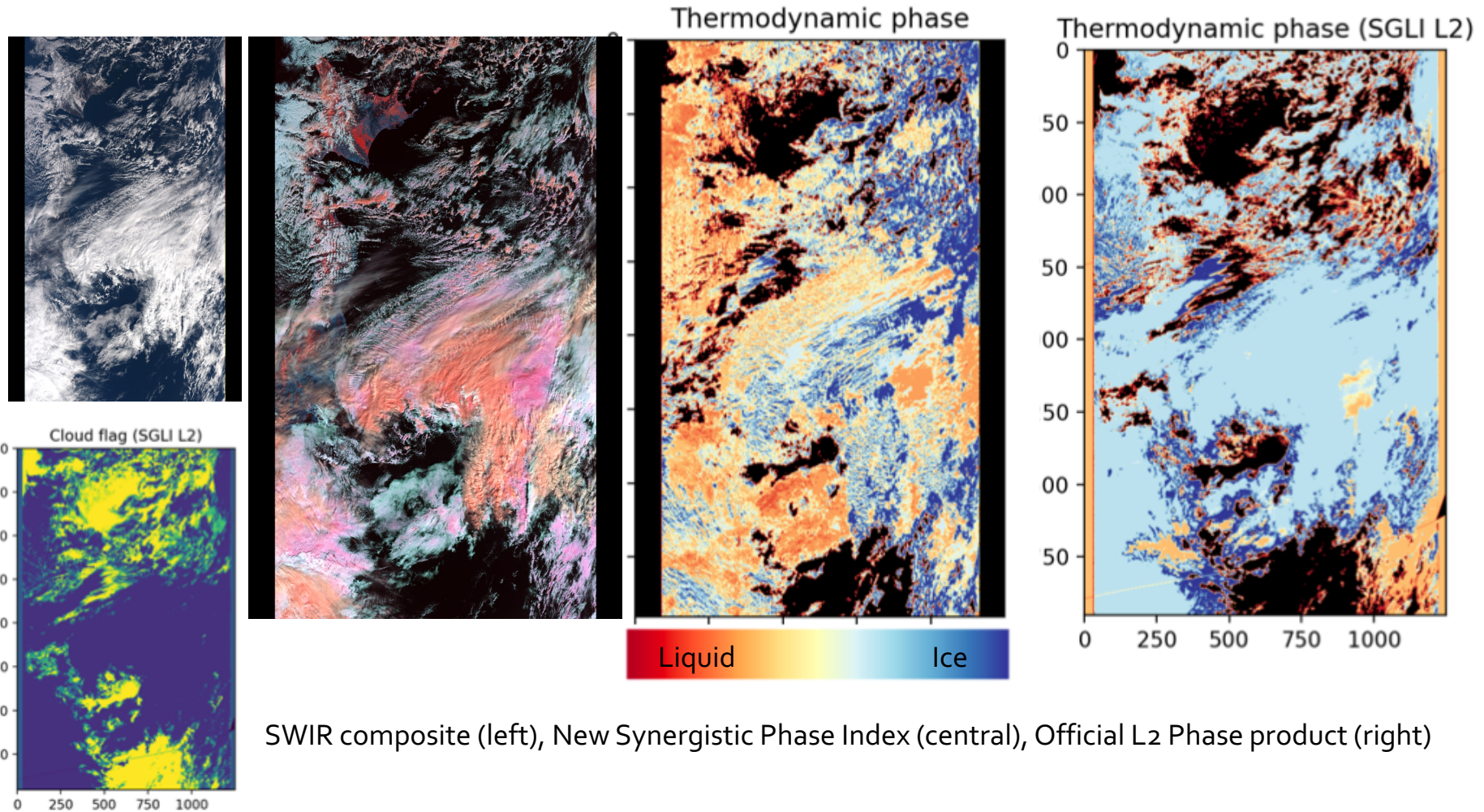


- A) True color composite image created from SGLI Visible channels 3, 5 and 8
- B) False color composite image created from SGLI visible channel 8 and SWIR channels 3 and 4
- C) False color composite image created from SGLI polarized channels. The yellow patches correspond to clouds exhibiting very low or negative polarization with significant difference between the two channels and are indicative of liquid phase clouds.

Comparing images (B) and (C) allows to identify liquid phase from polarization that would otherwise be difficult to identify from the SWIR channels only.

# New synergistic cloud phase index using combination of Polarisation and SWIR channels

Warning : Preliminary results for discussion only



SWIR composite (left), New Synergistic Phase Index (central), Official L2 Phase product (right)