中国近海碳循环973项目
CHOICE-C 秋季航次报告会

Underway pCO_2, Air-Sea CO_2 Fluxes from CHOICE-C Fall Cruise and Some Comparison of 3 Completed Cruises

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MEL
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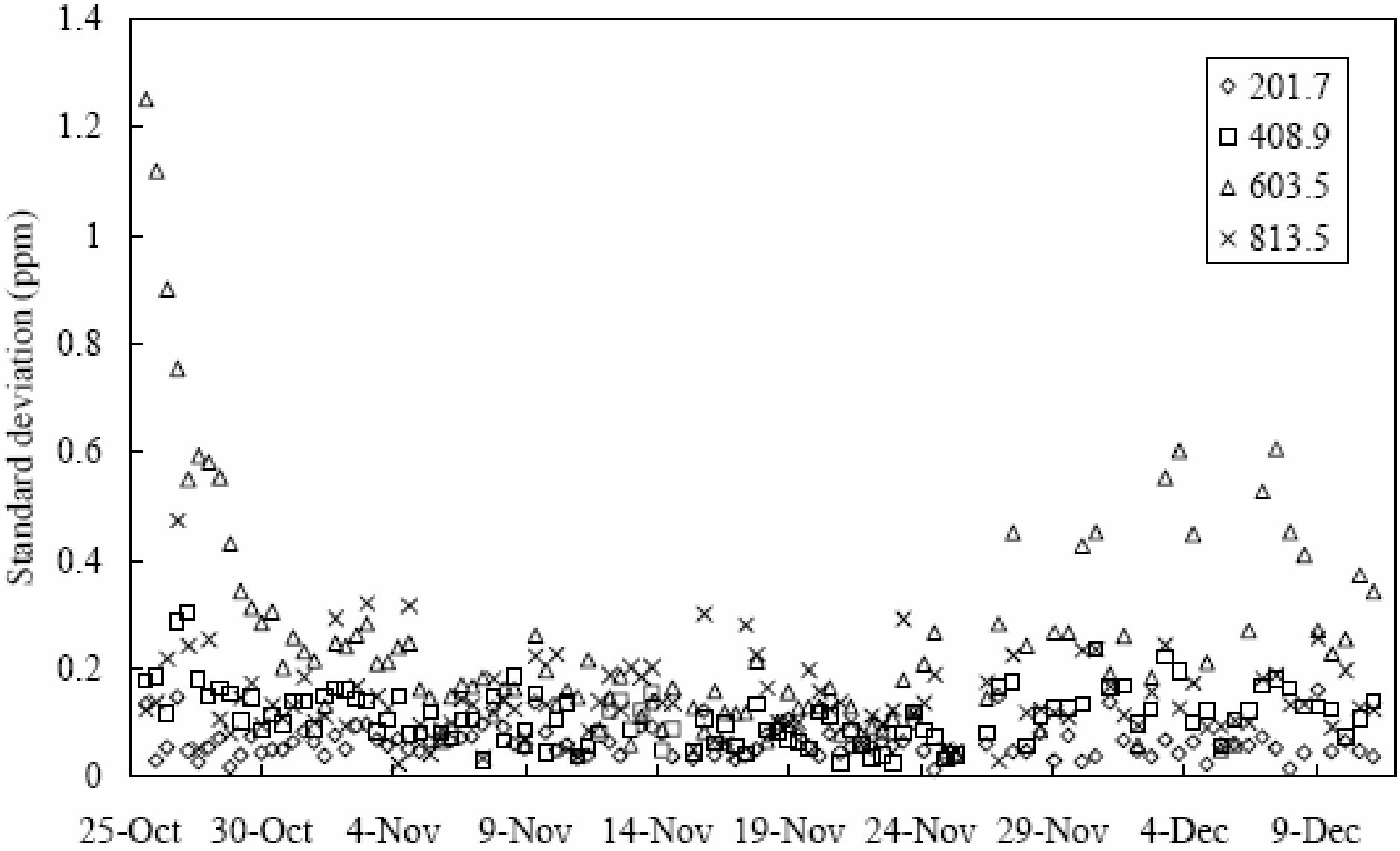
State Key Laboratory of Marine Environmental Science
(Xiamen University)

