Pacific Congress on Marine Science and Technology – PACON 2010

1-5 June, University of Hawai‘i at Hilo, Hilo, Hawai‘i



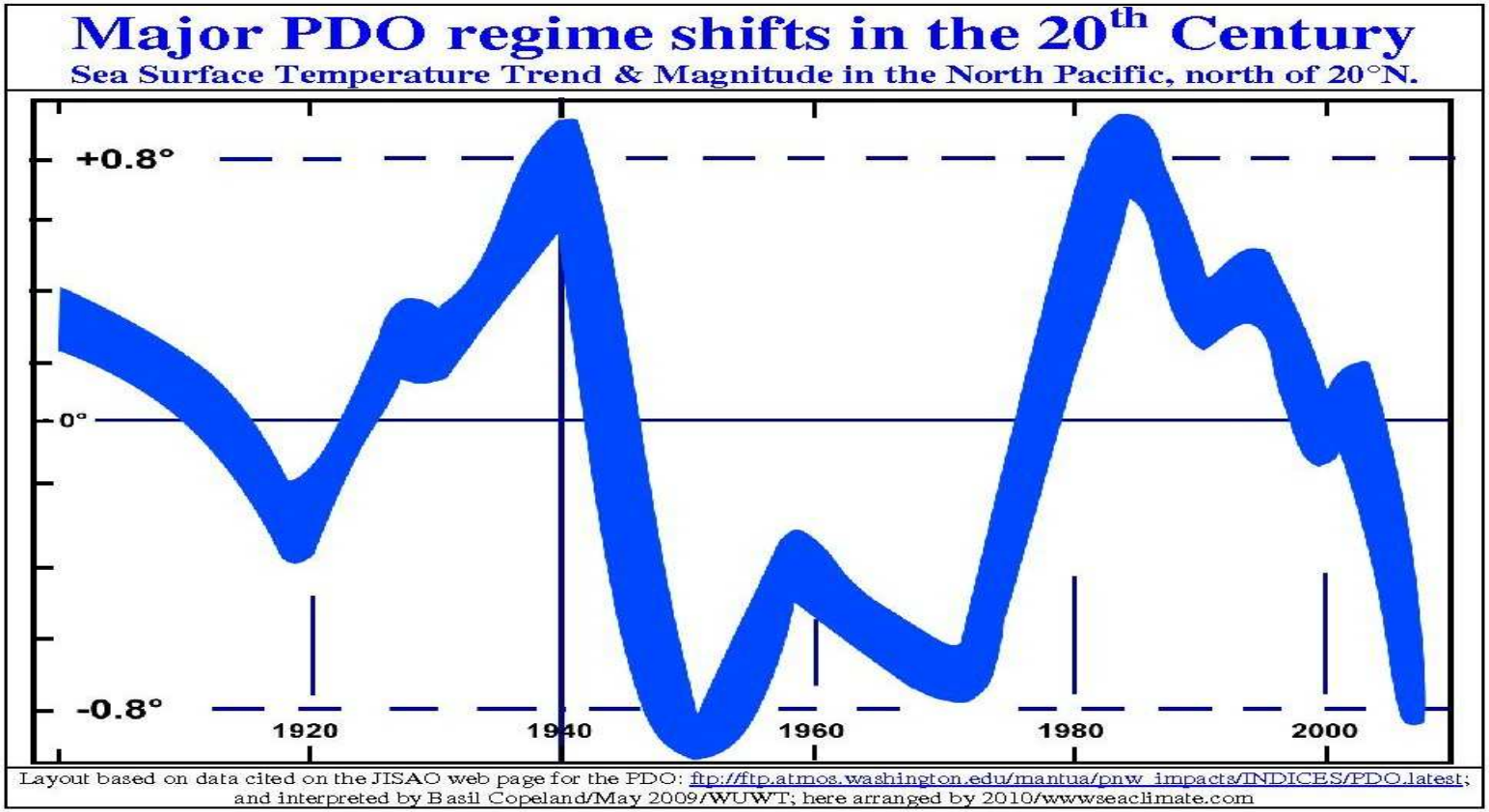
Pacific Cooling from 1943-1970; Influenced by Naval War?

By Arnd Bernaerts

Version: www.oceanclimate.de / 25May2010

The paper subject:

The temperature shift in the early 1940, with a cooling for three decades, and as reflected in the PDO image:



Two reasons for presentation of the subject:

1st To continue what I started at PACON 1997
“The Chinese University of Hong Kong“ with the paper:

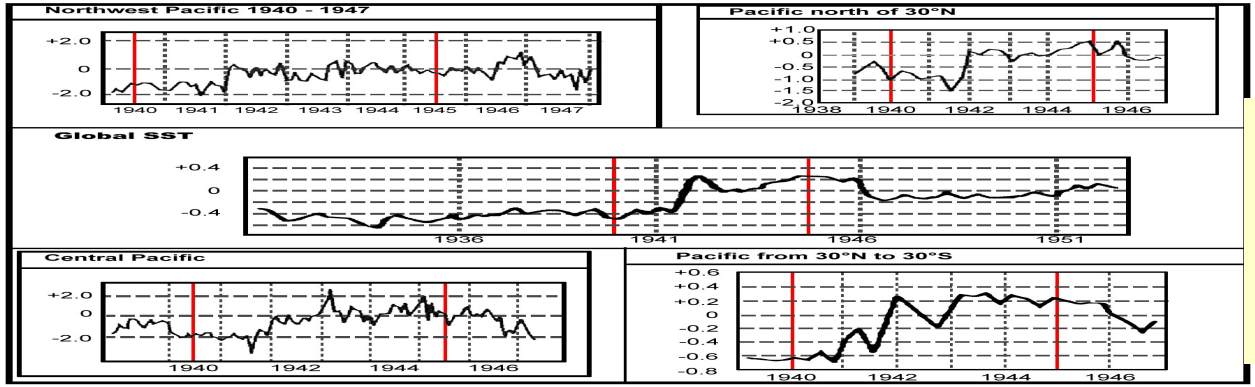
Reliability of Sea-Surface Temperature Data Taken during War Time in the Pacific

2nd
- To present my recent consideration concerning a system shift‘ in the North Pacific during the early 1940s,
- to stimulate your interest in the matter,
- with the kind request to:

TAKE OVER

My findings in the PACON 1997 paper:

1. Sea surface temperatures taken during WWII are highly unrealiable



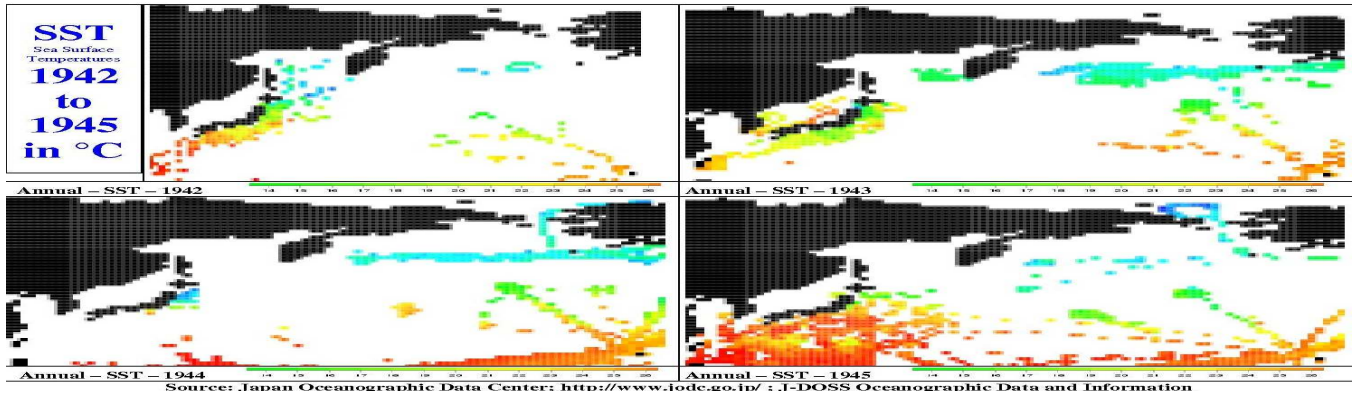
Data source:

P.B.Wright, 1986

And

Folland & Parker, 1995

2. The data are few, scattered, and random during the four war years 1942-1945:



Japan Oceanographic Data Center
http://www.jodc.go.jp/

The presentation focuses primarily on:

