AMSR2 Research Product (Thin Sea Ice Detection) Validation Results

Japan Aerospace Exploration Agency (JAXA),
Earth Observation Research Center (EORC)

Remote Sensing Technology Center of Japan (RESTEC)

Thin Sea Ice Detection

- **Algorithm developer**

  Kohei Cho (Tokai Univ.)

- **Algorithm overview**

  Detection of thin sea ice (up to 30-cm thickness) using 18.7 GHz V and H T_B

- **Validation**

  Comparison with MODIS TSI algorithm which detects thin sea ice using MODIS band 1 and 2 reflectance data.
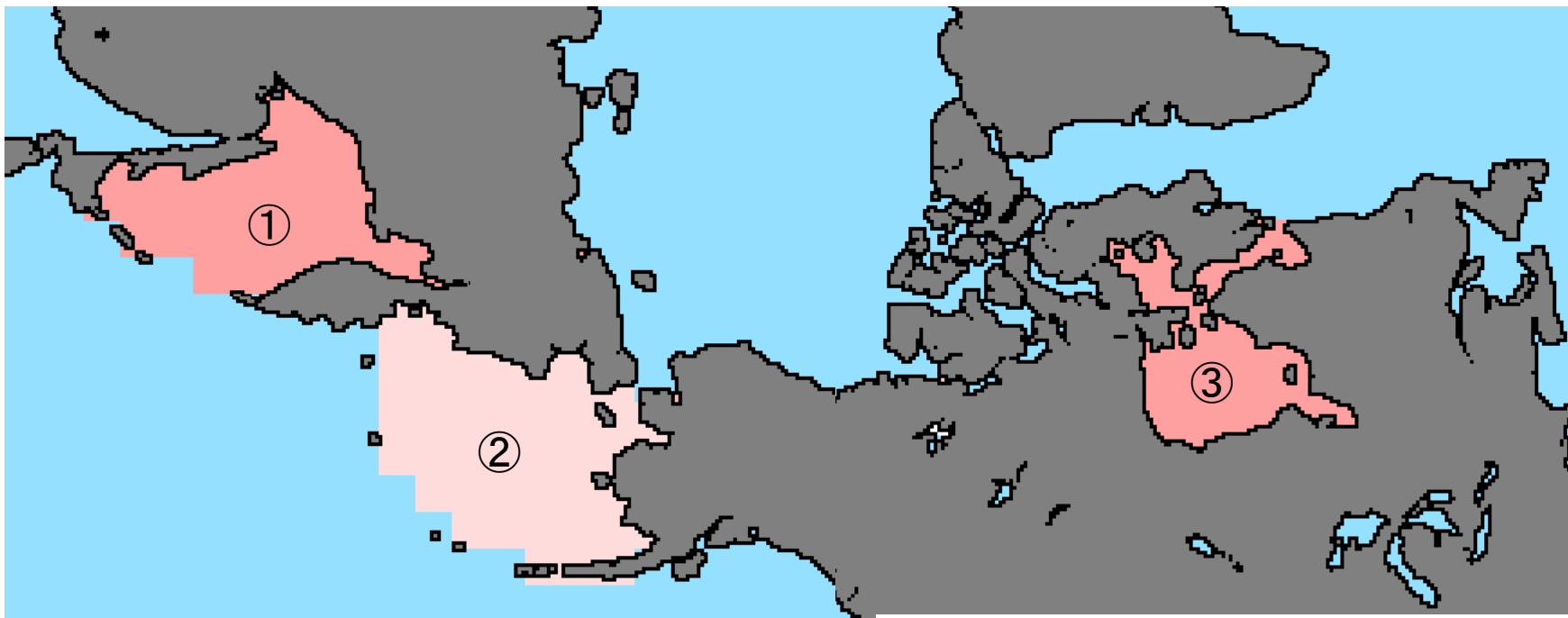
- **Goal accuracy**

  `right answer rate' of 80 % or more

  `right answer rate' =

  $$\frac{\text{The number of pixels both MODIS and AMSR2 TSI algorithms evaluated as the same kind of ice (thick ice or thin ice)}}{\text{The number of pixels where sea ice concentration is more than 90\%}}$$

