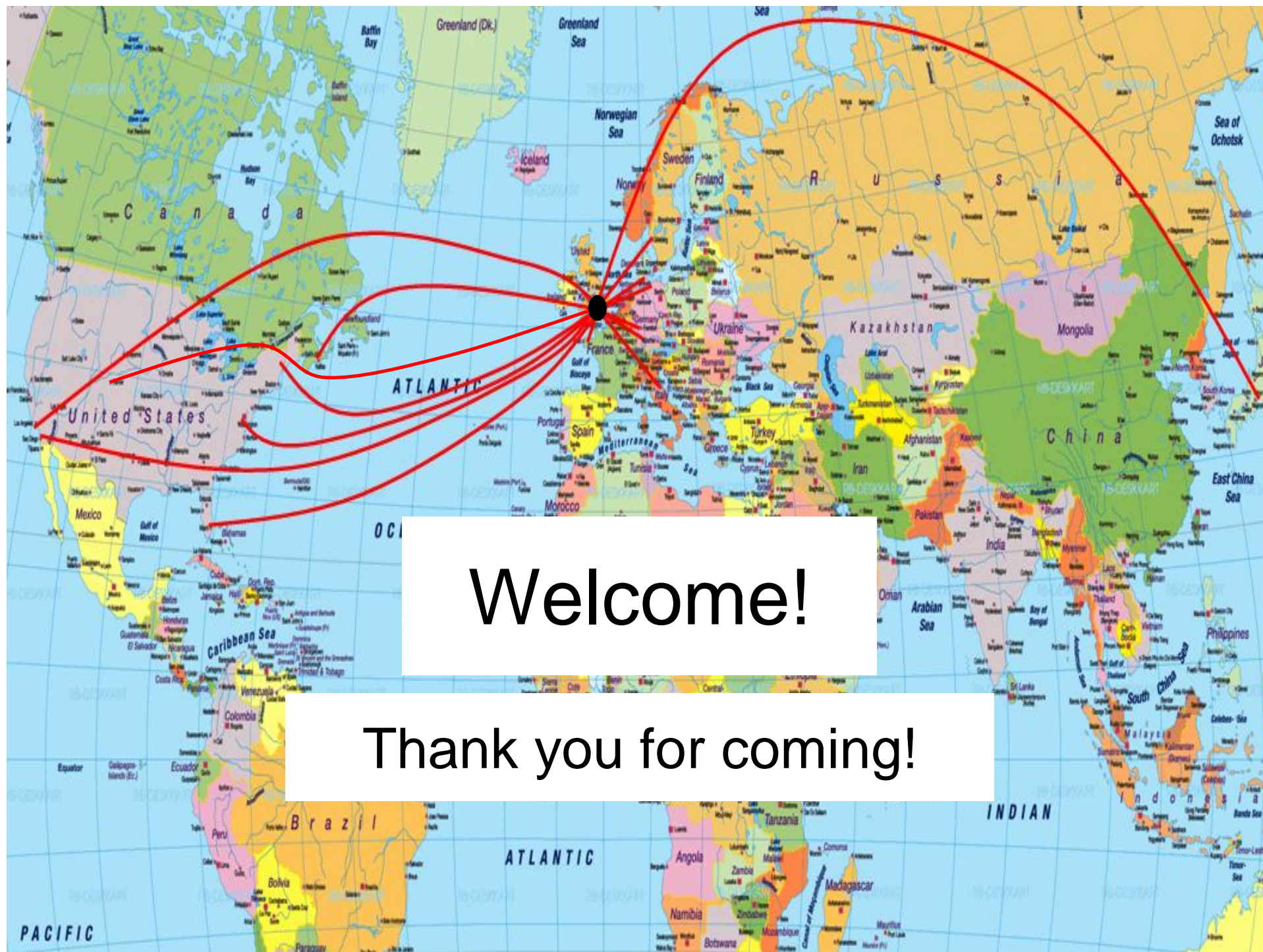


Thanks to Jeff Hare (Int. SOLAS and COST); Phil Williamson (UK SOLAS); and particularly Georgia Bayliss-Brown (all three!) for helping to organise this meeting.

Halocarbon Intercalibration Workshop

Tom Bell, UEA
SOLAS Project Integration

4th Feb 2008,
London



Welcome!

Thank you for coming!

