

LONG TERM

LTER

ECOLOGICAL RESEARCH

US Long Term Ecological Research Network

26 LTER Sites in USA including Alaska, Puerto Rico, Antarctica and Tahiti

Started 1980

6-year projects

Indefinite renewals based on performance

Forests, grasslands, deserts, estuaries, tundra, coastal marshes, lakes, swamps ...

8 marine coastal sites

2 oceanic pelagic

1 coral reef

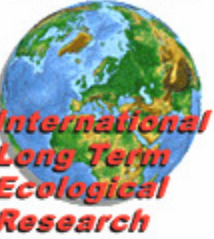
4 polar

NSF: DEB, OCE & OPP support

International LTER (ILTER): 32 networks of sites



ILTER

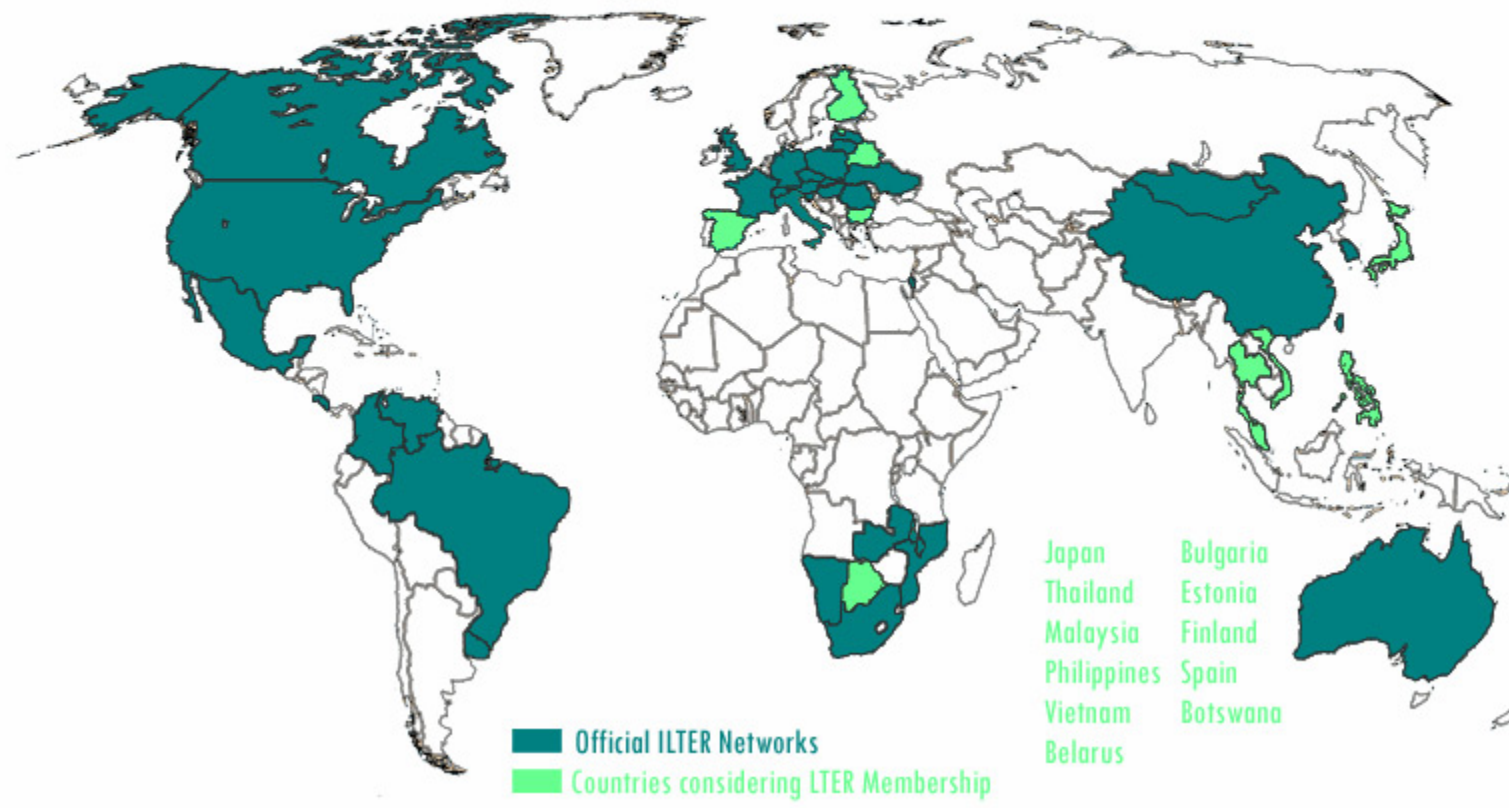


- ◆ People
- ◆ Networks
- ◆ News
- ◆ Meetings
- ◆ Other Resources
- ◆ Member's Only

International LTER Networks

ILTER is a network of networks. Its members are country-based networks of scientists engaged in long-term, site-based research. Thousands of researchers at hundreds of research sites are affiliated with one another through their country's network, their region's network, and the global network (ILTER). Please see the [People page](#) for more information.

