

International Conference on Energy Cooperation between Russia and Japan

## Panel 1 “Arctic Sea-lane”

Moderator: Dr. Hiromitsu Kitagawa (OPTI-SPF)

Panelists: Mr. Leonid Mikheson, Chairman of Management Board –  
Director, Novatek

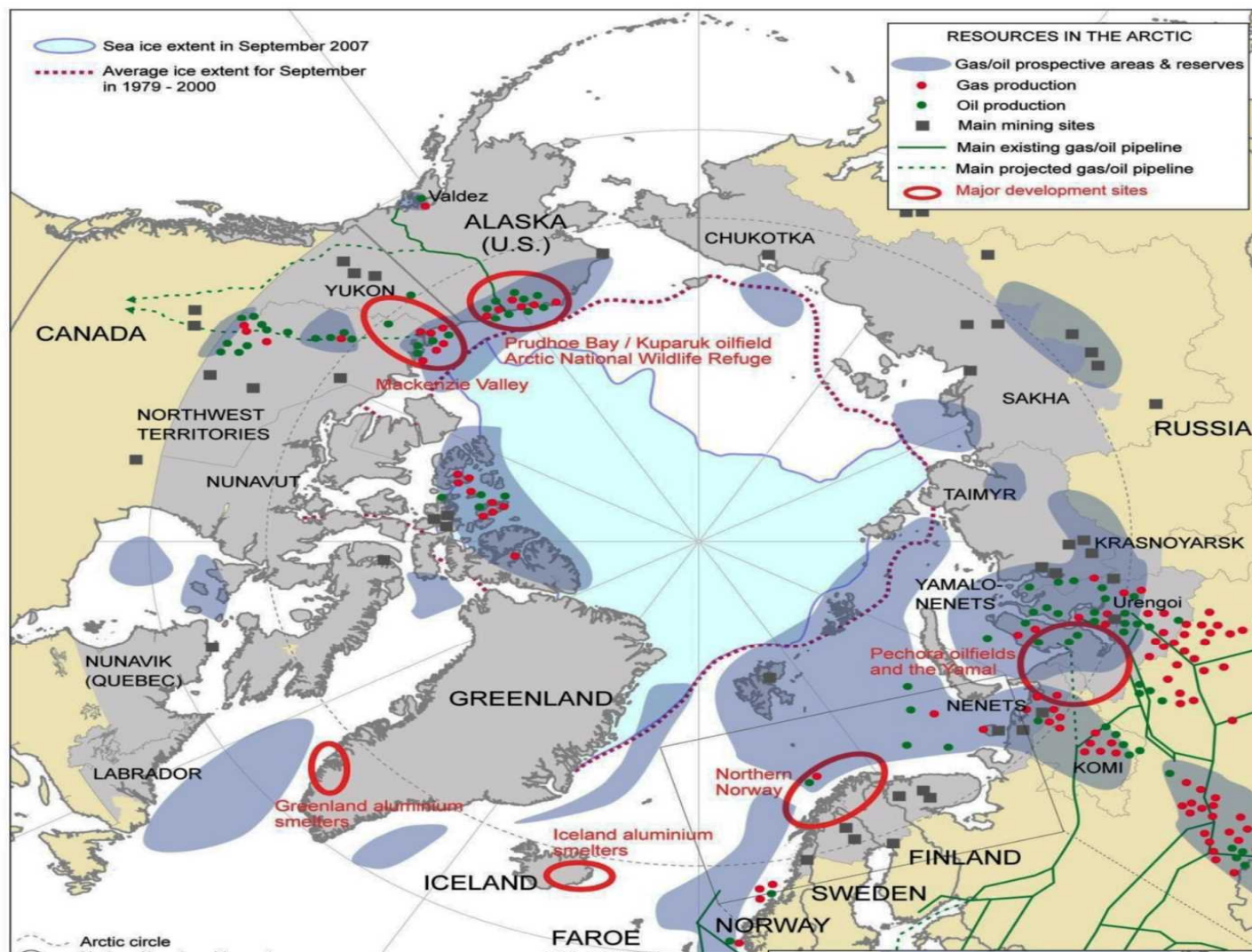
Mr. Michael Borrell, Senior Vice President of Continental Europe  
and Central Asia, Total

Dr. Hiroyuki Goda, Manager, Government and Industrial Affairs  
Group, Management Planning Headquarters, NYK

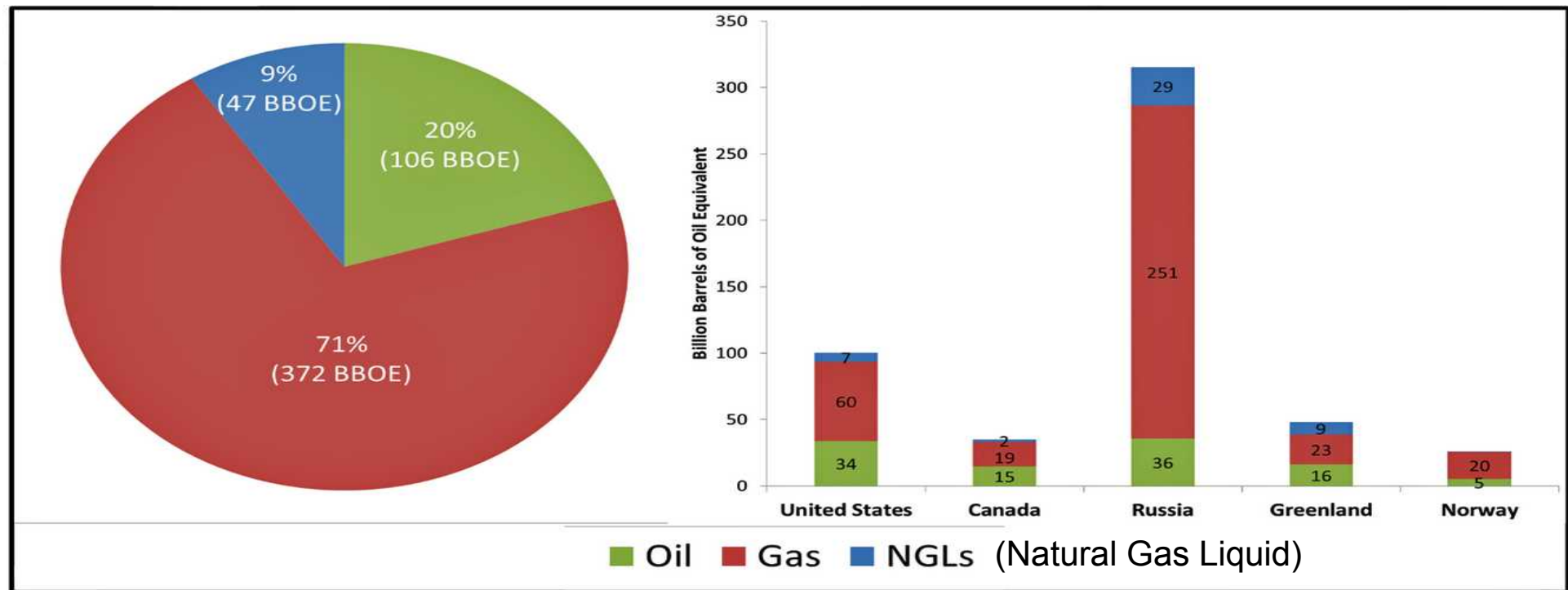
Mr. Nobuo Kikuta, JGC Corporation, Sponsor, Yamal LNG Project



# Marketable Oil/Gas Development Sites Shift: North American Shelves to Eurasian Ones



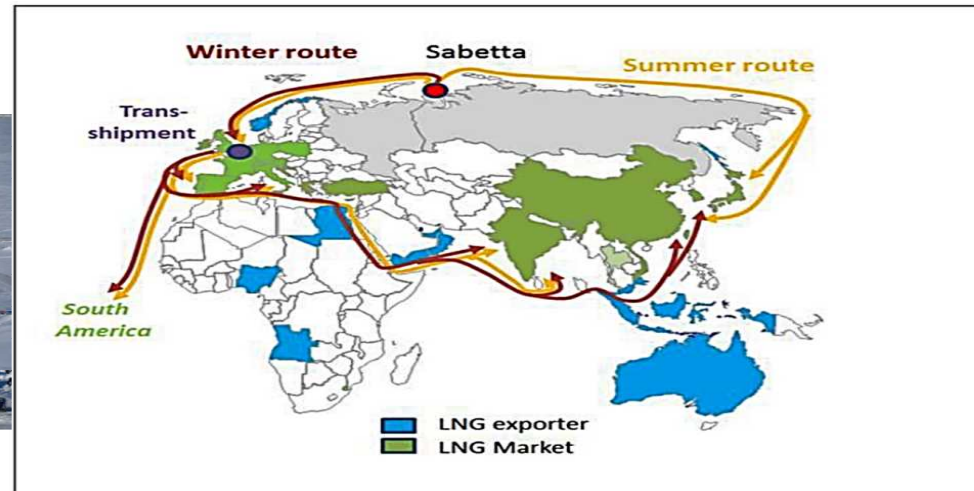
# Global Potential Arctic Energy Resources



