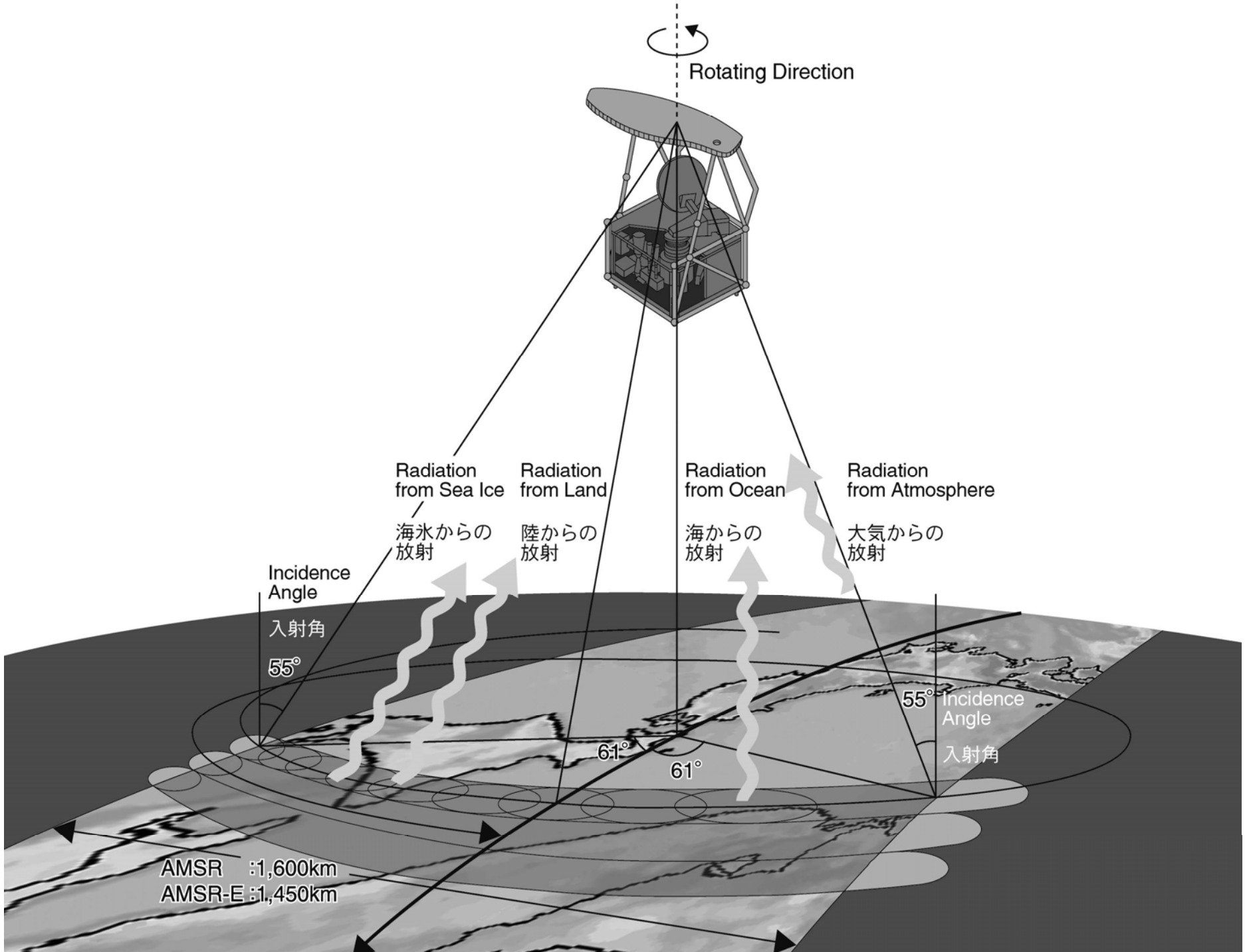
AMSR-E海面水温の応用

AMSR-E SST Applications

柴田彰

EORC/JAXA

2006 / 1 / 23 AMSR-E/GLI Symposium at Tokyo


Rotating Direction
Radiation from Sea Ice
海氷からの放射
Radiation from Land
陸からの放射
Radiation from Ocean
海からの放射
Radiation from Atmosphere
大気からの放射
Incidence Angle
入射角
55°
55°
Incidence Angle
入射角
61°
61°
AMSR :1,600km
AMSR-E :1,450km

