

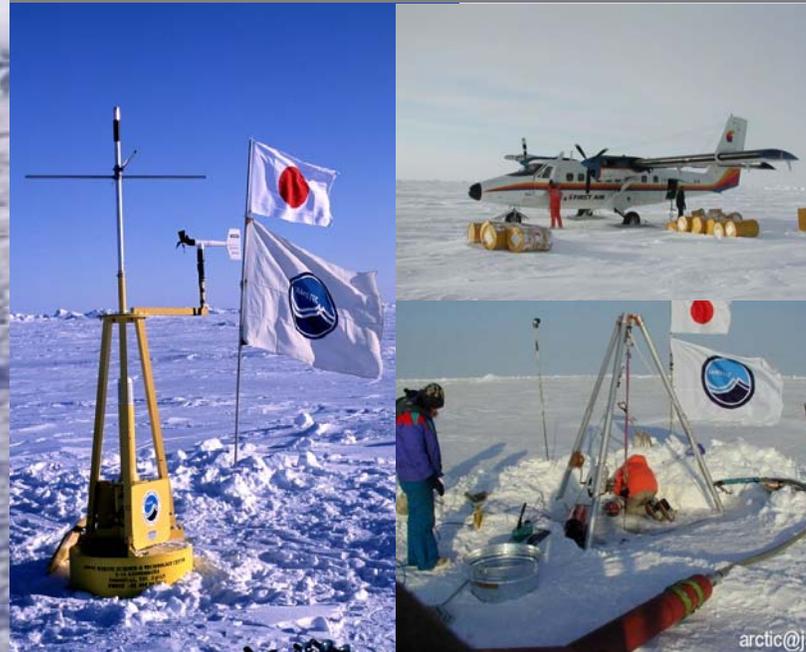
Development and deployment plan of ARGO type buoy in the Arctic Ocean

by T.Kikuchi, N.Shikama (JAMSTEC),
D.Langevin, T.Monk, and O.Lebreton (MetOcean)

Ice-drifting buoy observation

J-CAD (JAMSTEC Compact Arctic Drifter) is designed and developed by JAMSTEC and MetOcean Data System Ltd.

The scope of observation has been limited to ocean physics (temperature, salinity, & ocean currents) and weather condition (air temp., sea level pressure, wind direction and speed). Development of the buoy began in 1999 and we have deployed in the Arctic Ocean since 2000. J-CAD 6, 7, & 8 are currently obtaining data from the Arctic Ocean.



J-CAD data Web site - Lunascape

アドレス(D) http://www.jamstec.go.jp/arctic/J-CAD_e/jcadindex_e.htm

JAMSTEC Arctic Ocean Research project index
 J-CAD Japanese page

JAMSTEC Compact Arctic Drifter J-CAD

last update : 7 May, 2004

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Latest data from J-CAD

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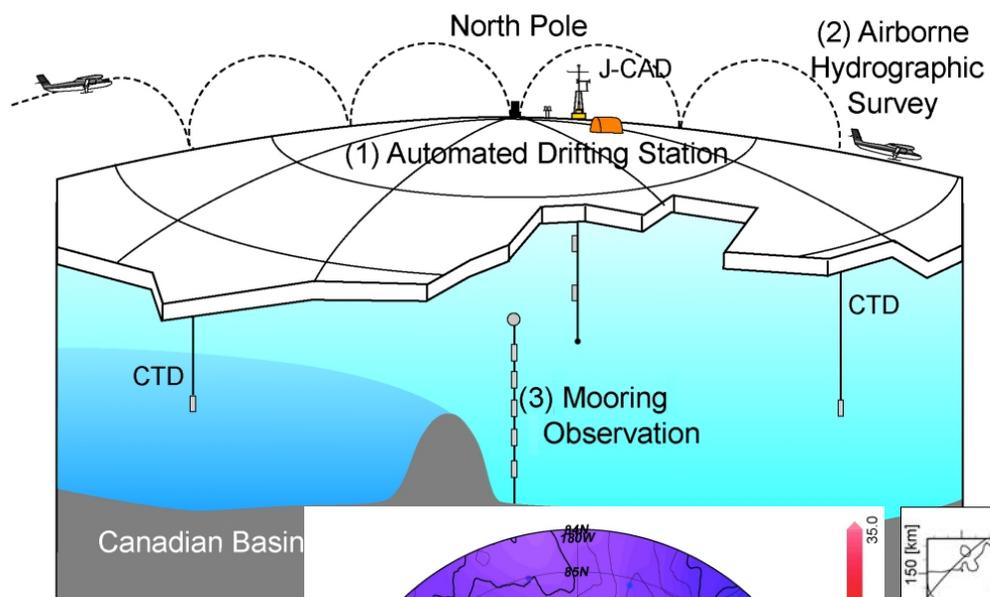
Attention !!
 J-CAD Data & Report (April 2000 ~ March 2003) [CD-ROM] is released. Data & Information of J-CAD are included in this CD-ROM. If you have an interest in this report, please send an e-mail to takashik@jamstec.go.jp or hosononi@jamstec.go.jp.