(National Petroleum Management Association, 2014)



# YAMAL LNG PROJECT



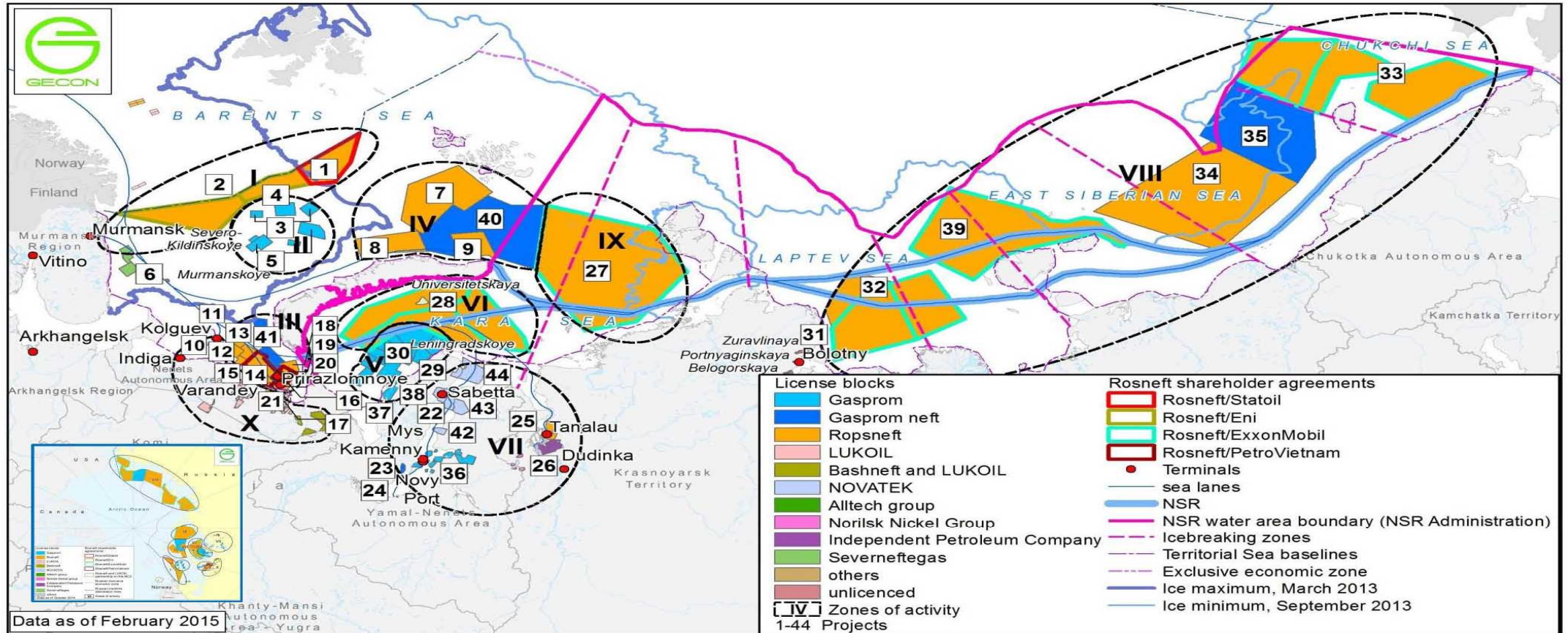
Ice Free Sea Extent in the Region



A potential LNG plant at Kanin Nos would be linked to the South Tambey Gas Condensate Field via an offshore gas pipeline



# PROJECTS OF DEVELOPMENT OF OIL AND GAS AND DEVELOPMENT OF TRANSPORT INFRASTRUCTURE IN THE RUSSIAN ARCTIC

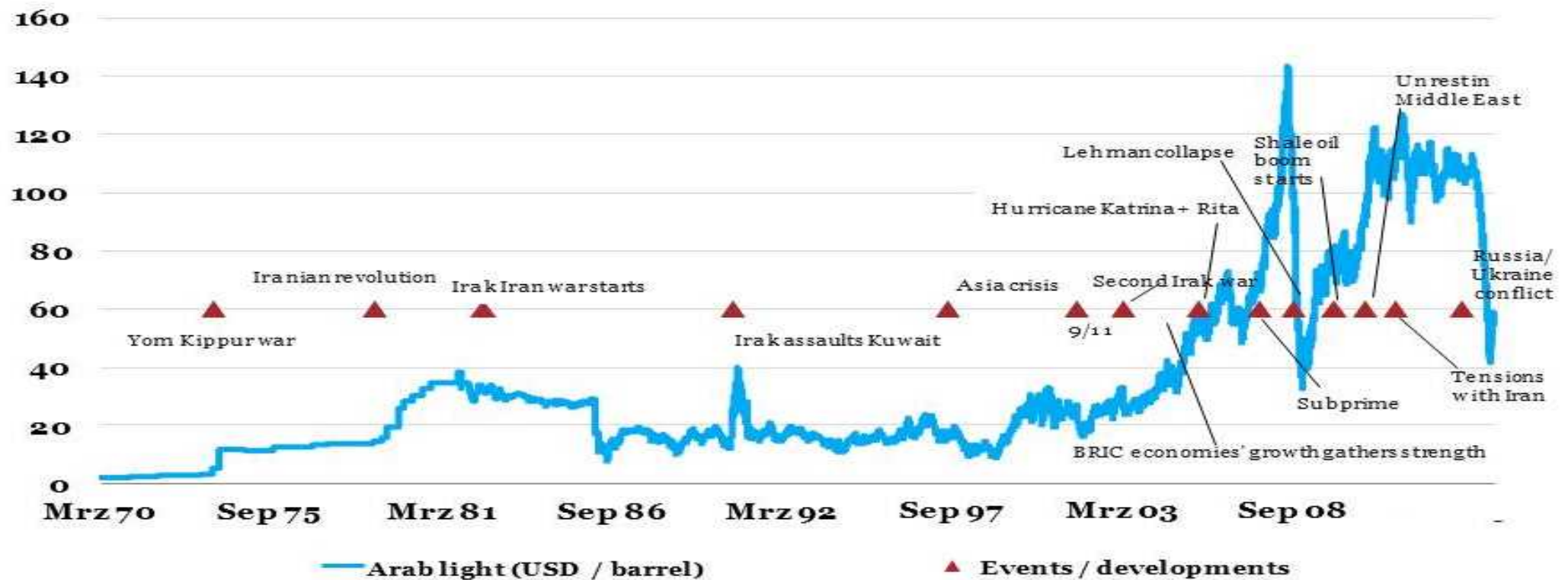


44 investment offshore and onshore projects with the maritime scheme of transportation located in 10 zones of economic activity