AMSR-E

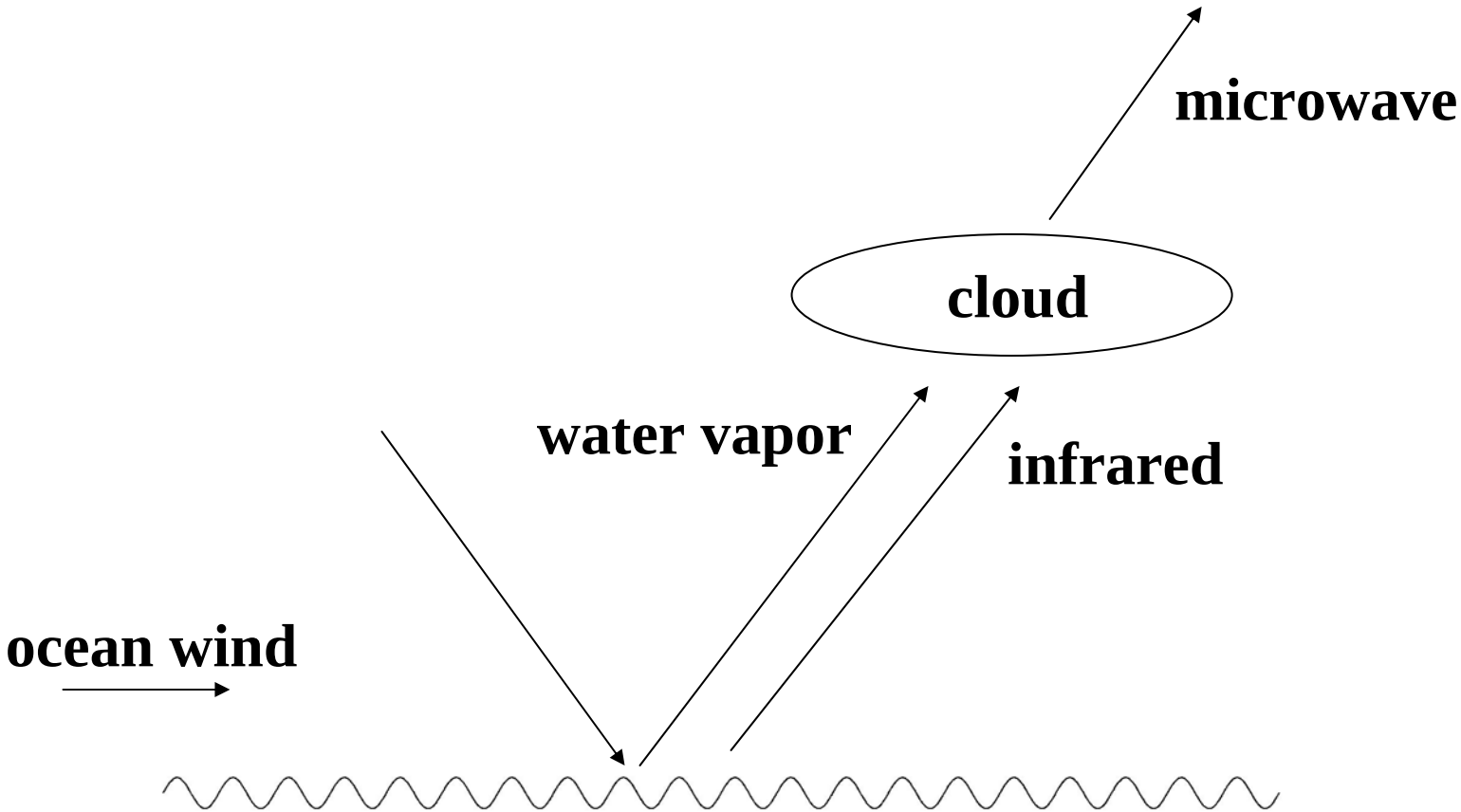
Aqua

Courtesy of NASA

Advanced Microwave Scanning Radiometer (AMSR)

AMSR-E	**AQUA**	**NASA**	**May 2002 ~ present**
AMSR	**ADEOS-II**	**JAXA**	**Dec. 2002~ Oct. 2003**

