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# North Pacific Marine Science Organization PICES 2018 Annual Meeting

Toward integrated understanding of  
ecosystem variability in the North Pacific

Oct. 25 – Nov. 4, 2018 Yokohama, Japan



# **Wooster Award (2018)**





**Dr. Vyacheslav B. Lobanov**

**V.I. Il'ichev Pacific Oceanological Institute  
(Vladivostok, Russian Federation)**

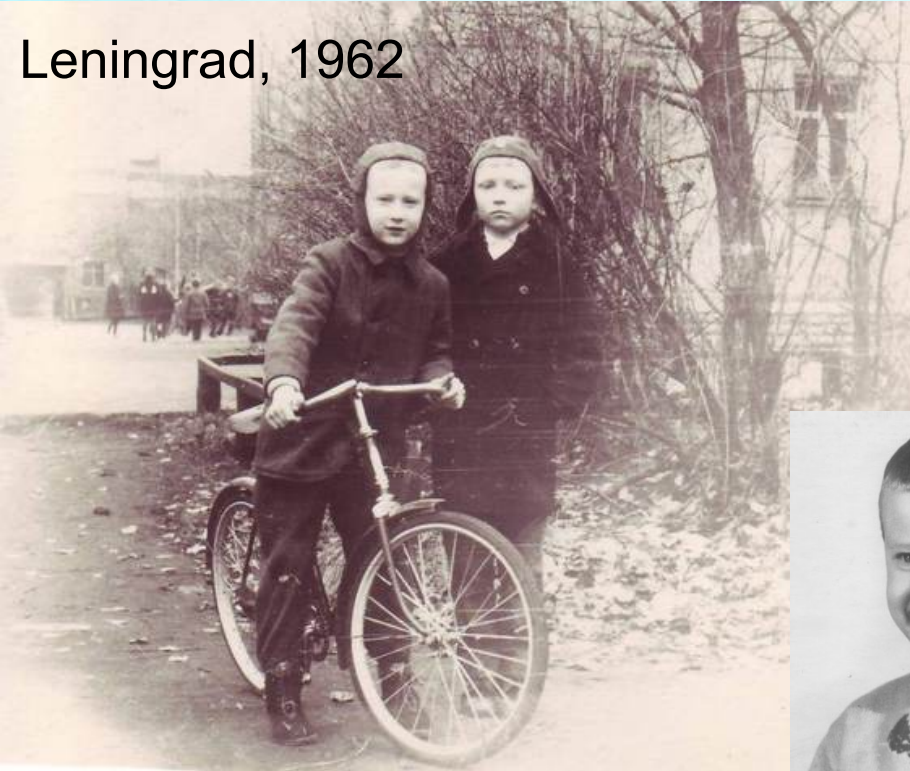


# Dr. Lobanov in his Early Days

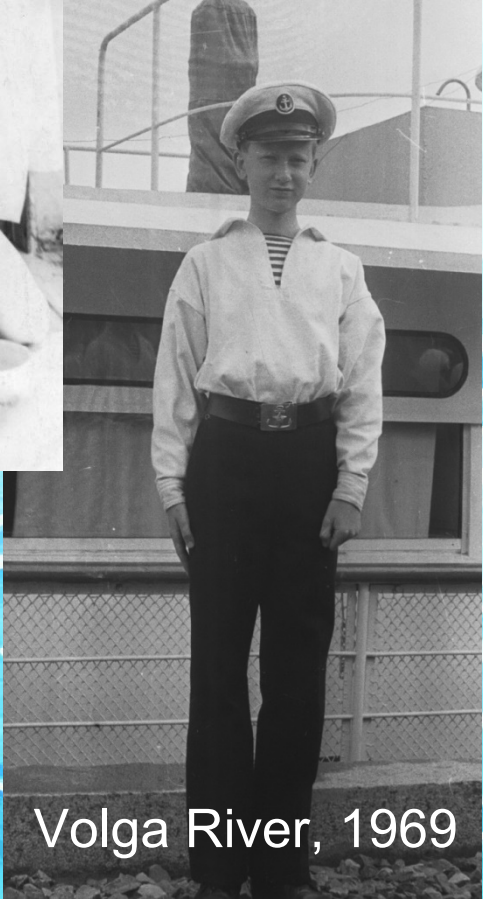


# Dr. Lobanov in his Early Days

Leningrad, 1962



1961



Volga River, 1969