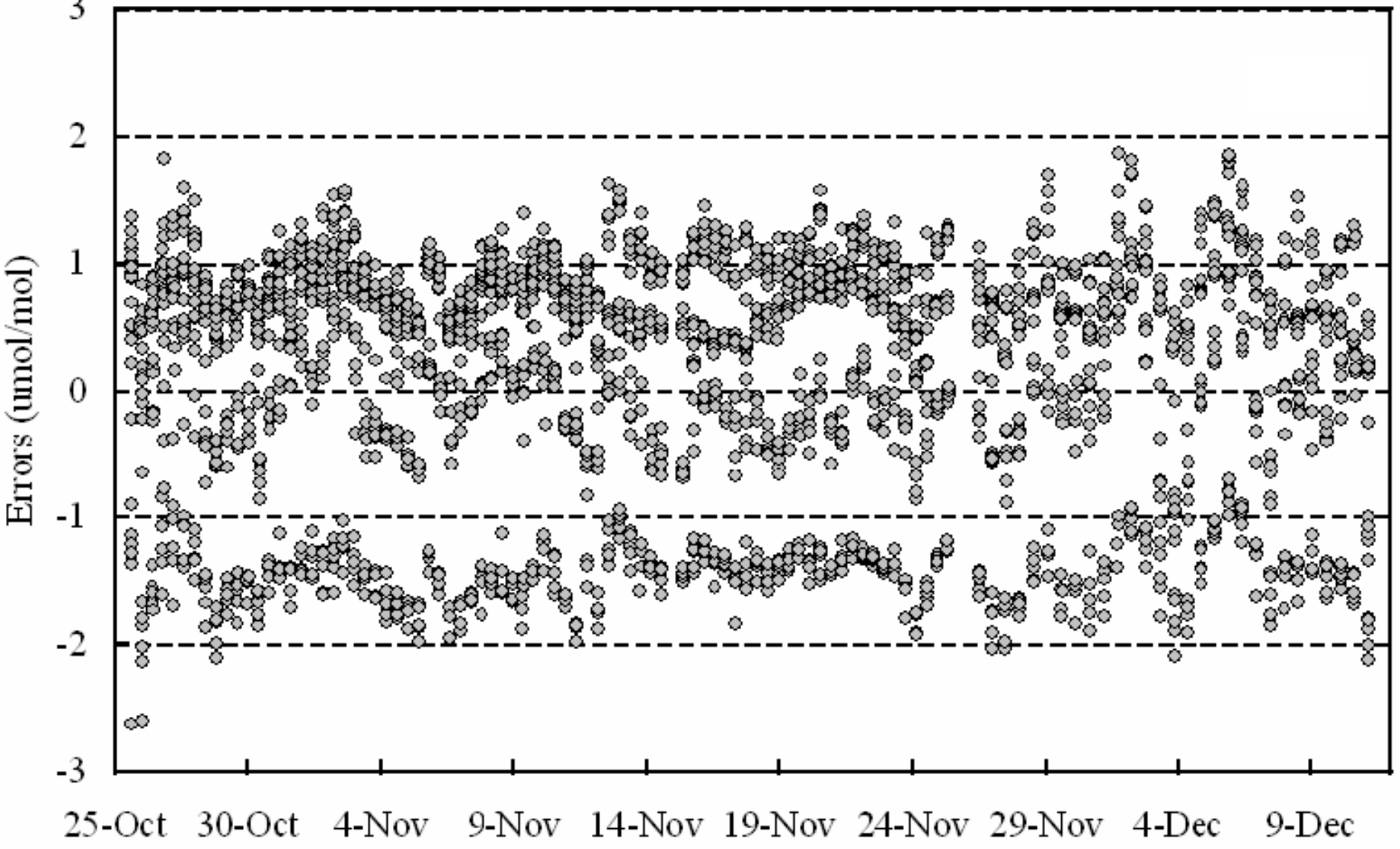
OCEAN CARBON GROUP
厦门大学海洋碳循环研究组

数 据 质 控



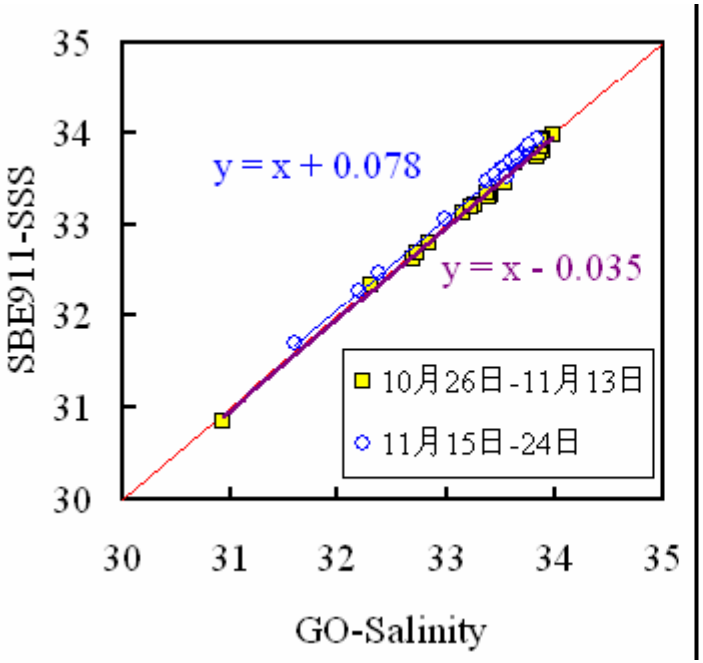
各个浓度标准气平行测定的标准偏差（n = 5-8）

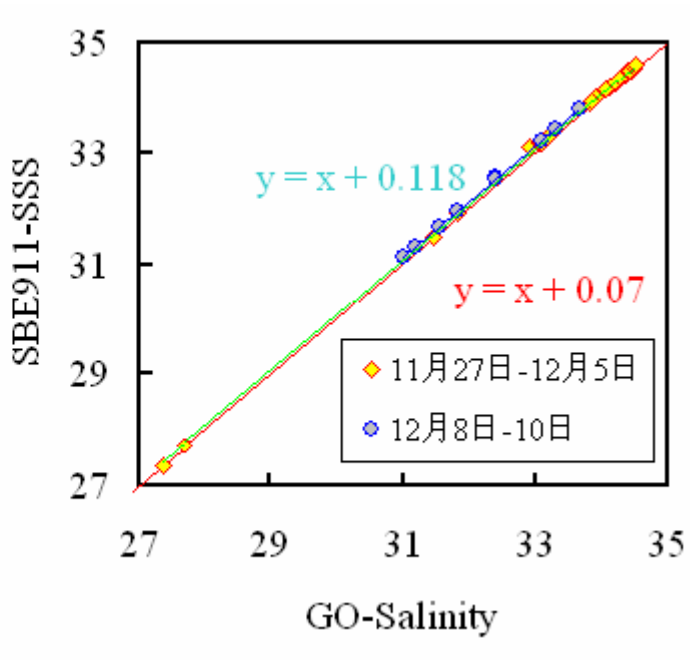
数 据 质 控

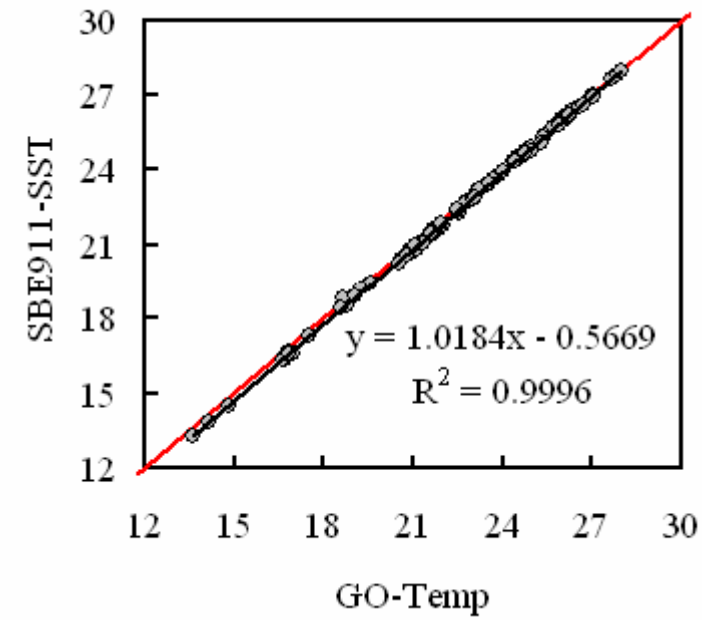


工作曲线的误差随时间的变化

数 据 质 控

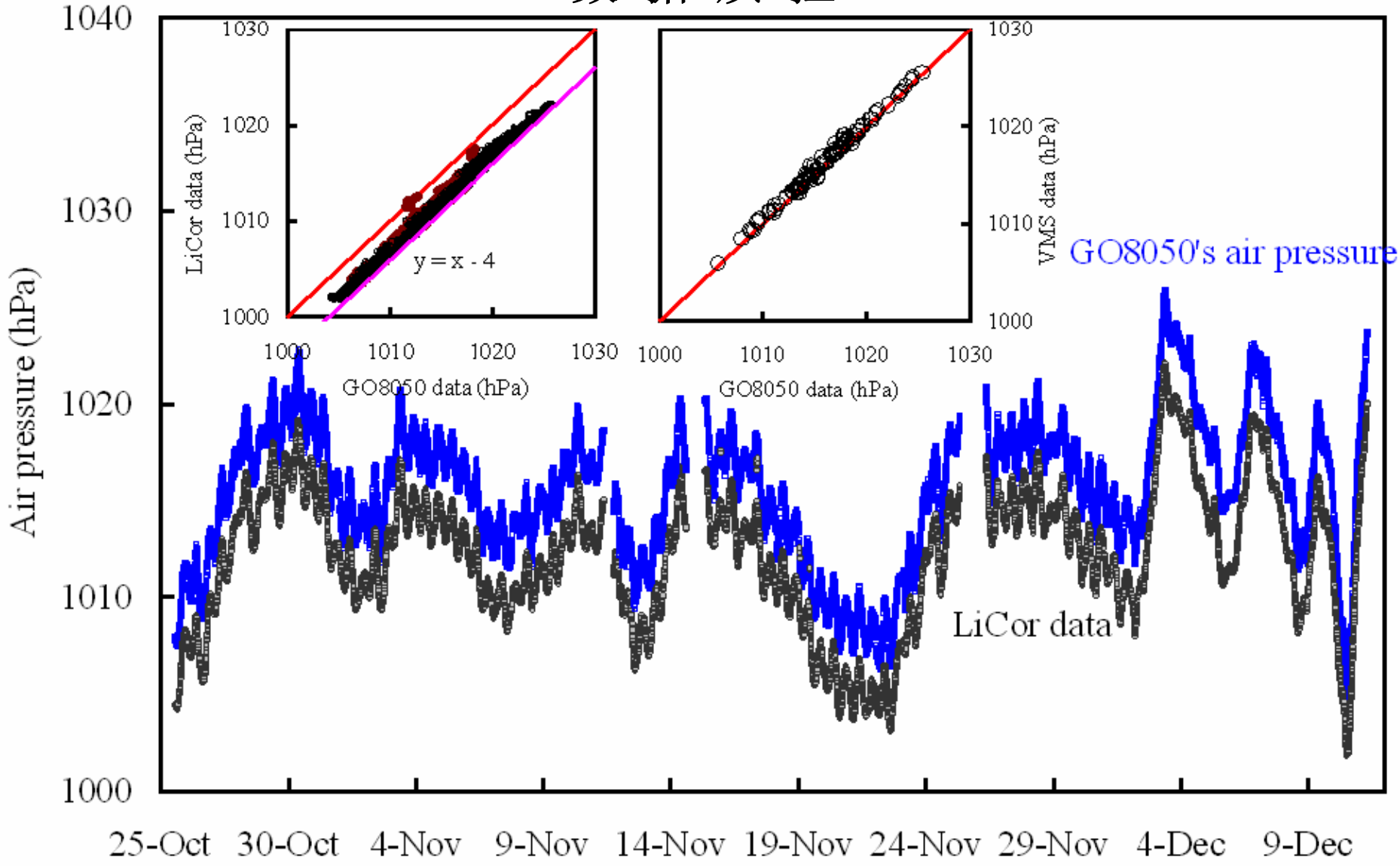






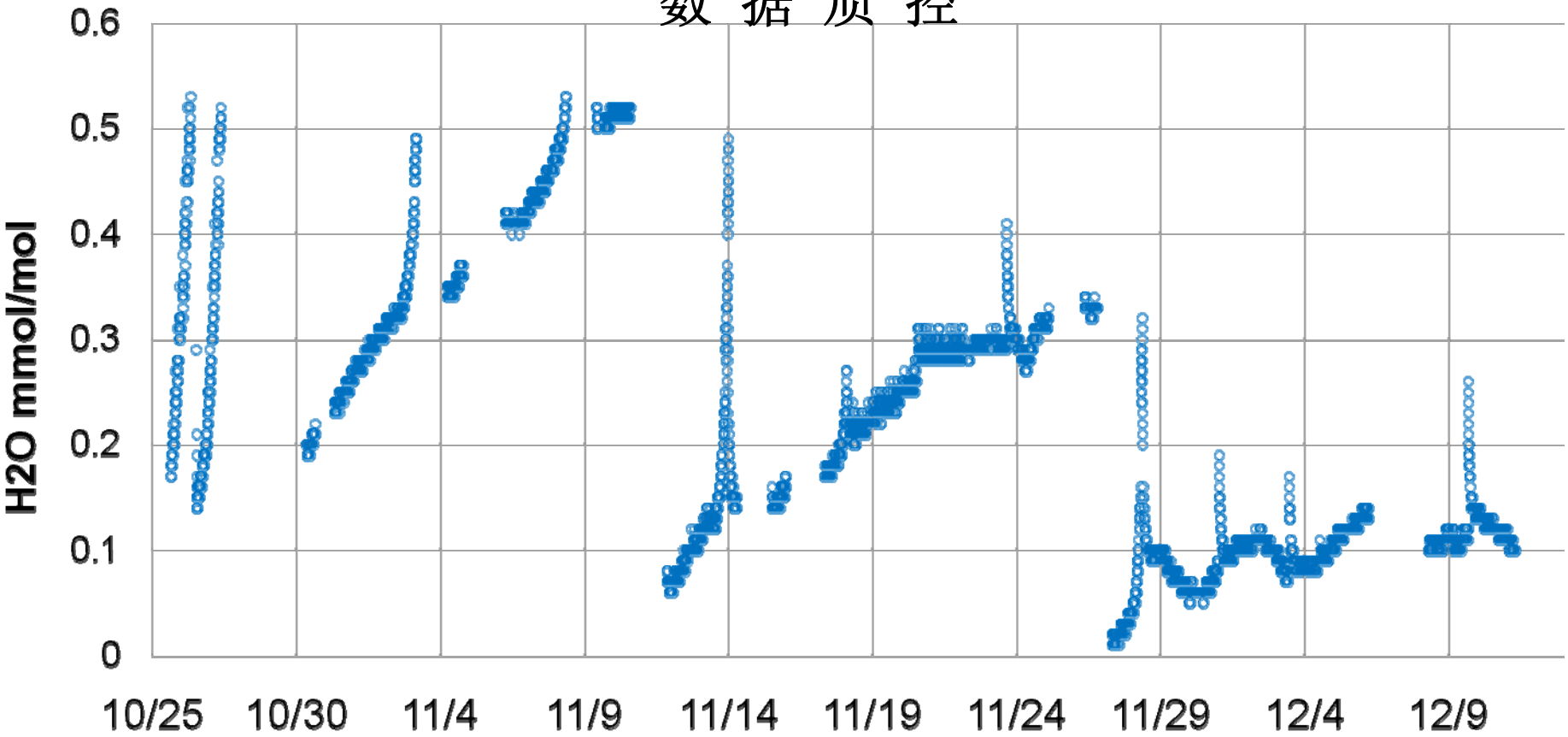
在上混合层超过10-m 的站位，直读式CTD SBE911+测定的5-m 温盐与抽水口设在4-5 m的GO-8050系统测定的盐度和平衡器水温的比较。说明GO-8050 系统测定的温盐与CTD高度一致，稍许偏差进行了分段调整。