SST Observation by Microwave Radiometers

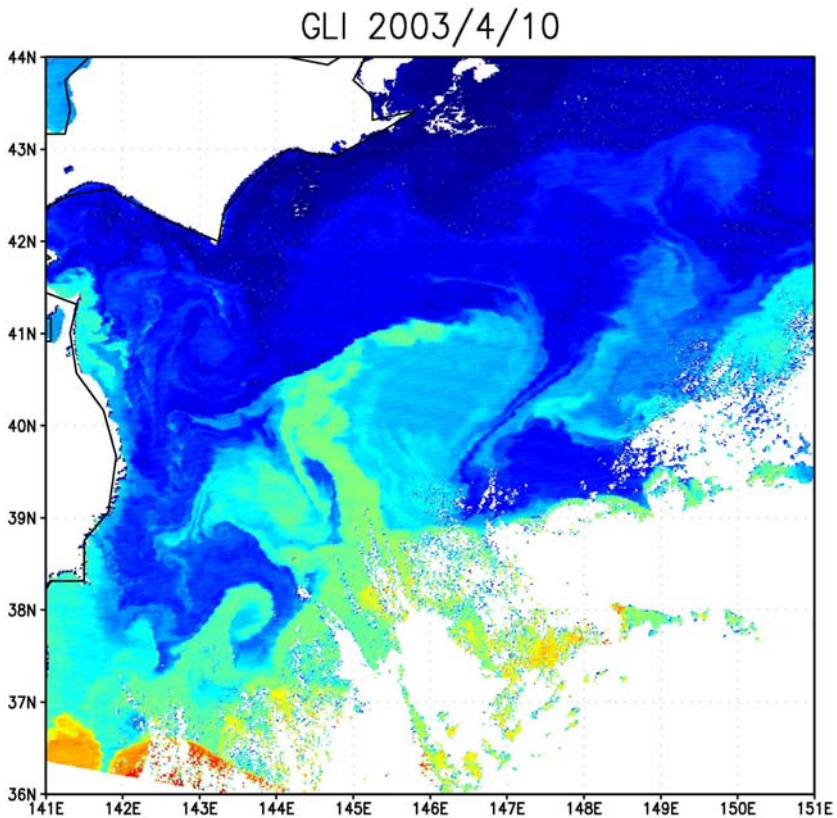


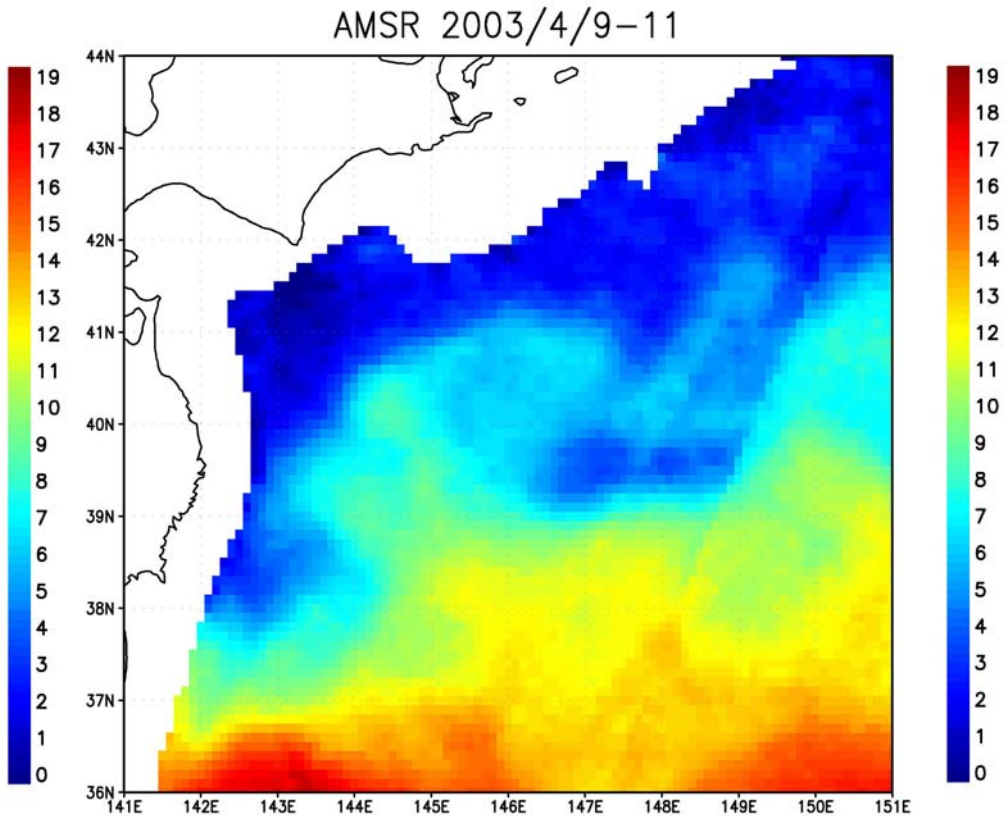
Emission at 6-10GHz microwave depends on SST

Comparison of AMSR and GLI SST (1/2)

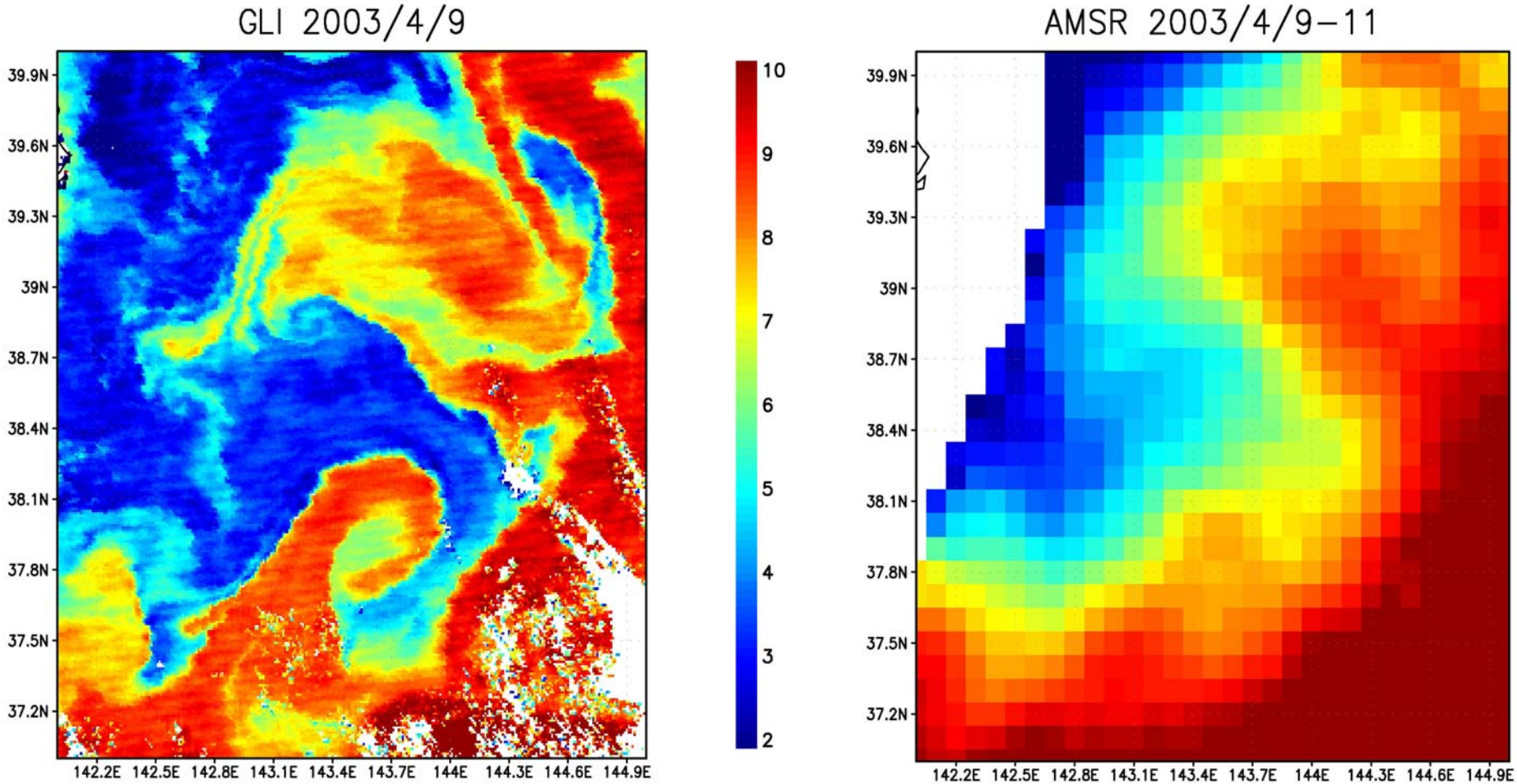
GLI / infrared

AMSR / microwave





Comparison of AMSR and GLI SST (2/2)



AMSR-E SST Accuracy

Comparison with individual buoy SST

spatial resolution of 50Km

0.5-0.6 ºC

Monthly-spatially averaged AMSR-E SST

maybe 0.2-0.3 ºC

Operational Applications of AMSR-E SST

Japan Meteorological Agency (JMA)

MGDSST (AMSR-E + AVHRR + buoys)