The International Long Term Ecological Research Network



LTER Core Research Areas:

Primary Production

Population Studies of specific key species

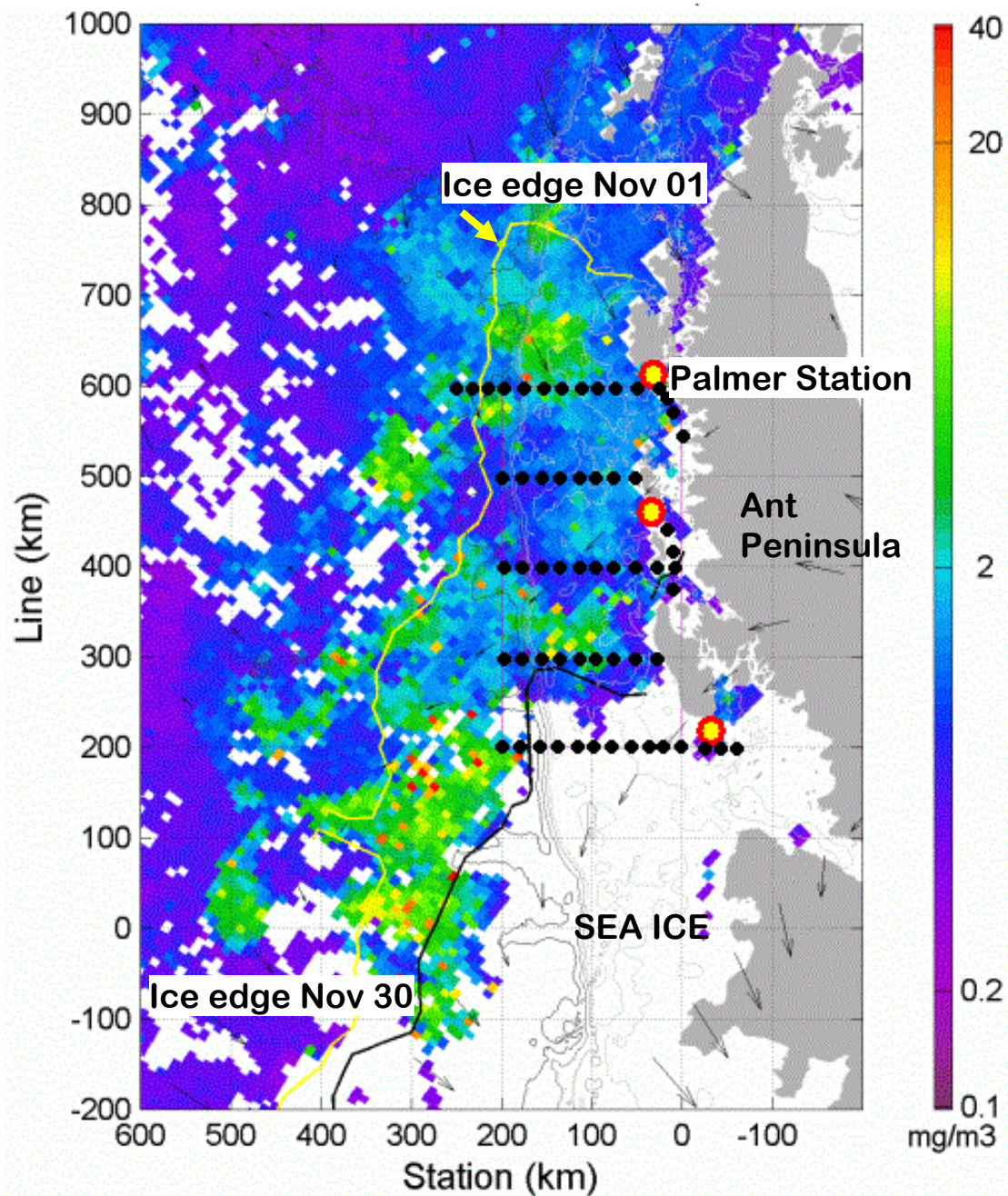
Movement of Organic Matter (decomposition)

Movement of Inorganic Matter

Disturbance Patterns: fires, floods, storms...