J-CAD Office
 Ocean Observation and Research Department

J-CAD 8 deployed nearby North Pole (NP00 2004)

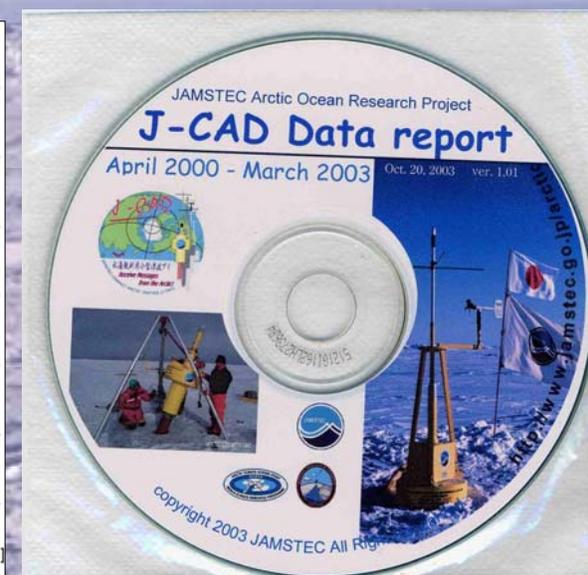
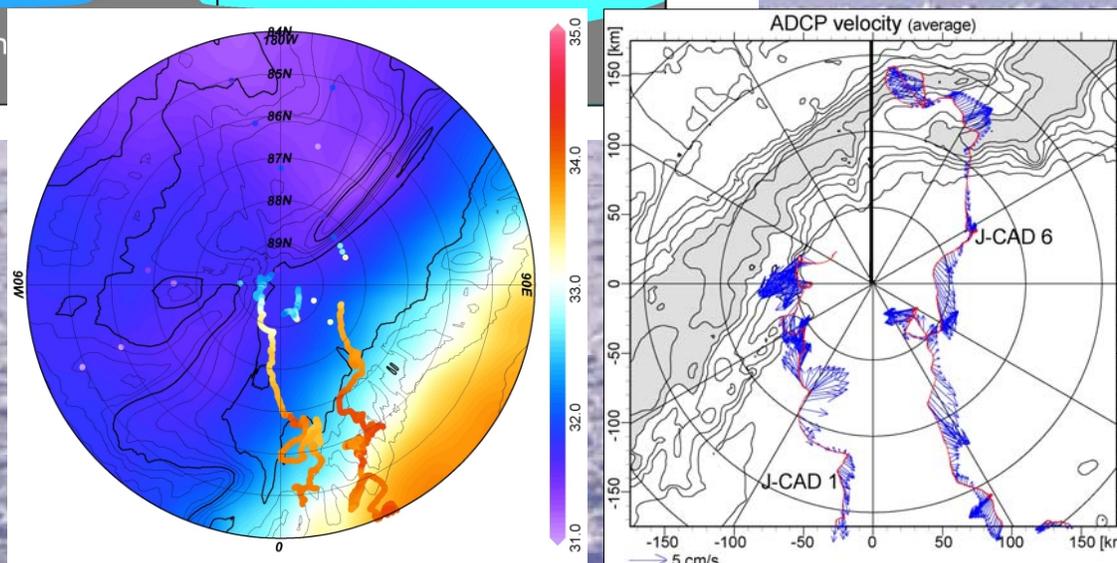
From the observational Results

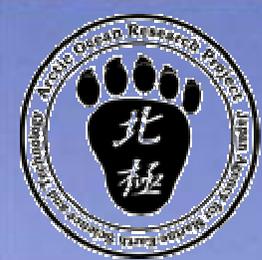
North Pole Environmental Observatory (NPEO)



We have deployed 8 J-CADs and continue to observe the oceanographic condition of the Arctic Ocean since 2000. Then,

- > J-CAD web site shows the latest data from the Arctic Ocean.
- > we can observe the hydrographic condition of the Arctic Ocean in the early 2000
- > ocean currents of the upper layer were measured under the Arctic multi-year ice
- > the data was published on a CD.
(It will be released on the J-CAD Web site soon.)