Analysis of oceanic conditions

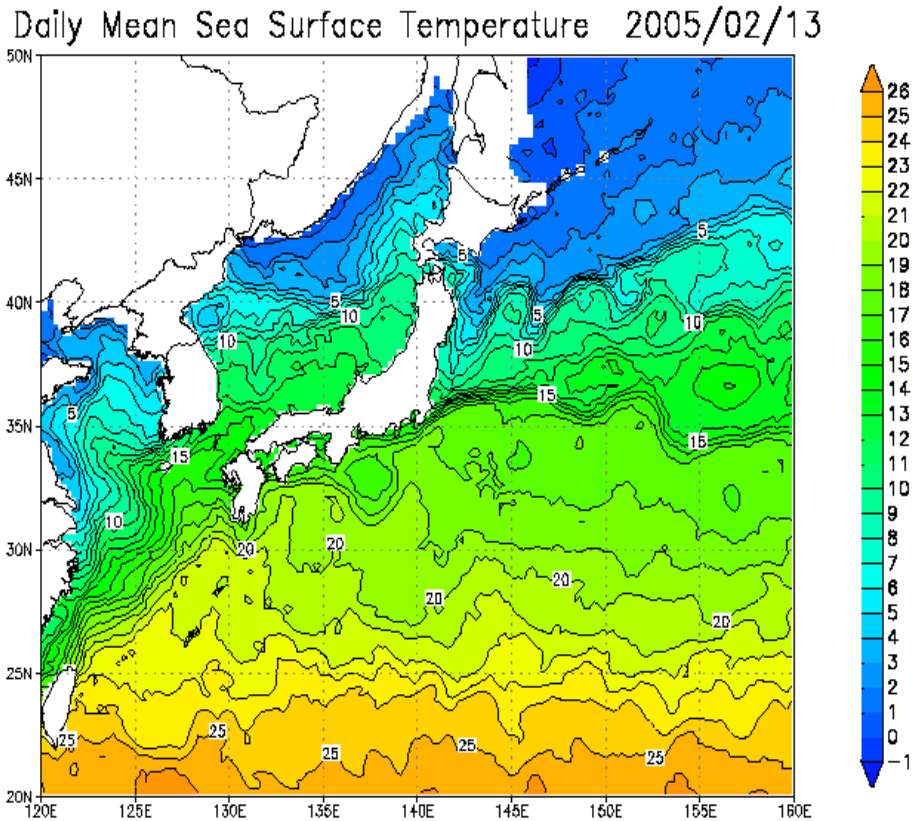
since April 2004

Japan Fisheries Information Service Center (JAFIC)