Talk Overview

1. SOLAS Project Integration and COST Action 735
2. Why is everyone here?
 - Intercalibration: considering the **Present, Future and Past**

SOLAS Project Integration

Aim:

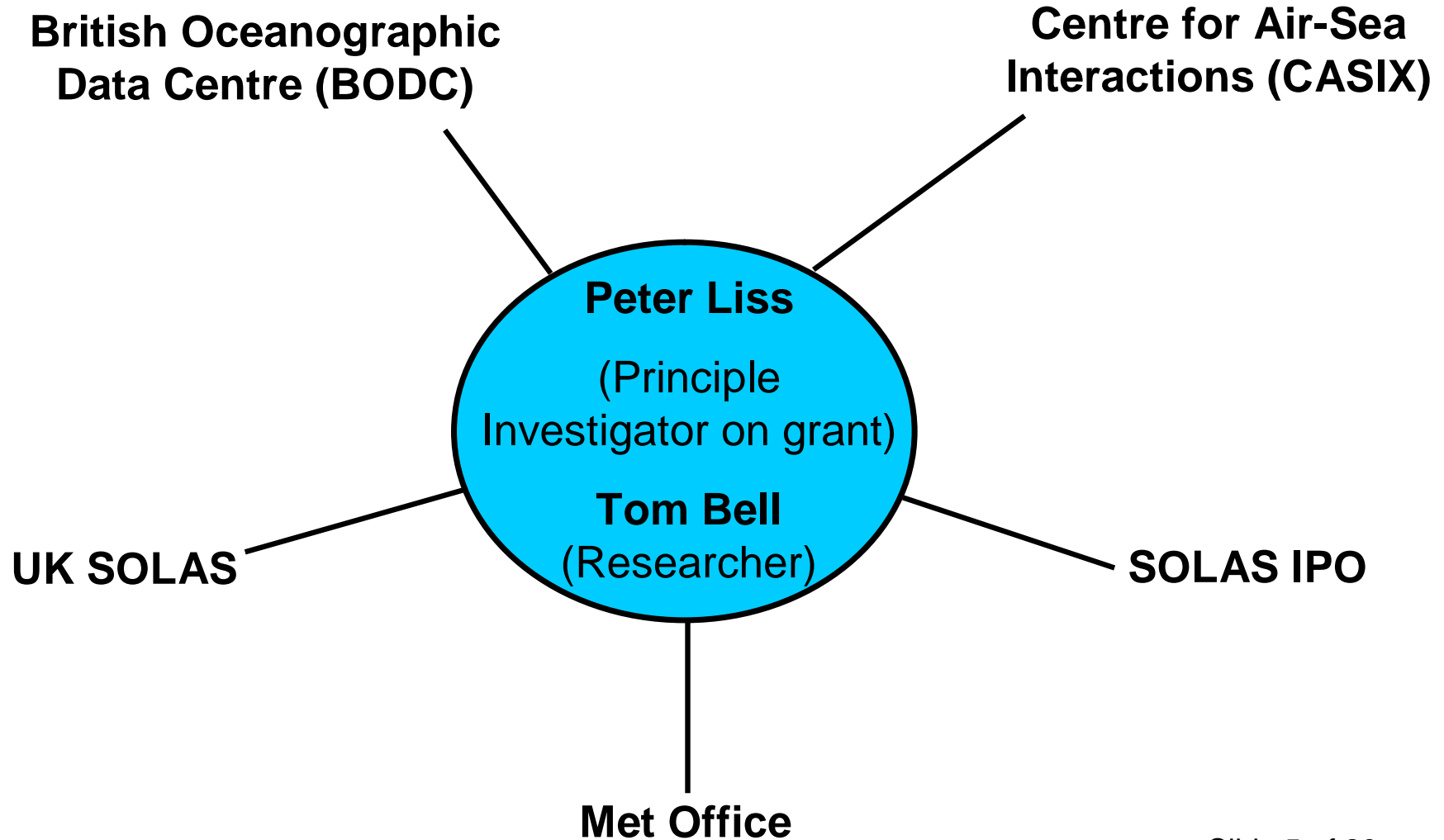
“To produce global air-sea flux (gas and aerosol) products for SOLAS-relevant compounds and particles.”



Since November 2006 I have been employed at UEA by NERC on the SOLAS Project Integration grant (Knowledge Transfer).