Large numbers of allied research projects at some sites (flux towers, etc)

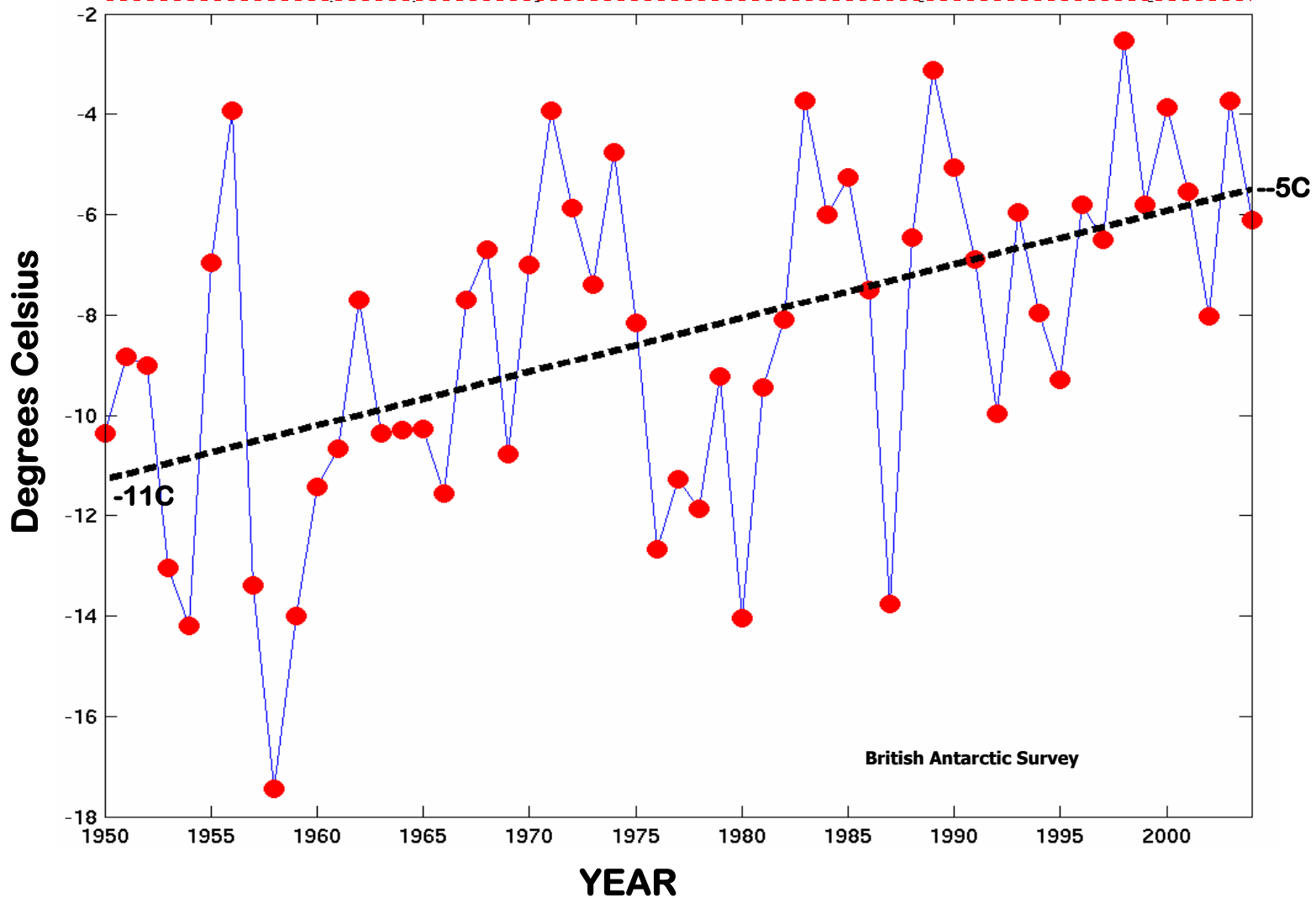
Palmer-LTER: SeaWiFS, Nov 2004



Average winter (June-July-August) temperature (Faraday Base)