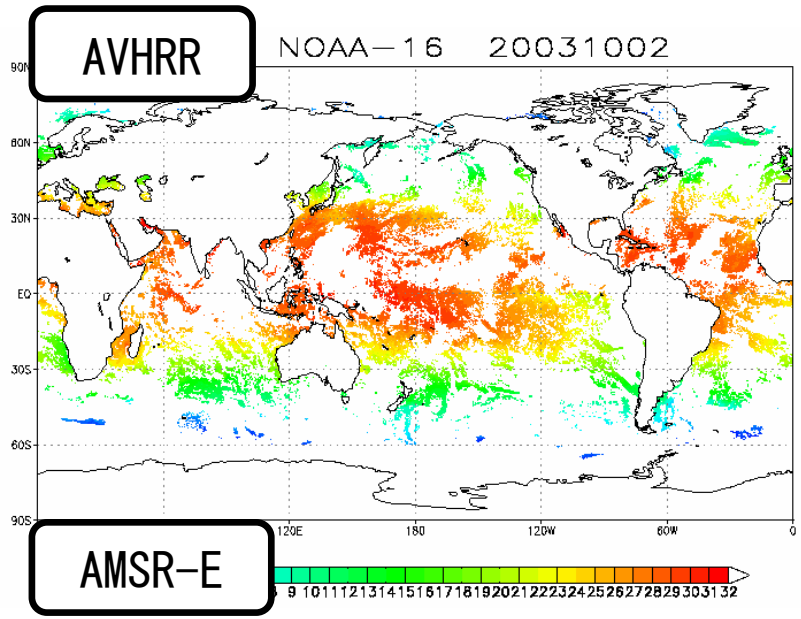
Analysis of fisheries conditions

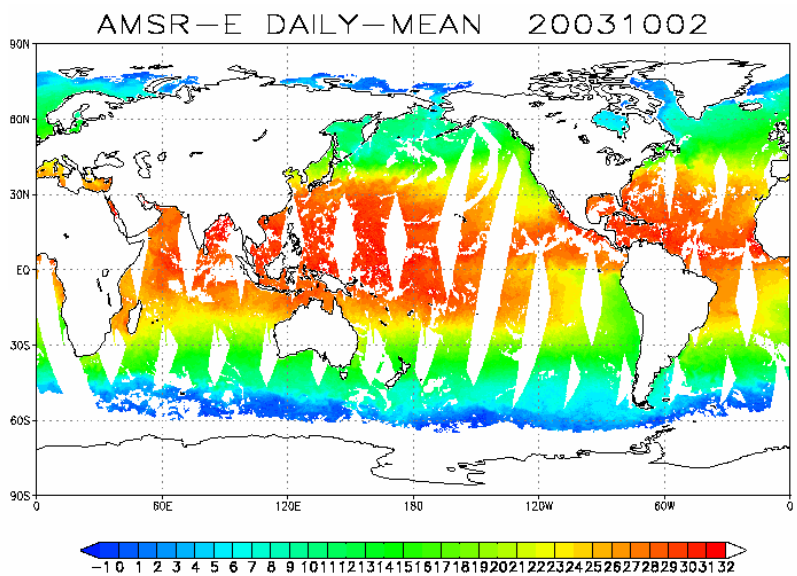
since April 2004

MGDSST of JMA



Lat-lon 0.25 degree grid



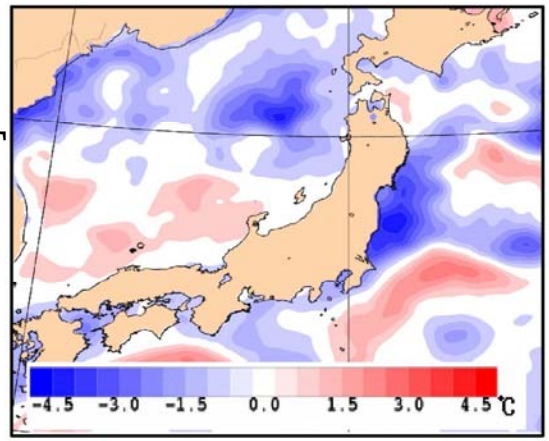


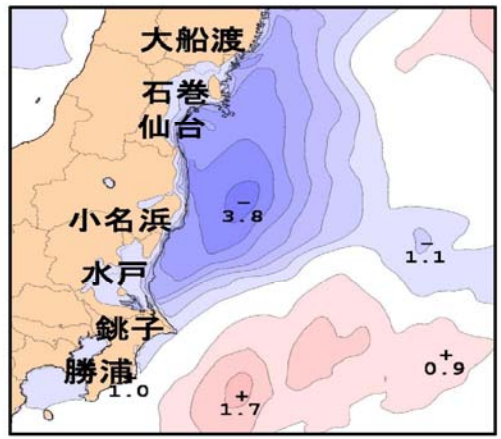
Courtesy of JMA

MGDSST as a boundary condition for JMA Forecast Model

NE wind blowing over a colder SST ocean might induce lower air temperature and higher humidity along the east coast of Japan