Validation area
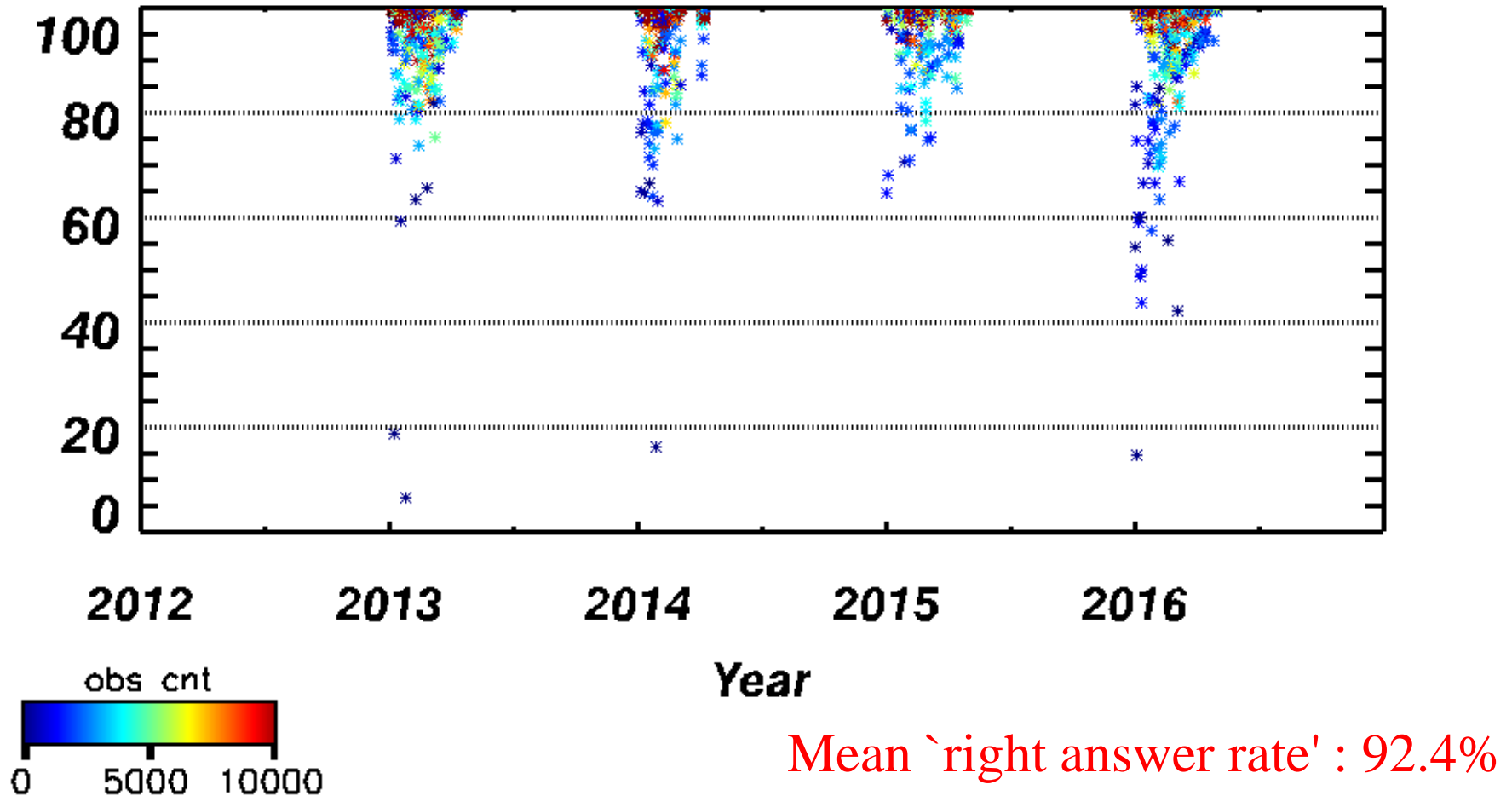

① Okhotsk Sea, ② Bering Sea, ③ Hudson Bay