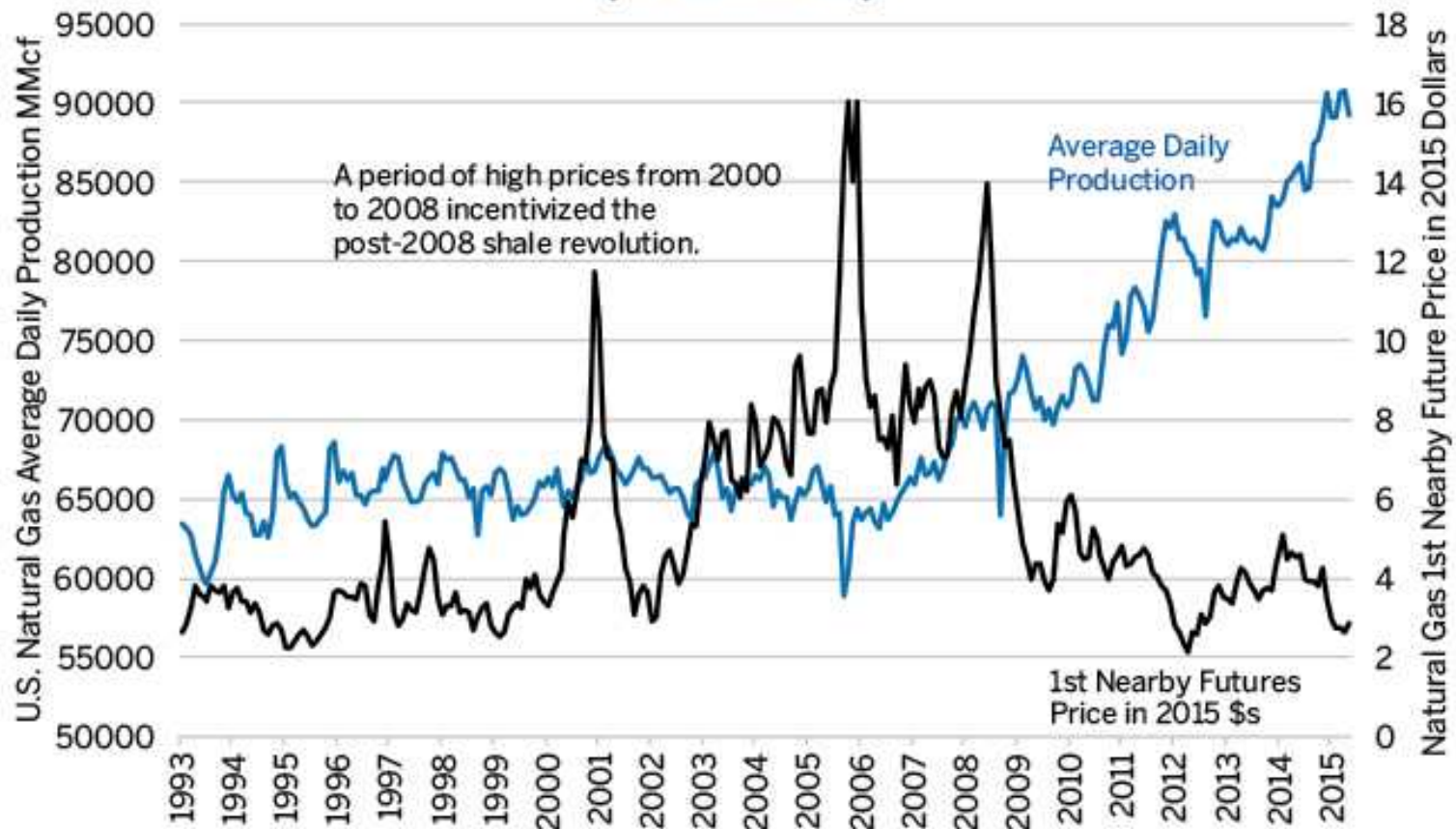
# Weak Oil Price

Oil price (Arab light), USD/barrel



(Bloomberg, 2015)

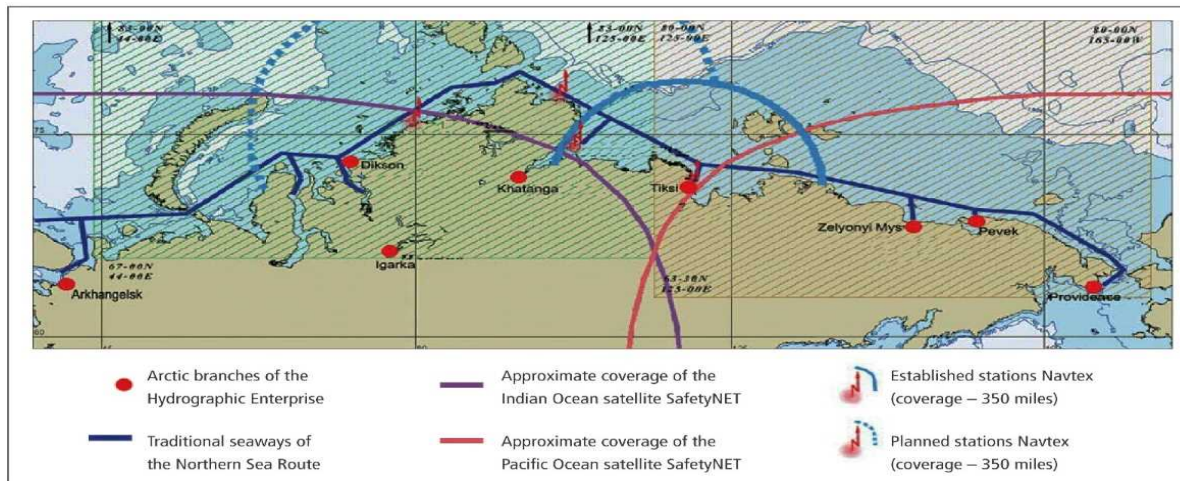
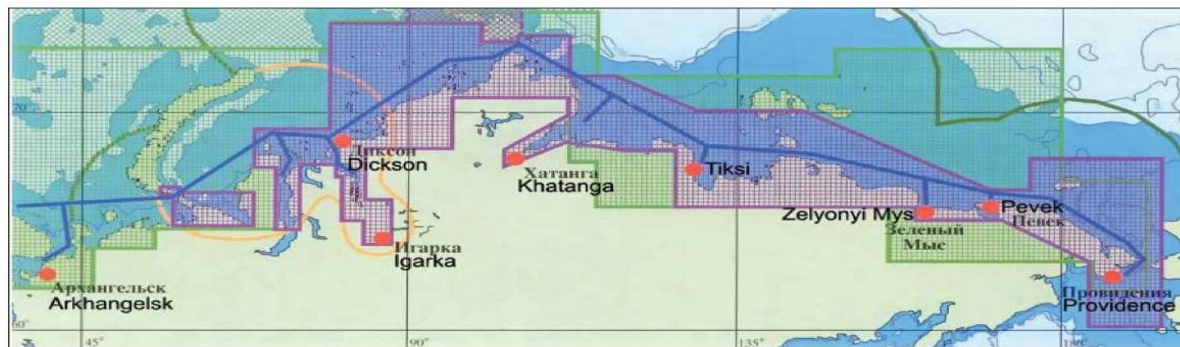
## Natural Gas Production and Prices (in 2015 \$s)



Sources: Energy Information Administration (1993-2012) & Point Logic (2013-2015),  
Bloomberg Professional (NG1 with generic rolls and CPI INDX)

# Developing Northern Sea Route

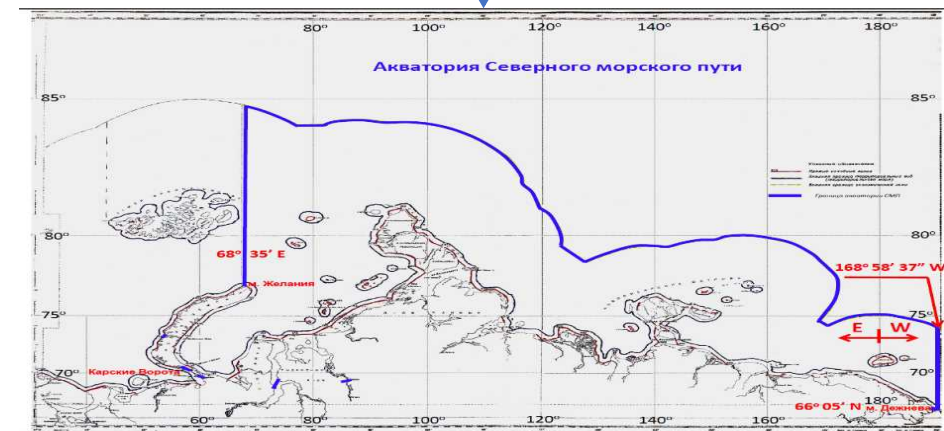
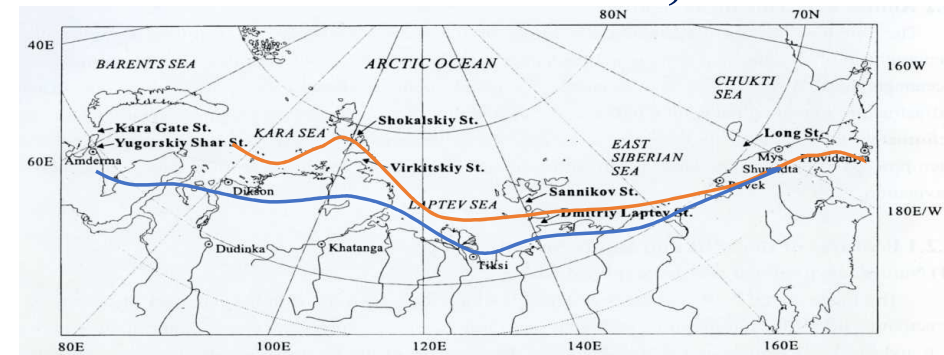
## Electric Charts and SAR Structure



(Source: CNIIMF, 2014)