A__Surface air temperatures;

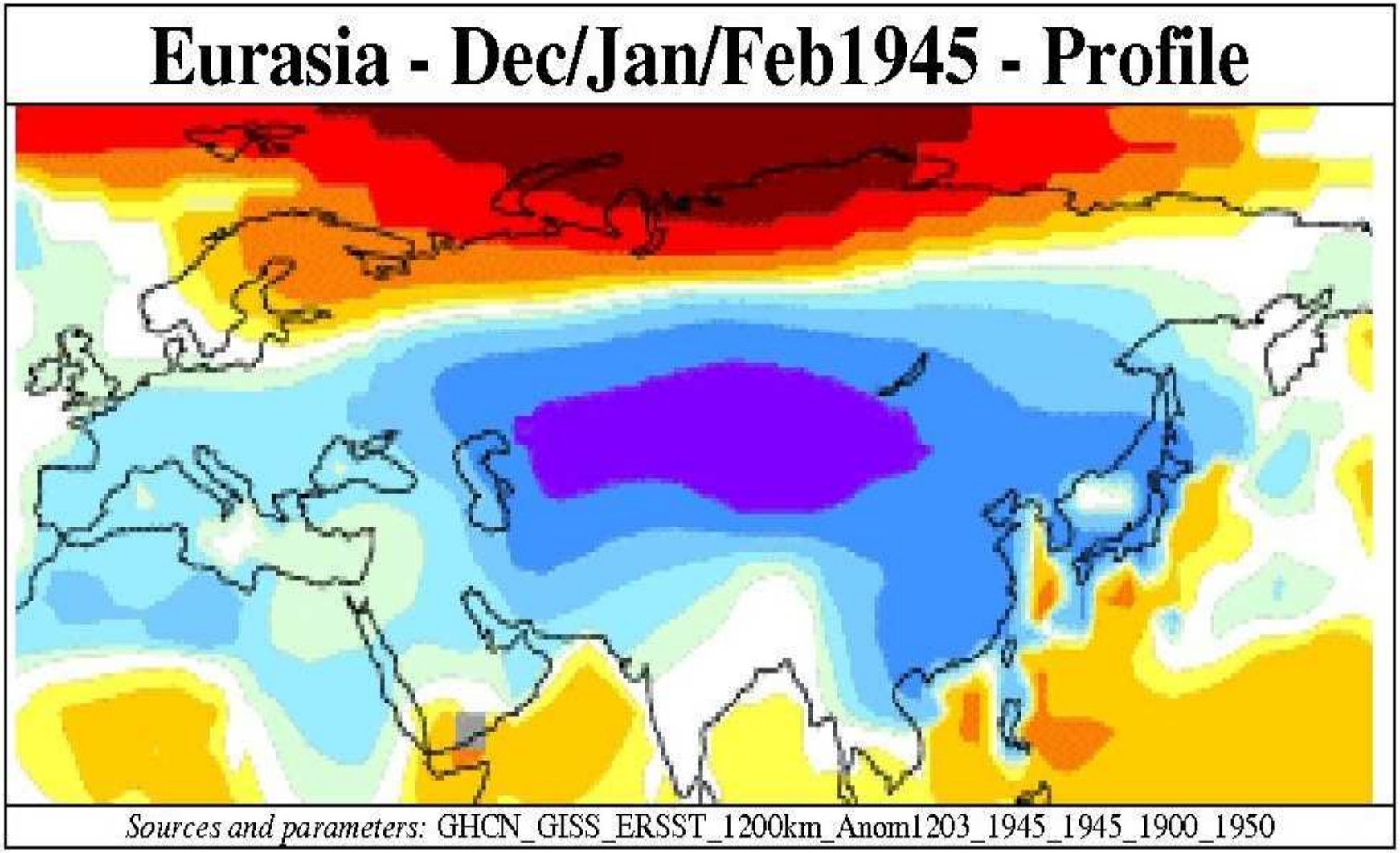
B__winter season (Dec., Jan. & Feb.);

C__from autumn 1944 to August 1945;

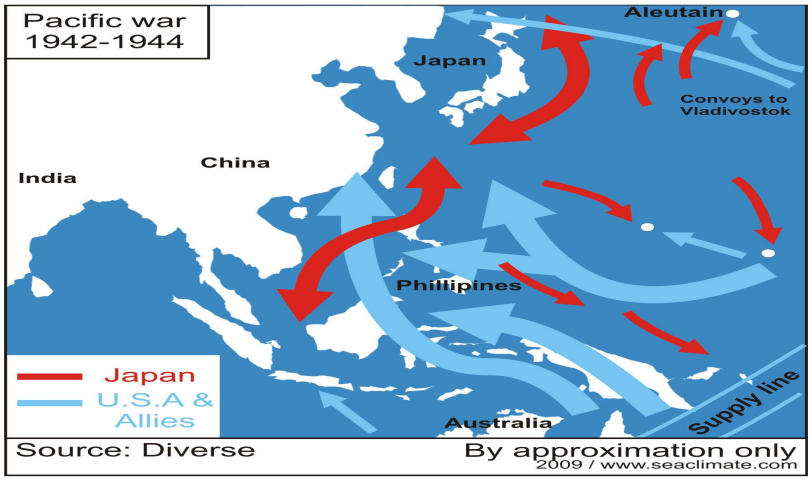
D__Japan

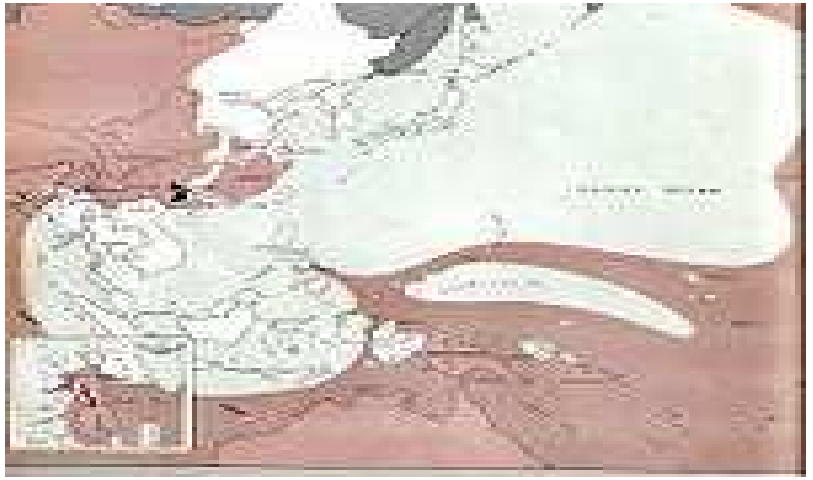
__raising some few further observations, and
__discussing the relevance on the PDO shift in the early 1940.

