

# Workshop 3

Nov. 22, 2017 (09:00 - 12:00)  
Lotte Hotel Jeju, Emerald Room

Time	Title	Presenter
09:00 – 09:25	Arctic sea ice motion and deformation measurements using high-resolution optical satellite images	Chang-Uk Hyun, Hyun-cheol Kim (Unit of Arctic Sea-Ice Prediction, Korea Polar Research Institute)
09:25 – 09:50	Tracing Drift Ice in the Arctic Ocean using Model and Reanalysis data	GwangSeob Park, Young Back Son (Marine Ecosystem Dynamic Lab, Korea Institute of Ocean Science & Technology)
09:50 – 10:15	The sea surface warming in the East China sea using in-situ and satellite data	Young Back Son, Gwangseob Park (Jeju Environment Research Section, Korea Institute of Ocean Science & Technology, KIOST)
10:15 – 10:40	Convolutional Neural Network Based Image Classification: A Case Study in the Polar Regions	Junhwa Chi, Hyun-Cheol Kim (Korea Polar Research Institute, Unit of Arctic Sea-Ice Prediction)
10:40 – 11:00	Break Time	
11:00 – 11:20	Decadal changes in the Arctic Ocean from 1998 to 2016 measured by multi-satellite data	Hyuna Kim, Hyun-Cheol Kim, Young Back Son (Jeju Environment Research Section, Korea Institute of Ocean Science & Technology)
11:20 – 11:40	Study on likelihood assessment of Harmful Algal Bloom (HAB) outbreak using big data	Young Back Son, Kyongseok Park, Jungho Um, Jin Young Jeong
11:40 – 12:00	A New Approach to Managing and Analyzing High-resolution Scientific Data	Kyongseok Park, Sunggeun Han, Jungho Um, Hyunwoo Kim (Scientific Data Technology Lab., Korea Institute of Science & Technology Information, KISTI)

## Arctic sea ice motion and deformation measurements using high-resolution optical satellite images

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Emerald Room

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### Abstract.

Sea ice motion and deformation have been measured using low-resolution microwave remote sensing to monitor wide polar area. This study presents an application of high-resolution optical satellite images for sea ice motion and deformation measurements. The sea ice motion was measured by using image block matching technique with hierarchical approach to enhance computing performance and multi-temporal images acquired from multiple spaceborne sensors of Korea Multi-Purpose Satellites (KOMPSATs). The sea ice motion extracted from image pairs of short time intervals were compared with in-situ buoy location records. The errors indicate more accurate measurements than from the sea ice motion datasets from conventional low-resolution microwave data. In the results of sea ice deformation, free drift patterns of ice floes were delineated from the high-resolution satellite images. The results demonstrate that using high-resolution optical images from operational satellites enabled accurate sea ice motion measurement, thus this approach could be used for expanding sea ice motion and deformation dataset.

Keywords: sea ice, high-resolution satellite image, motion, deformation