From the observational Results

J-CAD (JAMSTEC Compact Arctic Drifter)



In the multiyear ice zone of the Arctic Ocean, ice-drifting buoy observation is the most useful method to monitor the oceanographic condition even under the severe environmental condition. However,

1) the temperature & salinity data obtained from J-CAD are discrete and up to 250m depth. We want to have a profile data up to 1000 m depth to cover the Atlantic Water.

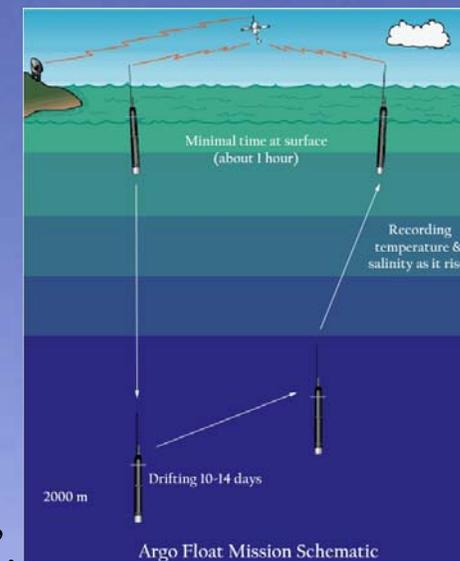
2) the full J-CAD deployment is not so easy that we can not ask anyone to deploy it. For example, Argo float is easy for everyone to deploy and observe the oceanographic condition up to 2000m depth. It is better for us.



Argo

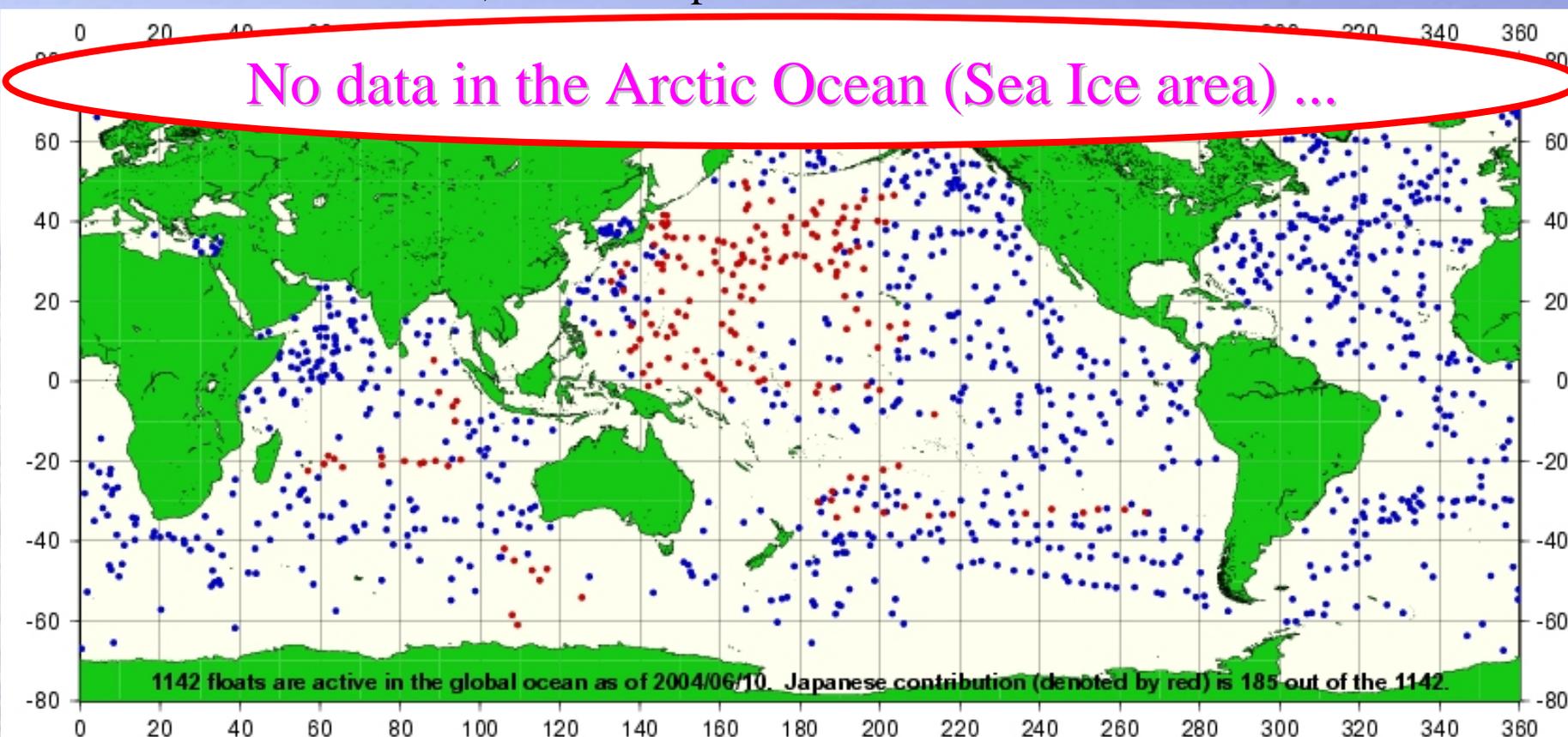
(A broad-scale global array of temperature/salinity profiling floats)