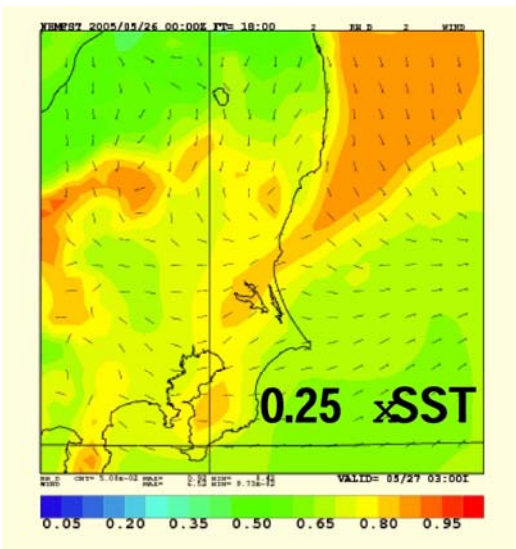
MGDSST-NPDSST on May 25, 2005

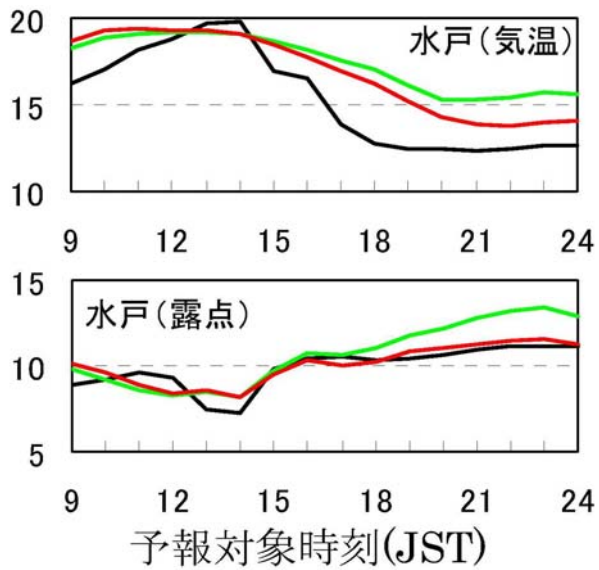




Air temperature Test - Control

Humidity





At Mito air temperature

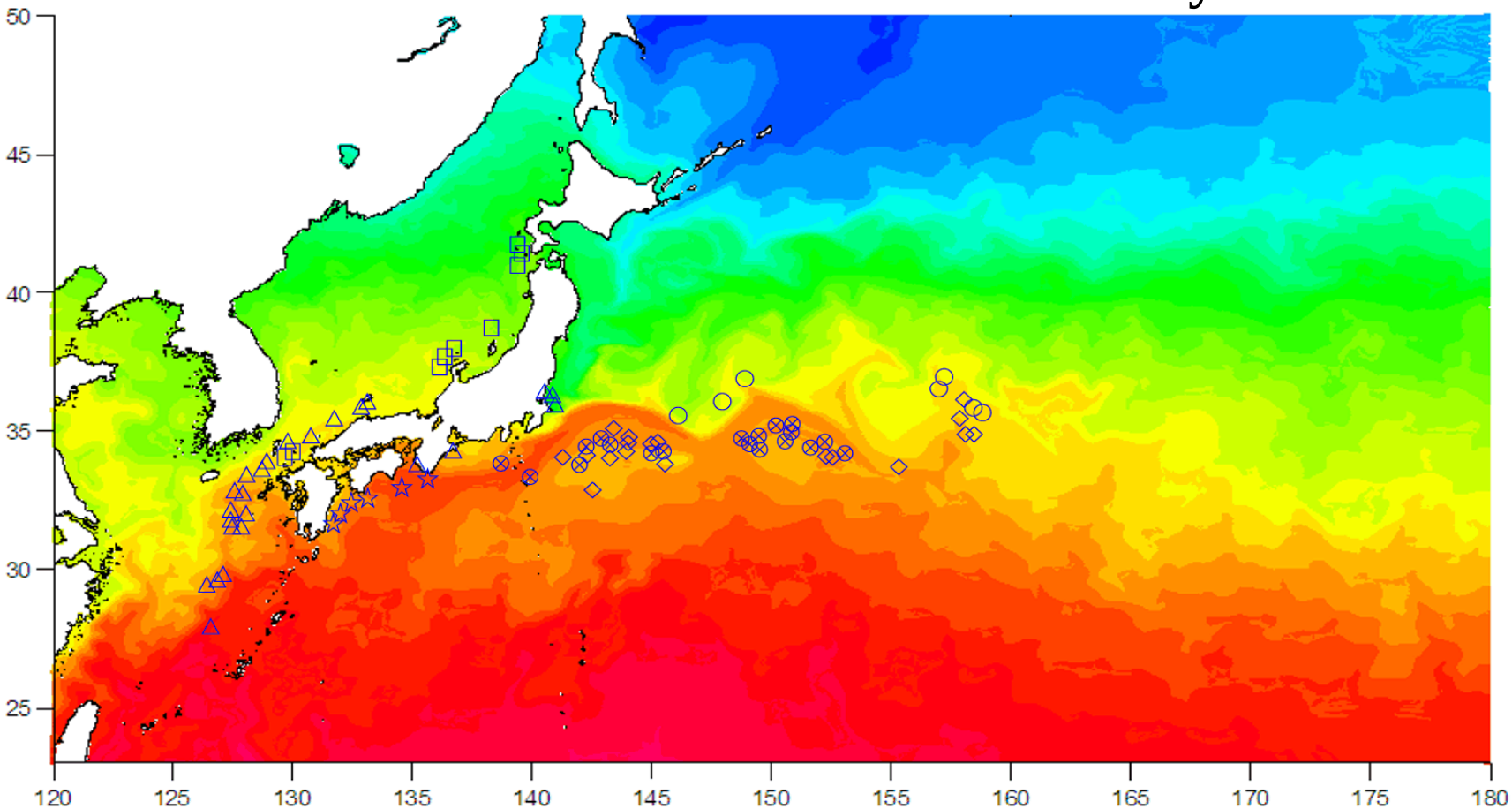
dew point

Courtesy of JMA

SST and Fishing Grounds

SST appropriate for fish living is different among fish species