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Project Integration UK Partners



COST Action 735: Tools for Assessing Global Air-Sea Fluxes of Climate and Air Pollution Relevant Gases



~ €500k over over a 5 year period to enable experts (mainly from within EU) in SOLAS-relevant research to meet, network and discuss how to tackle the task of SOLAS Project Integration.

COST Action 735 Aim:

“The main objective of this COST Action is to produce best estimates of global air-sea fluxes of compounds relevant to climate and air pollution”

SOLAS Project Integration Aim:

“To produce global air-sea flux (gas and aerosol) products for SOLAS-relevant compounds and particles.”

CO₂ Database (Takahashi, 2006)

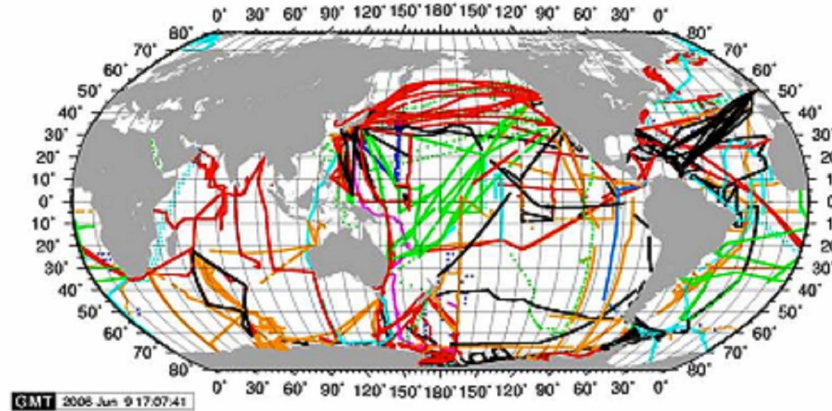
January - March Observations

CI

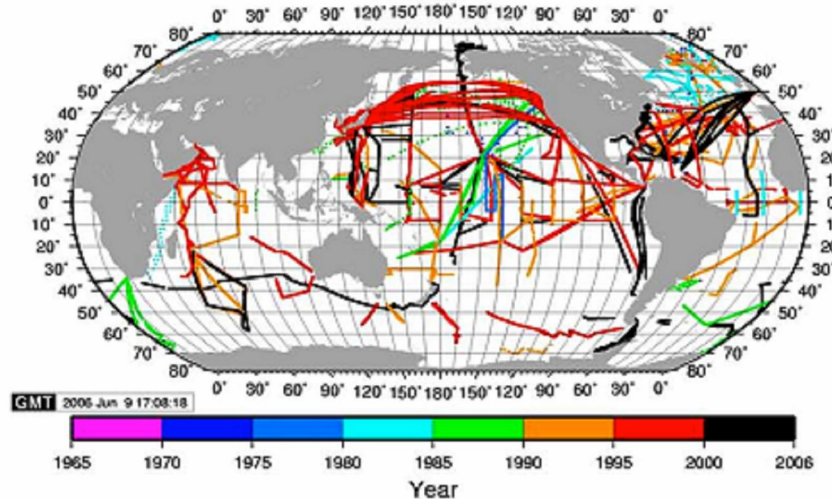
(mo
NC

**Surface water pCO₂
Database in two
Seasons**

**Total number of
pCO₂ meas. = 2.7 M
as of Jan. 9, 2006**



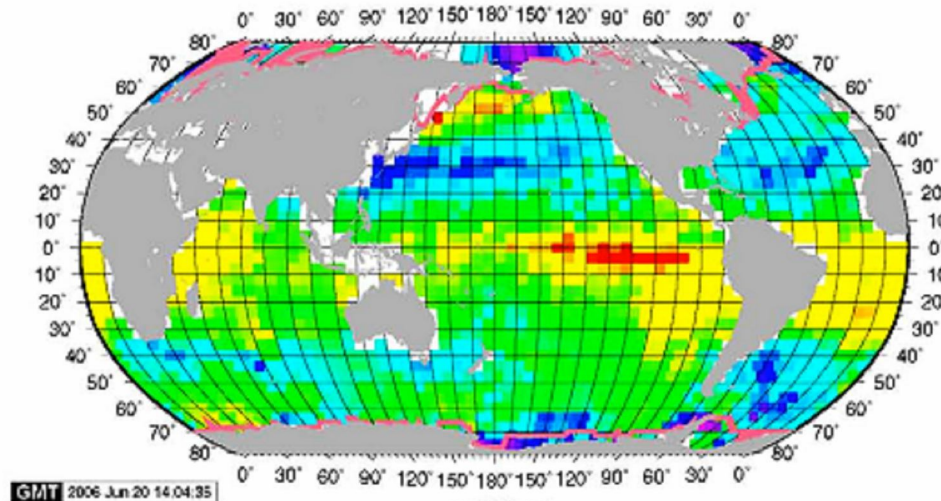
July - September Observations



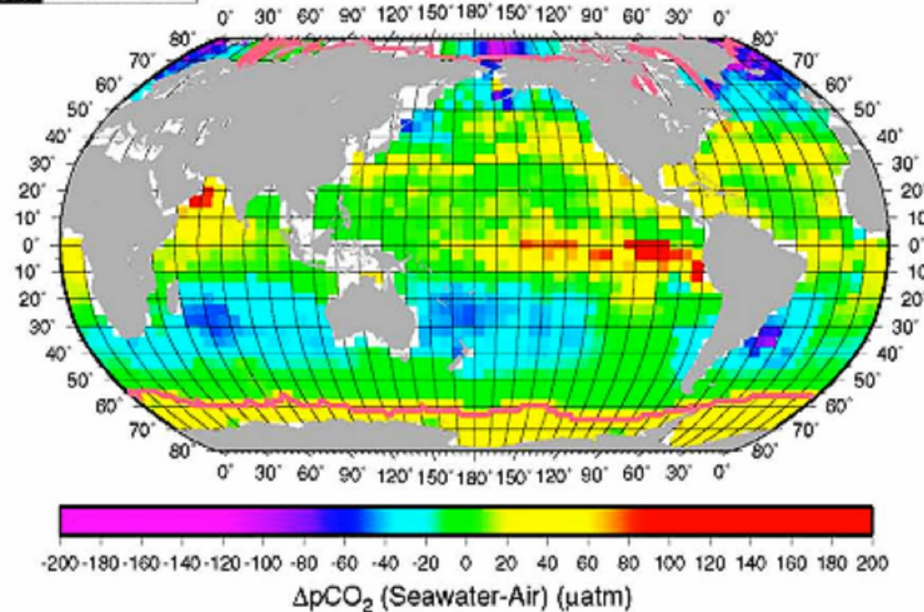
CO₂ Database (Takahashi, 2006)

Climatological Mean
Air-Sea pCO₂
Difference (μatm)