数 据 质 控



气压数据的一致性比较：GO-8050 的气压计位于东方红2 号的船顶，距海面~10 m 高；LiCor是置于二层甲板14 号实验室（海平面附近）的CO_2 检测器。LiCor 报告的气压相对于GO-8050的气压数据偏低0-4 hPa，表明数据处理过程中气压引入的误差不超过0.4%

数 据 质 控



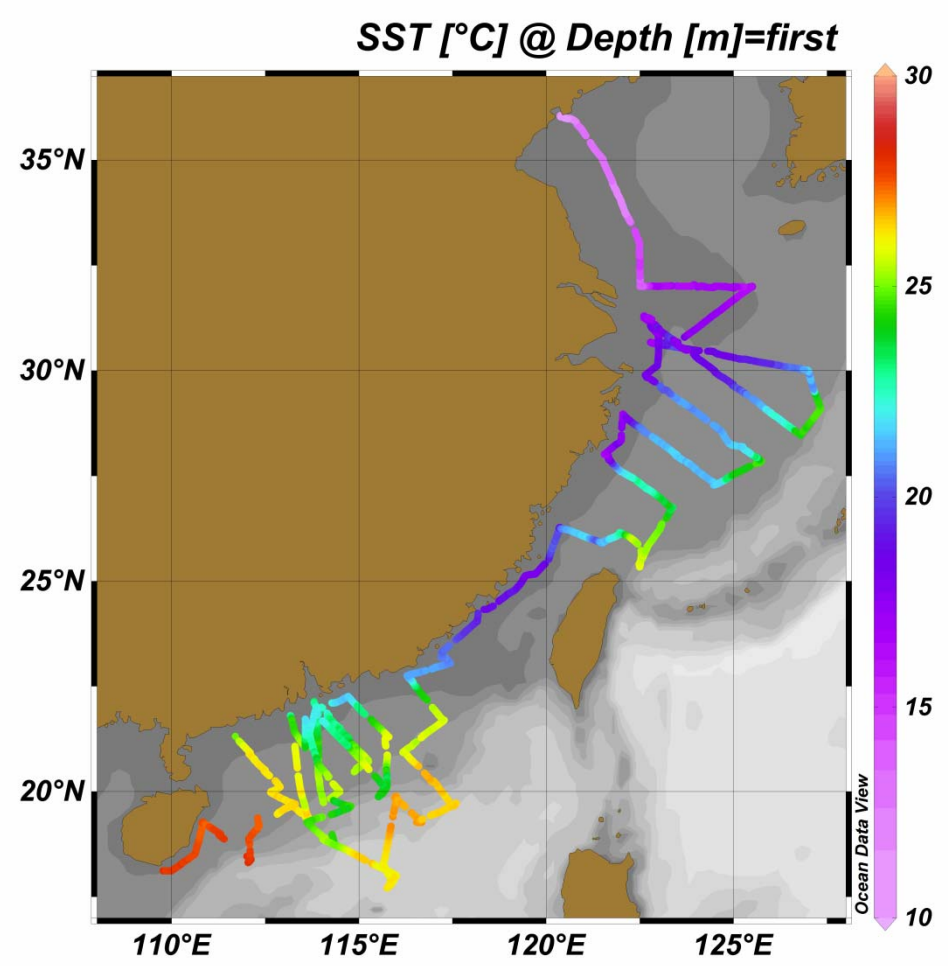
GO-8050 系统送入LiCor 检测器的水蒸气信号

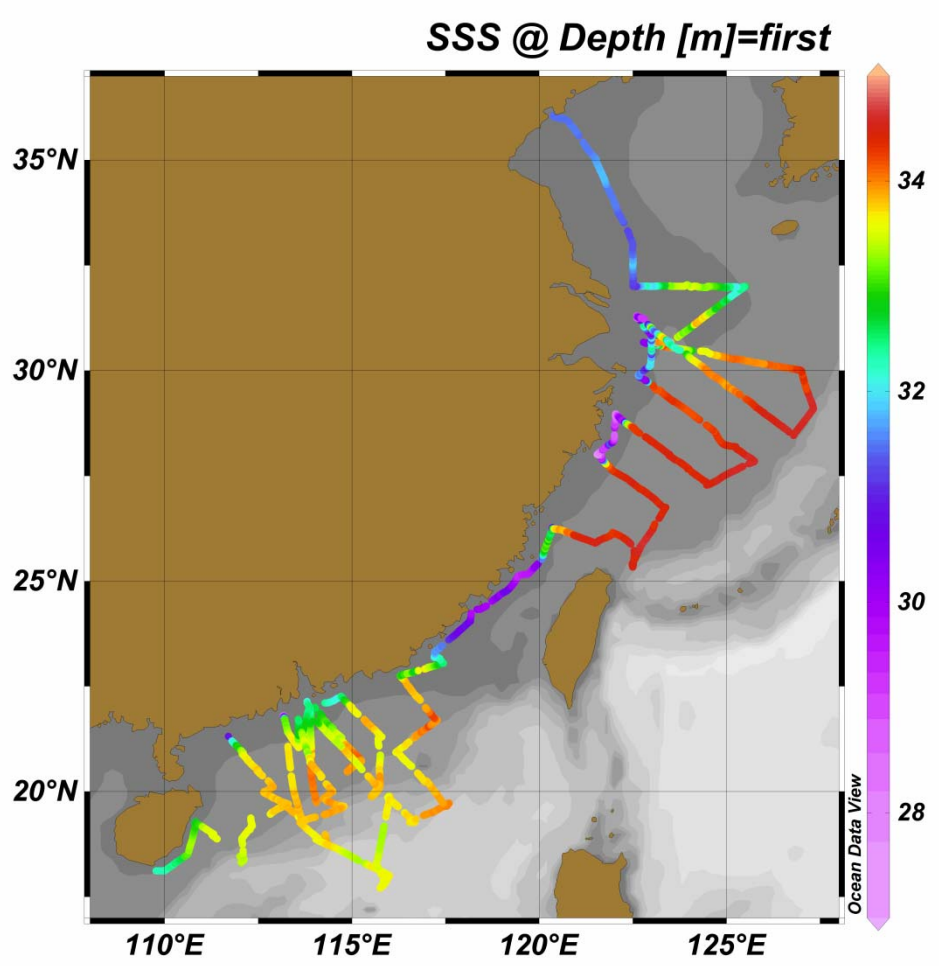
对于干法测定pCO_2 而言，这个数值应当接近于0（即完全脱除水蒸气的影响），否则在数据处理过程中将引入显著误差（Zhai & Dai, 2009）。

GO-8050系统由于设计缺陷，这一数值通常会维持在10-20之间，难以满足高准确定测定的需要，而本航次测定对系统进行了改进，增加了$Mg(ClO_4)_2$ 干燥管，大大减小了进入检测器的水蒸气信号，从而提高了数据质量。