Deployment began in 2000. Argo builds on the existing upper-ocean thermal networks, extending their spatial and temporal coverage, depth range and accuracy, and enhancing them through addition of salinity and velocity measurements. Based on the current Argo operation, it is well known that the technology of vertical profile measurement by changing its buoyancy has already developed and we can use them.



However, it is “Except for the Arctic Ocean.....”.

No data in the Arctic Ocean (Sea Ice area) ...





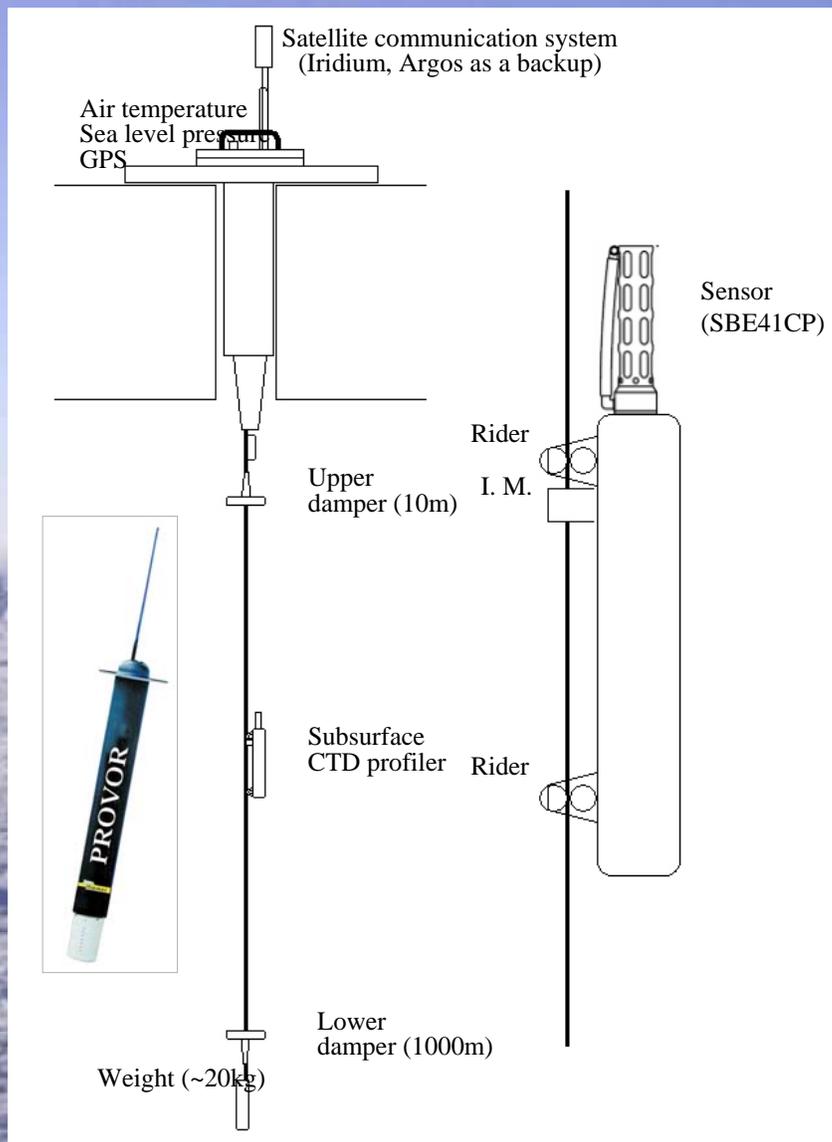
To conduct sustainable time-series observation
in the Arctic multi-year ice area, ...