courtesy of JAFIC



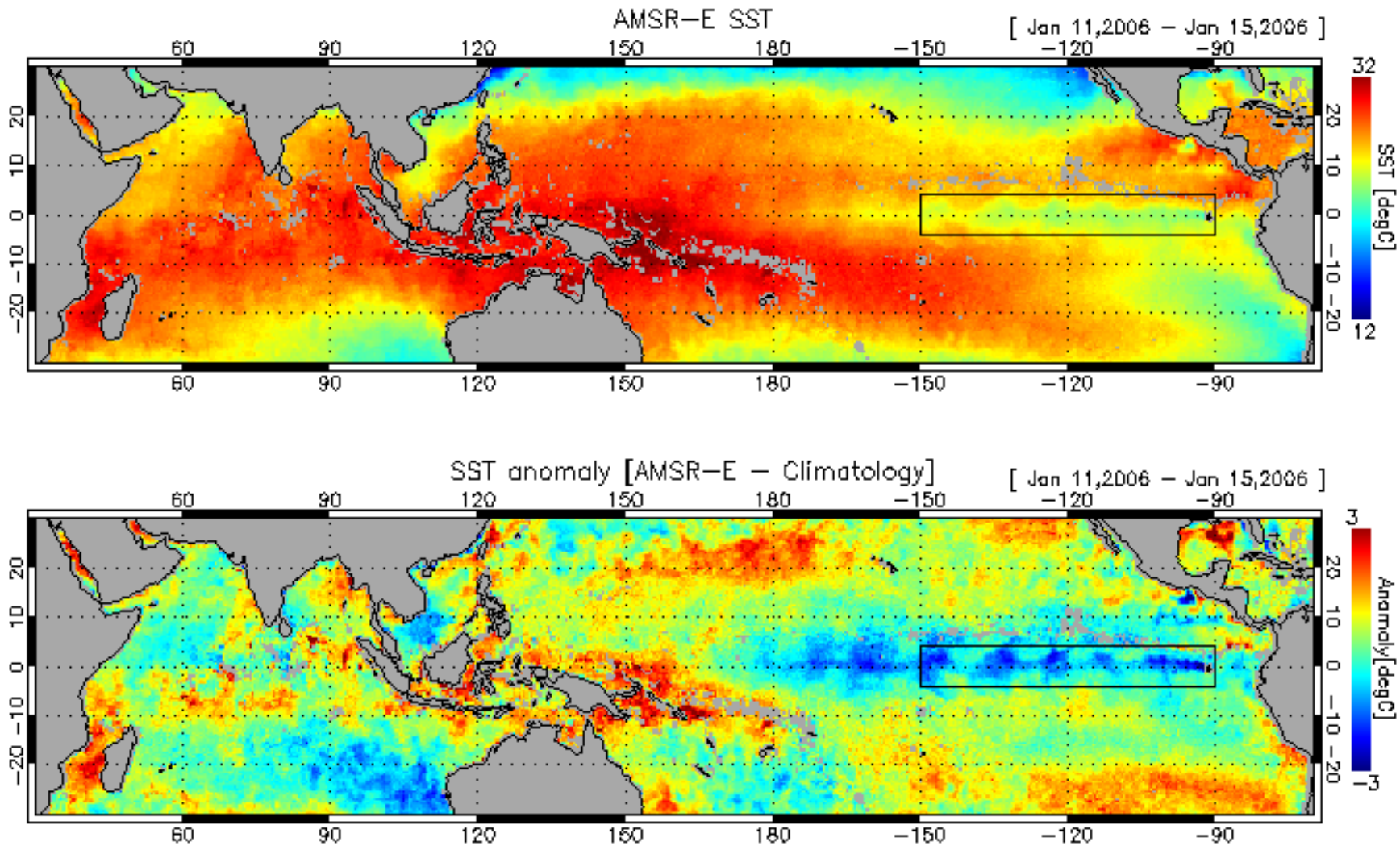
◇ Bonito, ○ Tuna, □ Squid, Δ Saurel

AMSR-E SST for monitoring the ocean climate

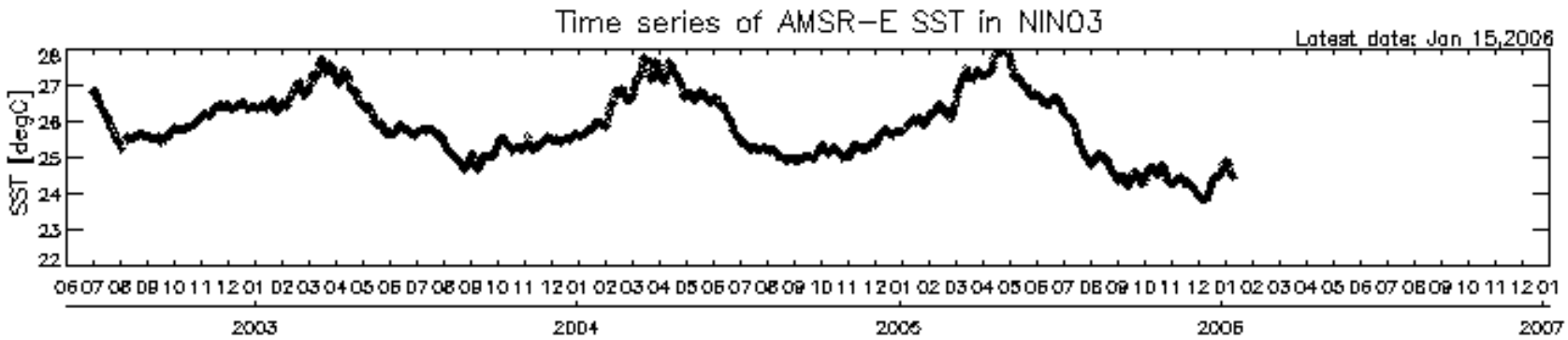
El nino

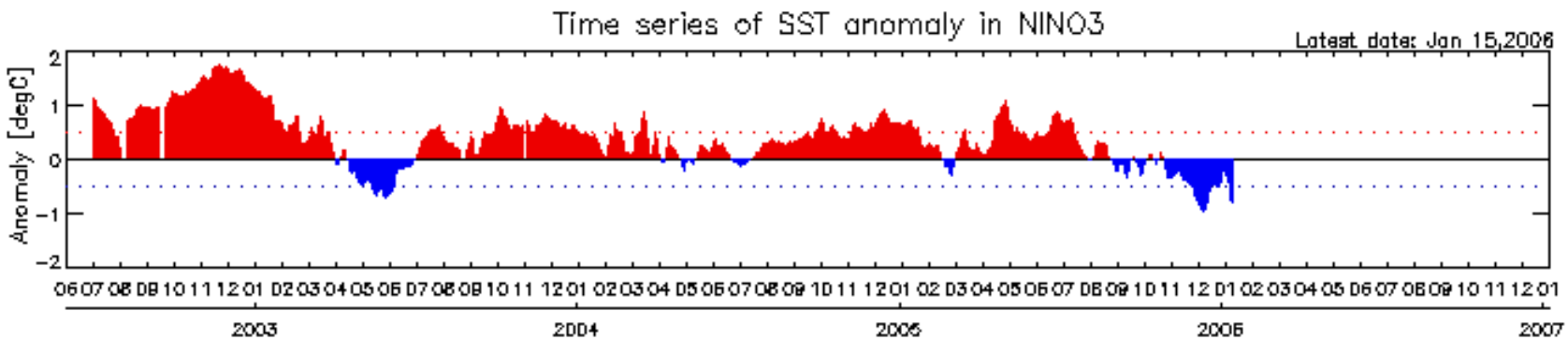
Global SST warming

Monitoring the El Nino (1/2)