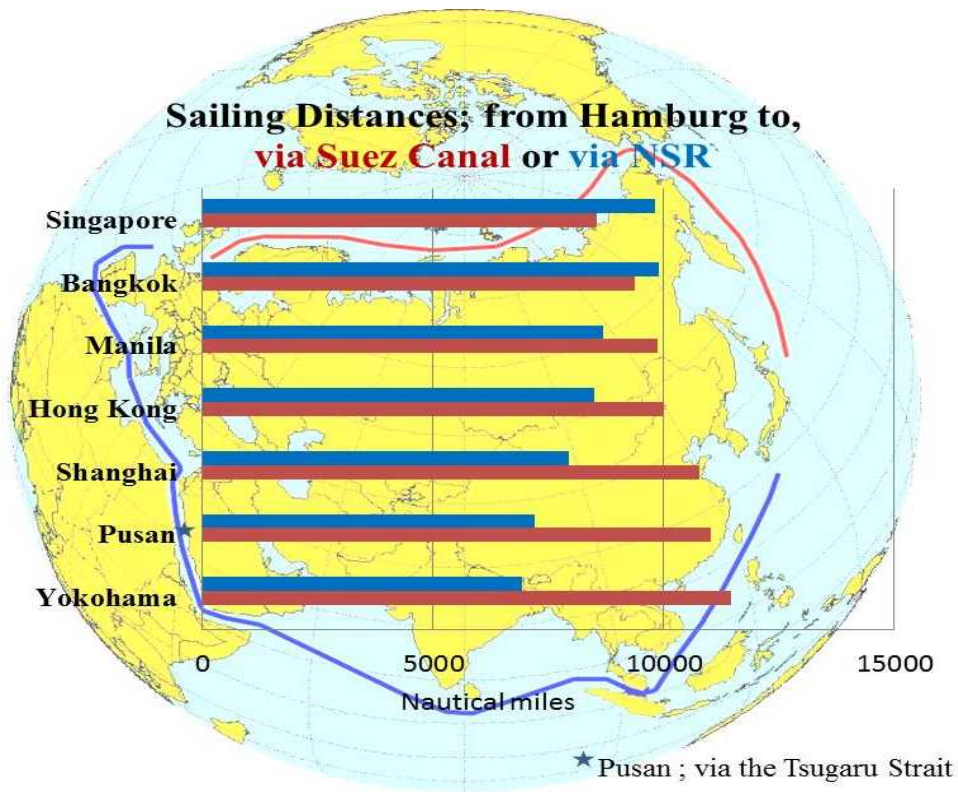
## NSR

## Lines to Water Area, 2014

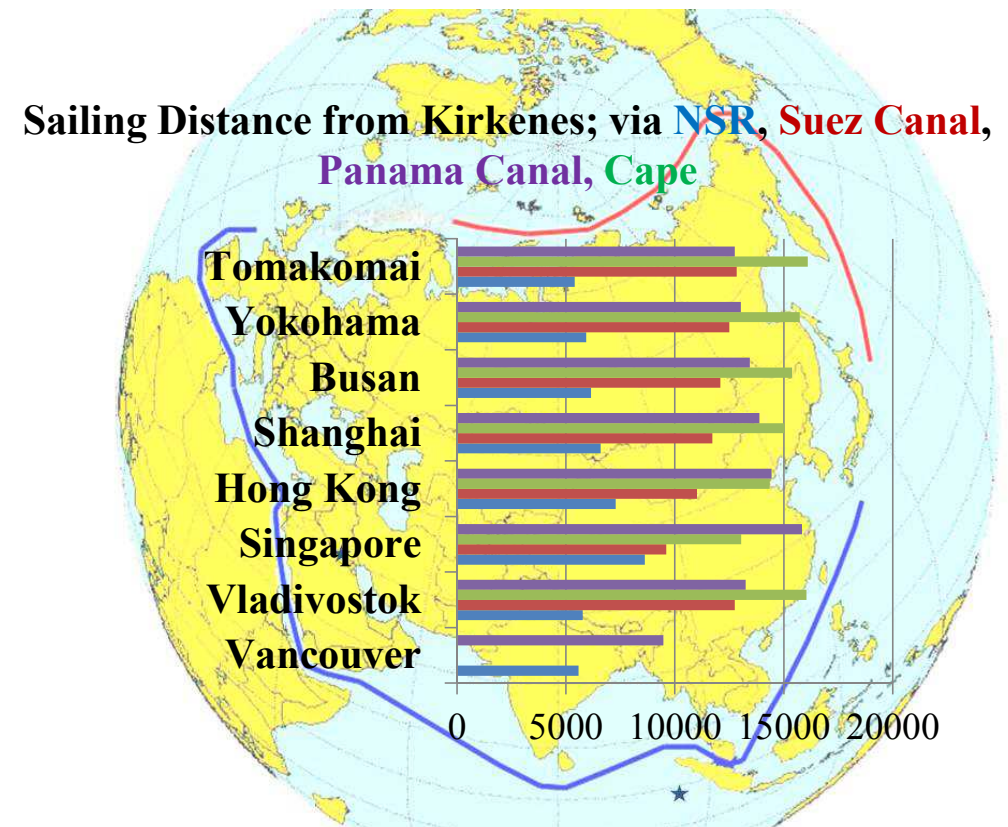




# Sailing Distance: Hamburg – Yokohama



# Kirkenes - Tomakomai



# Number of Transited Vessels:

## via Northern Sea Route

## via Suez Canal

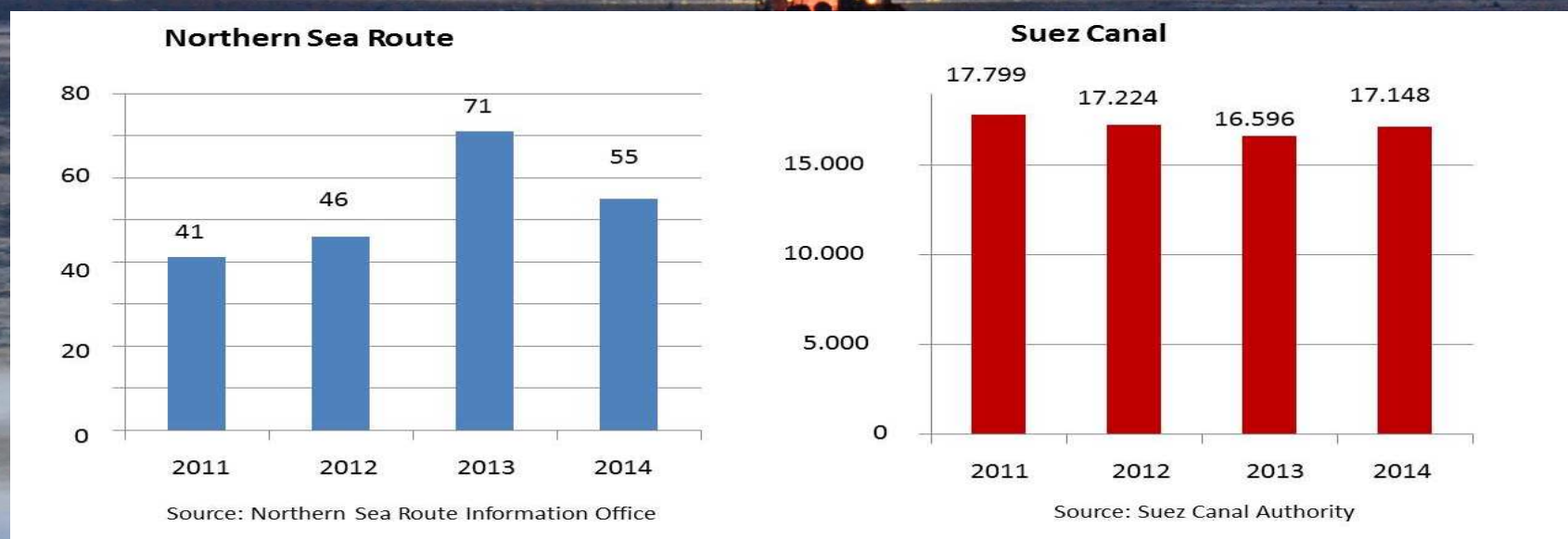
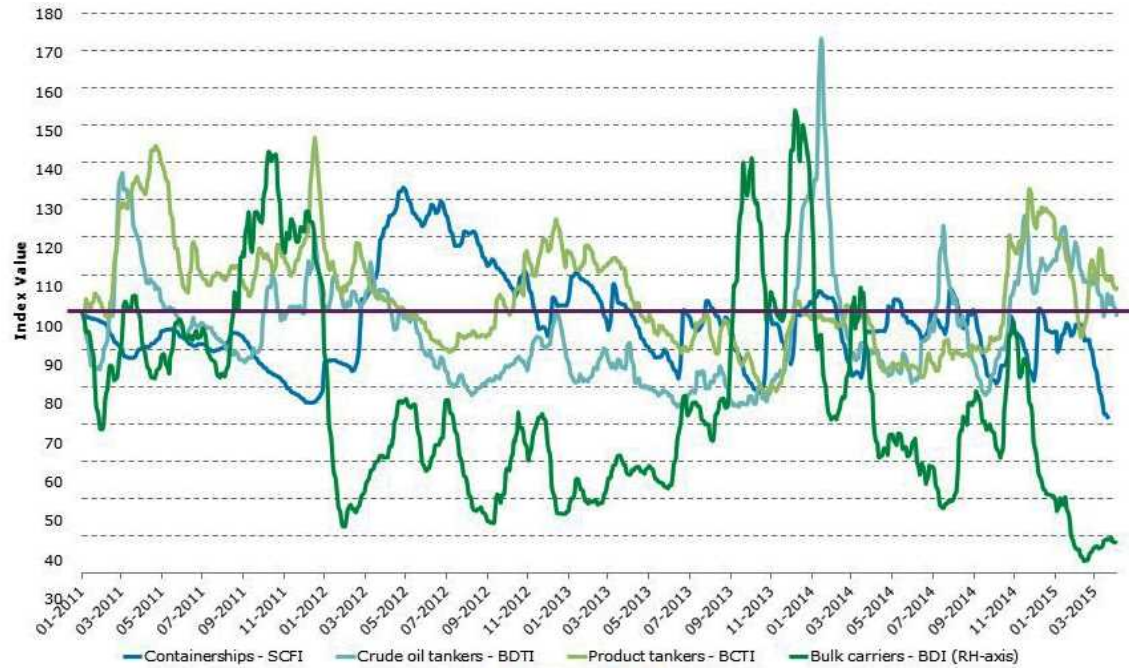


