ISAES 2019

XIII International Symposium on Antarctic Earth Sciences

22 July (Mon) – 26 July (Fri) , 2019
Songdo Convensia, Incheon, Republic of Korea

Abstract List – Oral

Oral Presentation

No.	Day	Time	Presenter	E-mail	Institution/Organization	Abstract no.	Session no.	Title
177	TUE	16:15-16:30	Suvrat Kaushik	suvrat.k007@gmail.com	Indian Institute of Remote Sensing, India	A191	18	Sea ice extent and variability monitoring and wind speed retrieval along polar Marginal Ice Zones using SCATSAT-1 scatterometer and SAR data
178	TUE	15:45-16:00	Iman Heidarpour	i.heidarppour@kopri.re.kr	Korea Polar Research Institute, Korea	A207	18	KOMPSAT5 Satellite Sea-Ice Image High-Frequency Multiplicative Noise Effects Analysis Based on Joint Complex Time-Frequency Domain Method
179	TUE	16:00-16:15	Hyangsun Han	hyangsun@kopri.re.kr	Korea Polar Research Institute, Korea	A274	18	Monitoring iceberg A68 calved from the Larsen C Ice Shelf using satellite remote sensing
180	TUE	15:00-15:15	Seunghee Kim	seunghee@kopri.re.kr	Korea Polar Research Institute, Korea	A310	18	Estimation of ice shelf thinning derived from surface depression of an ice rumple
181	TUE	15:15-15:30	Jamin Greenbaum	jamin@utexas.edu	University of Texas Institute for Geophysics, USA	A438	18	Ocean-driven thinning of Totten and Shackleton Ice Shelves, the two primary outlets of the Aurora Subglacial Basin in East Antarctica
182	TUE	15:30-15:45	Chunxia Zhou	zhoucx@whu.edu.cn	Wuhan University, China	A454	18	Mass Balance Assessment of the Lambert Glacier-Amery Ice Shelf System , East Antarctica
183	MON	16:15-16:30	Ziyin Zhang	zzy_ahgeo@163.com	Institute of Urban Meteorology, China Meteorological Administration, China	A026	19	Possible influence of the Antarctic Oscillation on haze pollution in North China
184	MON	15:30-16:00	Suchithra Sundaram	suchithra.sundaram@nyu.edu	New York University, UAE	A035	19	Does the combined effect of the Indian summer monsoon and Indian Ocean Dipole modulate the September Antarctic sea ice?
185	MON	17:00-17:15	Seongjoong Kim	seongjkim@kopri.re.kr	Korea Polar Research Institute, Korea	A039	19	Recent Antarctic Peninsula cooling derived by southern stratospheric polar vortex weakening
186	MON	16:45-17:00	Vladyslav Tymofeyev	tvvladys@gmail.com	Ukrainian Hydrometeorological Institute, Ukraine	A105	19	Climate variability in the West Antarctic sector and potential of seasonal predictability of the tropica Pacific and Atlantic zone
187	MON	12:15-12:30	Jaho Koo	zach45@yonsei.ac.kr	Yonsei University, Korea	A124	19	Relationship between total ozone and regional meteorology around the Weddell Sea
188	MON	16:00-16:15	Taejin Choi	ctjin@kopri.re.kr	Korea Polar Research Institute, Korea	A226	19	Characteristics of Surface Meteorology at Lindsey Islands, Amundsen Sea, West Antarctica
189	MON	11:45-12:00	John Moore	john.moore.bnu@gmail.com	Beijing Normal University, China	A229	19	What can stratospheric aerosol injection geoengineering do for Antarctic ice mass loss - lessons from Greenland
190	MON	16:30-16:45	Dhahyun Ahn	devorahn711@gmail.com	Yonsei University, Korea	A250	19	Potential effect of air pollution from the subtropical Southern hemisphere to Antarctica: spatiotemporal patterns of AOD, CO, NO2, and HCHO revealed by satellite observations
191	MON	15:00-15:30	Sangyoon Jun	syjun@kopri.re.kr	Korea Polar Research Institute, Korea	A279	19	Two leading modes of Antarctic surface temperature and their contributions to Antarctic surface climate change
192	MON	11:30-11:45	Sangjong Park	sangjong@kopri.re.kr	Korea Polar Research Institute, Korea	A281	19	30-YEAR CLIMATOLOGY OBSERVED AT KING SEJONG STATION, ANTARCTICA
193	MON	11:00-11:30	Sheeba Chenoli	sheeba@um.edu.my	University Malaya, Malaysia	A296	19	The Linkage between the Antarctic Sea Ice Extent in Indian Ocean sector and the Indian Summer Monsoon Rainfall
194	MON	12:30-12:45	Wonseok Seo	wonseok0623@kopri.re.kr	Korea Polar Research Institute, Korea	A340	19	Characteristics of Atmospheric Boundary Layer at the Jang Bogo Station, Terra Nova Bay, East Antarctica in Summer
195	MON	12:45-13:00	Kyonghwan Seo	khseo@pusan.ac.kr	Pusan National University, Korea	A364	19	Impact of the Madden-Julian oscillation on Antarctic sea ice
196	MON	12:00-12:15	Emilia Kyung Jin	jin@kopri.re.kr	Korea Polar Research Institute, Korea	A373	19	The future projection of ice sheet melting and sea level rise under the RCP scenarios
197	WED	11:15-11:30	Mi Duan	duanmi_1995@163.com	Shanghai Ocean University, , China	A380	20	Otolith edge chemistry reveals the role of water mass in structuring Electrona antarctica population in the Antarctic Circumpolar Current system