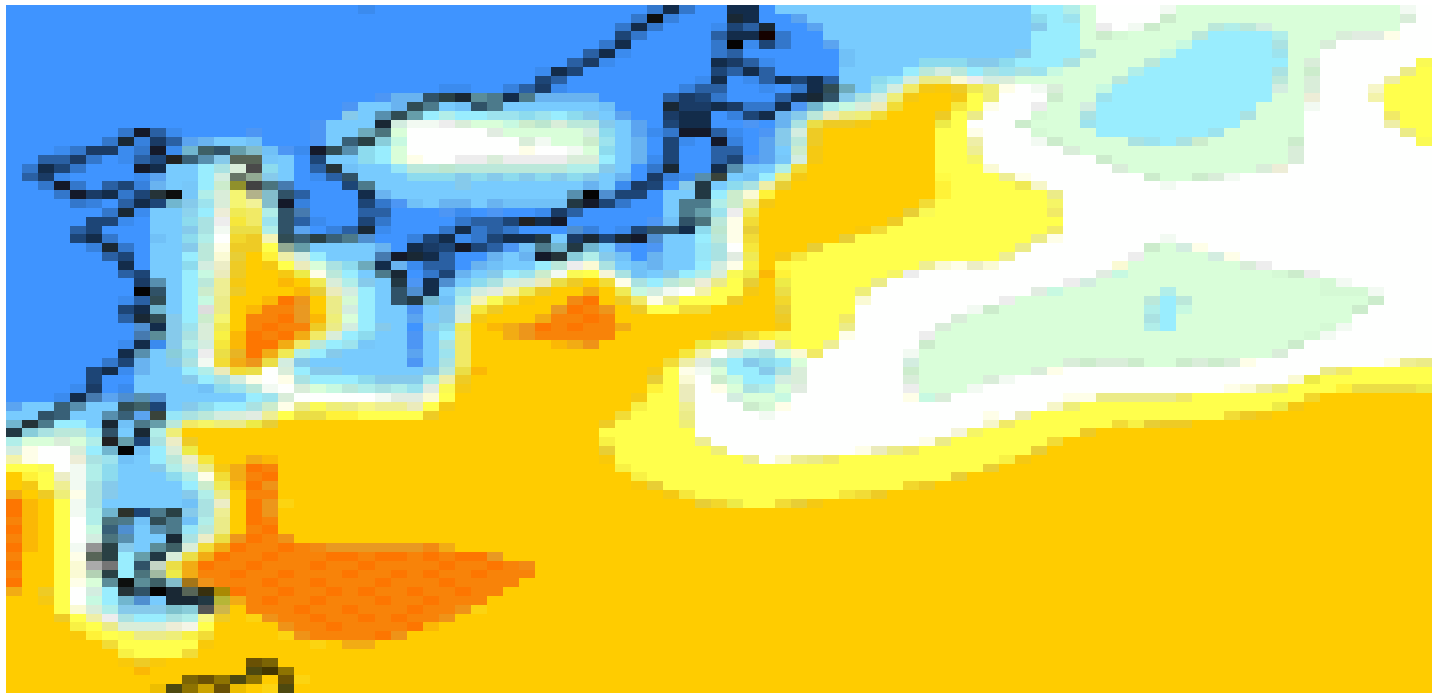
Winter air temperature 1944/45 in the Far East



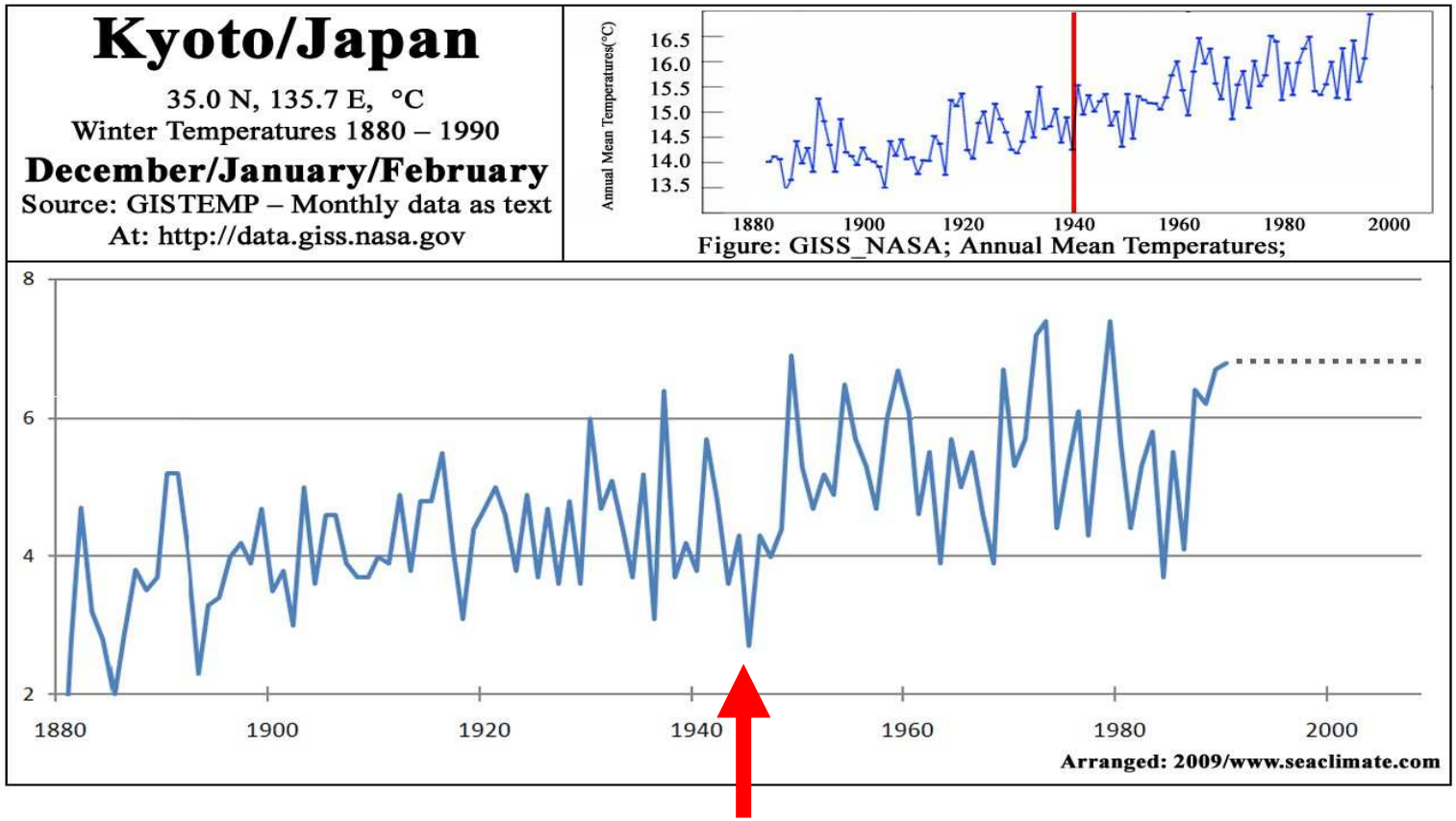
Naval activities in South East Asia & Temperature Profile







Coldest winter at KYOTO for about 50 years



D/J/F 1944-45

Extreme Winter –except Kushiro

Suttsu
Suttsu 42.8 N 140.2 E, °C
Winter Temperatures 1888-2010
December/January/February
Source: GISTEMP – Monthly data as text
At: http://data.giss.nasa.gov

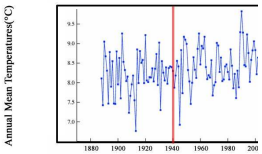
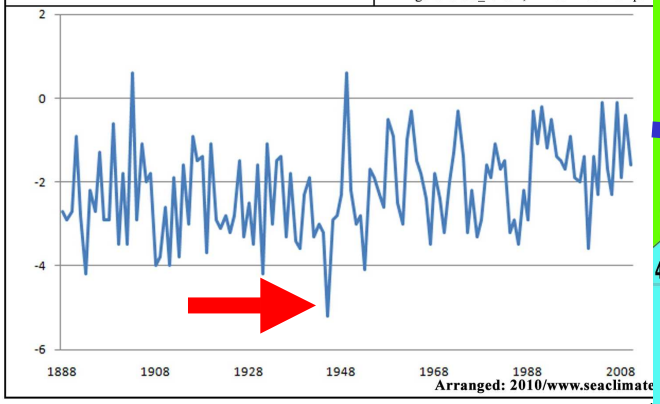


Figure: GISS_NASA; Annual Mean Temper



Kushiro
Kushiro 43.0 N 144.4 E, °C
Winter Temperatures 1910-1990
December/January/February
Source: GISTEMP – Monthly data as text
At: http://data.giss.nasa.gov

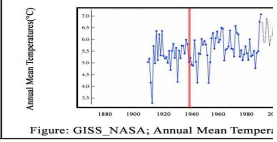
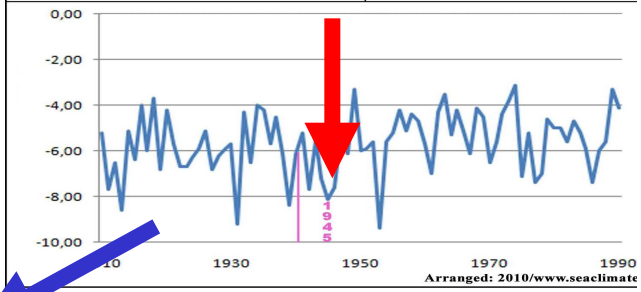
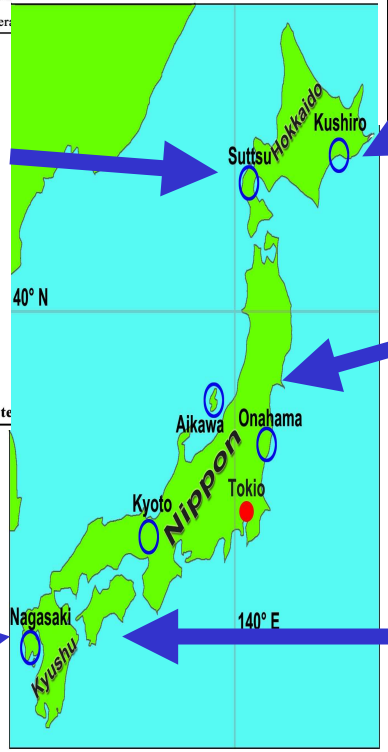