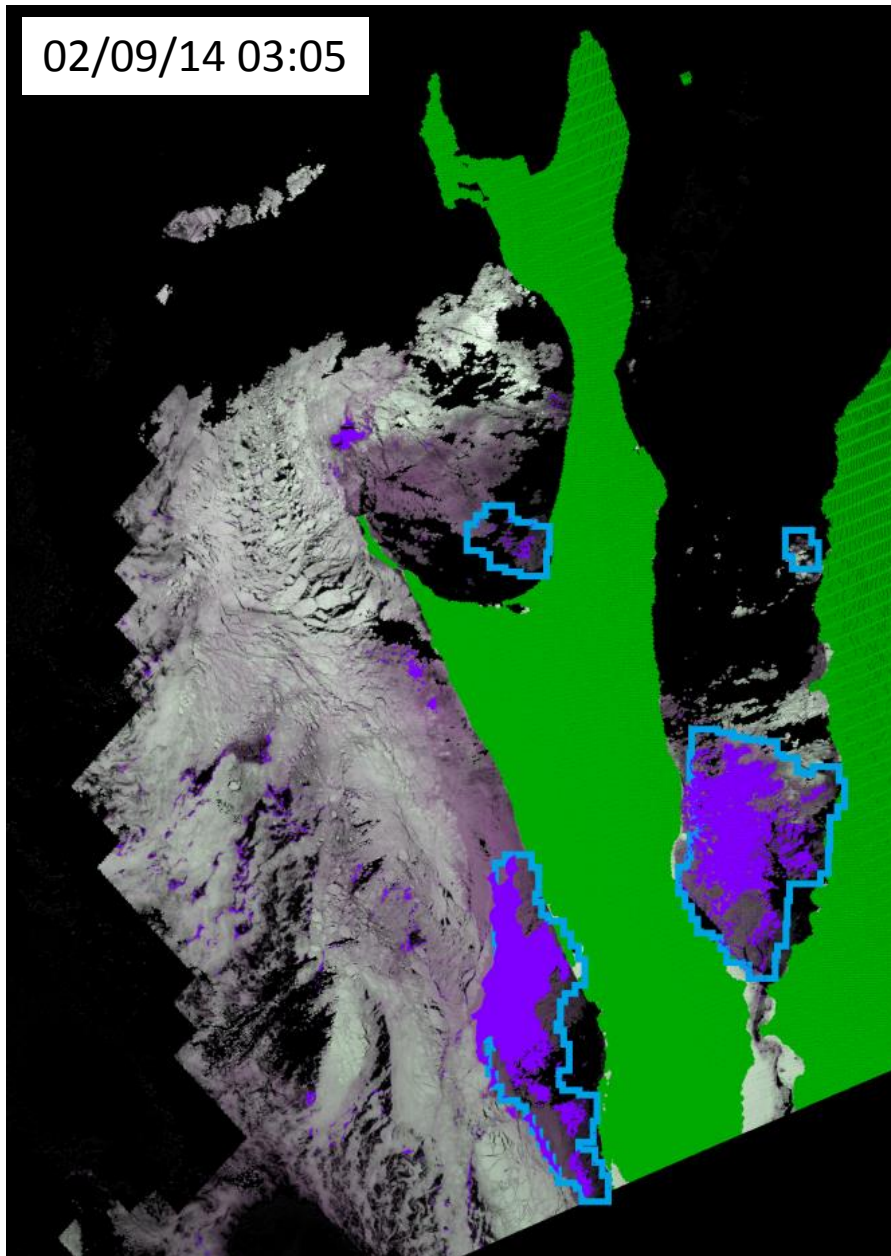
Newly added as validation areas.