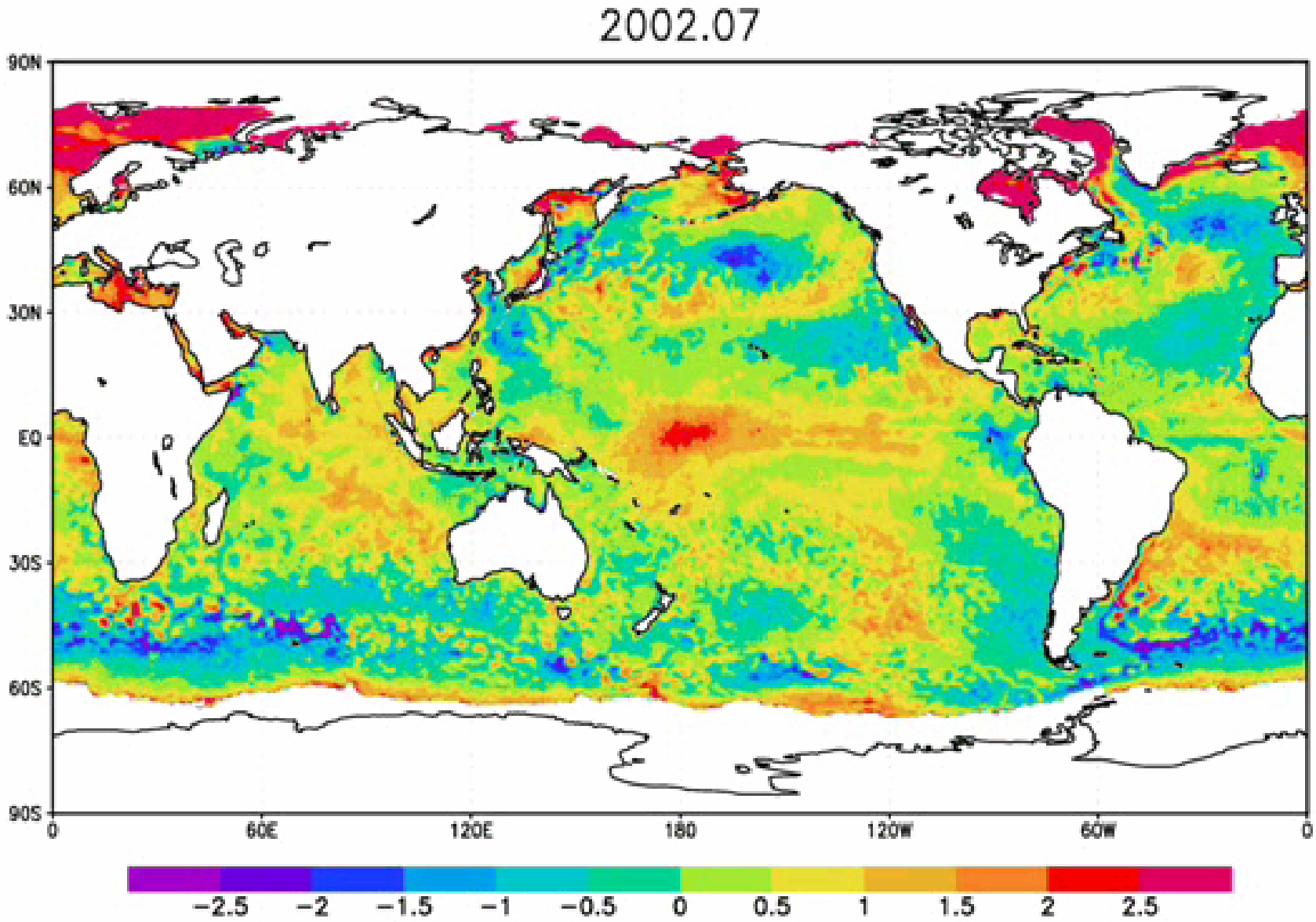


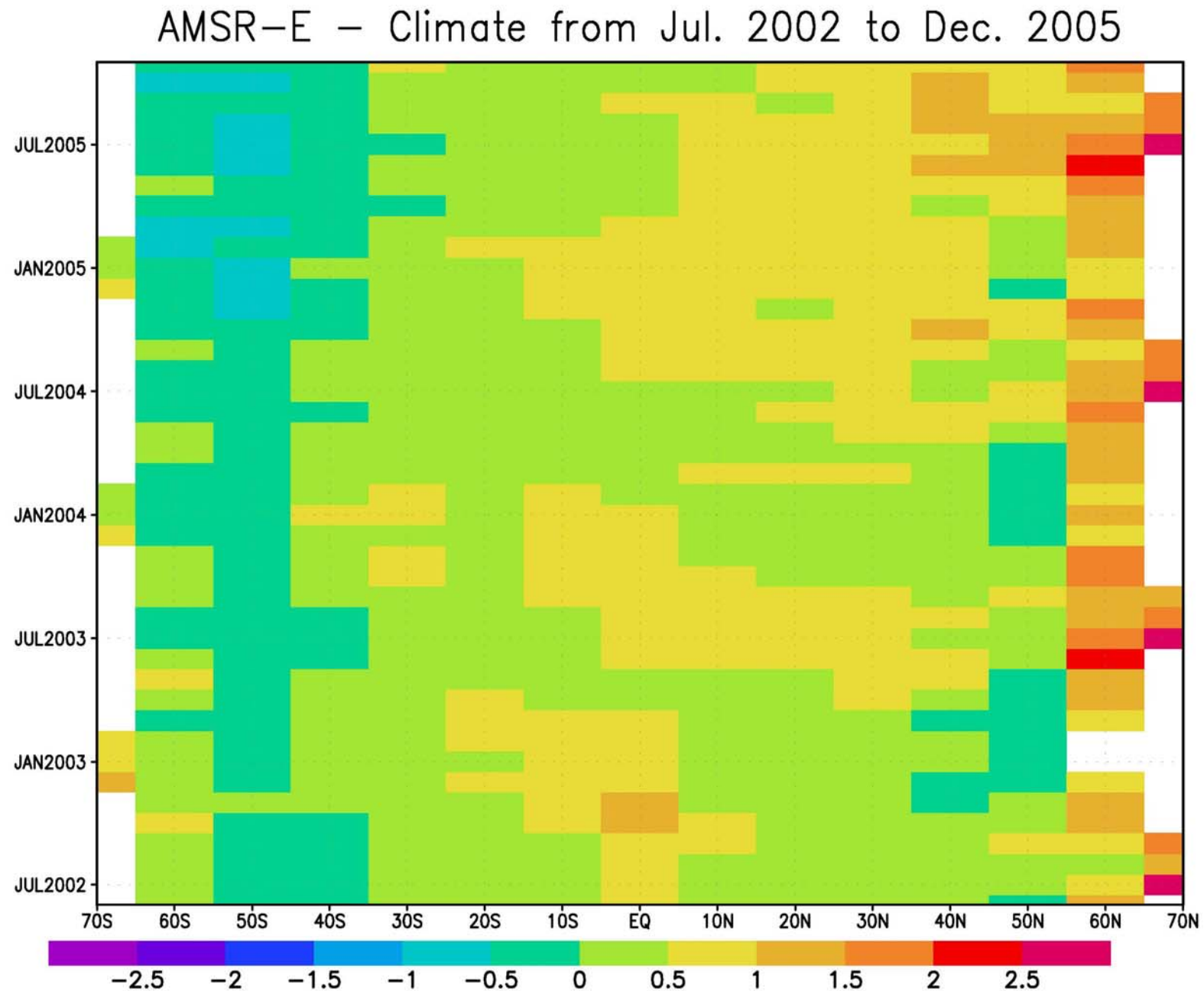
Monitoring the El Nino (2/2)





Movies from July 2002 to December 2005




AMSR-E – Climate from Jul. 2002 to Dec. 2005
JUL2005
JAN2005
JUL2004
JAN2004
JUL2003
JAN2003
JUL2002
70S
60S
50S
40S
30S
20S
10S
EQ
10N
20N
30N
40N
50N
60N
70N
−2.5
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
2.5

Conclusions

- **The accuracy of AMSR-E SST is 0.5-0.6 ºC for individual data, and maybe 0.2-0.3 ºC for monthly-spatially averaged data.**
- **JMA and JAFIC are using AMSR-E SST operationally, for analyzing oceanic and fisheries conditions, respectively.**
- **AMSR-E SST can be used in monitoring the El Nino, and may be used for monitoring the global warming.**
- **The microwave SST retrieved from the AMSR-type radiometers should be one of core products in the Earth remote sensing.**