Figure: GISS_NASA; Annual Mean Temper





Sendai - Japan
Sendai 38.3 N 140.9 E, °C
Winter Temperatures 1927 – 2010
December/January/February
Source: GISTEMP – Monthly data as text
At: http://data.giss.nasa.gov

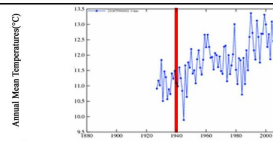
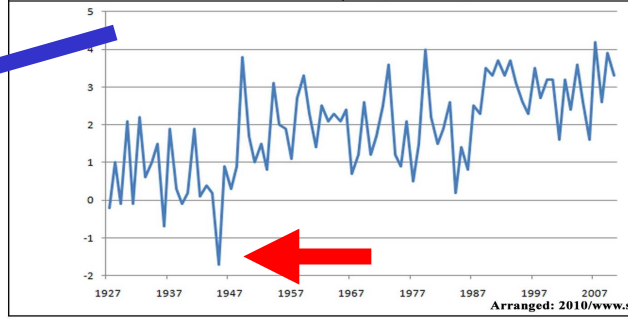


Figure: GISS_NASA; Annual Mean T



Nagasaki - Japan
Nagasaki 32.7 N 129.9 E, °C
Winter Temperatures 1880 - 2010
December/January/February
Source: GISTEMP – Monthly data as text
At: http://data.giss.nasa.gov

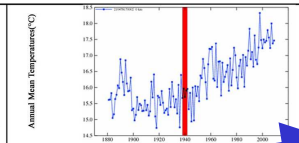
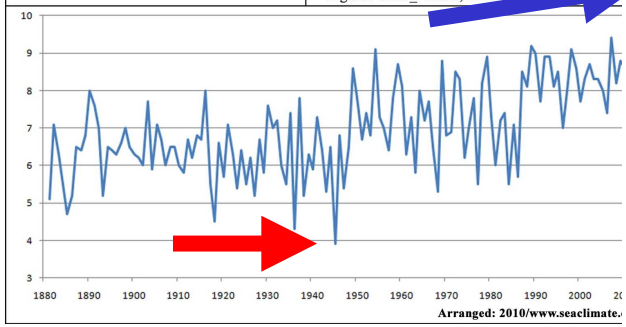


Figure: GISS_NASA; Annual Mea



Uwajima- Japan
Uwajima 33.2 N 132.6 E, °C
Winter Temperatures 1920 - 1990
December/January/February
Source: GISTEMP – Monthly data as text
At: http://data.giss.nasa.gov

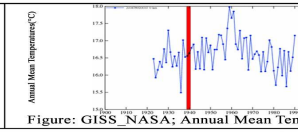
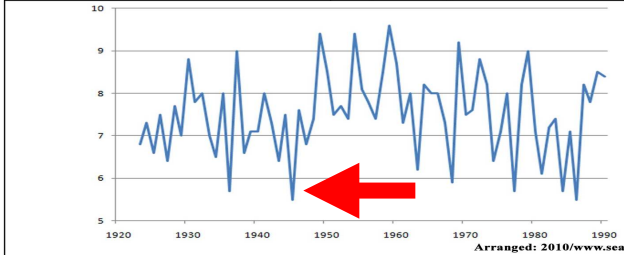
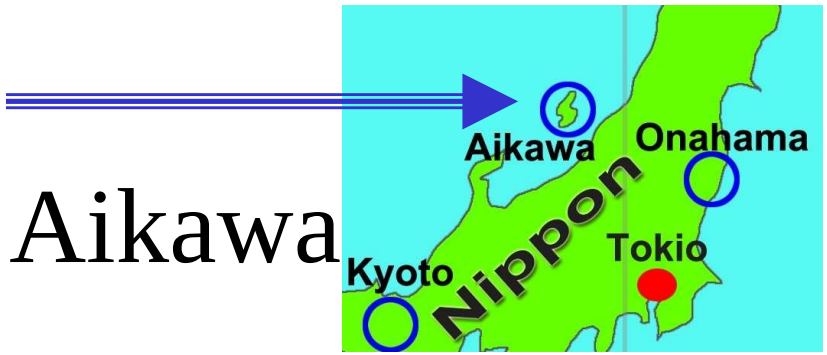


Figure: GISS_NASA; Annual Mean Tem



D/J/F
1944/45

Aikawa



Air temperature
D/J/F – 1944/45

Aikawa
Aikawa 38.0 N 138.2 E, °C
Winter Temperatures 1910– 1990
December/January/February
Source: GISTEMP – Monthly data as text
At: http://data.giss.nasa.gov

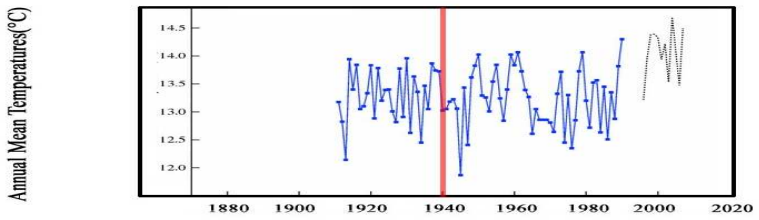
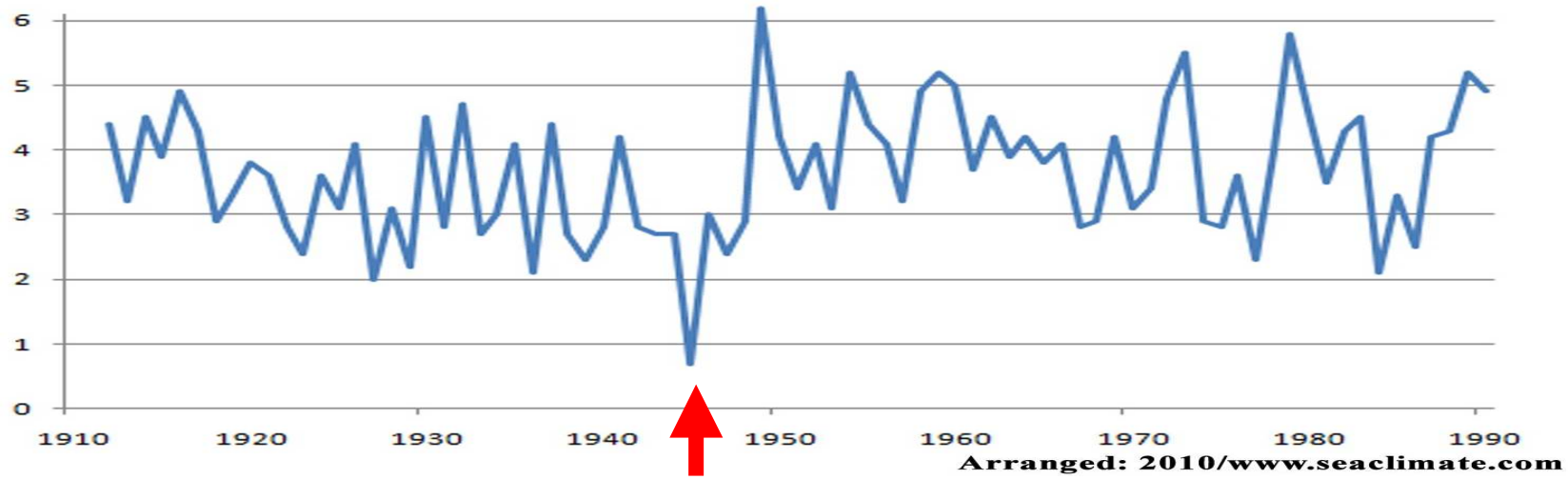


Figure: GISS_NASA; Annual Mean Temperatures;