February
2000

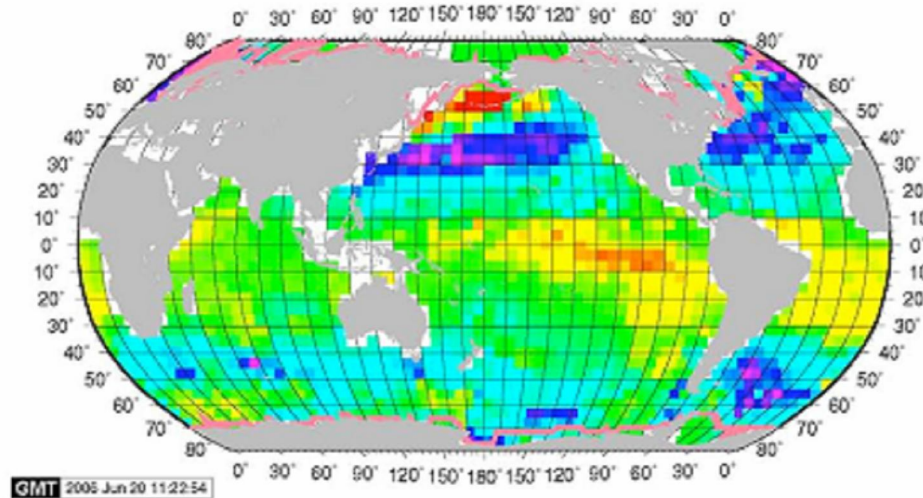


August
2000

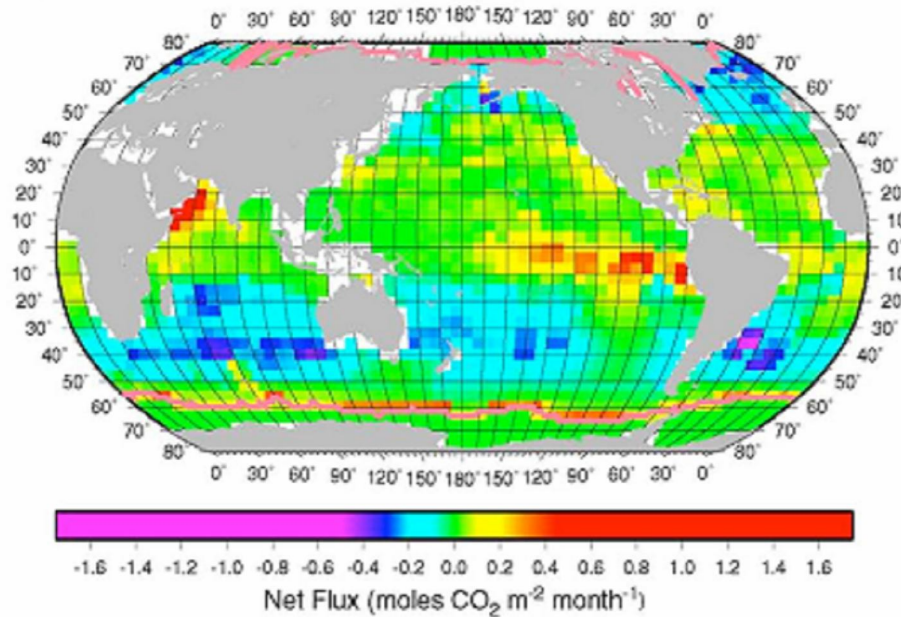


CO₂ Database (Takahashi, 2006)