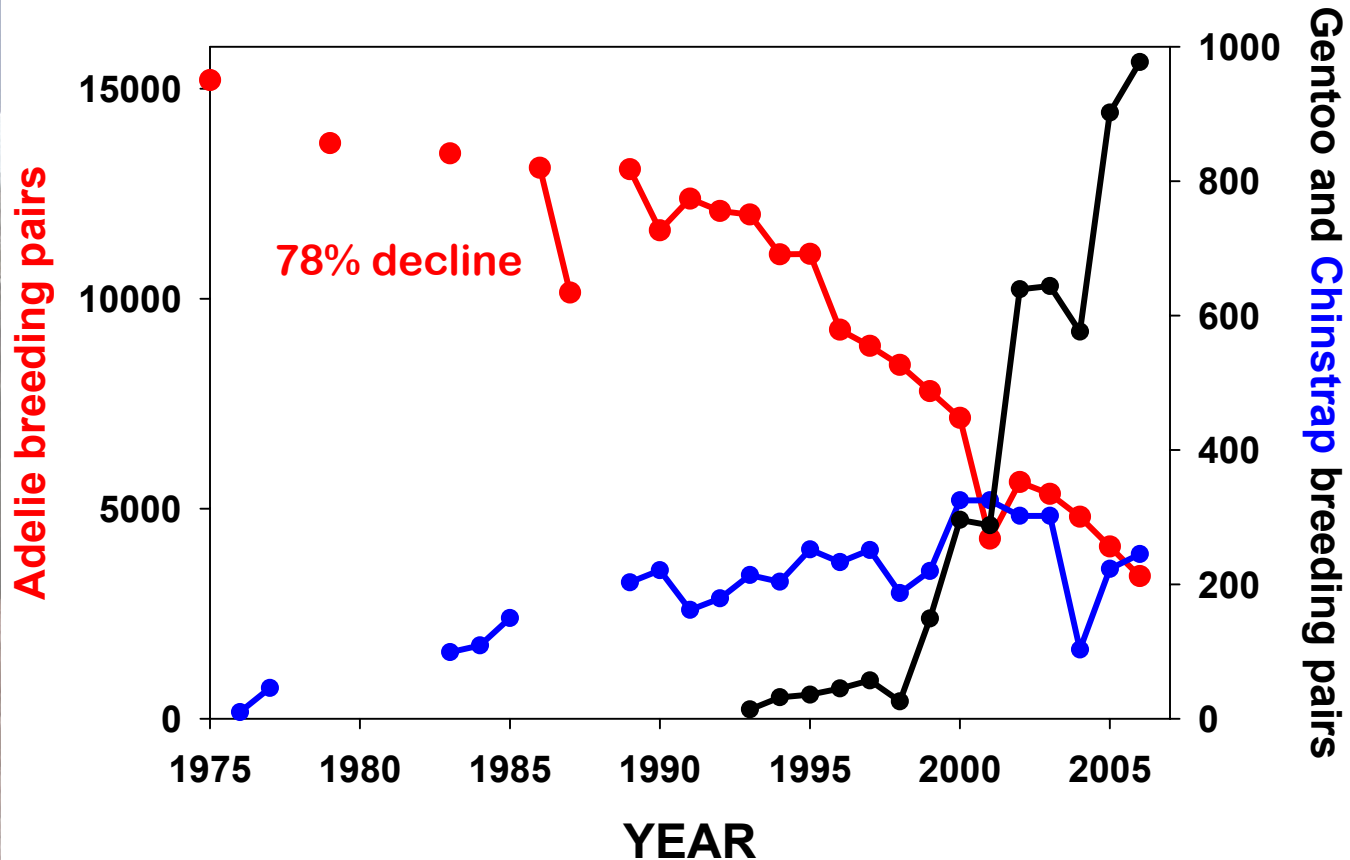
+1.1°C per decade: 6°C since 1950: 5 x global average

Freezing point of seawater: -1.8°C (sea ice formation)



PENGUIN POPULATIONS NEAR PALMER STATION

Adélie's declining, Gentoos and Chinstraps invading and increasing



PAL DATA 1993-2007

January (midsummer) snapshots: regional scale (55 stations, 400 x 200 km)

- Mets, CTD & inwater optics
- Nutrients, DIC ALK DOC O2
- Pigments, POC, PN, Bact #
- PrimProd, Bacterial Prod
- Zooplankton stocks
- Underway T,S, O2, pCO2, fluorescence
- Bird and mammal observations & distributions
- Sea Ice extent and duration

Local-scale inshore Zodiac stations near Palmer (Oct- April, 2 x weekly)