1944/45



Onahama

Air temperature
D/J/F – 1944/45

Onahama- Japan
Onahama 37.0 N 140.9 E, °C
Winter Temperatures 1910 – 2008
December/January/February
Source: GISTEMP – Monthly data as text
At: http://data.giss.nasa.gov

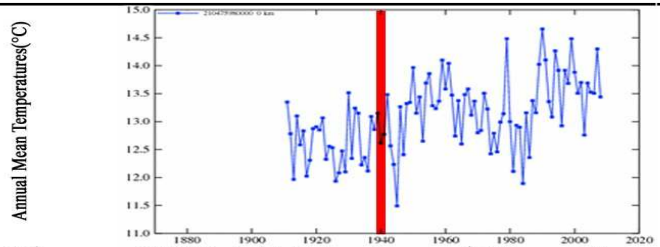
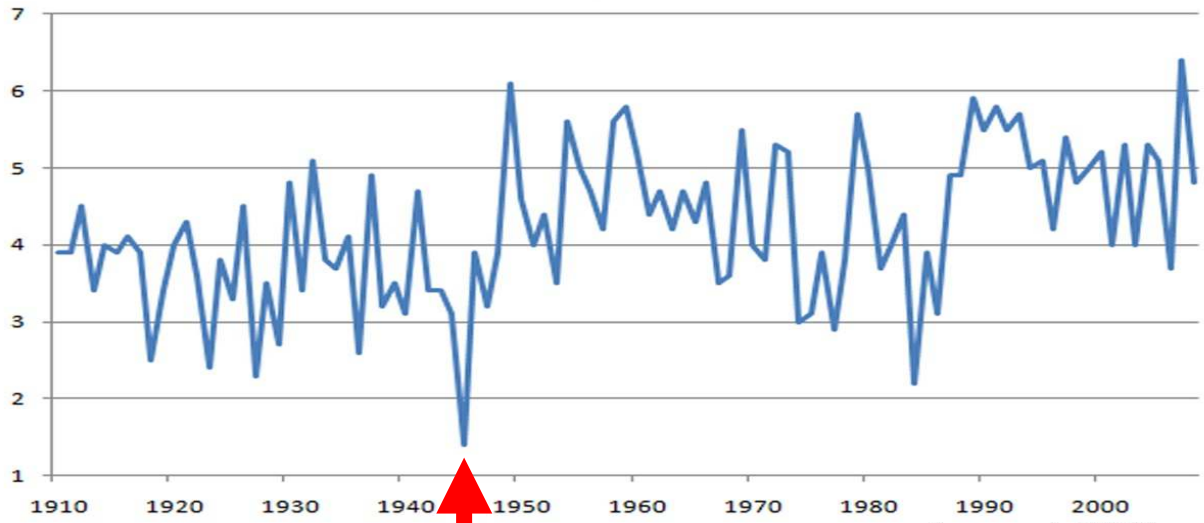
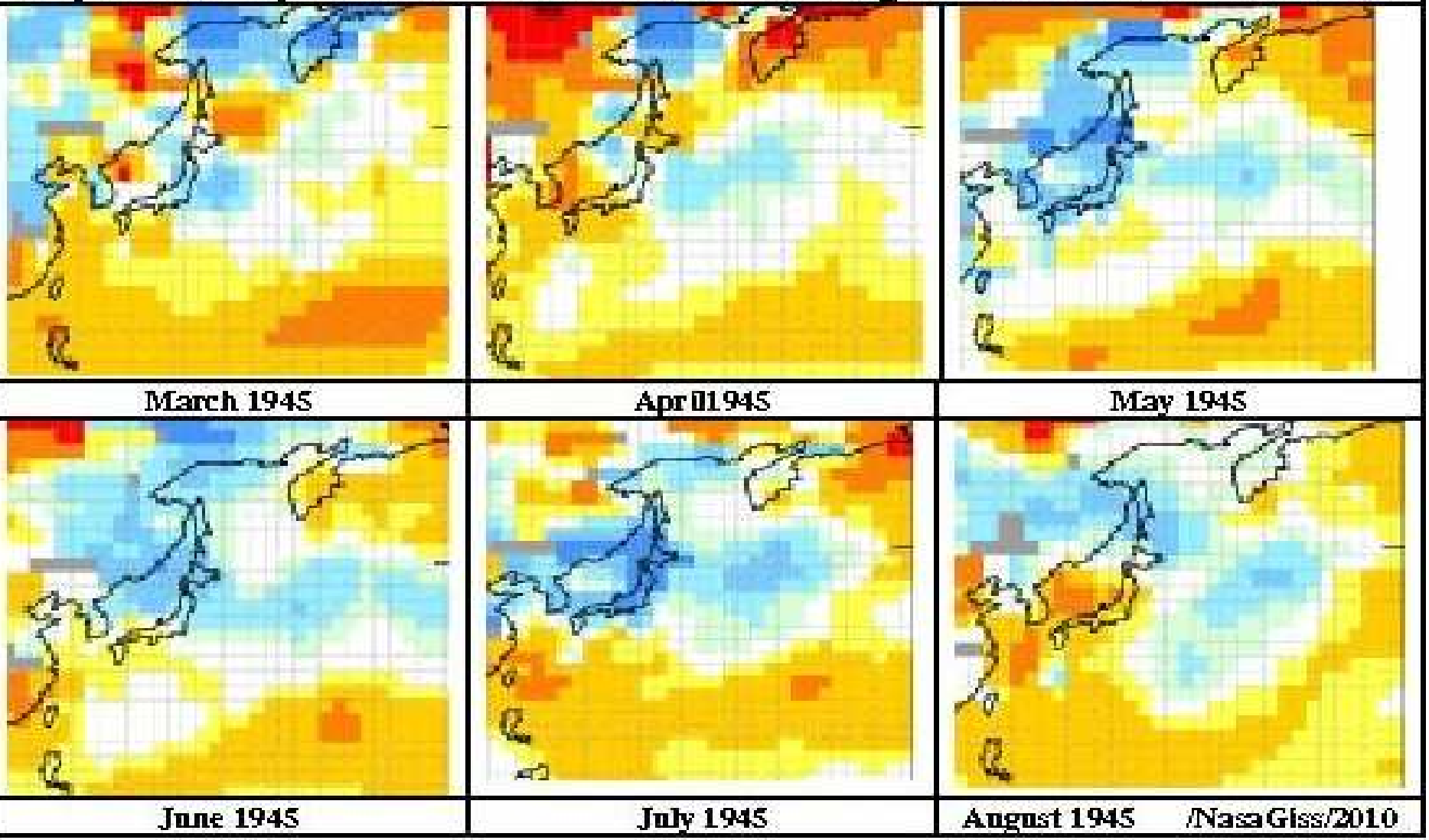


Figure: GISS_NASA; Annual Mean Temperatures;