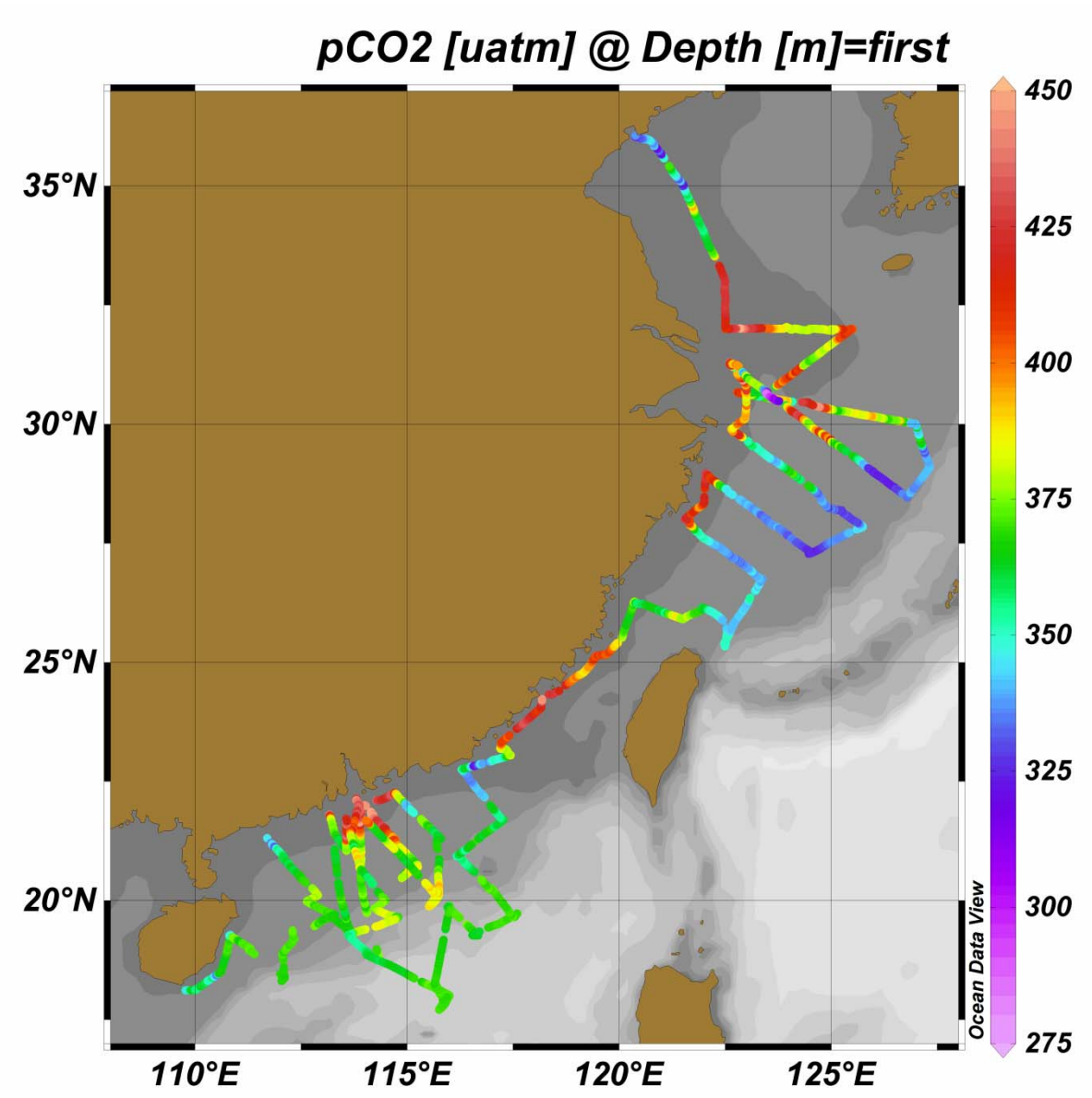
综合上述各项分析，初步估计本航次数据不确定度优于1%

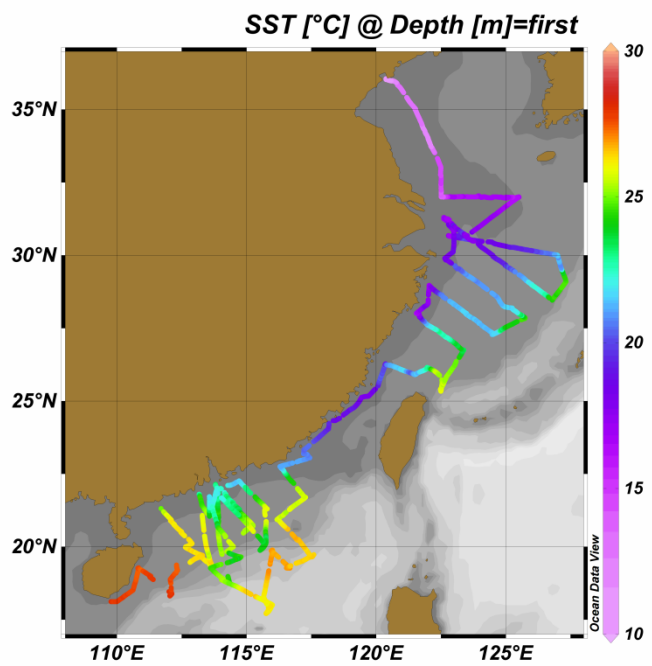
初 步 结 果

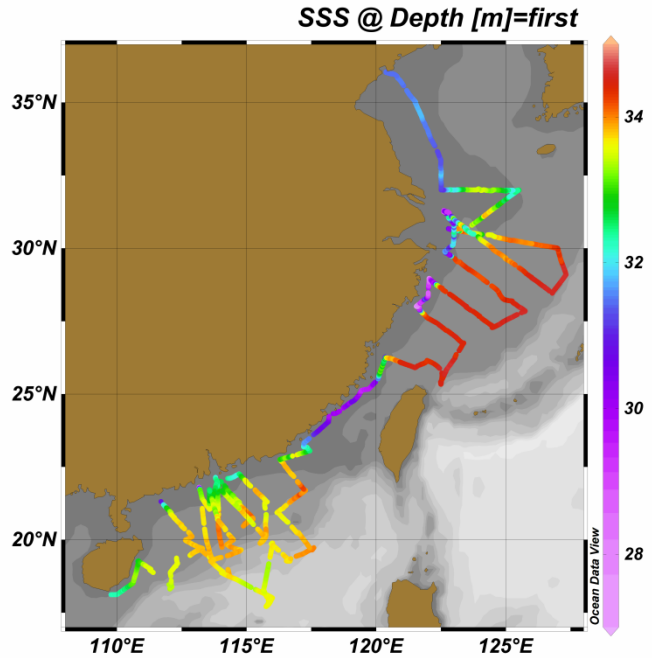

SST [°C] @ Depth [m]=first
35°N
30°N
25°N
20°N
110°E
115°E
120°E
125°E
30
25
20
15
10
Ocean Data View


SSS @ Depth [m]=first
35°N
30°N
25°N
20°N
110°E
115°E
120°E
125°E
34
32
30
28
Ocean Data View