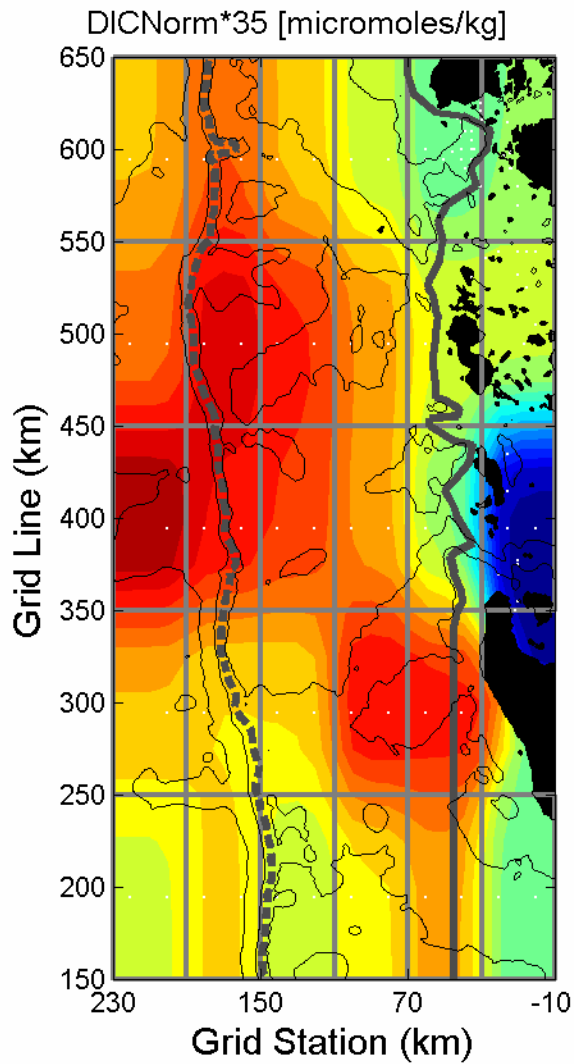
- Mets, CTD & optics
- Nutrients, DOC, O2
- Pigments, POC, PN, Bact #
- PrimProd, Bacterial Prod
- Zooplankton stocks, egg production, growth rates
- Penguin demography, diets, foraging behavior
- Moored profiler

Time series sediment trap
Physics moorings

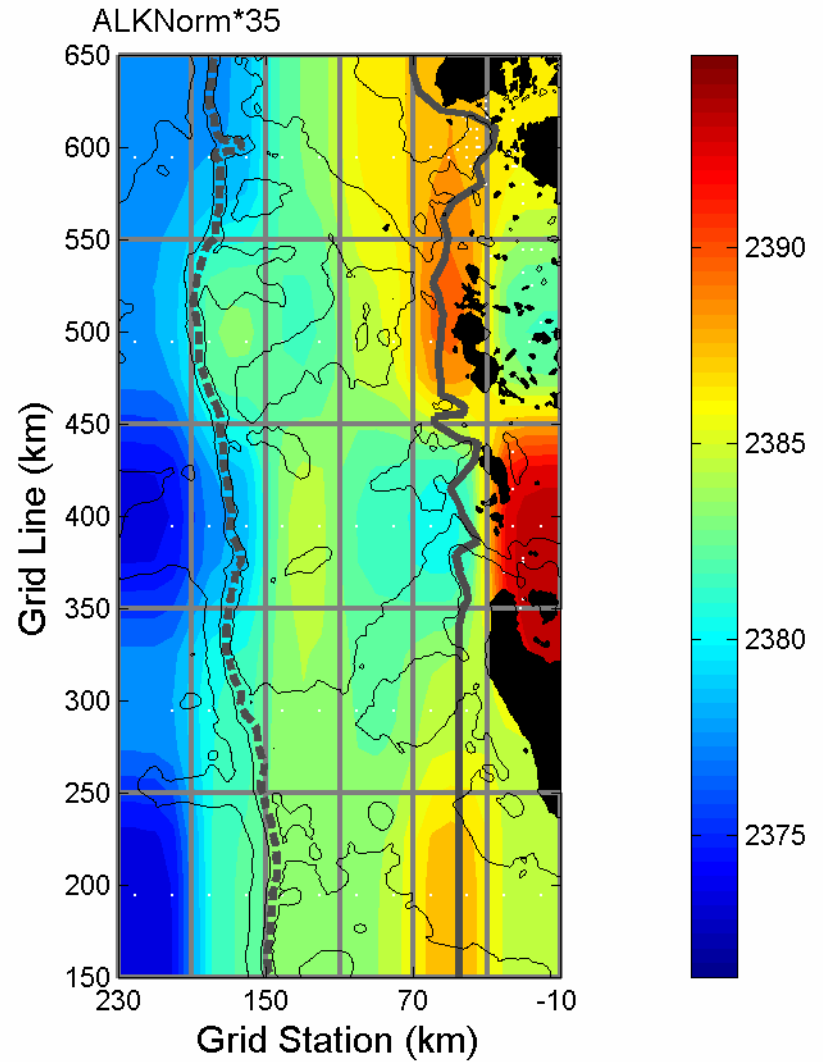
Slocum Glider (Rutgers Univ)