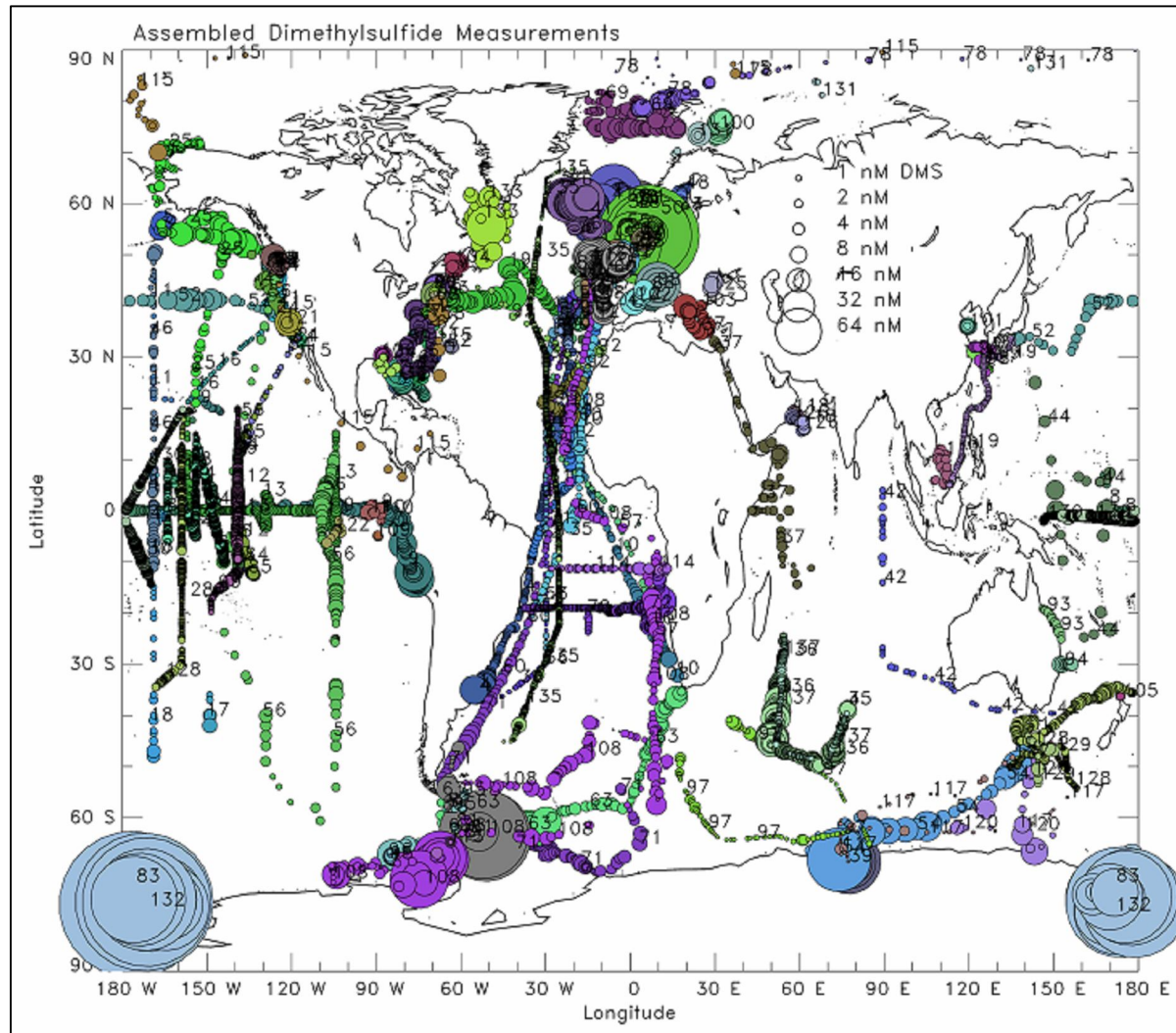
Climatological Mean
Monthly Flux
(moles CO₂ m⁻² month⁻¹)
NCEP Wind, U², W92
February
2000