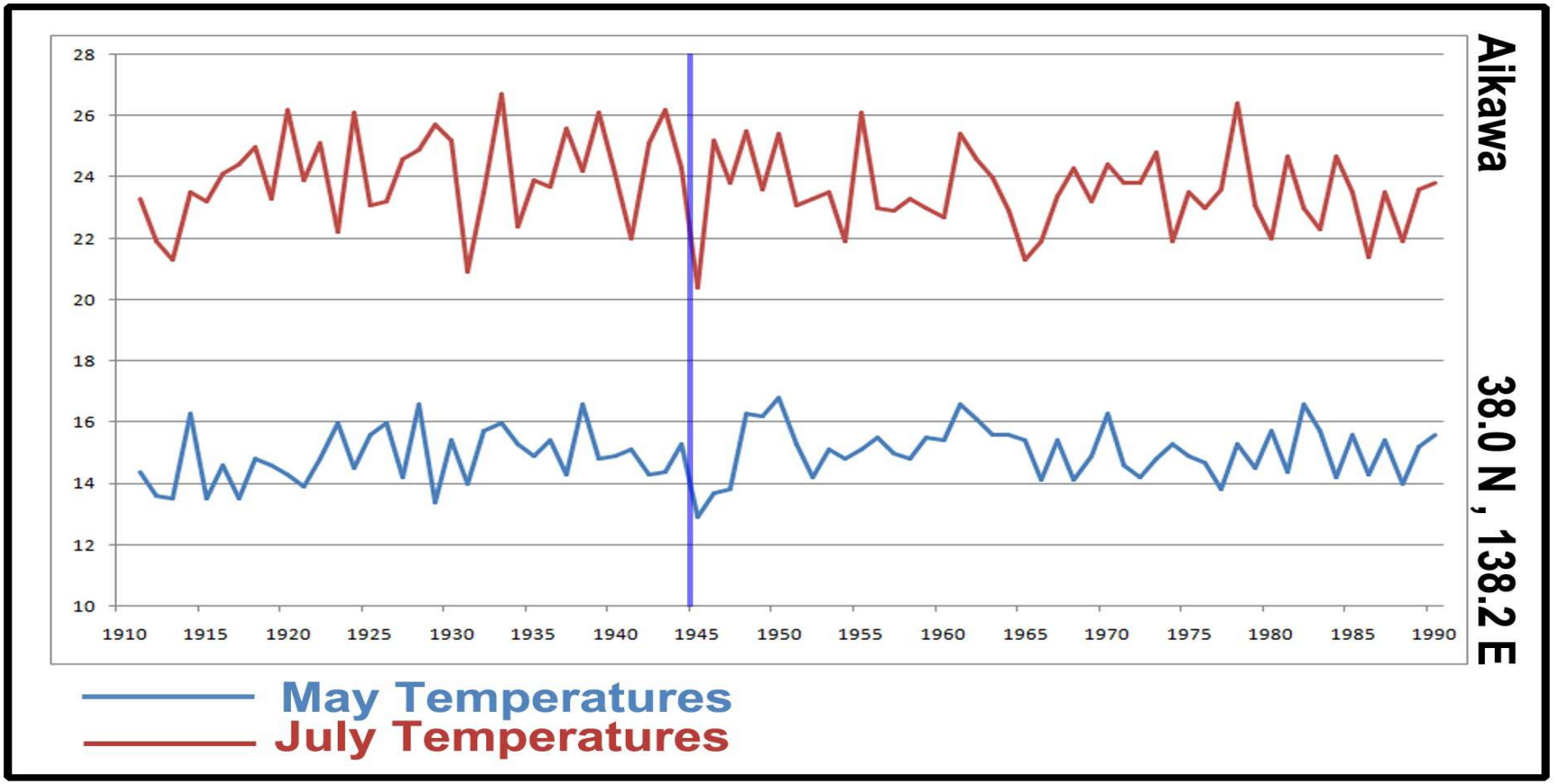


1944/45

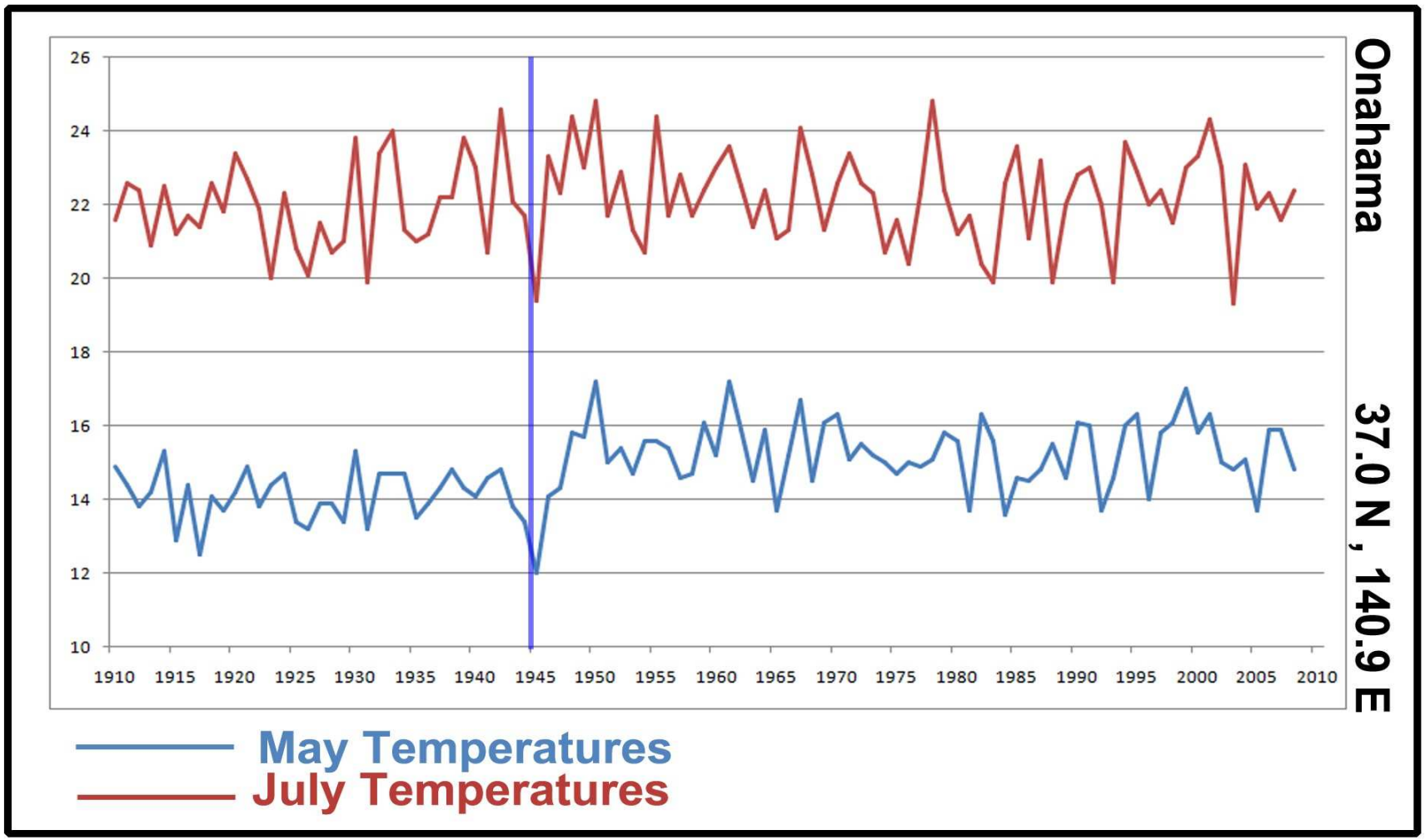
Japan Temperature Anomalies during the last War Months



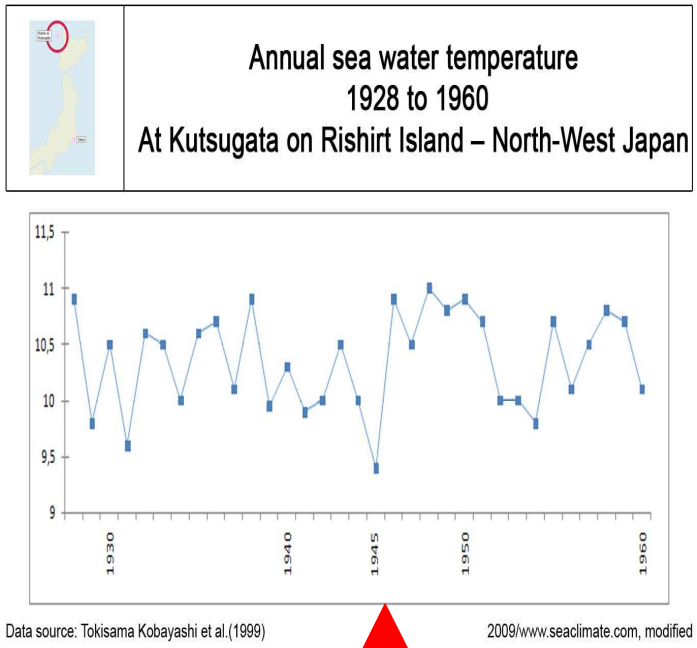
May & July months - Aikawa



May & July months - Onahama



SST – 1st example - Kutsugata



Source*): Tokimasa Kobayashi et al. (1999):
"Long-term fluctuation of the catch of Pacific herring in Northern Japan".
PICES-GLOBEC, 8th Meeting in Vladivostok, October 1999