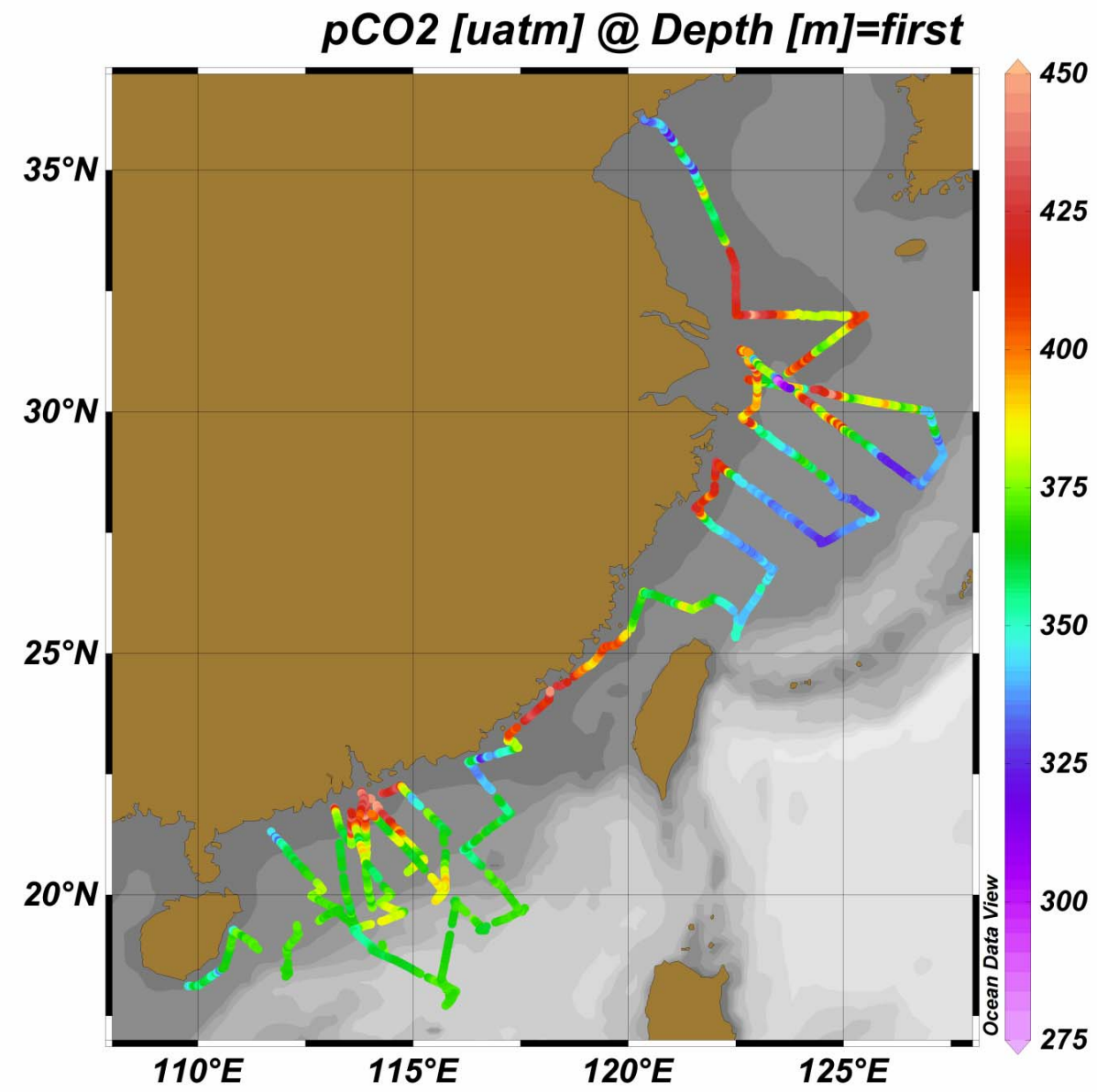
初 步 结 果

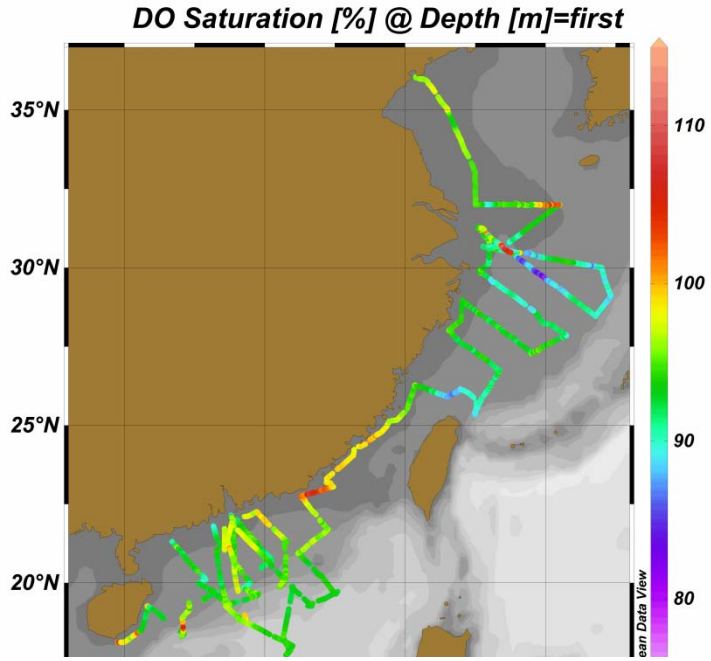

pCO2 [uatm] @ Depth [m]=first
35°N
30°N
25°N
20°N
110°E
115°E
120°E
125°E
450
425
400
375
350
325
300
275
Ocean Data View

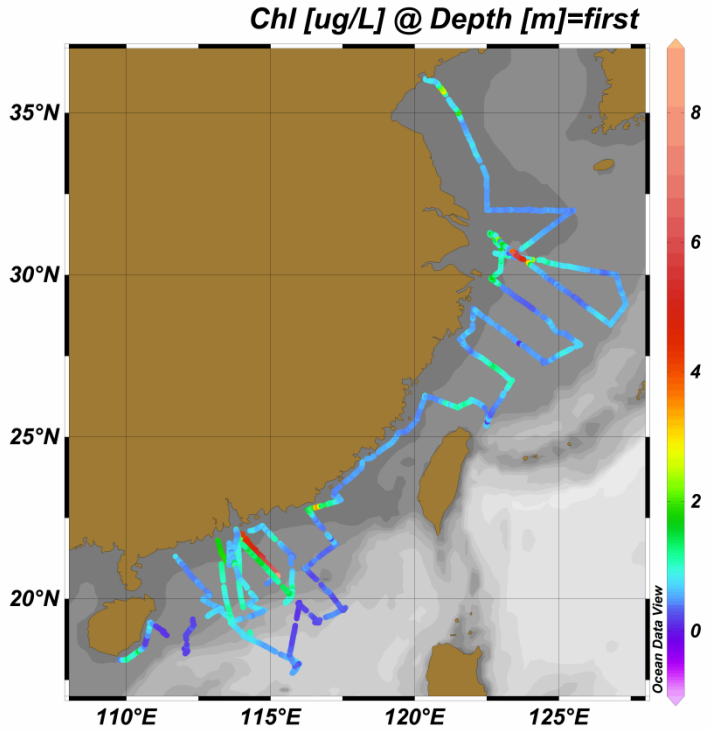

SST [°C] @ Depth [m]=first
35°N
30°N
25°N
20°N
110°E
115°E
120°E
125°E
30
25
20
15
10
Ocean Data View


SSS @ Depth [m]=first
35°N
30°N
25°N
20°N
110°E
115°E
120°E
125°E
34
32
30
28
Ocean Data View

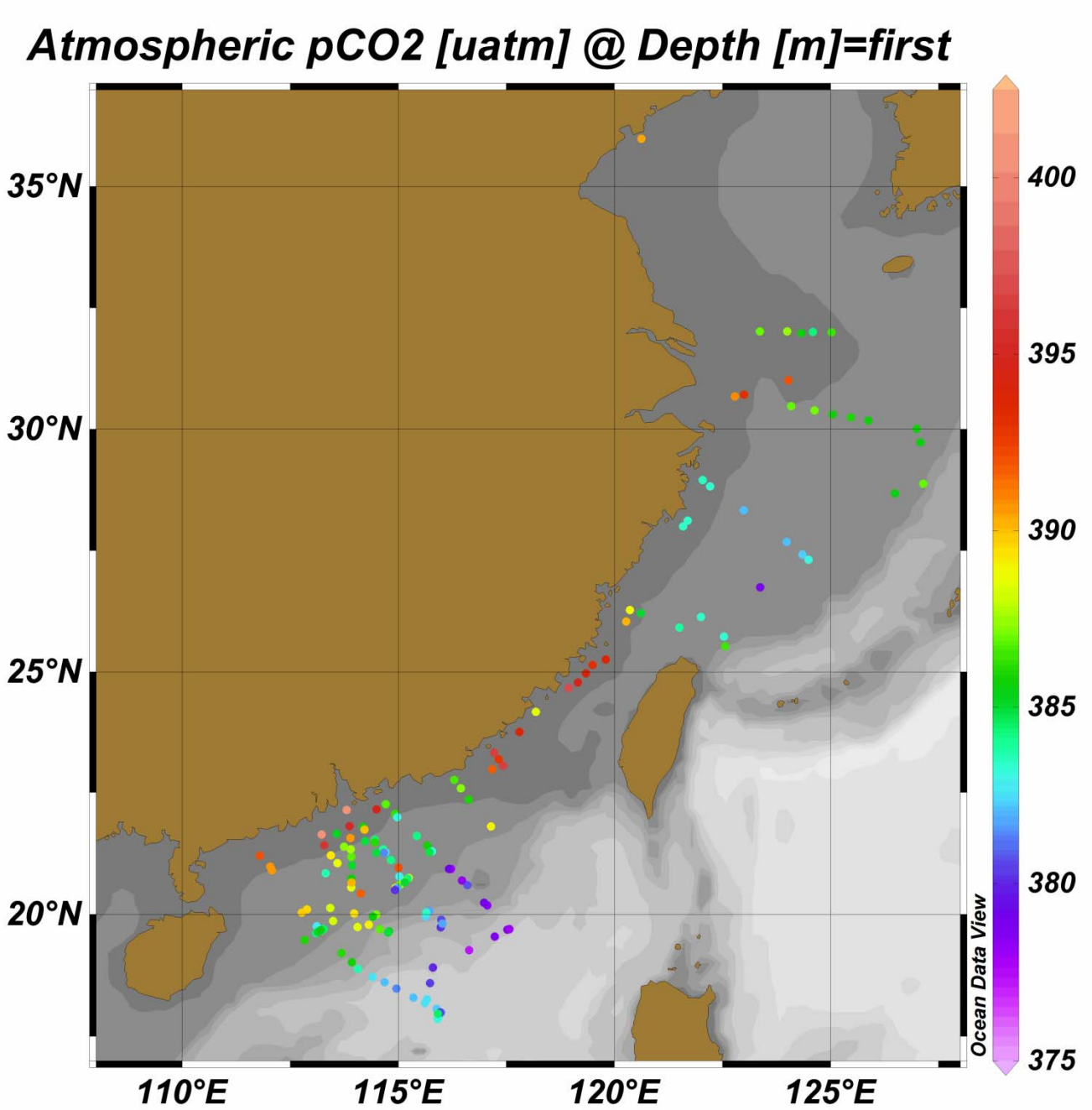
初 步 结 果


pCO2 [uatm] @ Depth [m]=first
35°N
30°N
25°N
20°N
110°E
115°E
120°E
125°E
450
425
400
375
350
325
300
275
Ocean Data View