J-CAD successful performance
on the Arctic multi-year ice (Ice Platform)
+
Vertical Profiling System
based on an Argo float (Subsurface CTD profiler)

Polar Ocean Profiling System (POPS)

Both JAMSTEC and MetOcean have experiences of development and operation of J-CAD and Argo float, so we are collaborating in the development of new ice-drifting buoy system tethering an ARGO type subsurface CTD profiler.

Polar Ocean Profiling System (POPS)



Ice Platform ; It is similar to J-CAD platform.

- o Meteorological sensors are in the platform.
- o Inductive modem system is applied as data communication system between the platform and subsurface CTD profiler.
- o Iridium satellite communication system is used.

Cable (steel) ; up to 1000m depth

w/upper(10m) & lower(1000m) damper, and weight(~20kg)

Subsurface CTD Profiler ;

PROVOR(Argo Float)

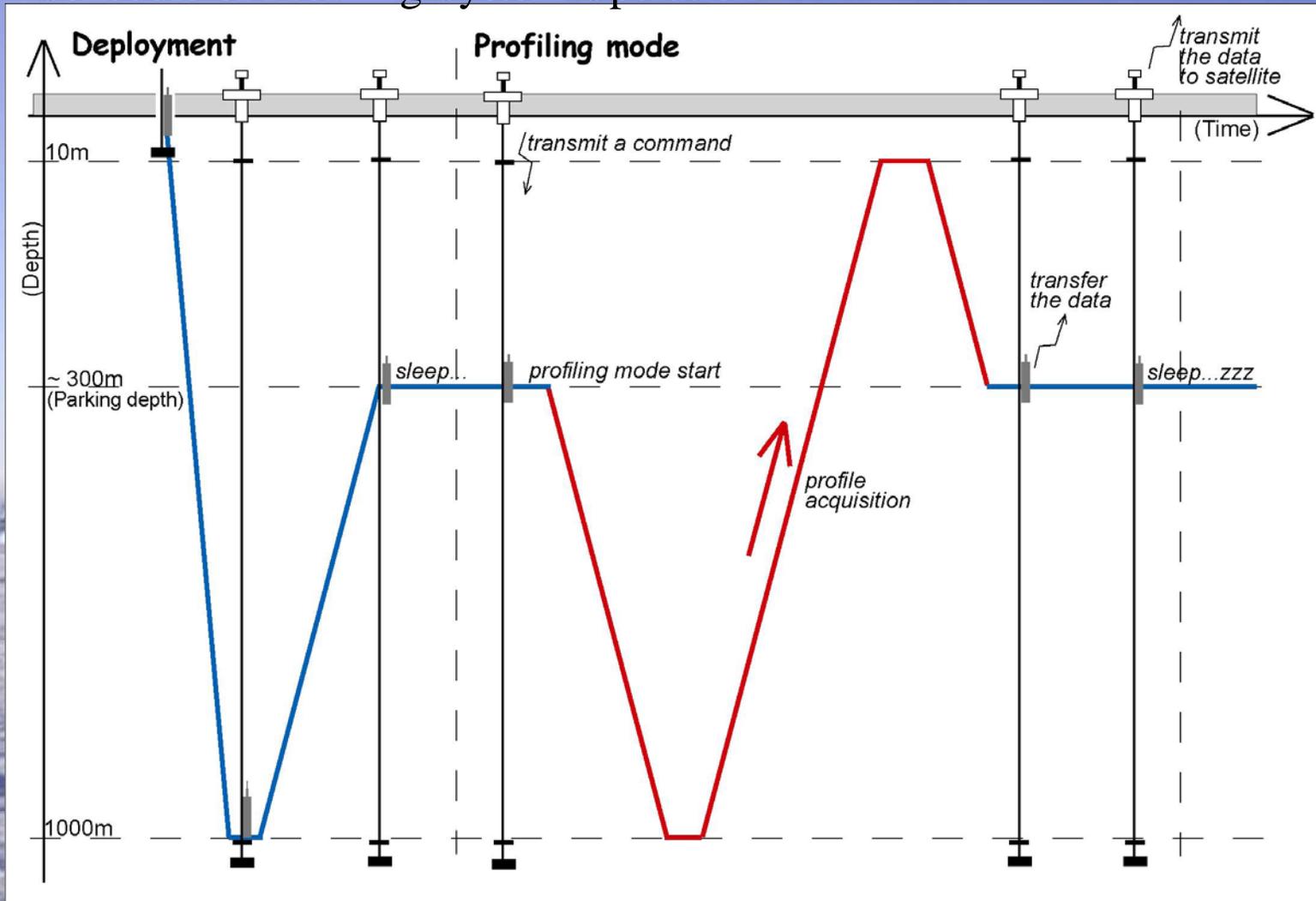
- Argos system
- + Inductive modem system
- + rider for attachment with the cable

SBE 41CP sensor is mounted on the anodized float end-cap to obtain temp., salinity, and depth data.