# Slava was interested in the Sea – and the things that live in it -- from an early age

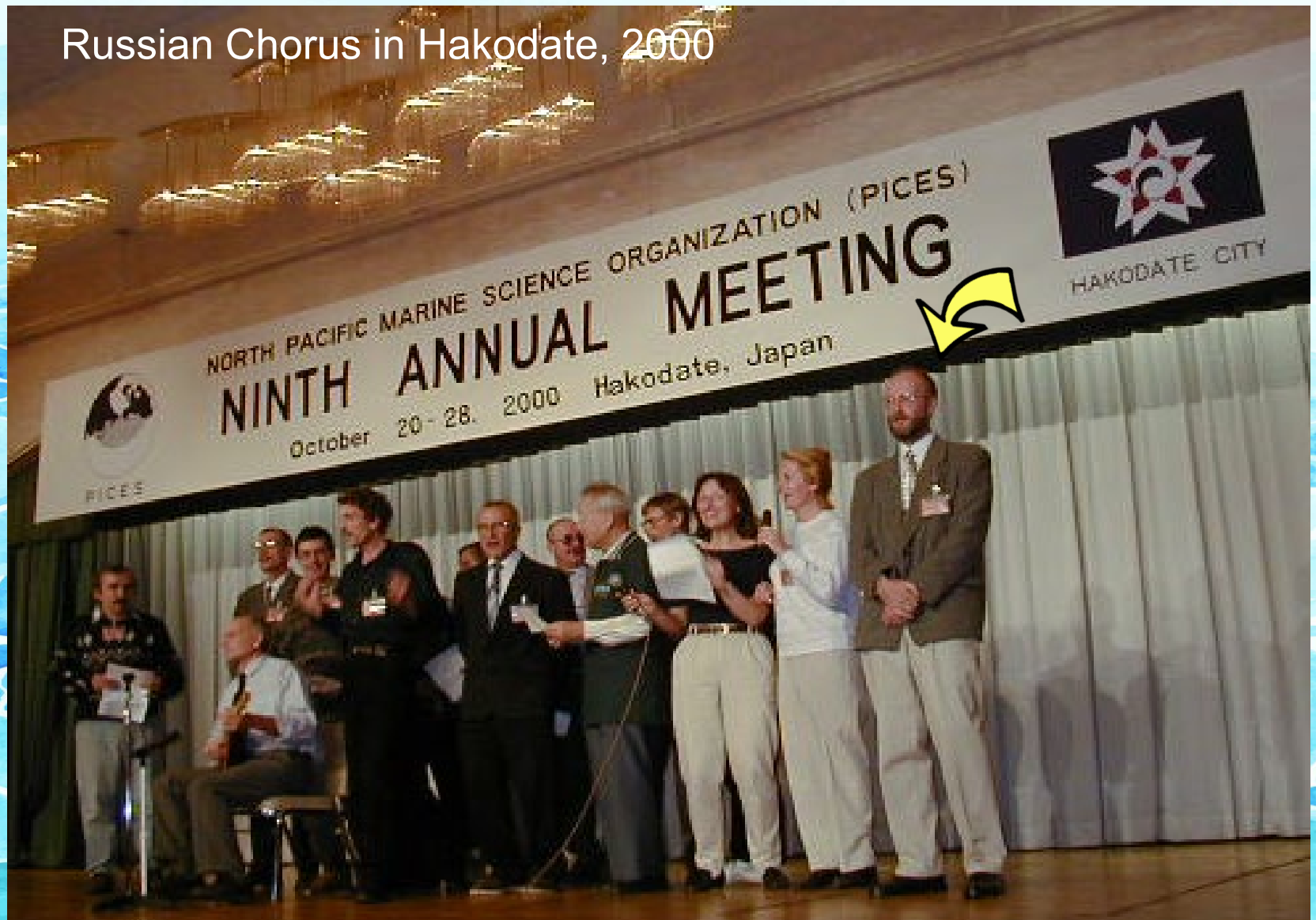


# Young Slava dreamed of being a Rock Star ...



# ... and he is still making music

Russian Chorus in Hakodate, 2000





# Slava met the love of his life, Alica ...



# ... and is a loving husband and father



# And a very proud Grandfather!

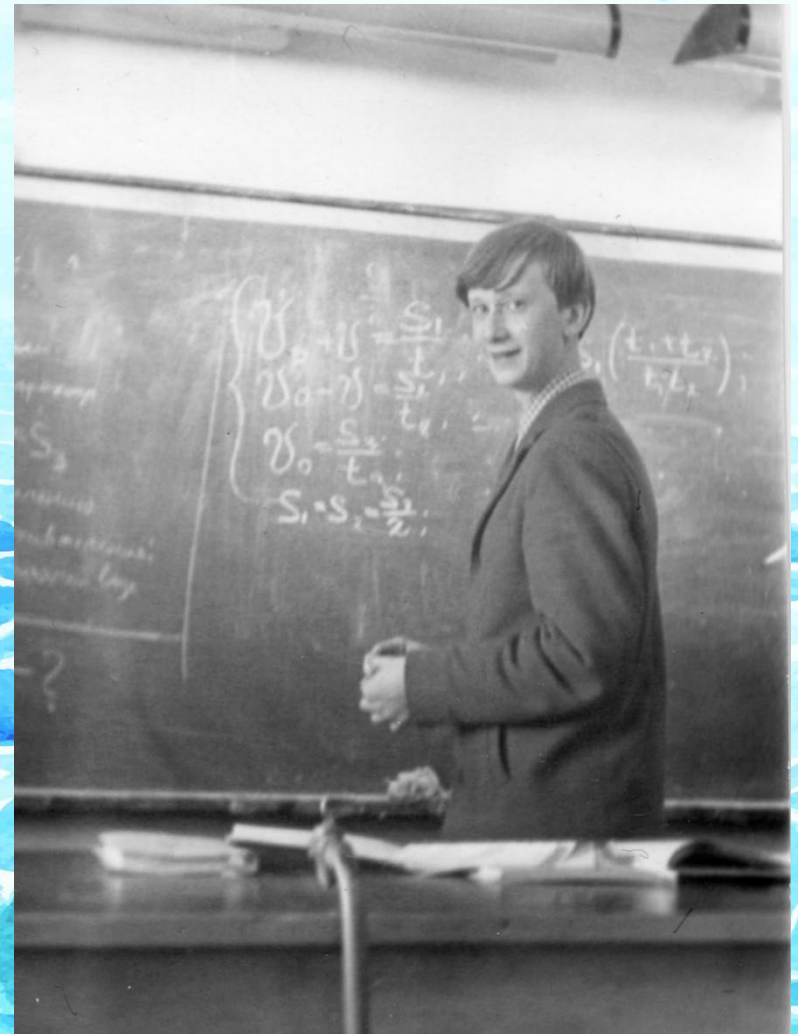


# EDUCATION JOURNEY

➤ 1977 B.S. in Oceanography

Department of Oceanography

Leningrad State University



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➤ **1977 B.S.** in Oceanography

Department of Oceanography

Leningrad State University

➤ **1993 Ph.D** in Oceanography

Far Eastern Branch of the Russian

Academy of Sciences, Vladivostok



**... and soon established himself as a premier sea-going oceanographer**



1978-79 Kallisto-Pacific Cruise



# Slava has spent many days at sea ...



1978 Peter the Great Bay



2000 Last Station to Hakodate!



# ... on ships from many different nations



1978 Peter the Great Bay



2000 Last Station to Hakodate!

**... though he seems a little over-dressed for this cruise**



# Professional History

## ➤ 1977 – 1995

Junior Research, Researcher, Senior Researcher  
Pacific Oceanological Institute, Far Eastern Branch,  
Russian Academy of Sciences