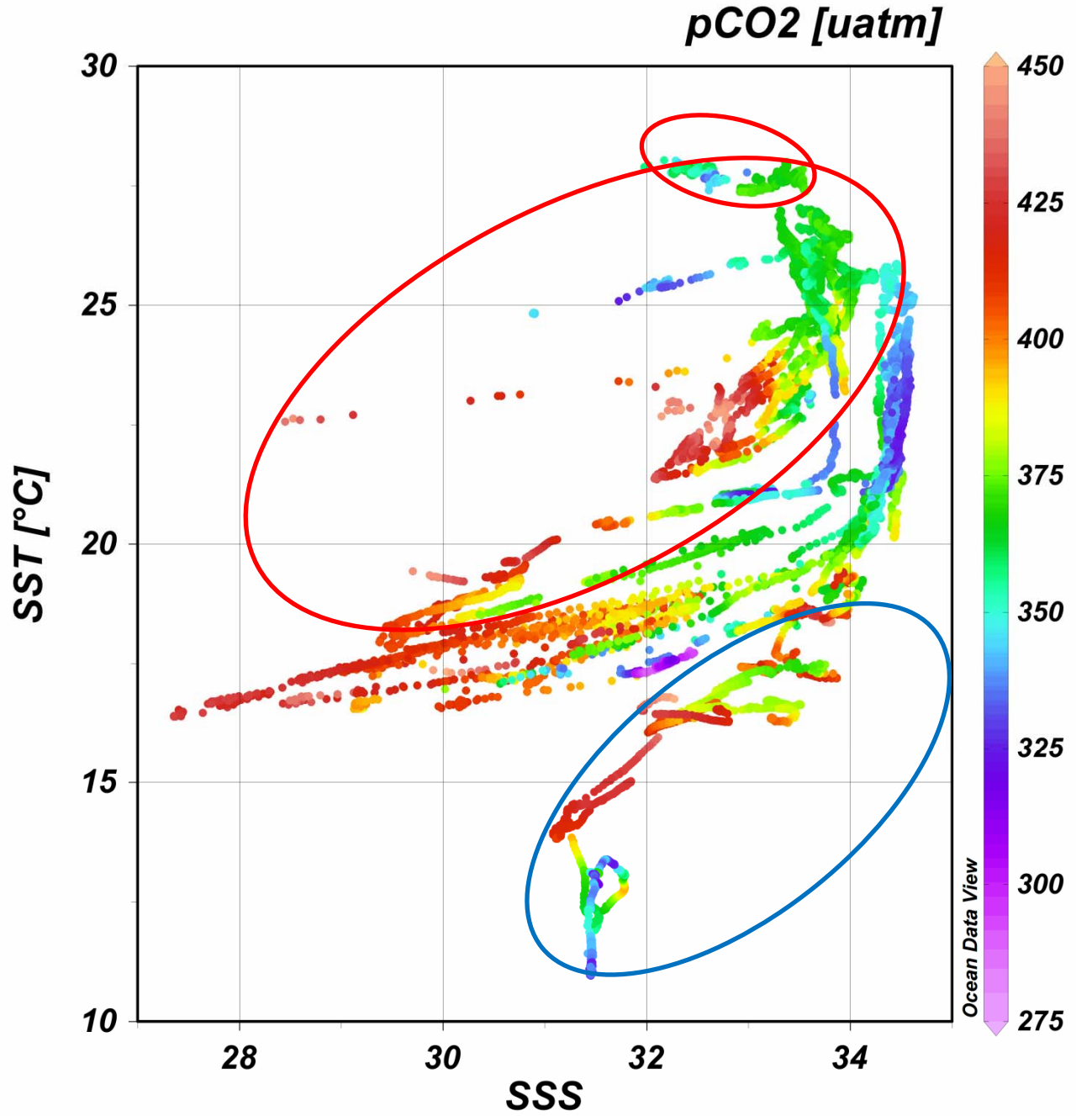

DO Saturation [%] @ Depth [m]=first
35°N
30°N
25°N
20°N
110
100
90
80


Chl [ug/L] @ Depth [m]=first
35°N
30°N
25°N
20°N
110°E
115°E
120°E
125°E
8
6
4
2
0
Ocean Data View

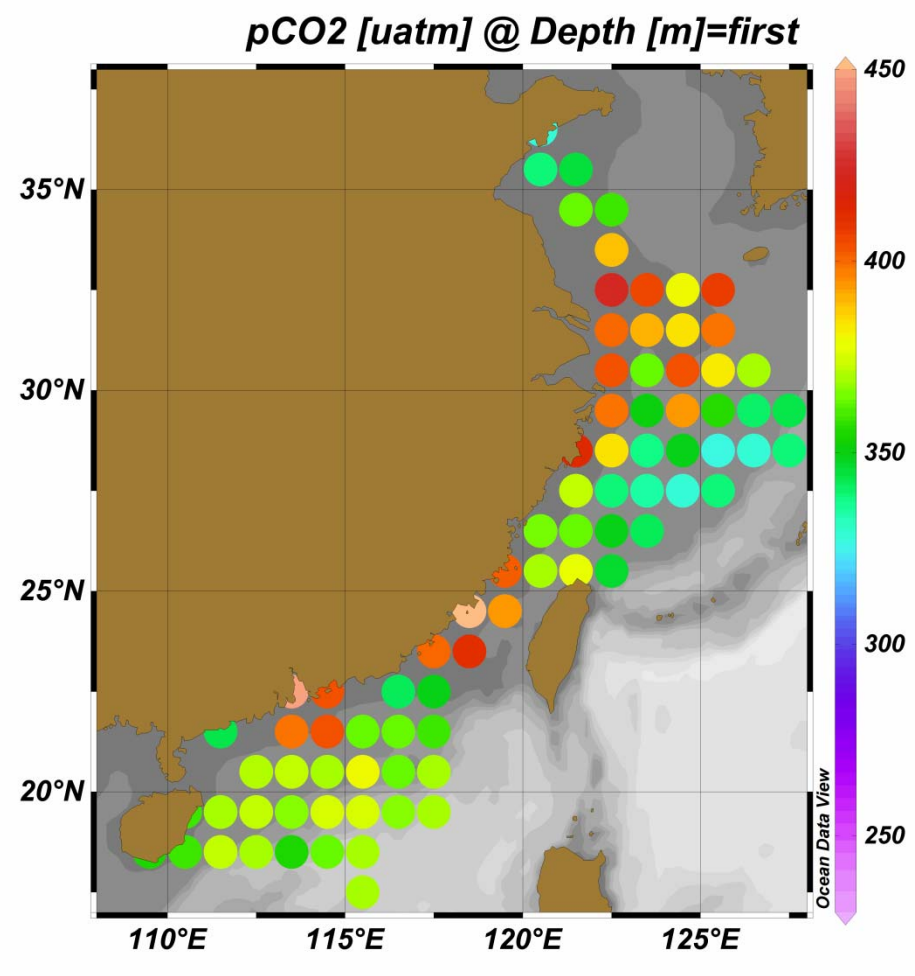
初 步 结 果


Atmospheric pCO2 [uatm] @ Depth [m]=first
35°N
30°N
25°N
20°N
110°E
115°E
120°E
125°E
400
395
390
385
380
375
Ocean Data View

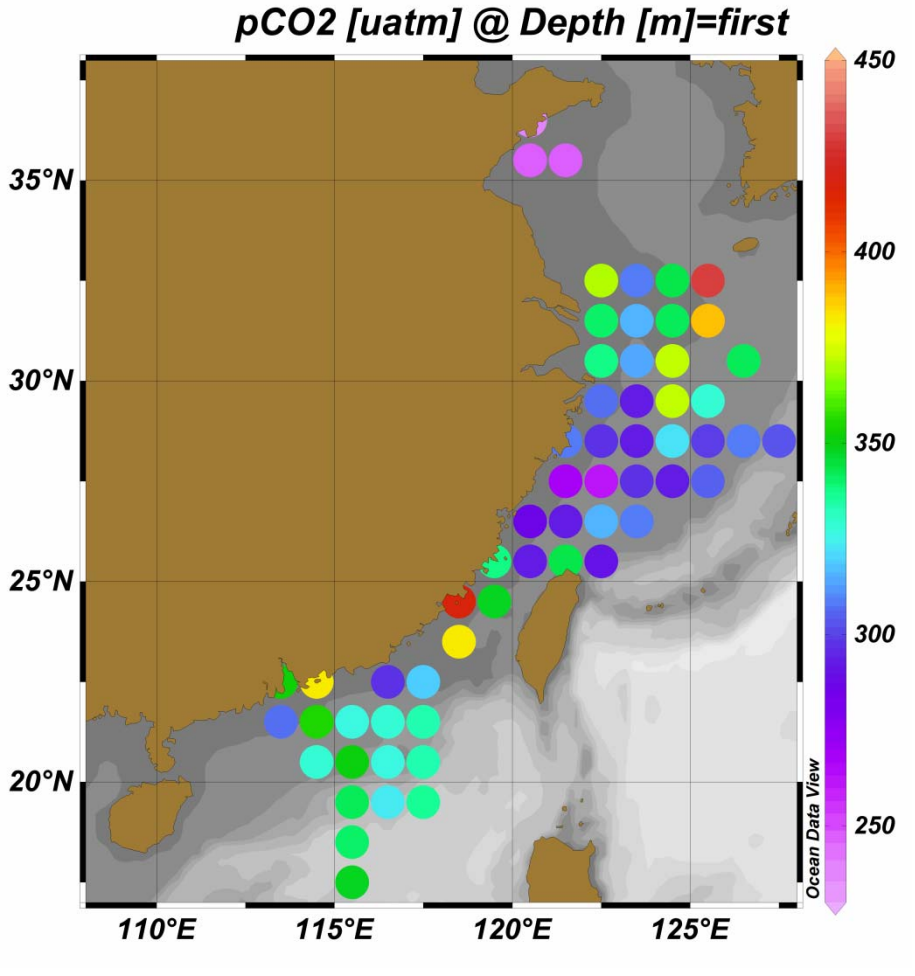
初 步 结 果


pCO2 [uatm]
SST [°C]
SSS
30
25
20
15
10
28
30
32
34
450
425
400
375
350
325
300
275
Ocean Data View