Photo: Nordic Bulk Carriers



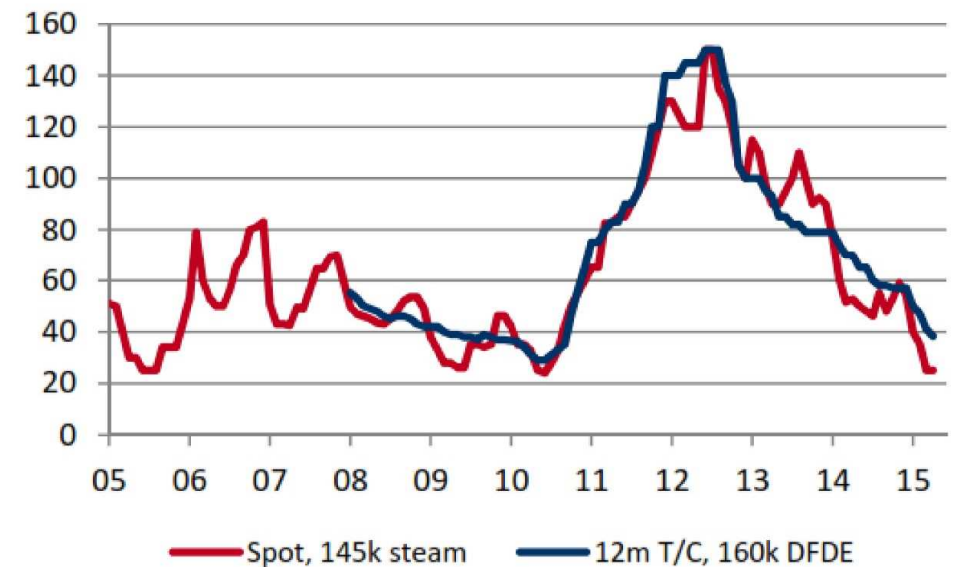
# Freight Rate Fluctuation; 2011 – 2015



(Source: BIMCO, 2015)

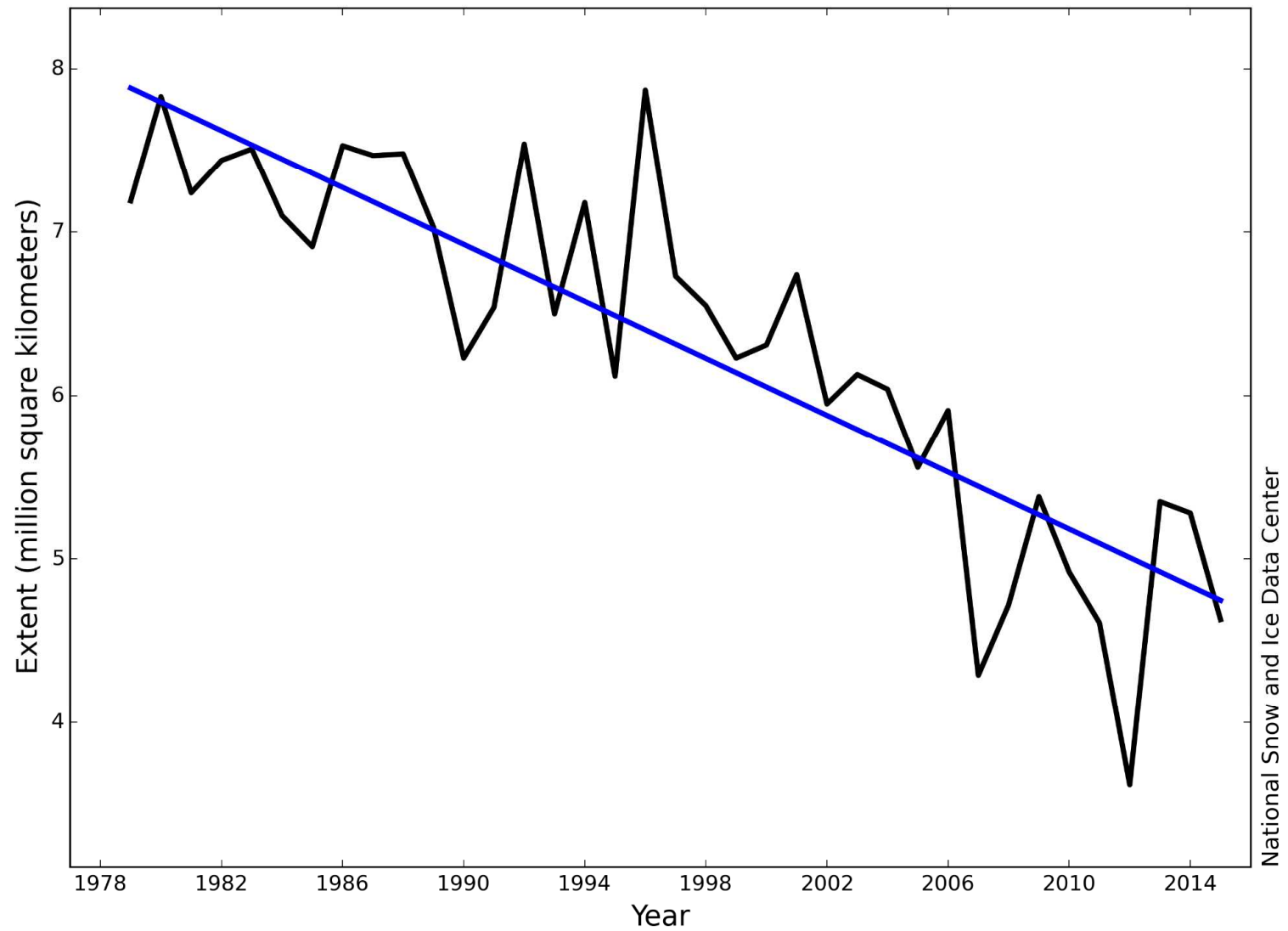
## LNG Freight Rate

Freight rates 1,000 USD/day



(Source: Timera Energy, 2015)