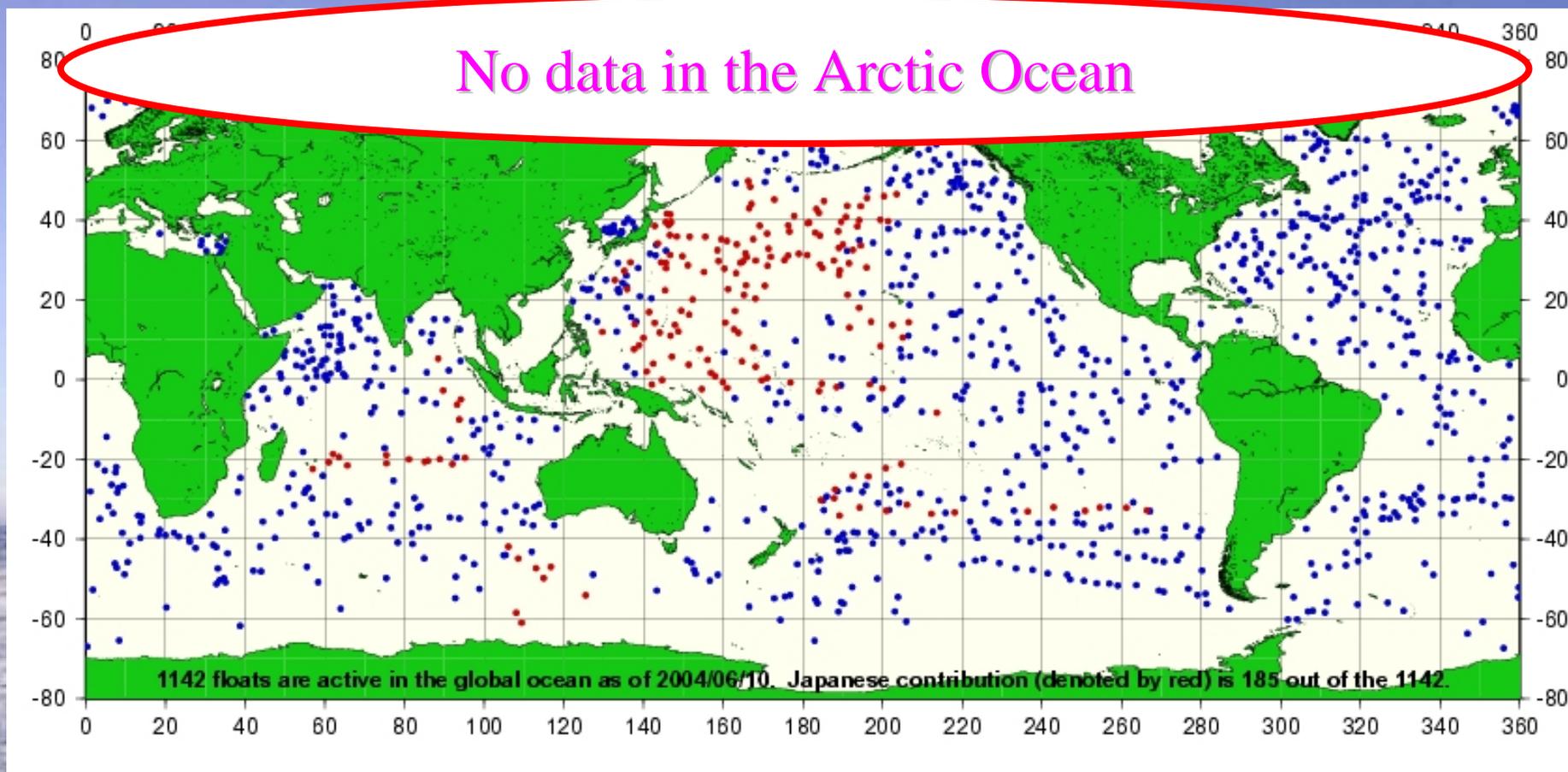
Polar Ocean Profiling System (POPS)

Schedule of Profiling System Operation



Both meteorological data and oceanographic profiling data acquisition are configurable. The power budget calculations indicate an expected life time of 24 months for hourly meteorological data acquisition with a position and CTD profile every 5 days.