August
2000



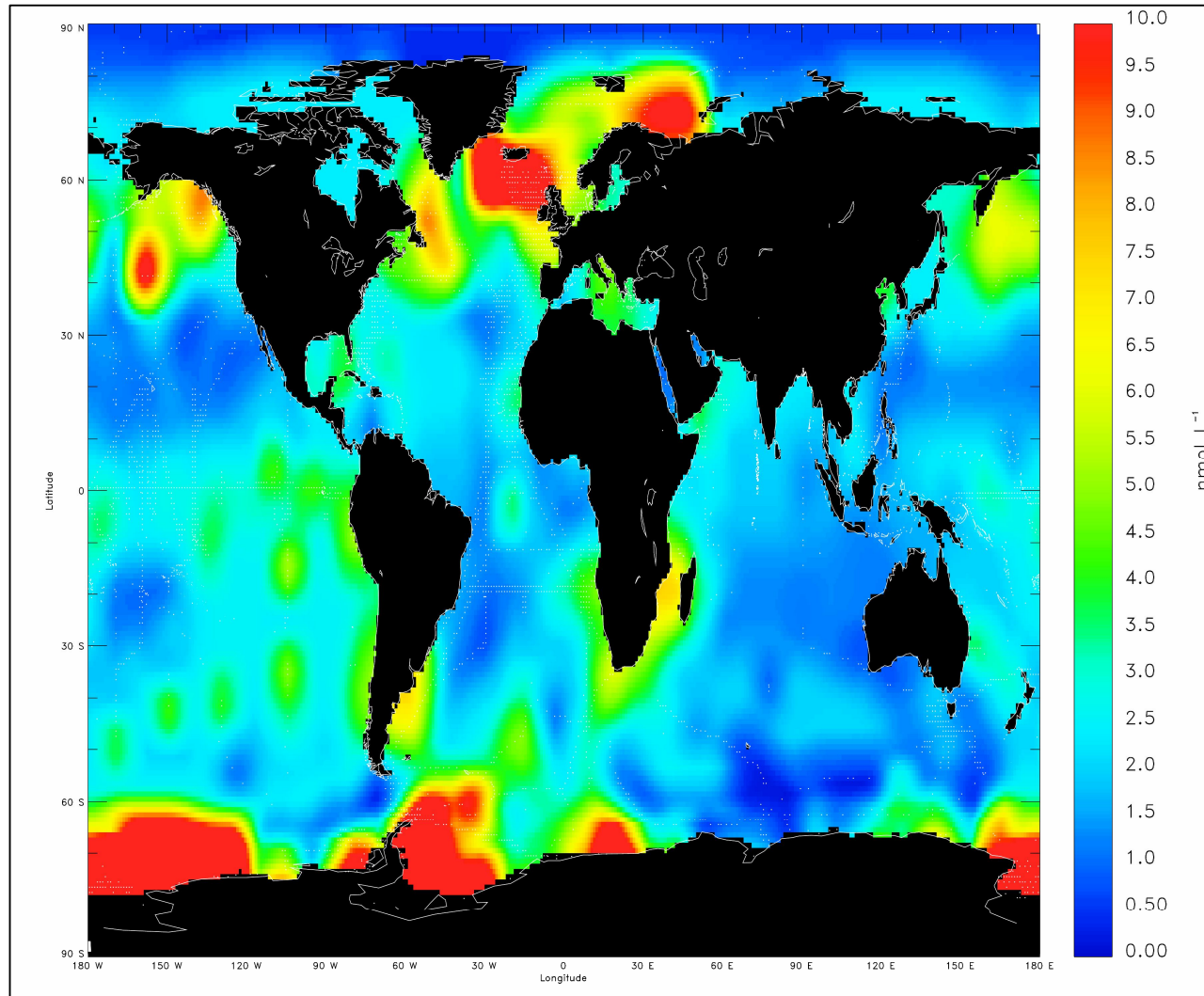
DMS Database and Climatology



Kettle et al. (1999)

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DMS Database and Climatology



Kettle et al. (1999)

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Project Scope

This project is:

- Not purely data management – the aim is to produce useful scientific products and publications.
- Funded by the UK (NERC), but not UK-centric – focussed on the global perspective.

Why Integrate?

Proposal Wording:

“These data products can be used to quantify and assess the role of ocean-atmosphere interaction in climate, air quality and ocean biogeochemistry”

Why Integrate?

Research in the field

- Useful comparison for individual datasets.
- Increase awareness of and integration with previous measurements and experiments.

Model-based research

- Earth System Models use data for validation of processes and distributions.
- Other models (e.g. 1-D, back-trajectory) need data for initial and boundary conditions.
- Global datasets can help indicate where models need improvement.

However...

Different compounds have different problems and issues that need resolving/addressing:

- Dataset size
- Spatial resolution
- Temporal resolution
- Are both air and sea measurements required for a flux? (e.g. DMS only requires ocean concentrations)
- Differences in model/modellers 'needs'
- How comparable are the various measurements?

Why Is Everyone Here?

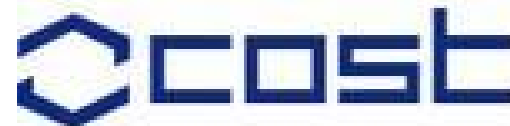
The Issue:

- Understanding global and regional distributions and fluxes of short-lived halocarbons has become increasingly important.
- Short-lived halocarbons = implicated as significant sources of reactive halogens
 - Marine boundary layer oxidation
 - Lower Stratosphere ozone depletion
- An identified aim of SOLAS Project Integration is the production of global air-sea flux estimates for short-lived halocarbon compounds.
- Despite a significant amount of data collection (ocean and atmosphere), there has been little data collation beyond the activity of individual research groups (e.g. Butler et al., GBC, 2007).
- An essential prerequisite to dataset creation is a workshop on measurement methodologies and intercalibration.

Funded by...