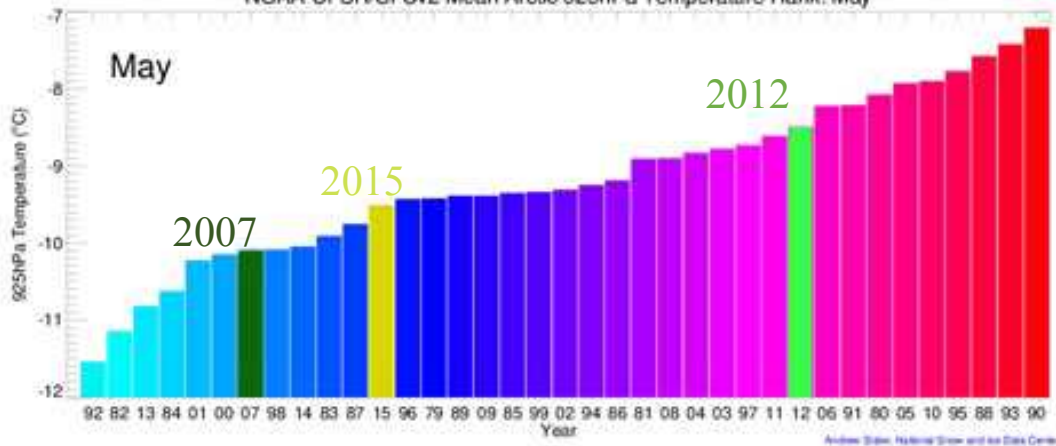
# Average Monthly Arctic Sea Ice Extent September 1979 - 2015



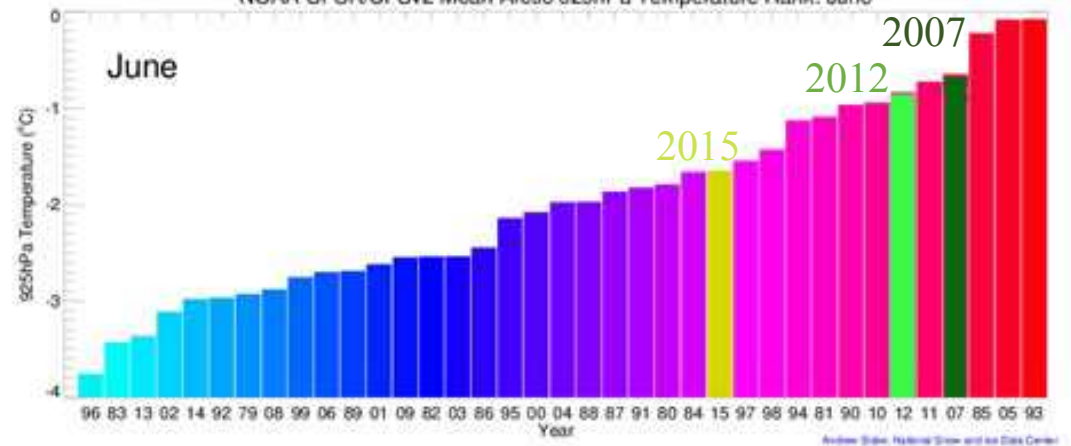


## Average Air Temperatures Arctic Ocean Area

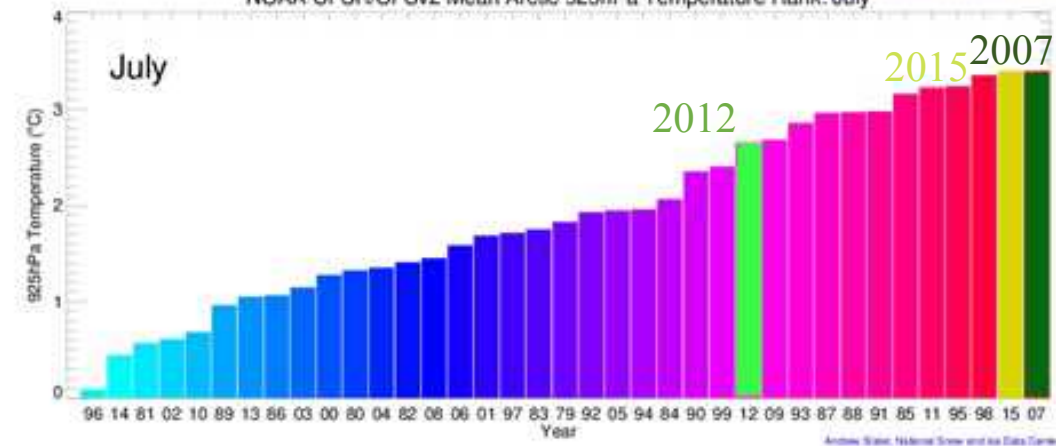
NOAA CFSR/CFSv2 Mean Arctic 925hPa Temperature Rank: May



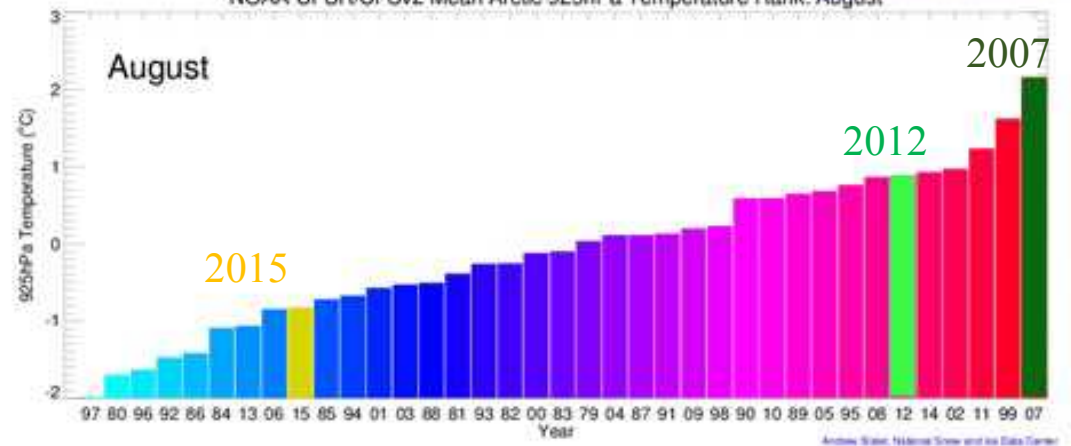
NOAA CFSR/CFSv2 Mean Arctic 925hPa Temperature Rank: June



NOAA CFSR/CFSv2 Mean Arctic 925hPa Temperature Rank: July

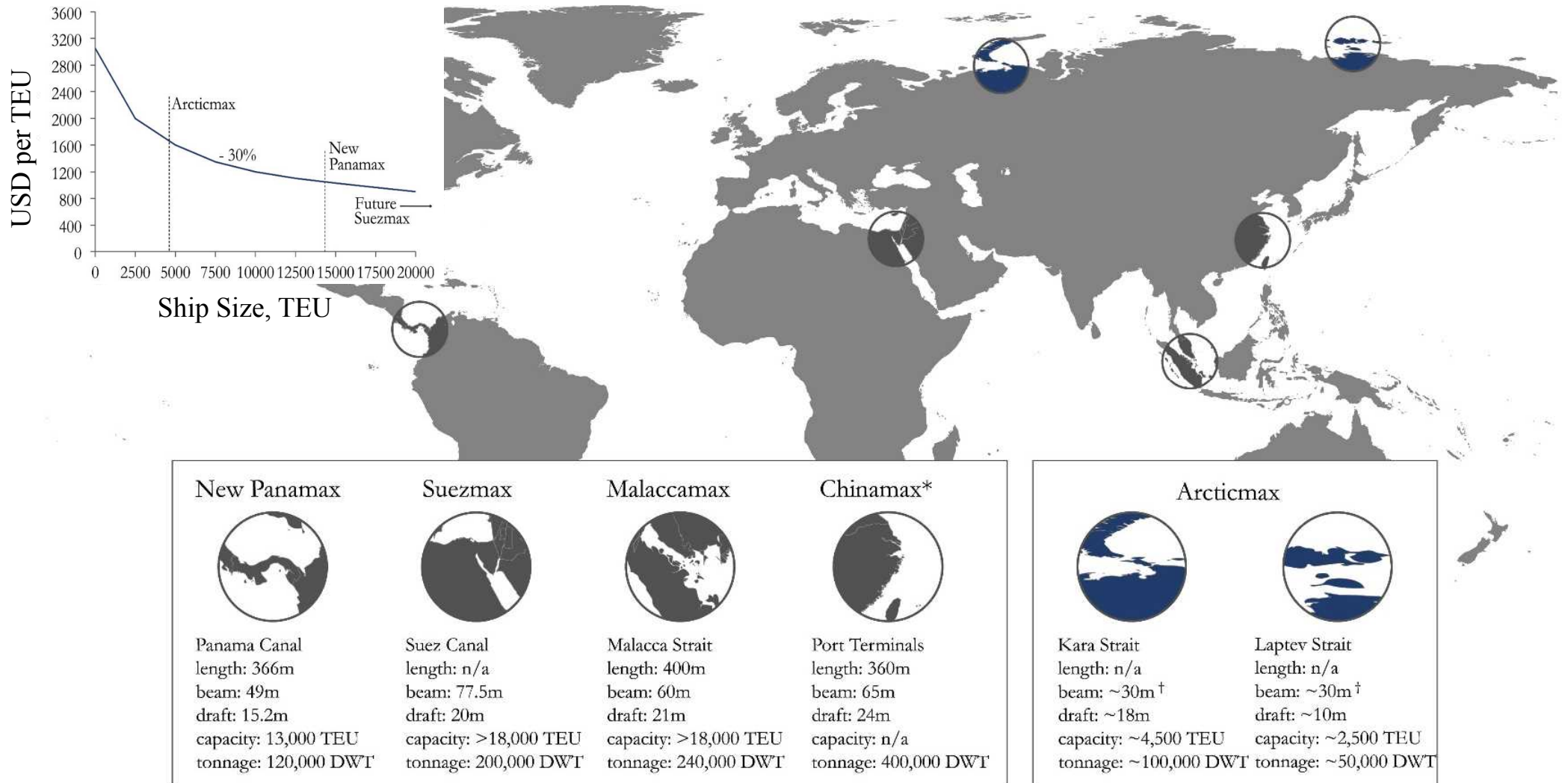


NOAA CFSR/CFSv2 Mean Arctic 925hPa Temperature Rank: August



(Source: NSIDC, 2015; modified)