January Climatologies, examples 1993-2006

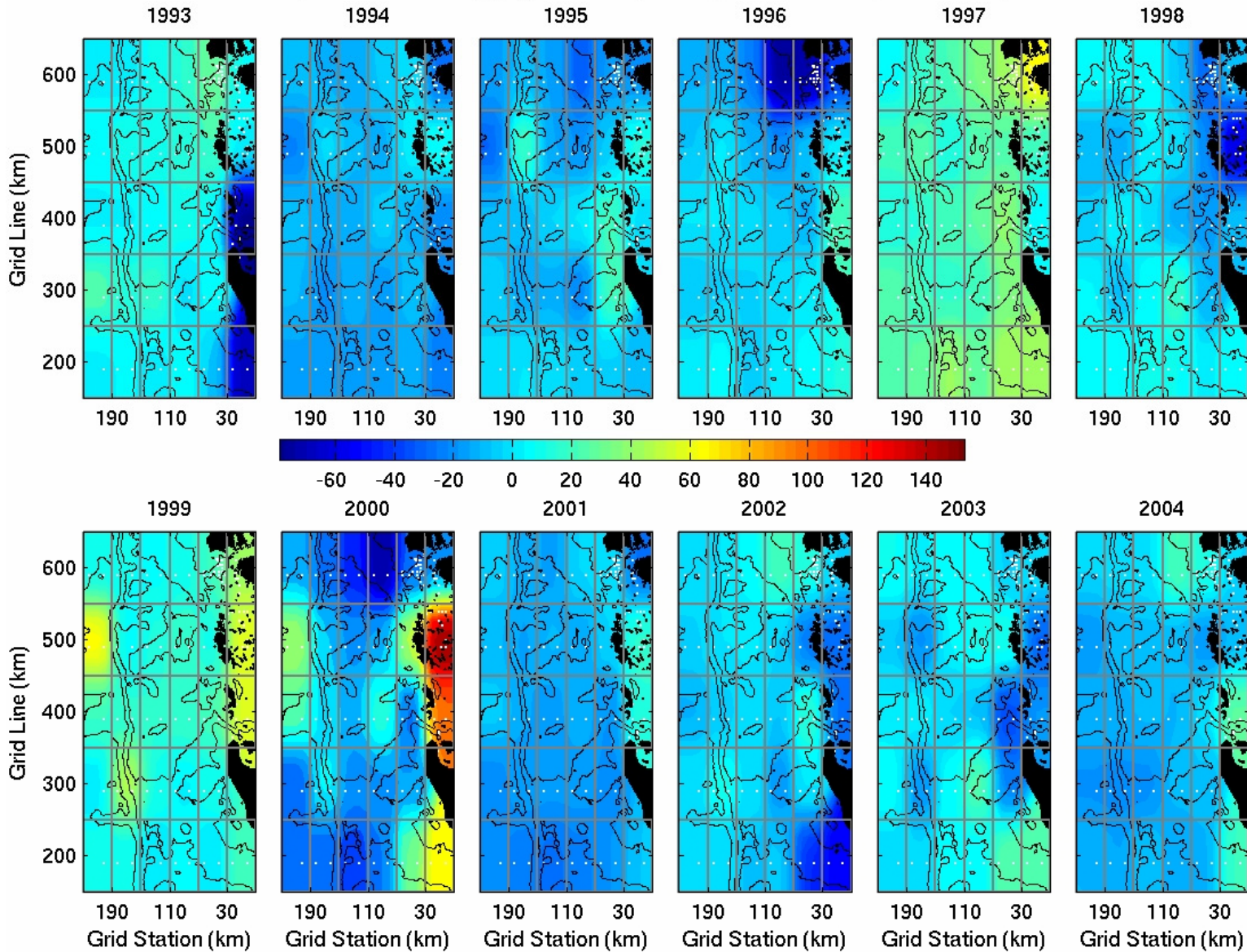
DIC



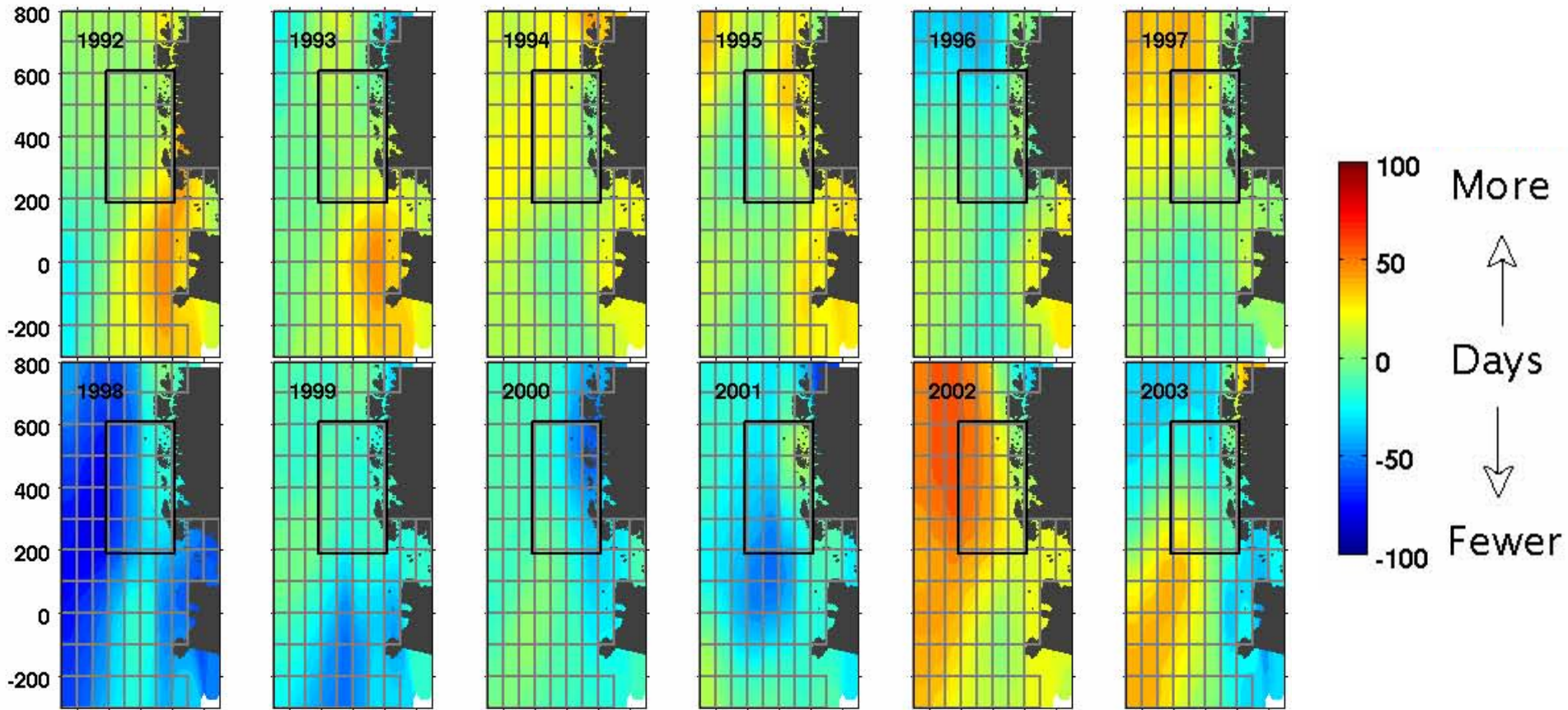
ALKalinity