Polar Ocean Profiling System (POPS)



Distribution of the buoy data
to not only Arctic scientists but also Argo community
--> Contribution to Global Climate Research

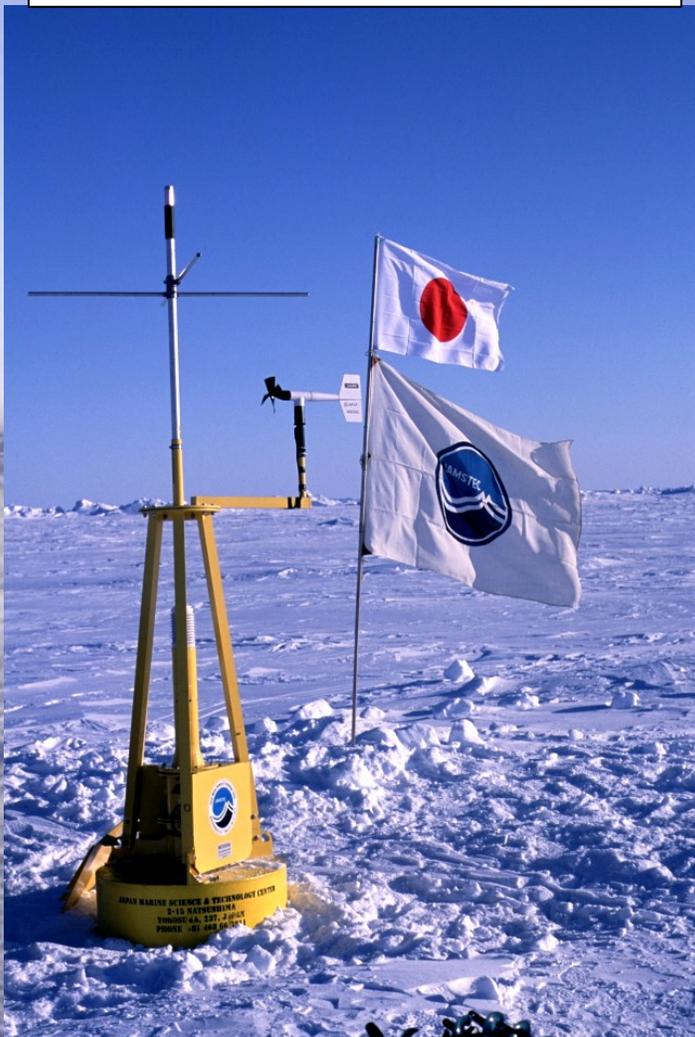
Polar Ocean Profiling System (POPS)

- 2004/05 **POPS development has already started...**
- 2005/06 **NPEO 2005: J-CAD 9 (mini) deployment & POPS North Pole Test**
Polarstern: Kara, East Siberian Sea cruise (ARK-XXI/2)
(or Russian Ice breaker: NABOS cruise)
J-CAD 10 (full) deployment (& POPS first deployment)
- 2006/07 **NPEO 2006: POPS deployments**
- 2007/08/09 4th IPY(International Polar Year)
NPEO 2007 & 2008: POPS deployments
Polarstern? Other ice breaker???
Antarctic (NIPR, Japan) or other sea-ice area ???