198	WED	11:00-11:15	Bo Deng	bo_deng@163.com	ShangHai Ocean University, China	A381	20	Variation in fatty acid composition and diet of Antarctic krill (Euphausia superba) in the Bransfield Strait during autumn 2017 and 2018
199	WED	10:30-11:00	Hector Mansilla Vera	hmansilla@inach.cl	Chilean Antarctic Institute, INACH, Chile	A418	20	The paleontological heritage of Fossil Hill Formation on the King George Island. An Early Eocene Lagerstätten from Antarctic?.
200	WED	11:45-12:00	Michael Wethington	wethi002@umn.edu	Polar Geospatial Center, USA	A462	20	Using Very- and Ultra-High resolution Digital Elevation Models in Antarctic Biological Research
201	WED	11:30-11:45	Latife Cakir Bayram	lcakir@erciyes.edu.tr	Erciyes University, Turkey	A475	20	The Cytological, Microbiological and Ophthalmic Evaluation of Ocular Surface Samples Taken from Penguin Species of the Antarctic Peninsula : Preliminary evaluation of the results belong to ten eye swabs
202	FRI	10:30-10:45	Catherine Huerta	catherinne.huerta@gmail.com	Universidad Católica de Temuco, Chile	A114	21	Preliminary results of a geomicrobiological study in the Madre de Dios archipelago
203	FRI	10:45-11:00	Oksun Kim	oskim@kopri.re.kr	Korea Polar Research Institute, Korea	A367	21	Distinctive microbial assemblages and their ecological function in permanently ice-covered lakes of the Dry Valleys, Antarctica
204	FRI	11:00-11:15	Yuzhong Zhang	zhangyz@sdu.edu.cn	Shandong University, China	A379	21	Mechanistic insight into 3-methylmercaptopropionate metabolism and kinetical regulation of demethylation pathway in marine dimethylsulfoniopropionate-catabolizing bacteria
205	FRI	11:15-11:45	José Perez Donoso	jose.perez@unab.cl	Andrés Bello National University National University, Chile	A405	21	Geomicrobiology studies at Union Glacier in the Ellsworth mountains: microbial survival in one of the most extreme environments in Antarctica
206	FRI	11:45-12:00	Vicente Cabrera Opazo	cavi.contacto@gmail.com	Andrés Bello National University National University, Chile	A453	21	Bioprecipitation of calcium carbonate induced by bacteria isolated from regolith of Ellsworth Mountains
207	FRI	12:00-12:30	Jill Mikucki	jmikucki@utk.edu	University of Tennessee, USA	A472	21	Geomicrobiological transformations in Antarctic subglacial environments
208	WED	17:00-17:15	Amin Beiranvand Pour	amin.beiranvand@kopri.re.kr	Korea Polar Research Institute, Korea	A023	22	Mapping poorly exposed lithologies using Landsat-8 and ASTER satellite data in Antarctic Peninsula
209	WED	16:45-17:00	Brandi Downs	downs.152@osu.edu	The Ohio State University, USA	A137	22	Observing the Cryosphere with Next Generation GNSS-Reflectometry
210	WED	15:00-15:30	Mathieu Morlighem	mmorligh@uci.edu	University of California Irvine, USA	A215	22	BedMachine Antarctica v1: a new subglacial bed topography and ocean bathymetry dataset of Antarctica
211	WED	15:30-16:00	Simon Cox	s.cox@gns.cri.nz	GNS Science, New Zealand	A252	22	Release of the continent-wide dataset GeoMAP v.201907
212	WED	16:30-16:45	Esha Shah	eshu7456@gmail.com	Gujarat University, India	A293	22	Change Detection over the major ice shelves of Antarctica using RADARSAT and Sentinel Data
213	WED	16:00-16:30	Chang Qing Ke	kecq@nju.edu.cn	Nanjing University, China	A339	22	Mass balance of Antarctic ice sheet based on CryoSat-2 from 2011-2018
214	WED	17:15-17:30	Changuk Hyun	chyun@kopri.re.kr	Korea Polar Research Institute, Korea	A360	22	High-resolution remote sensing techniques for monitoring penguin colonies in the Ross Sea, Antarctica
215	THU	12:00-12:15	Yafei Wang	wangyf1997@foxmail.com	Jilin university, China	A132	23	Hydraulic fracturing in fissured ice borehole wall: theory and tests
216	THU	11:45-12:00	Rusheng Wang	wangrs@jlu.edu.cn	Jilin University, China	A147	23	A New Smart System of Rapid Continuous Coring Drilling with Air Reverse Circulation in Antarctica
217	THU	11:30-11:45	Hyomin Kim	hmkim@njit.edu	New Jersey Institute of Technology, USA	A169	23	Autonomous Instrument Network for Coordinated Observations at Remote Antarctic Locations
218	THU	11:00-11:15	Changhyun Chung	ch.chung@kopri.re.kr	Korea Polar Research Institute, Korea	A261	23	Development of OPV (Optional Piloted Vehicle) for Polar Research
219	THU	10:30-11:00	Stephen Yan	jbyan@ua.edu	University of Alabama, USA	A305	23	Ultra-Wideband Multiple Input and Multiple Output Radar for Airborne Ice Sounding and Imaging
220	THU	11:15-11:30	Stephen Yan	jbyan@ua.edu	University of Alabama, USA	A306	23	Ultra-wideband Microwave Radars for Airborne Mapping of Near-Surface Internal Layers in Polar Firn and Ice