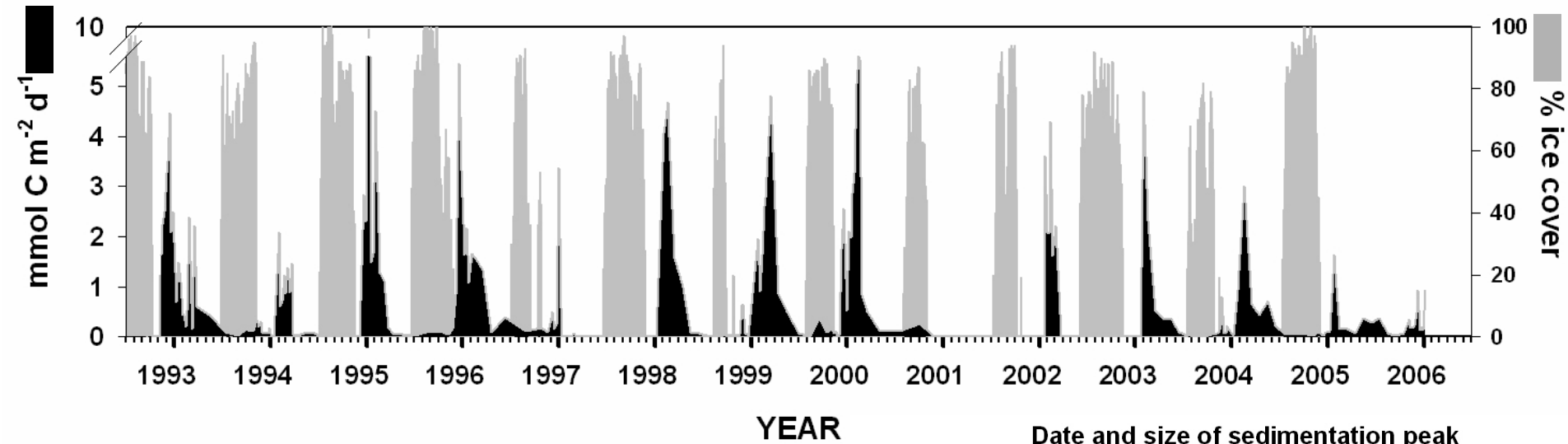
Anomalies of DIC [micromoles/kg] | gas Col 8 | Tcar | J.days 0-60 | Grid 142 | Covariance