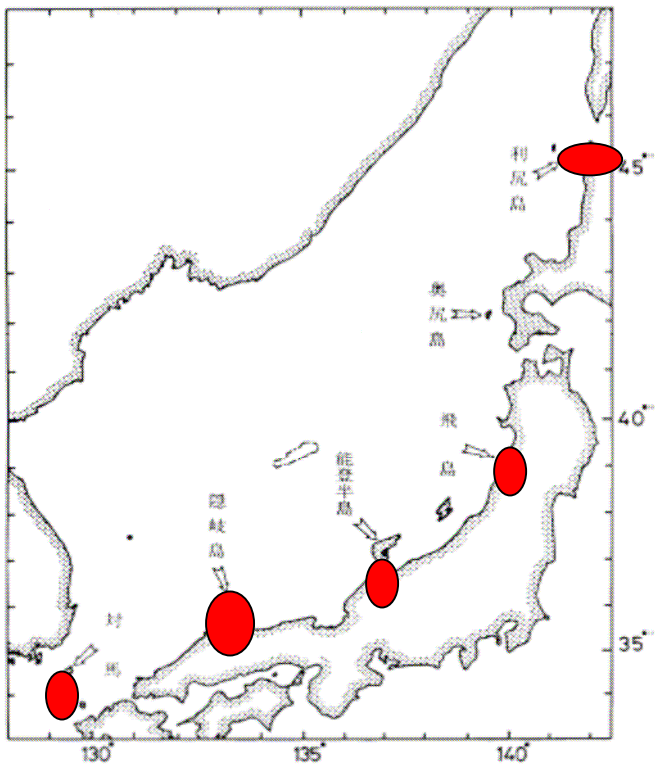
__(Extract): The annual mean seawater temperatures recorded at Takashima showed that an apparent rise in five year running mean after 1910.

__(Extract): There was a remarkable decline in sea surface temperature from 1939-1945 and the temperature rose again after 1946.
NOTE: The very low SST in 1945.

*) http://www.pices.int/publications/scientific_reports/Report15/REX_Longterm.pdf

1945

SST – 2nd example – Japan Sea



第１図　報告に用いた表面水温資料の観測場所

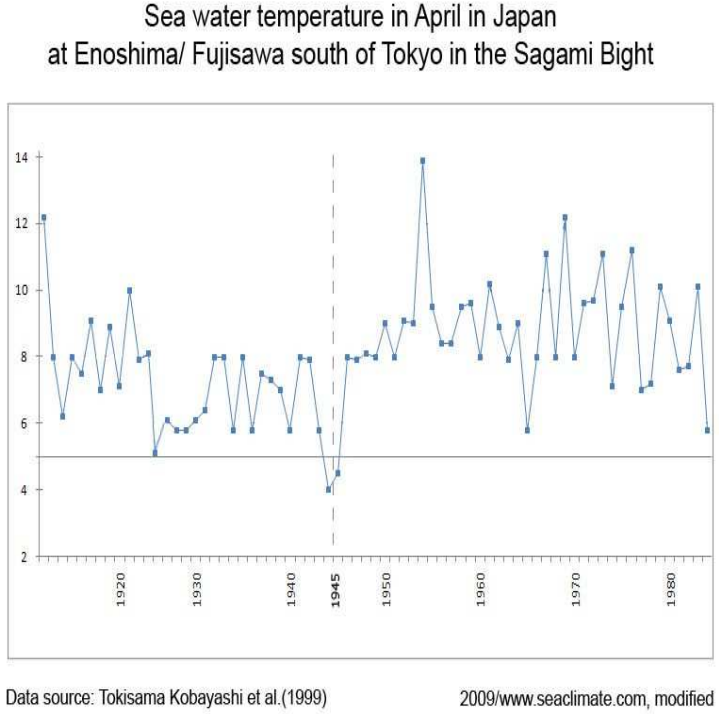
Figure and Extract from: Kösuke Naganuma (1978), “On the Water Temperature Fluctuation at the Representative Points in the Japan Sea along the Honshu Coast”;
Bull. Jap. Sea Reg. Fish (29), p. 269-282.
(Except abstract on in Japanese)

___(Extract): The surface water temperature analyses were carried out on those data observed during the period from 1918 through 1975 at several points along the Honshu coast of the Japan Sea, Tsushima, Oki Islands, Noto Peninsula, Tobishima, Okujiri-tõ, and Rishiri-tõ (see: previous Figure).

__(Extract): 3) The annual average temperature at each point varies as low as 0,8°C for every latitudinal degree from the south to the north.

___(Extract): 10) It is pointed out that the period before 1945 was low temperature period, and thereafter high temperature period.