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Session18: Antarctic sea ice variability and ice shelf processes

Estimation of ice shelf thinning derived from surface depression of an ice rumple

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Ice rumples are locally-grounded features of flowing ice shelves, elevated tens of meters above the surrounding surface. These features may significantly impact the dynamics of ice-shelf grounding lines, which are strongly related to shelf stability. However, the observation of such surface feature was hardly carried out due to its small size. The present study was designed to observe and better understand the transient nature of the ice rumple surface elevation. We used DLR's TanDEM-X and TerraSAR-X bi-static SAR data to construct high-resolution DEMs of the Thwaites ice shelf in West Antarctica from 2011 to 2013. During the period 2011-2013, the deformation maps showed the presence of an ice rumple and its recent fading. The ice rumple may have appeared sometime between the observations of a grounding line of the Thwaites glacier using Double-Differential Interferometric SAR (DDInSAR) in 1996 and 2011. The observed degradation of the ice rumple during 2011–2013 may be related to a loss of contact with the underlying bathymetry caused by the thinning of the ice shelf. We used a viscoelastic deformation model with a finite spherical pressure source to interpret the surface changes in terms of pressure changes at the bottom of the ice shelf. Global optimization allowed us to fit the model to the observed deformation map, producing reasonable estimates of the ice thickness at the center of the pressure source. Then, we calculated the thickness change using the estimated thicknesses from the viscoelastic deformation model. The thinning rate was much higher than that of previously reported levels, suggesting strong melting at a local pinning point. We conclude that combining the use of multiple high-resolution DEMs and the simple viscoelastic deformation model is feasible for observing and understanding the transient nature of small ice rumples, with implications for monitoring ice shelf stability.