## ➤ 1996

Visiting Researcher, University of Maryland

## ➤ 1995 – 2015

Deputy Director, Pacific Oceanological Institute

## ➤ 2015 – Present

Director, Pacific Oceanological Institute



# Some Important Papers

GEOPHYSICAL RESEARCH LETTERS, VOL. 30, NO. 4, 1159, doi:10.1029/2002GL016451, 2003

# 2003

## Deep convection and brine rejection in the Japan Sea

Lynne D. Talley

Scripps Institution of Oceanography, University of California San Diego, La Jolla, California, USA

V. Lobanov, V. Ponomarev, A. Salyuk, P. Tishchenko, and I. Zhabin

V. I. Il'ichev Pacific Oceanological Institute, Far Eastern Branch Russian Academy of Sciences, Vladivostok, Russia

S. Riser

University of Washington, Seattle, Washington, USA

Received 15 October 2002; accepted 13 January 2003; published 19 February 2003.

[1] Direct water mass renewal through convection deeper than 1000 m and the independent process of dense water production through brine rejection during sea ice formation occur at only a limited number of sites globally. Our late winter observations in 2000 and 2001 show that the Japan (East) Sea is a part of both exclusive groups. Japan Sea deep convection apparently occurs every winter, but massive renewal of bottom waters through brine rejection had not occurred for many decades prior to the extremely cold winter of 2001. The sites for both renewal mechanisms are south of Vladivostok, in the path of cold continental air outbreaks. **INDEX TERMS:** 4283 Oceanography: General: Water masses; 4243 Marginal and semienclosed seas; 4223; 4215 Climate and interannual variability (3309). **Citation:** Talley, L. D., V. Lobanov, V. Ponomarev, A. Salyuk, P. Tishchenko, I. Zhabin, and S. Riser, Deep convection and brine rejection in the Japan Sea, *Geophys. Res. Lett.*, 30(4), 1159, doi:10.1029/2002GL016451, 2003.

deep structures were complex superpositions of relatively unstratified layers, like those identified in other deep convection regions. While it had been suggested that the densest Japan Sea water formation is located south of Vladivostok [Kawamura and Wu, 1998; Senju and Sudo, 1993] and that brine rejection in Peter the Great Bay (PGB) creates dense water [Ponomarev et al., 1991], ours were the first direct observations. The summer 1999 survey covered the Japan Sea, with the high salinity accuracy necessitated by the small variations below 500 m, and with full sampling for oxygen, nutrients and carbon, all having larger deep variations than salinity. The winter (February–March) 2000 survey (hereafter “W2000”) concentrated on the Japan Sea north of the subpolar front (40° to 40°30'N). The winter (February–March) 2001 survey (hereafter “W2001”) revisited, in a much colder winter [Kim et al., 2002; Senju et al., 2002], the deep convection and brine rejection locations observed in W2000.

# 2002

Proc. The 17th Int. Symp. Okhotsk Sea & Sea Ice, 24-28 Febr., 2002, Mombetsu, Japan, p.31-36.

## RENEWAL OF BOTTOM WATER IN THE JAPAN/EAST SEA

Vyacheslav Lobanov\*, Anatoly Salyuk\*, Vladimir Ponomarev\*, Lynne Talley\*\*, Kuh Kim\*\*\*, Kyung-Ryul Kim\*\*\*, Pavel Tishchenko\*, Aleksandr Nedashkovskiy\*, Guebuem Kim\*\*\* and Sergey Sagalaev\*

\* - V.I. Il'ichev Pacific Oceanological Institute, Far Eastern Branch, Russian Academy of Sciences, 43 Baltiyskaya St., Vladivostok 690041, Russia; (e-mail: lobanov@poi.dvo.ru)

\*\* - Scripps Institution of Oceanography, University of California, San Diego, La Jolla, USA

\*\*\* - School of Earth & Environmental Sciences, Seoul National University, Seoul, Korea