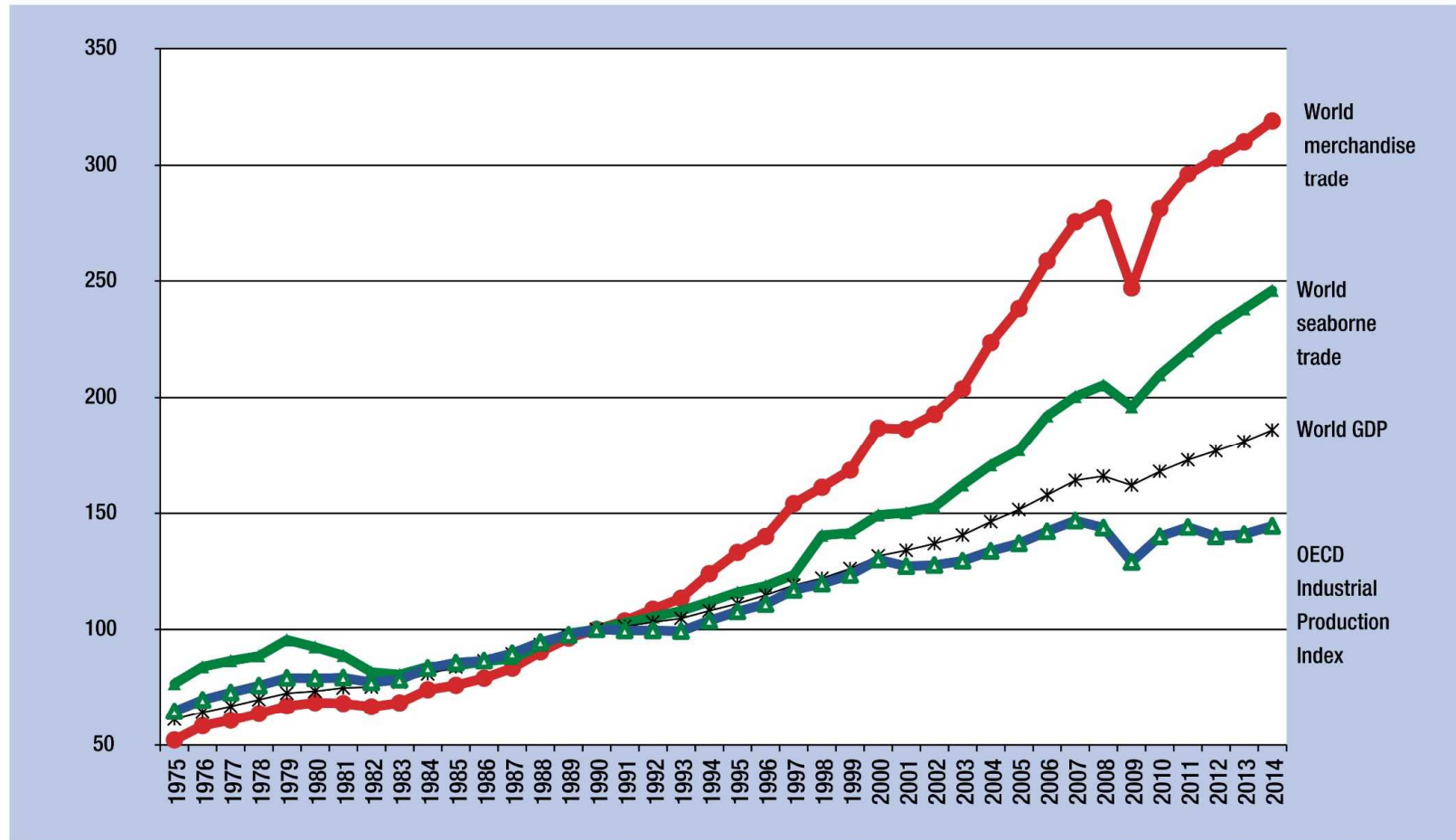
# Global Shipping Choke Points and Maximum Ship Size as of 2015



(Source: Cernel, Lloyd's Register and HKND Gr., 2015)



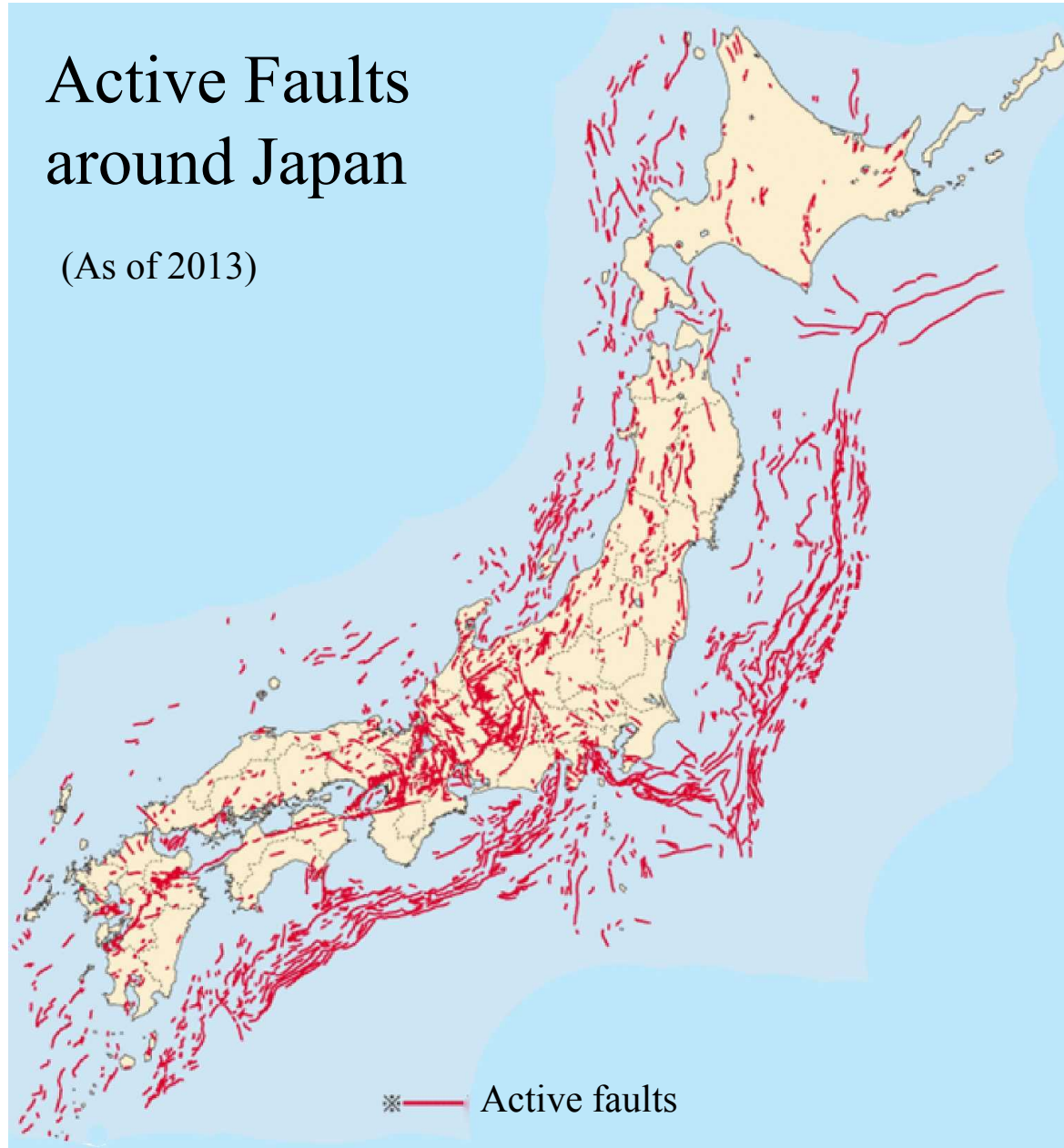
**Figure 1.1. The OECD Industrial Production Index and indices for world GDP, merchandise trade and seaborne shipments (1975–2014) (base year 1990 = 100)**



Sources: UNCTAD secretariat, based on OECD Main Economic Indicators, June 2015; United Nations Department of Economic and Social Affairs, 2015; LINK Global Economic Outlook, June 2015; UNCTAD *Review of Maritime Transport*, various issues; WTO, appendix table A1a, World merchandise exports, production and gross domestic product, 1950–2012; WTO press release 739, 14 April 2015.