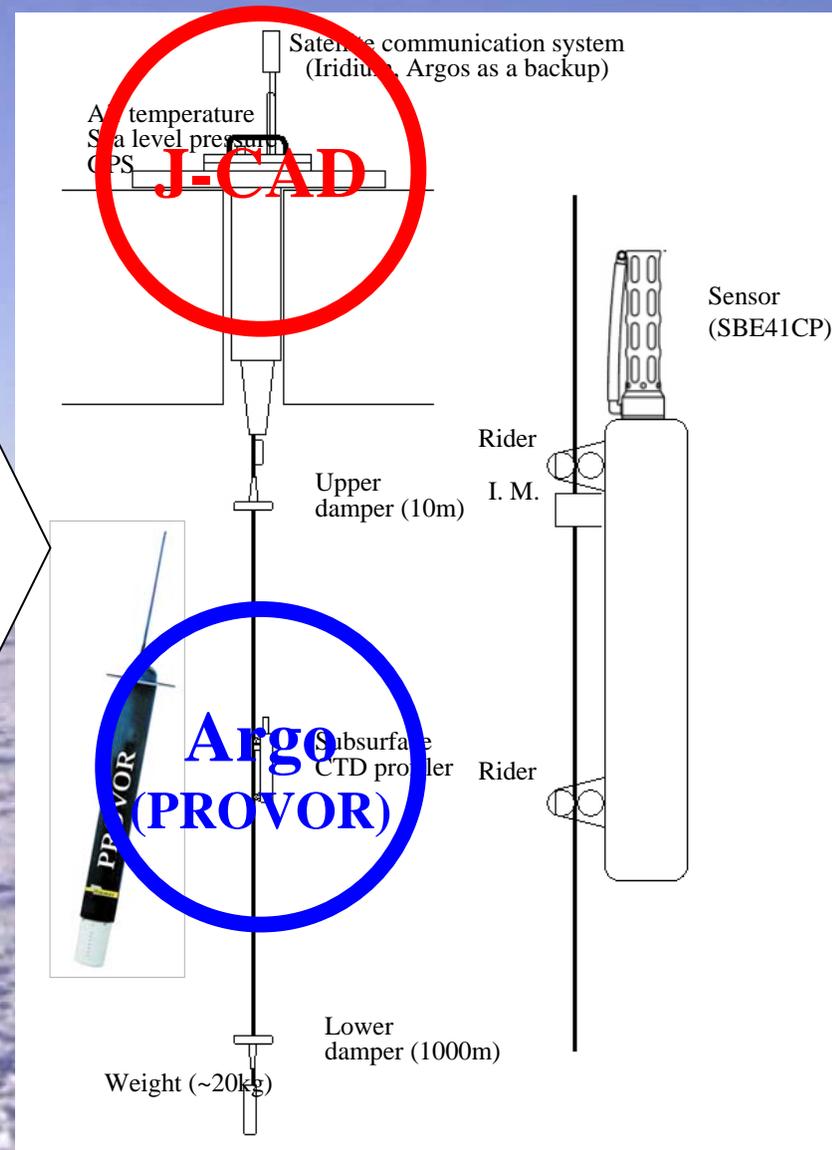


Polar Ocean Profiling System (POPS)

Based on the successful performance of J-CAD & Argo,



JAMSTEC & MetOcean are collaborating in the development of a new buoy system, POPS.





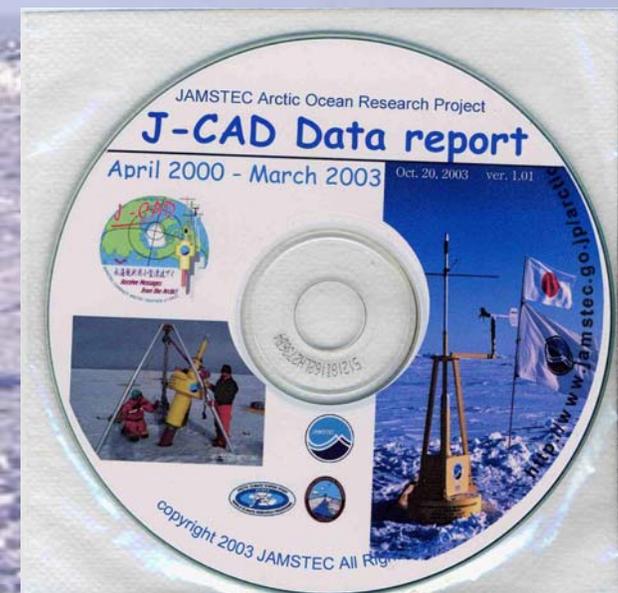
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ファイル(F) 編集(E) 表示(V) お気に入り(A) スクリプト(S) リンク(L) タブ(B) ウィンドウ(W) ツール(T) ヘルプ(H)

戻る 進む 検索 印刷 現在のタブを削除

アドレス(D) http://www.jamstec.go.jp/arctic/J-CAD_e/jcadindex_e.html 検索(S) Google(日本語)

J-CAD data ...

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J-CAD Office
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[Photograph](#)
[Report & Publication](#)
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[J-CAD Track Map \(All\)](#)
[Expanded map \(J-CAD 6\)](#)
[Expanded map \(J-CAD 7\)](#) [Mar. 1, 2004]
[Comparison with the climatology](#) [Aug. 1, 2002]