### Introduction

One of the most intriguing questions of the Japan/East Sea oceanography is ventilation of its deep and bottom waters. The sea is quite isolated from the North Pacific and it is expected that renewal of its deep water are provided by winter cooling at its northern area and convection process that can penetrate down to bottom (more than 3000 m). High concentration of dissolved oxygen in deep layer suggests frequent occurrence of this process. It is not clear, however, in what area and how often this takes place. Extensive literature following Nitani (1972) and Gamo et al. (1986) described interannual and decadal variability of the Japan/East Sea bottom water characteristics in association with variations of ventilation conditions as a response to regional climate changes. In particular, several studies revealed gradual decrease of dissolved oxygen and increase of potential temperature in lower deep and bottom waters for the second half of the 20<sup>th</sup> century (e.g. Kim et al., 1997; Minobe, 1996; Ponomarev et al., 1997; Riser, 1997; Kim et al., 2001; Gamo, 2001). It was shown that after period of intense ventilation in the 40<sup>th</sup> renewal process of the bottom water was significantly decreased or even stopped accompanied by winter air temperature rise in the Far-East (Varlamov et al., 1996) and the whole Asian Pacific Region (Ponomarev et al., 2000).

However this trend was interrupted last year. In this paper we present observational results of new bottom water formation and distribution over large area of deep Japan Basin as a result of convection process at coastal area of southern Primorye, Russia during severely cold winter of 2001 and possibility of weak ventilation in previous years.

GEOPHYSICAL RESEARCH LETTERS, VOL. 29, NO. 8, 1234, 10.1029/2001GL014498, 2002

## A sudden bottom-water formation during the severe winter 2000–2001: The case of the East/Japan Sea

Kyung-Ryul Kim, Guebuem Kim, and Kuh Kim

OCEAN Laboratory/RIO, SEES, Seoul National University, Korea

V. Lobanov, V. Ponomarev, and A. Salyuk

V.I. Il'ichev Pacific Oceanological Institute, Vladivostok, Russia

Received 3 December 2001; accepted 11 January 2002; published 26 April 2002.

[1] We observed a sudden initiation of bottom-water formation in the East Japan Sea associated with a severely cold winter in 2000–2001. An increase in dissolved oxygen concentration as well as decreases in temperature and nutrient concentrations for the bottom waters provides unequivocal evidence that cold, oxygen-rich and nutrient-poor surface waters were injected directly to the bottom. Since the conveyor-belt in the East Sea has been undergoing dramatic change with a complete halt to bottom-water formation since the mid-1980s, this sudden episode of bottom-water formation could easily be detected. Though the amount of bottom water formed was rather small, being only about 0.03% of the volume in the past time, the observation clearly demonstrates that the conveyor-belt is directly connected to the weather system. **INDEX TERMS:** 1635 Global Change: Oceans (4203); 4243 Oceanography: General: Marginal and semienclosed seas; 4532 Oceanography: Physical: General circulation

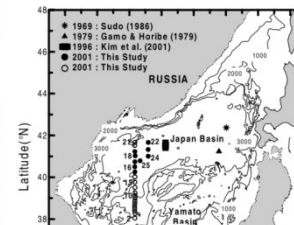
### 1. Introduction

[2] The East Sea is a typical semi-enclosed marginal sea surrounded by Korea, Japan and Russia with deep basins exceeding 2500 meters depth, such as the Japan Basin, Yamato Basin, and Ulleung Basin (Figure 1). Despite its smallness, however, recent studies have shown that the East Sea has very typical oceanic characteristics [Gamo and Horibe, 1983; Kim and Kim, 1996; Kim et al., 1996] as clearly shown in vertical profiles of temperature, salinity and dissolved oxygen in Figure 2. Notwithstanding the similarities in profiles between the East Sea and the open ocean, however, it is important to note that the East Sea has very weak vertical stability, as

increased instead during the same period [Kim and Kim, 1996; Kim et al., 1999, 2001]. The model developed for describing these changes, which is calibrated by the CFC-11&12 distributions shows that the formation of bottom-water has halted since the mid-1980s [Kang et al., 2002].