`Right answer rate' from 2013 to 2016 in Okhotsk Sea

Okhotsk TSI

Mean `right answer rate' : 92.4%

`Right answer rate' became more than 80% in 676 out of 747 scenes.
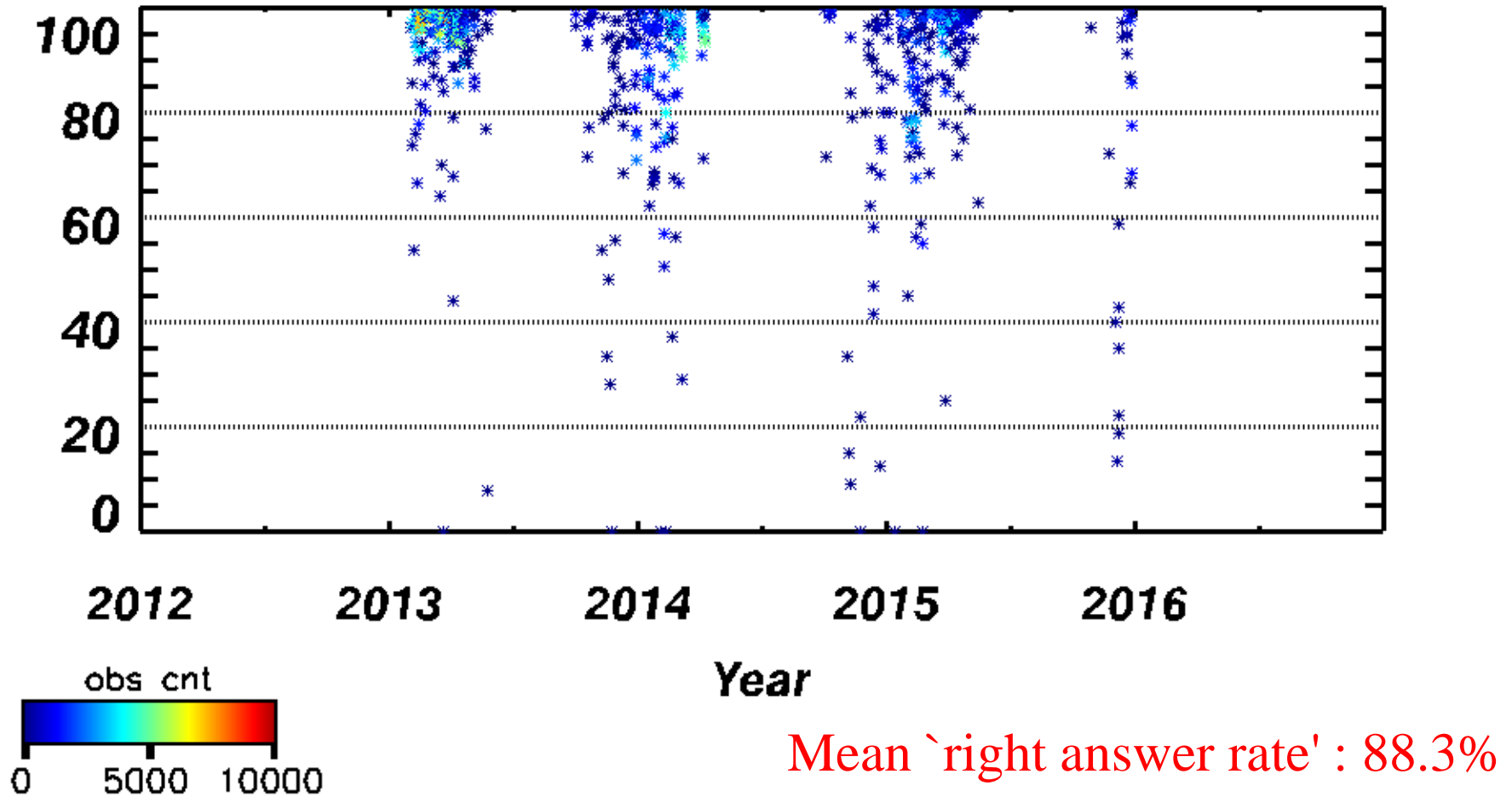
4

02/09/14 03:05

Purple pixels	: Thin Sea Ice by MODIS
White pixels	: Thick Sea Ice by MODIS
Right blue frame	: Thin Sea Ice by AMSR2
Black pixels	: Open water, cloudy area
Green pixels	: Land

`Right answer rate' 88.3%

0   250

km

5

`Right answer rate' from 2013 to 2016 in Bering Sea

Bering TSI

Mean `right answer rate' : 88.3%

`Right answer rate' became more than 80% in 469 out of 569 scenes.