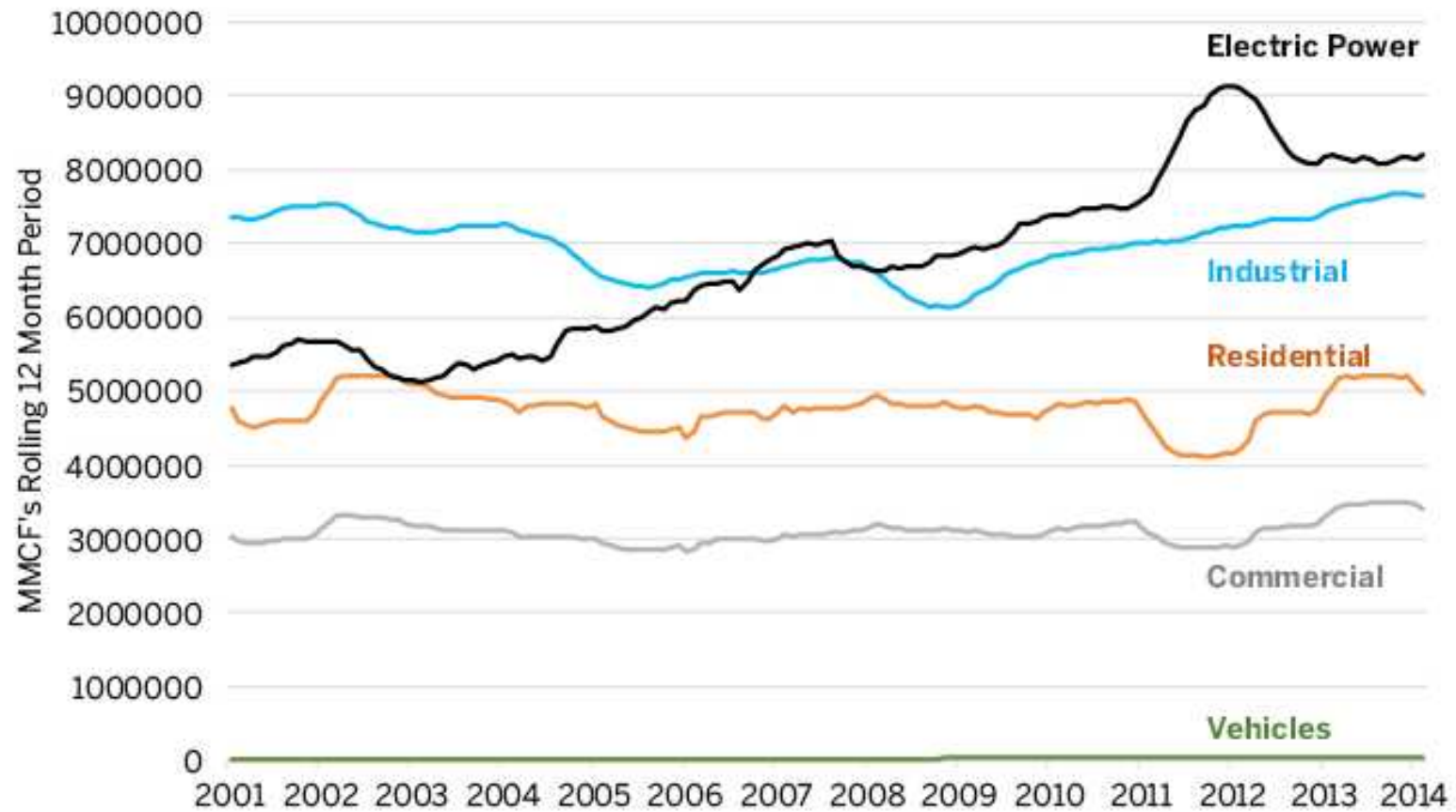
# Active Faults around Japan

(As of 2013)



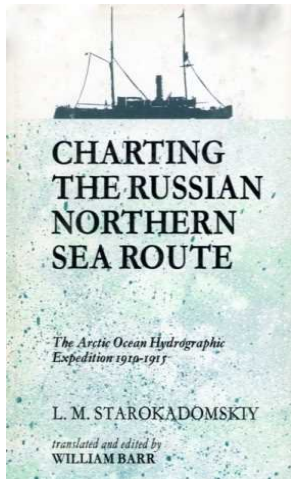
(Source: University of Tokyo, 2014)

# Natural Gas End Use



(Source: EIA, 2015)

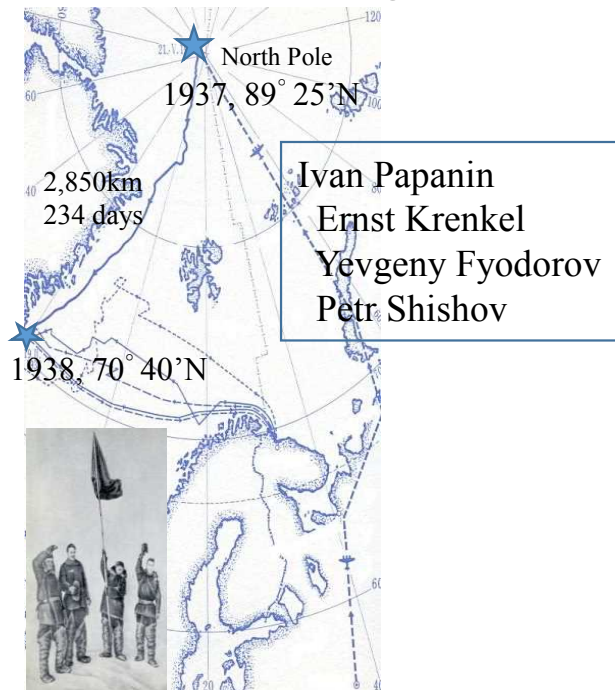




**“A pessimist sees the difficulty in every opportunity.  
An optimist sees the opportunity in very difficulty.”**

***Winston Churchill***

### **North Pole – 1: drifting ice station**



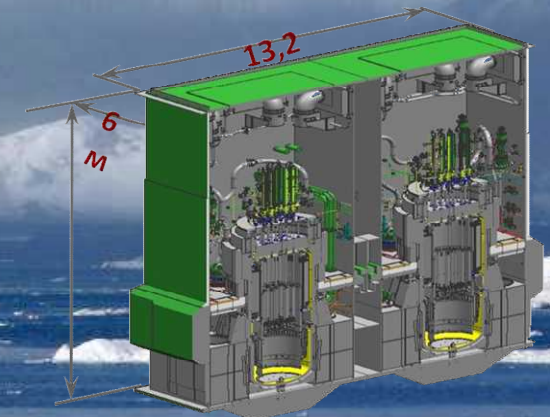
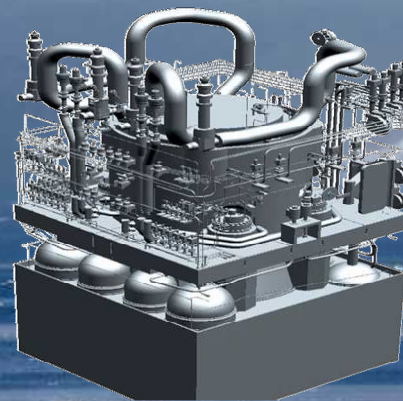
### **New Russian Nuclear Powered Multi-purpose Icebreaker (image)**



(Source:ROSATOMFLOT, 2014)

# Thank you for your kind cooperation

New Russian Marine Reactor, RITM-200 and Casing  
Small, Light and High Efficiency



(ROSATOMFLOT, 2014)