### 2. Materials and Methods

[4] As the part of the time-series monitoring effort, we returned to the central Japan Basin during April 14–24, 2001.



# 2002



# International Professional Activities

- **Chairman and National Coordinator, IOC/WESTPAC Coordinating Committee for NEAR-GOOS**
- **Board of Directors & President-Elect, Pacific Congress on Marine Science and Technology (PACON)**
- **Steering Committee for the Program of East Asian Seas Collaborative Experiments (PEACE)**
- **PICES:**
  - **Chair: POC Committee**
  - **Co-Chair: CREAMS-AP**
  - **Member: FUTURE-SSC; MONITOR; NPCOOS-AP**



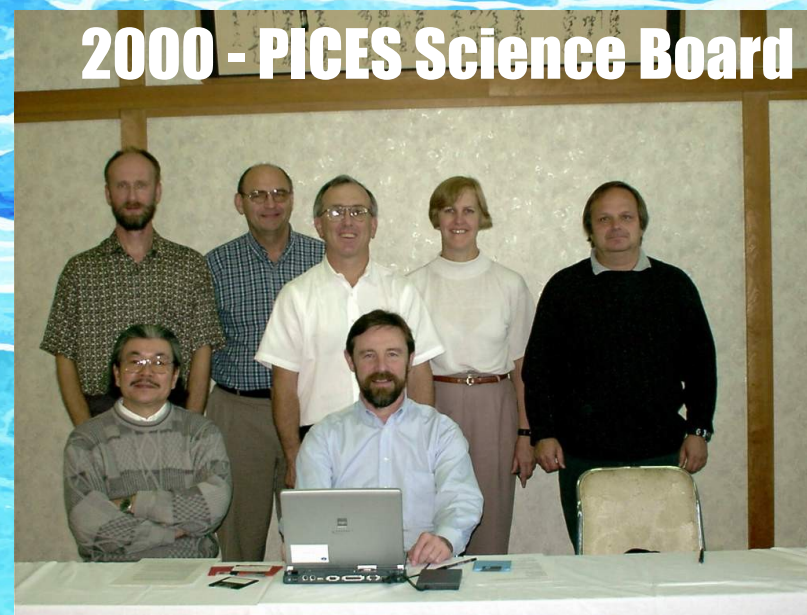
# Dr. Lobanov has been a teacher and mentor to young scientists throughout the North Pacific