04/08/14 23:35

0   250
km

Purple pixels   : Thin Sea Ice by MODIS
White pixels   : Thick Sea Ice by MODIS
Right blue frame   : Thin Sea Ice by AMSR2
Black pixels   : Open water, cloudy area
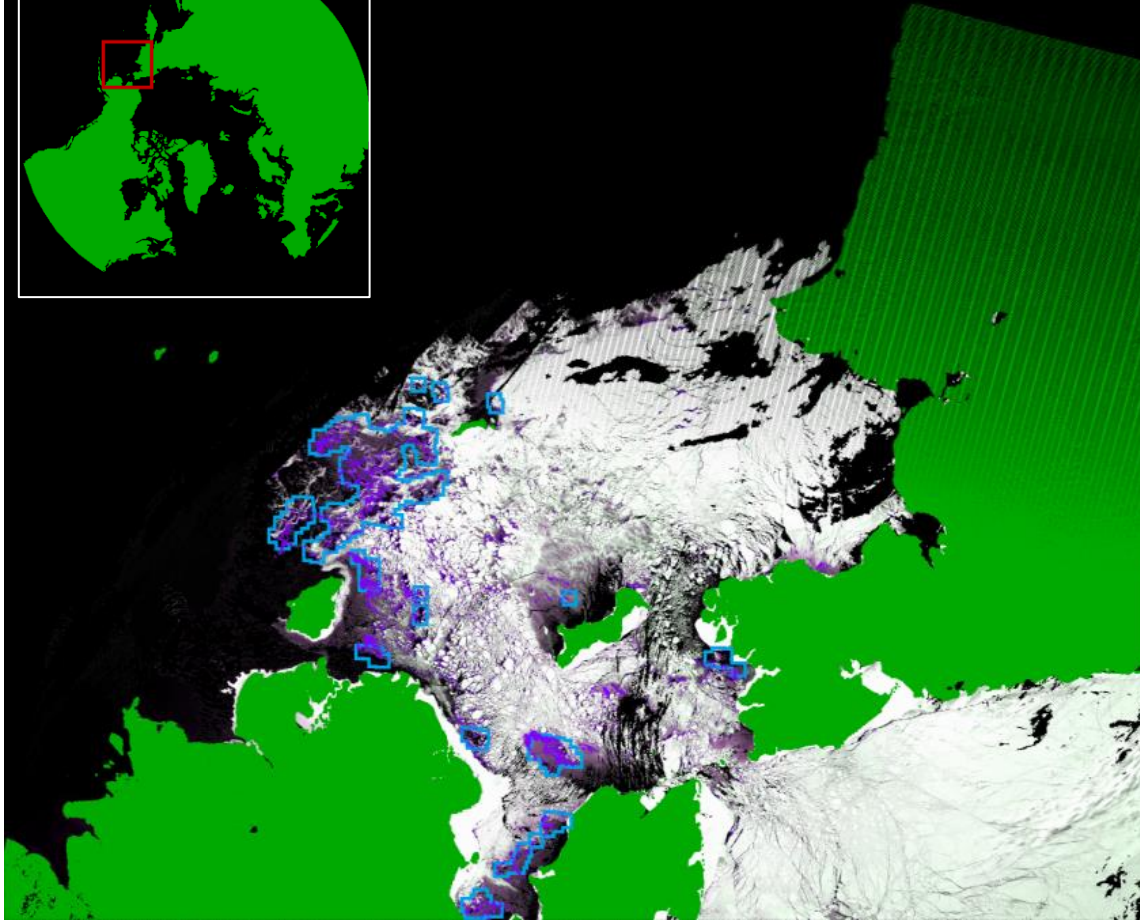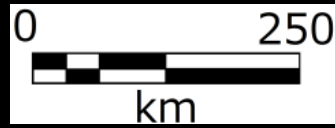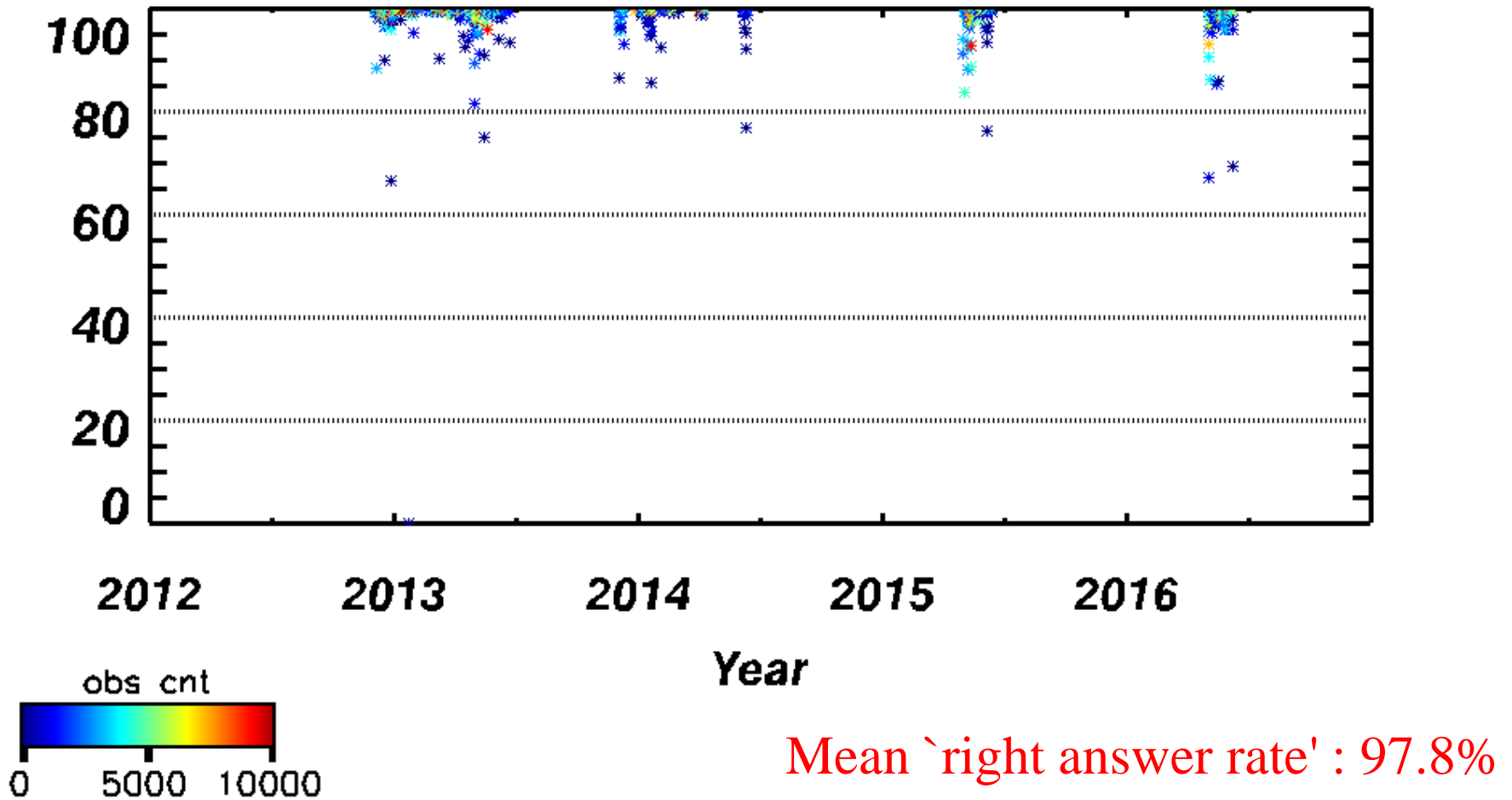Green pixels   : Land