Comparison

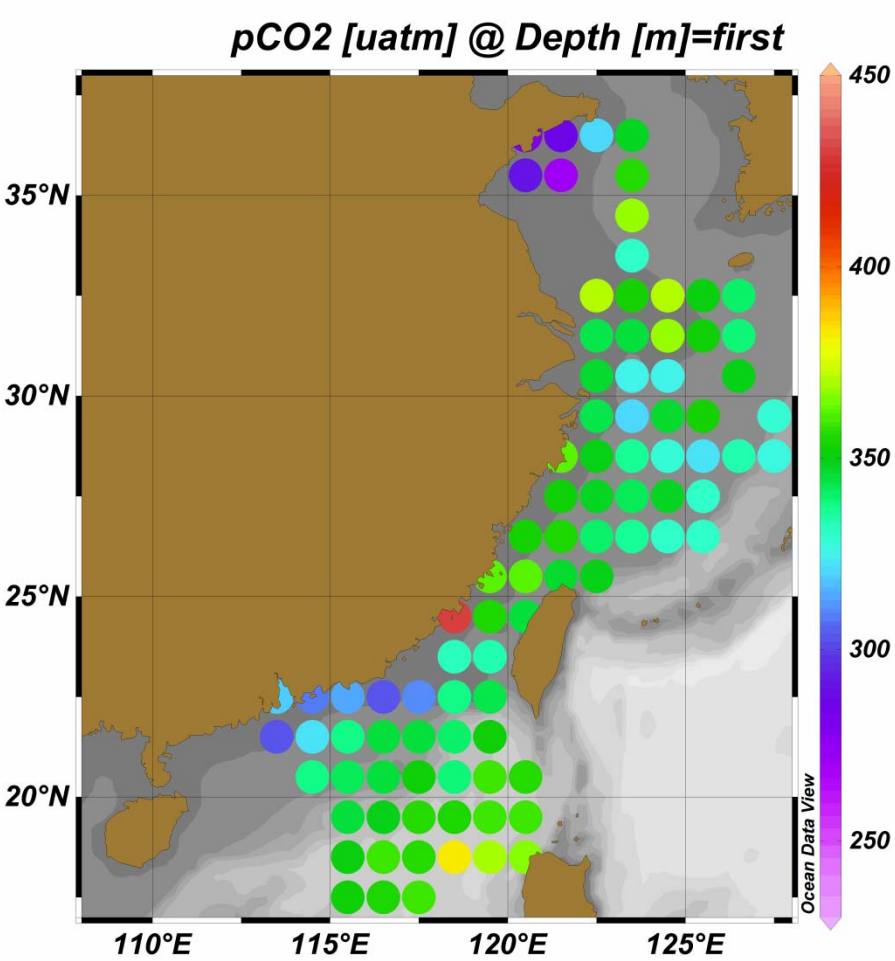


2010 Fall Cruise

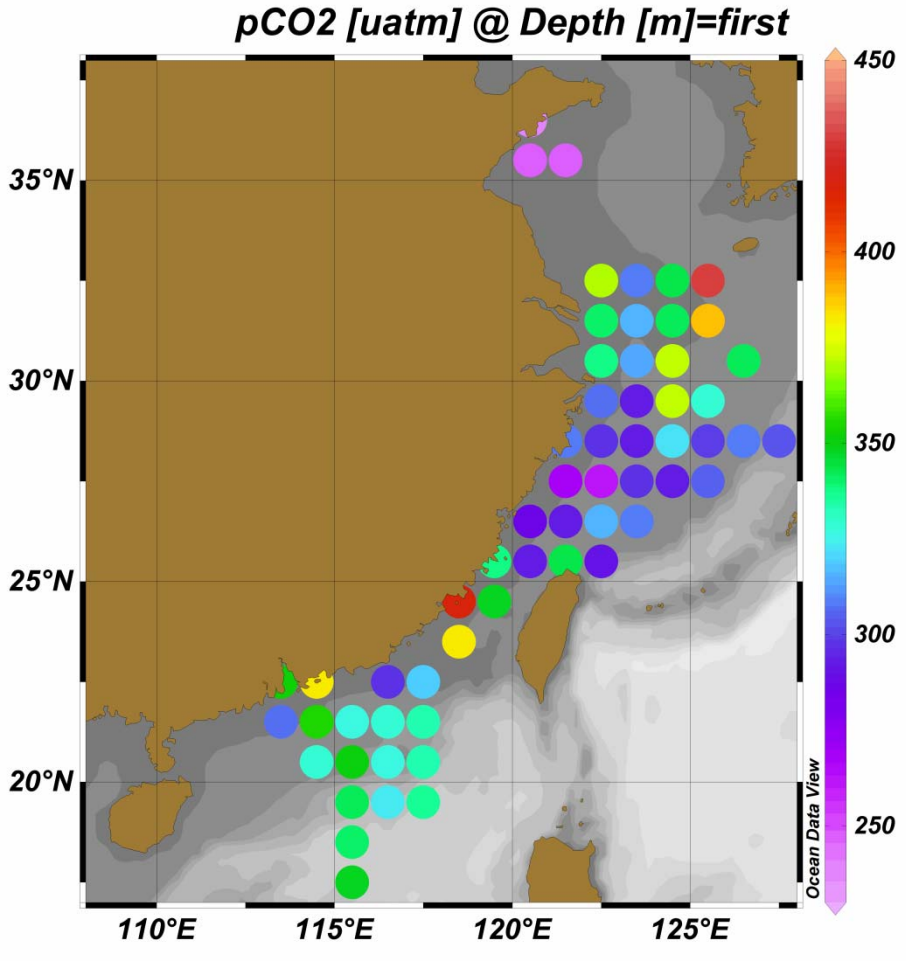


2010 Fall Cruise after T-Normalize

Comparison

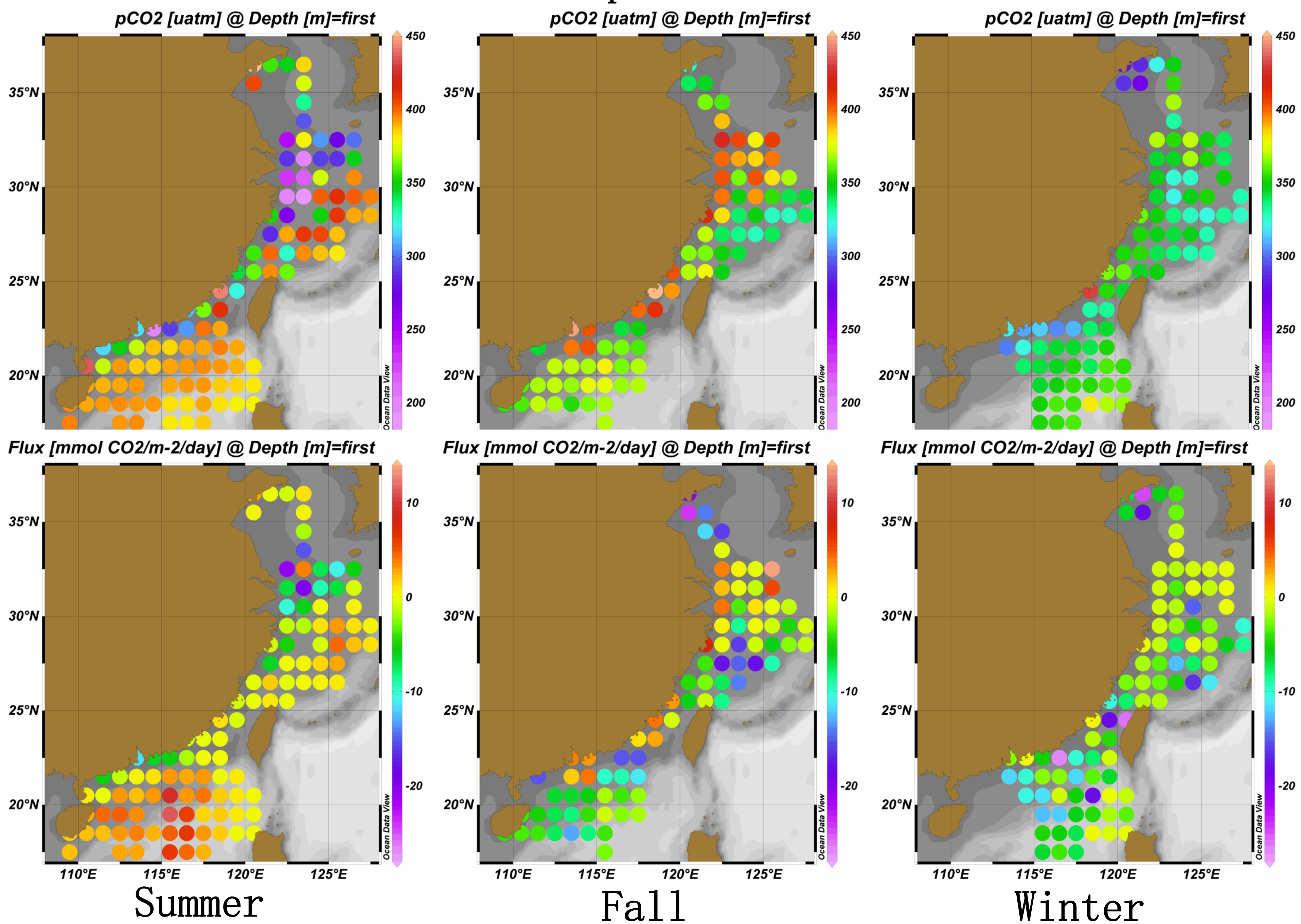


2009-2010 Winter Cruise

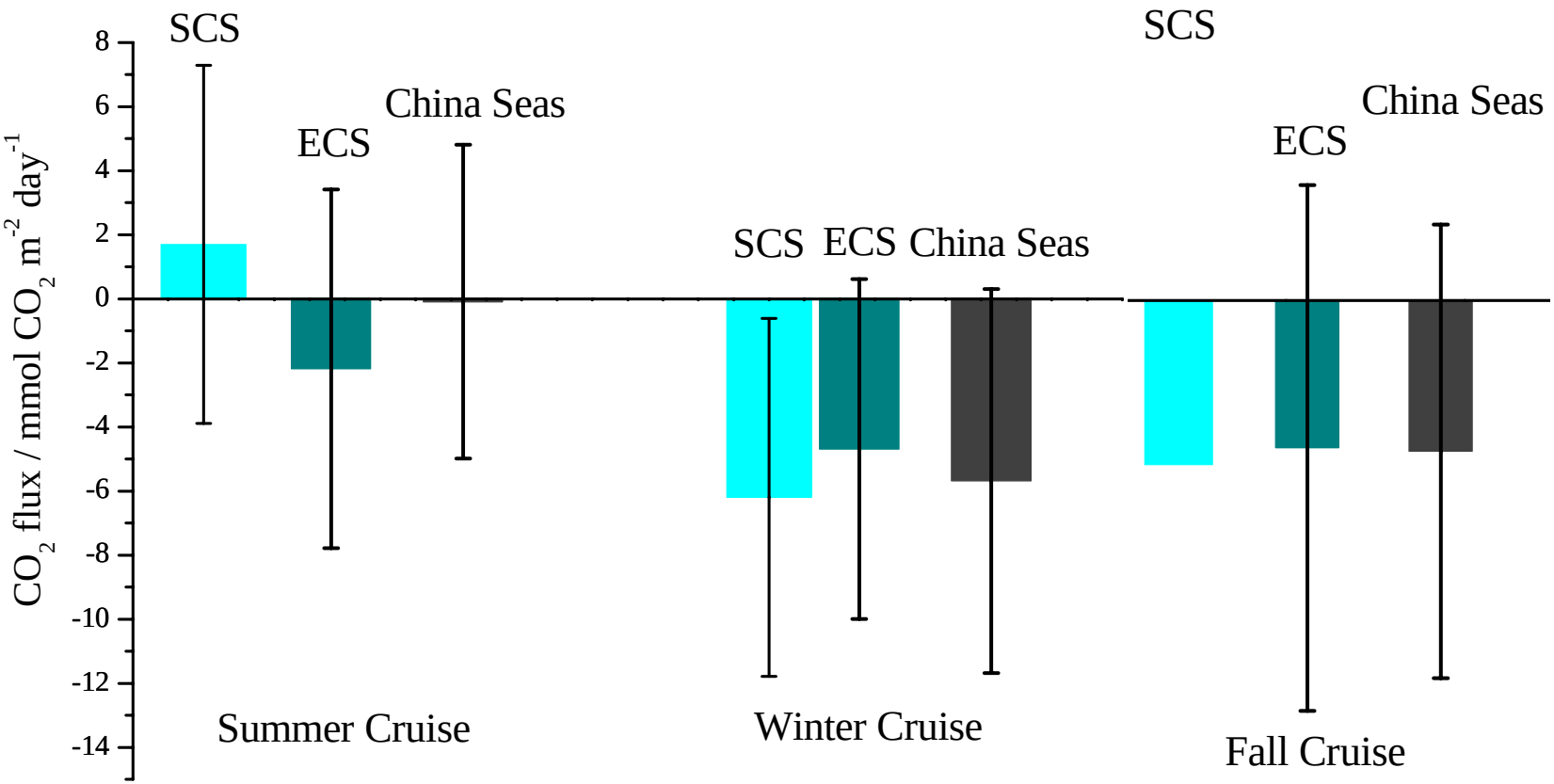


2010 Fall Cruise after T-Normalize

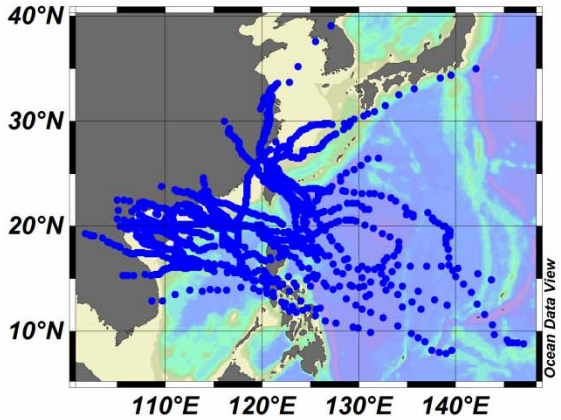
Comparison

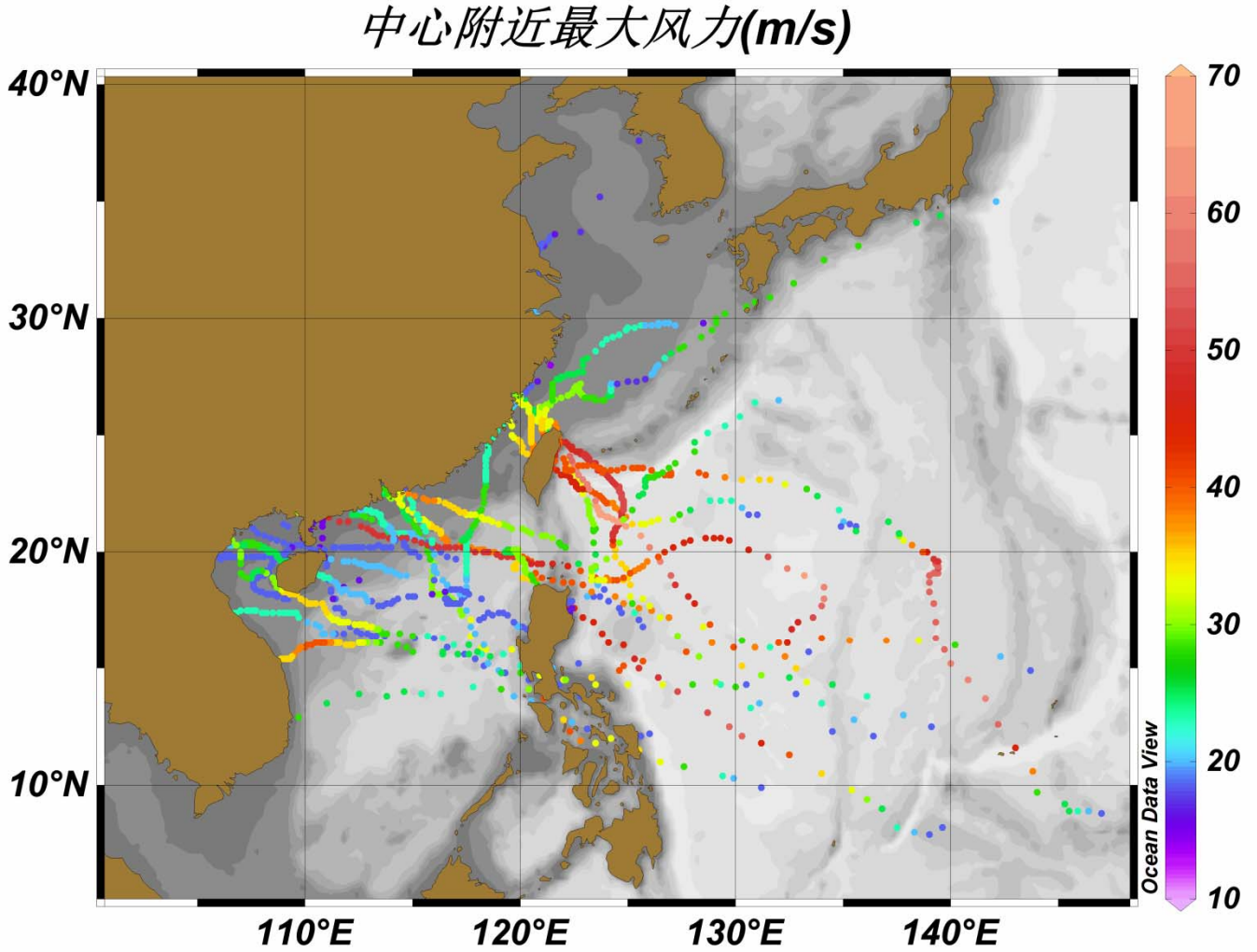

pCO2 [uatm] @ Depth [m]=first
Flux [mmol CO2/m-2/day] @ Depth [m]=first
35°N
30°N
25°N
20°N
110°E
115°E
120°E
125°E
450
400
350
300
250
200
10
0
-10
-20
Ocean Data View
Summer
Fall
Winter

Comparison


SCS
ECS
China Seas
SCS
ECS
China Seas
SCS
ECS
China Seas
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
CO2 flux / mmol CO2 m-2 day-1
Summer Cruise
Winter Cruise
Fall Cruise

Thank you!





2008-2010影响中国海的主要台风路径及中心附近最大风力