## Remote Sensing Course, Vladivostok, 2011



# PICES Meetings



# PICES Meetings

**2002 - Honolulu**



**2006 - Yokohama**



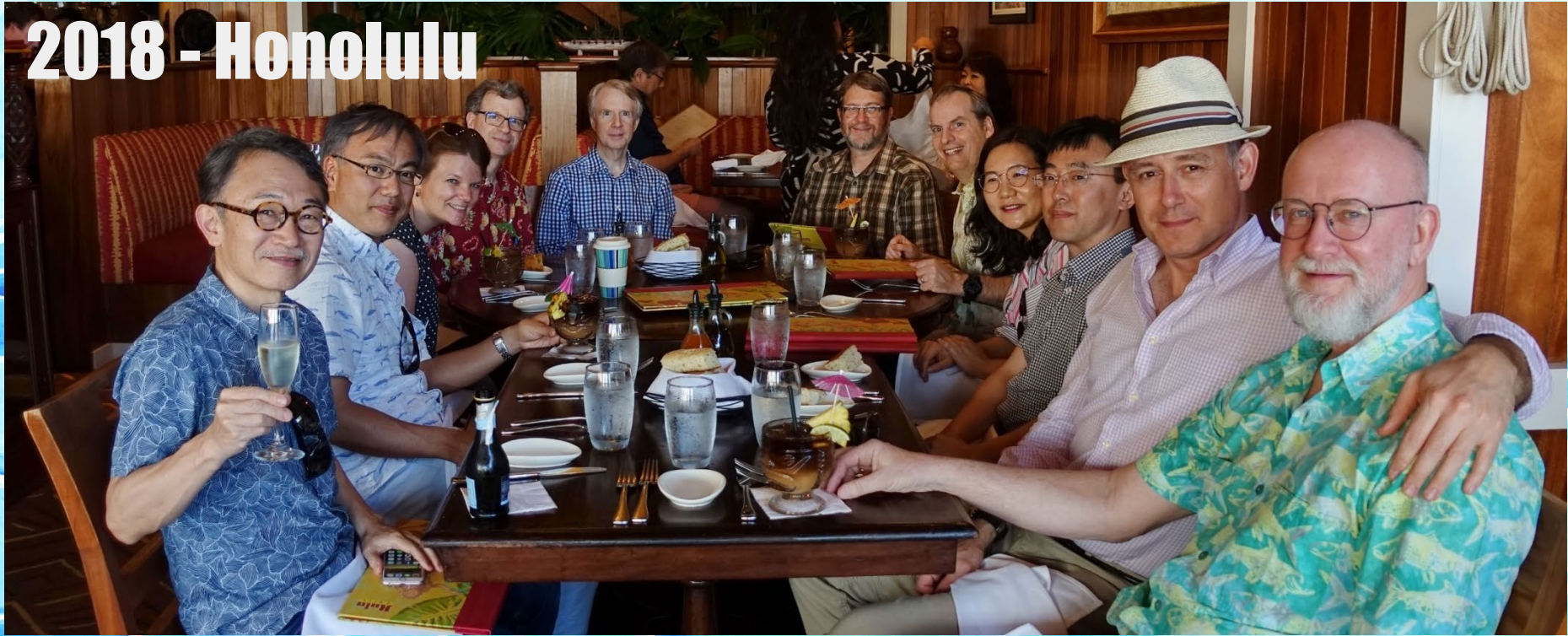


# PICES Meetings

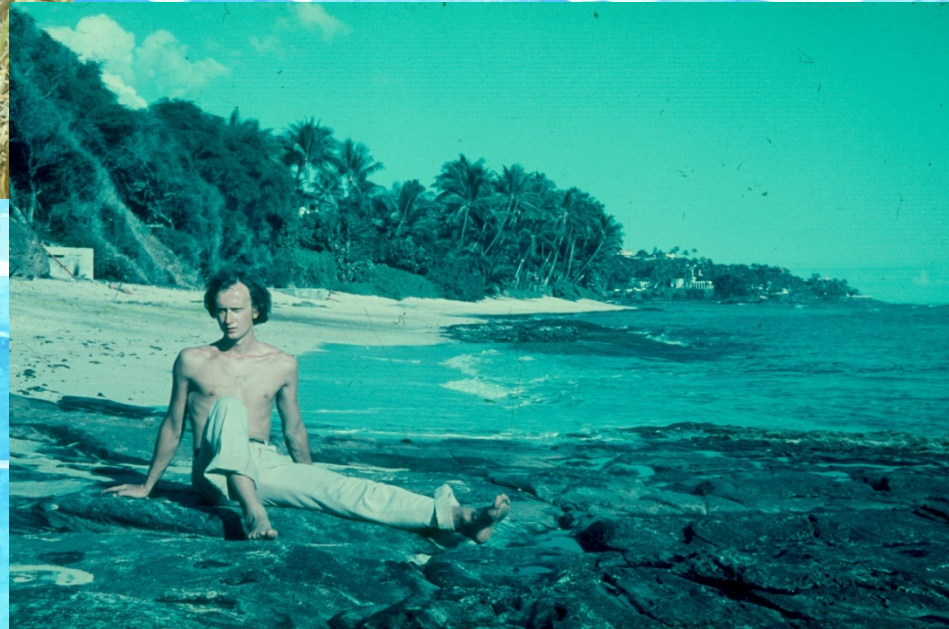


# PICES Meetings

2018 - Honolulu



**... but has always known how to have a  
work-life balance**



# PICES 2018 Annual Meeting

Yokohama, Japan



**Dr. Vyacheslav B. Lobanov**





Foreign Chambers of Commerce near the Yokohama Harbour, Ukiyo-e print, 1872, Hiroshige Utagawa II. Property of the Yokohama Archives of History.

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