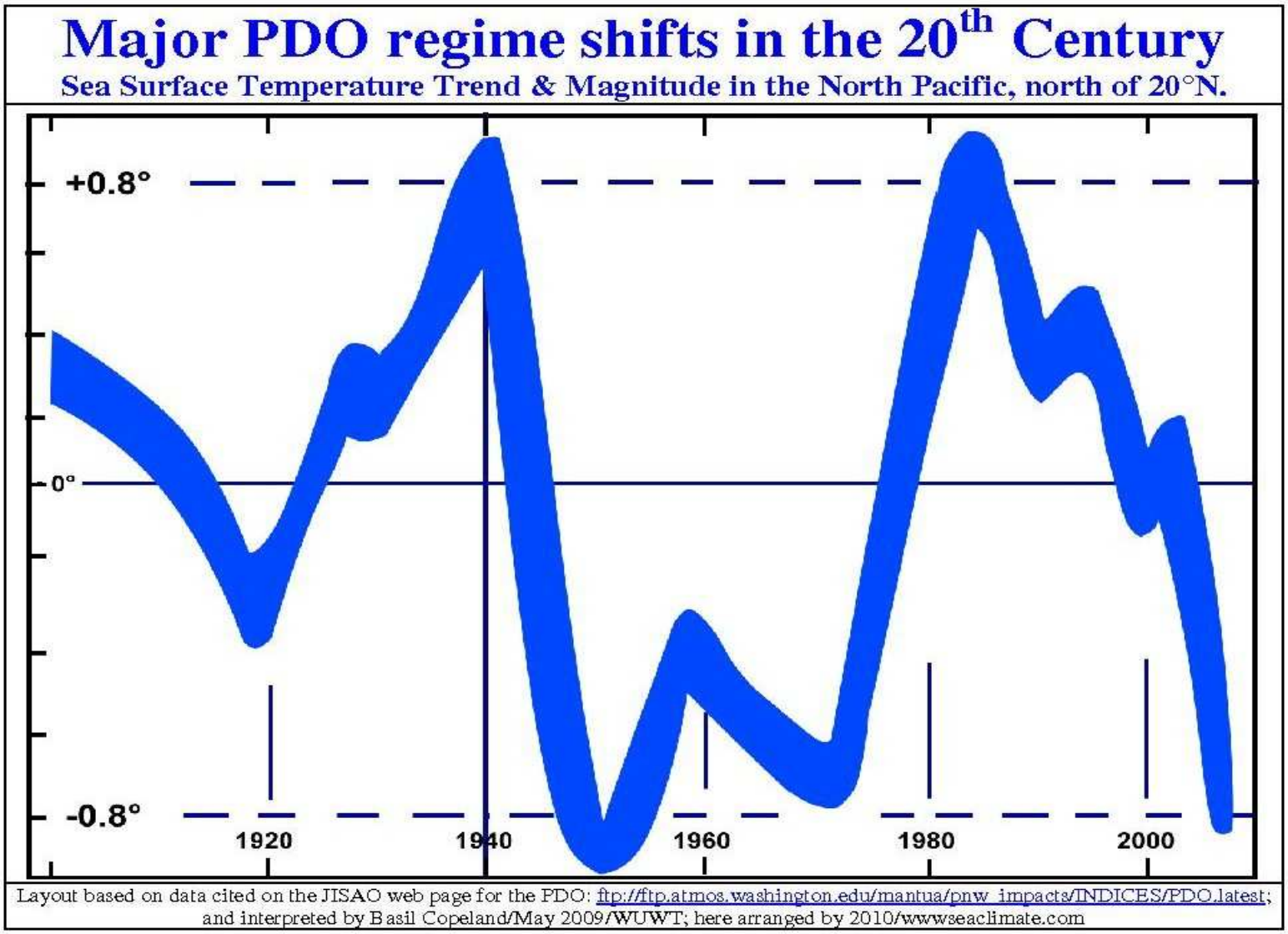
SST –3rd example – South of Tokyo



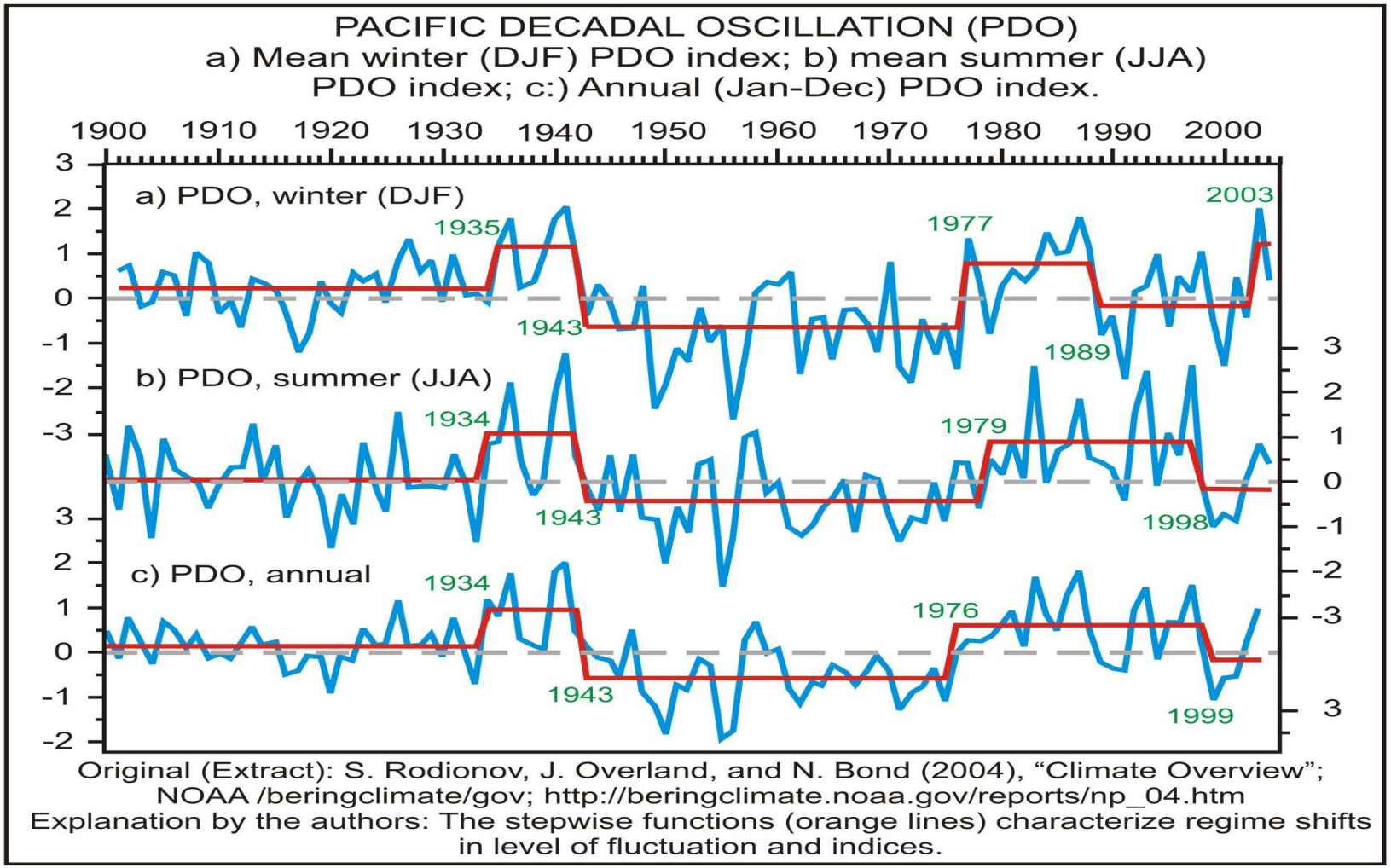
Source*): Tokimasa Kobayashi et al. (1999):
"Long-term fluctuation of the catch of Pacific herring in Northern Japan".
PICES-GLOBEC, 8th Meeting in Vladivostok, October 1999

COMMENT: The record low SST during the month of April 1944 and 1945 in succession are a clear indication that high naval activities in the Sagami Bight south of Tokyo kept the water temperatures at unusual low level.

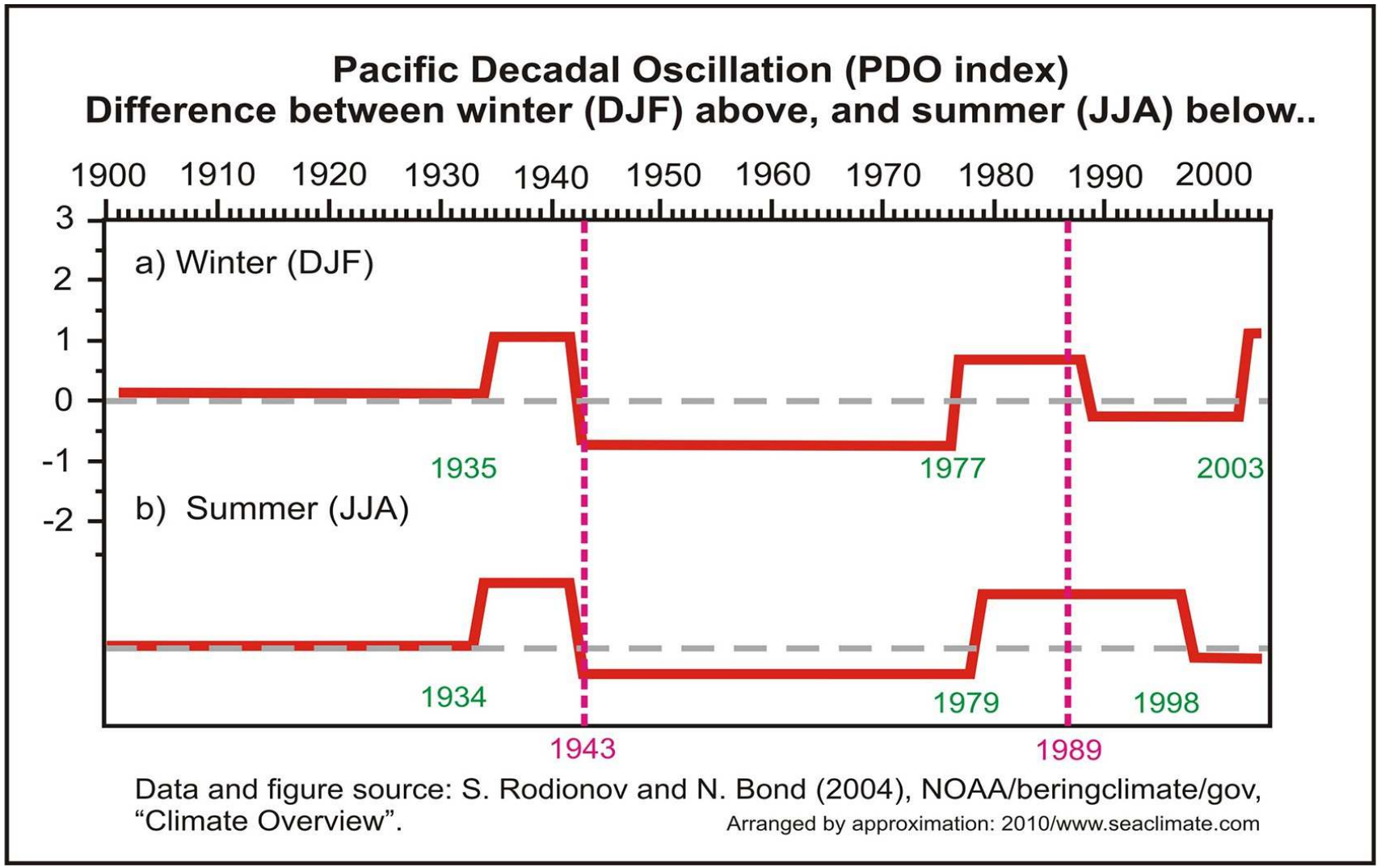
1. The big picture – The shift of PDO



2. The big picture – The shift of PDO



3. The shift of PDO – Winter v Summer



Conclusion

A. The air temperature in Japan during the last war winter 1944/45 are so remarkable low that a reasonable explanation on causation should be given.

B. To confirm or to reject any influence of naval war activities on air temperature data all possible sea-temperatur data form the early 1940s should be collected and analysed.

C. The simultaneity of the POD shift in summer and winter 1943 indicates that it has been caused by an unusual force? Had it been an internal or external force, e.g. the Pacific War?