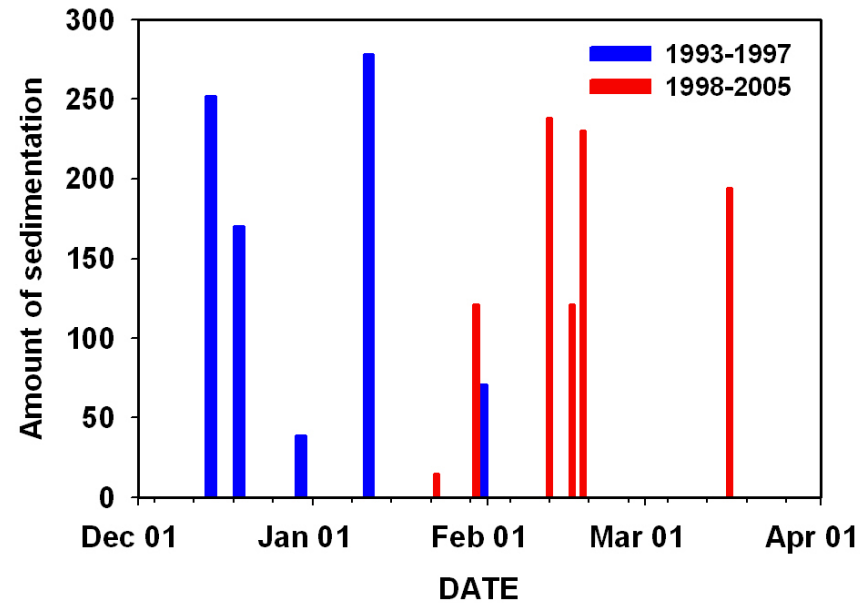
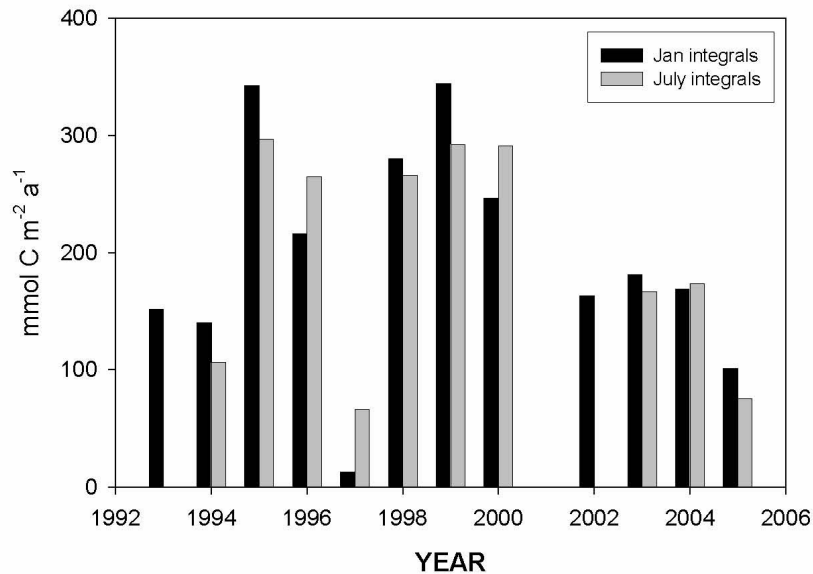
Annual anomalies: sea ice duration



Palmer Antarctica Sediment Trap 150 meters



Annual sedimentation



PAL and OCB

What PAL can do for OCB

- **Share data (time series 93-07)**
- **Collect samples (eg, Bender $^{17}\text{O}_2$)**
- **Host you, students on annual cruise or at Palmer Station**
- **Support for adjunct projects (eg, Matrai et al DMS project)**
- **ILTER Network overall: an untapped resource for ocean carbon time series and process studies**

What OCB can do for PAL

- **Use our data!**
- **Write/support/encourage cooperative proposals**
- **Provide new methods, ideas, students**

Thanks for your attention!