NATURAL
ENVIRONMENT
RESEARCH COUNCIL



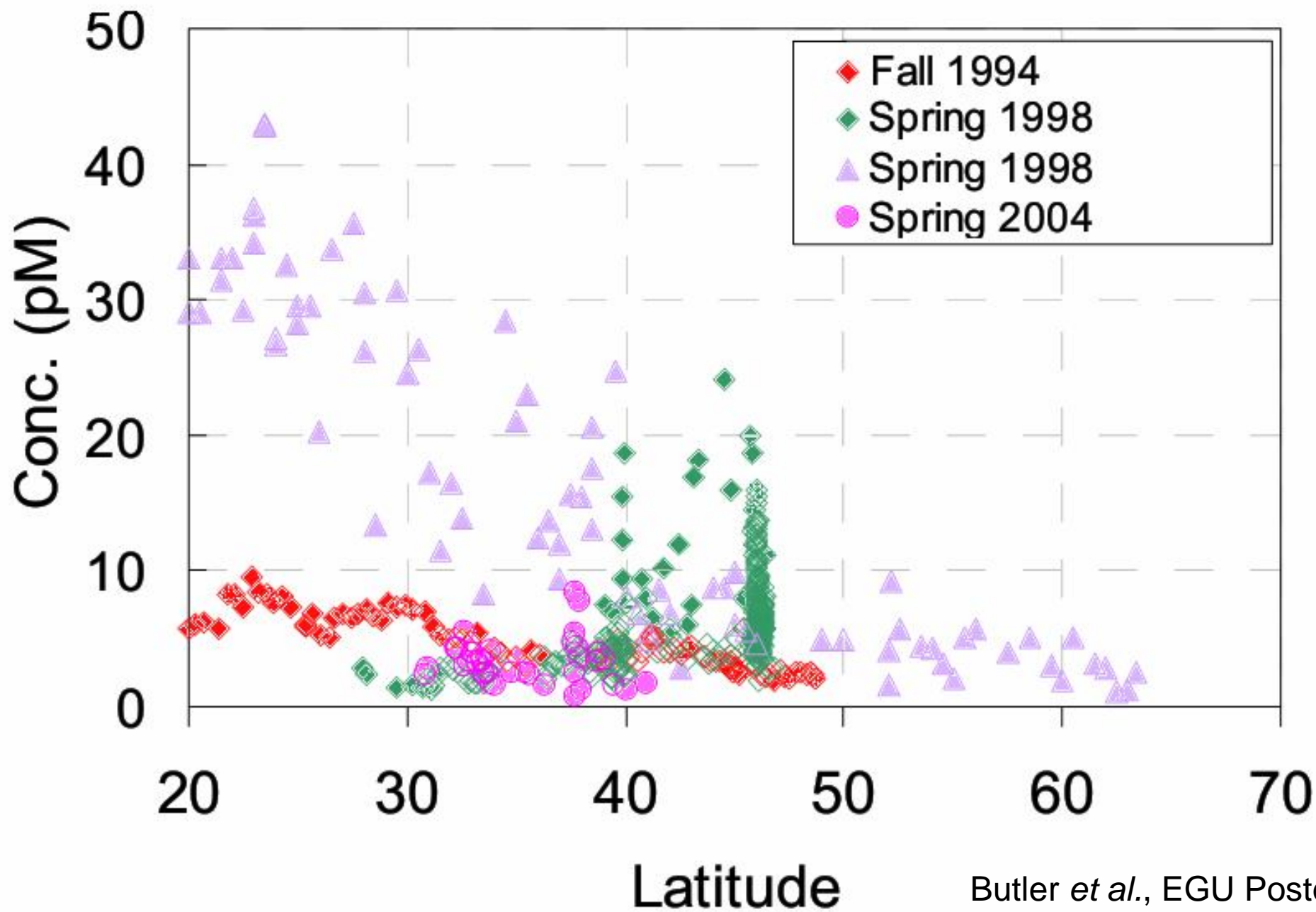
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Why Is Everyone Here?

The Problem:

- Currently, short-lived halocarbon data is difficult to compare:
 - Lack of intercalibration
 - No established measurement guidelines
 - No collective long-term quality control to assure continuity among data sets.
- Are observed differences due to spatial, seasonal, or annual variations?
- Or are they due to other issues (i.e. analysis and calibration discrepancies)?


CH₃I Water (North Atlantic)



Benefits of Intercalibration

- Improving the accuracy of current experimental methods.
- Enhancing the comparability of data in the future by coordinating research effort.
- Past...(or rather, questions I'd like to see answered)
 - Can the halocarbon community collate a global dataset?
 - Would this be a good tool or a bad (i.e. detrimental) tool for science?
 - For modellers, an integrated, QC dataset is better than a limited, uncontrolled dataset.
 - How do we collate a dataset?
 - What are the issues that need to be addressed?
 - What information is needed to resolve these issues?
 - What data can be used as part of a dataset?
 - What is the best way to use existing data to make a “global”, integrated product?
- I hope that we begin to resolve at least some of these questions/issues throughout today.

Anticipated Outputs from this Meeting

1. An overview 'white paper' presenting the 'consensus' of discussion.
2. Initiation of collaboration needed between research groups to facilitate experimental intercalibration efforts for halocarbon measurements.
-  3. Creation of a 'group of experts' on ocean / atmosphere halocarbon measurements that can inform SOLAS Project Integration.
4. Make progress toward assembling a database.