`Right answer rate' 92.7%

`Right answer rate' from 2013 to 2016 in Hudson Bay
Hudson TSI

Mean `right answer rate' : 97.8%

`Right answer rate' became more than 80% in 424 out of 434 scenes.

03/05/14 17:05

0   250

km

Purple pixels   : Thin Sea Ice by MODIS

White pixels   : Thick Sea Ice by MODIS

Right blue frame   : Thin Sea Ice by AMSR2

Black pixels   : Open water, cloudy area

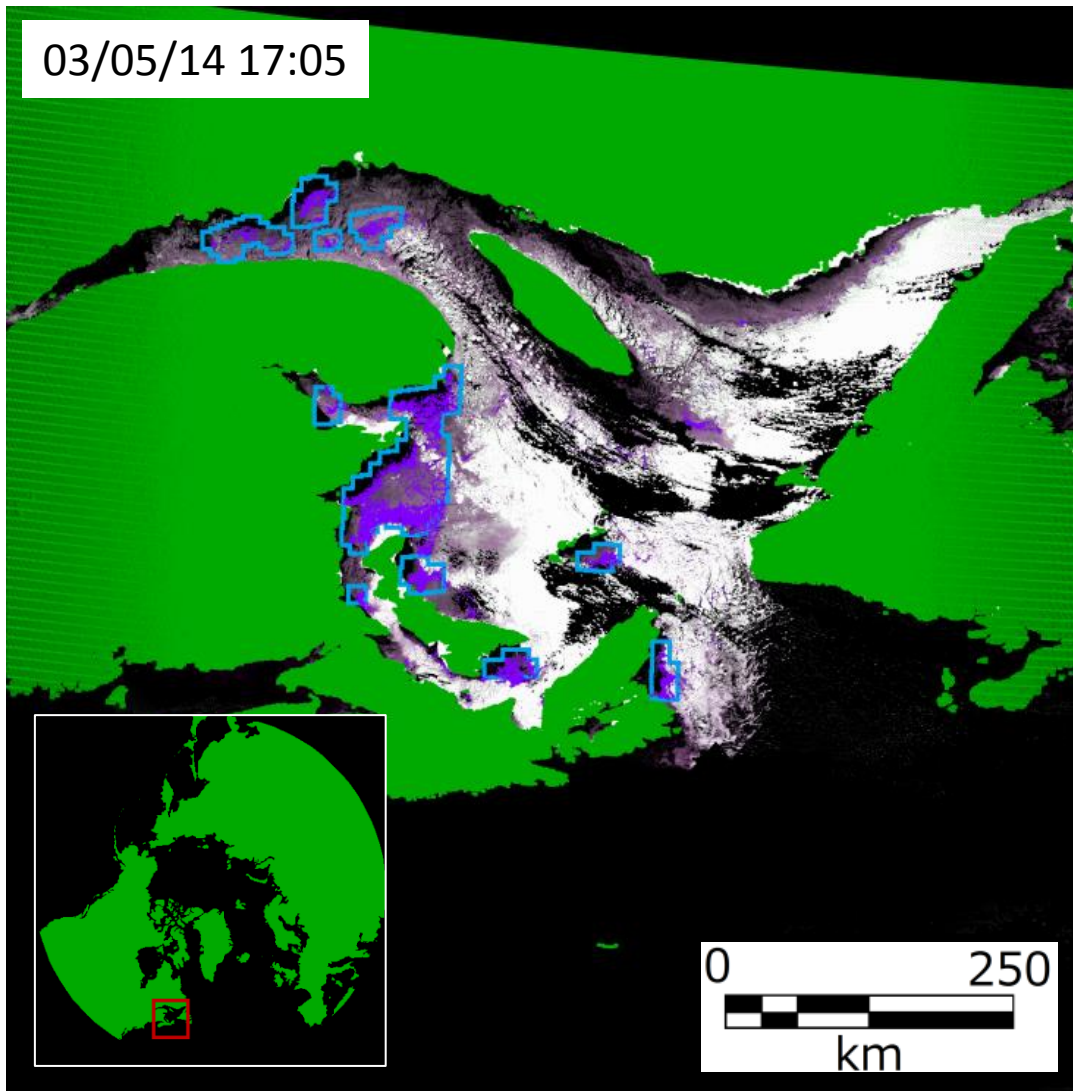Green pixels   : Land

`Right answer rate' 93.7%