



IPAB report to DBCP for 1997

International Programme for Antarctic Buoy

1. Introduction

The WCRP/International Programme for Antarctic Buoy (IPAB) was formally established, following a one year pilot phase, at a meeting in Helsinki, Finland in June 1994. IPAB builds upon co-operation among agencies and institutions with Antarctic and Southern Ocean interests to develop and maintain an optimum observational network for near-surface meteorological and oceanographic data within the Antarctic sea-ice zone, using drifter buoys and other appropriate data collection systems. The operational area of the Programme is south of 55 degrees South latitude, and includes that region of the Southern Ocean and Antarctic marginal seas within the maximum seasonal sea-ice extent.

IPAB has a strong research component, and is endorsed as a self-sustaining project of the WMO/ICSU/IOC World Climate Research Programme. It reports to the JSC for WCRP through the Arctic Climate System Study (ACSYS). IPAB is also an Action Group of the WMO/IOC Data Buoy Co-operation Panel.

The Programme is proposed as a long-term on-going one. After a five year initial phase, begun in 1994, subsequent development will be as agreed by the Participants.

2. Objective of the Programme

The objective of the WCRP International Programme for Antarctic Buoy is to establish and maintain a network of drifting buoys in the Antarctic sea-ice zone in order to:

- (i) support research in the region related to global climate processes and to global change, and, in particular, to meet research data requirements specified by the WCRP and relevant SCAR programmes;
- (ii) provide real-time operational meteorological data meeting the quality requirements of the WMO/World Weather Watch (WWW) programme;
- (iii) establish a basis for on-going monitoring of atmospheric and oceanic climate in the Antarctic sea-ice zone, in particular contributing to the aims of GCOS;

3. Participants

At August 1997, 16 organisations, representing 11 countries, had subscribed to IPAB by submitting letters of intent to participate in the programme.

Participant's contributions to the Programme include not only data buoy activities, but can also take the form of data acquisition and processing charges, monetary contribution, logistic support for deployment, data communication services, data archiving, and scientific or technical advice.

4. Management

The First Session of the International Programme for Antarctic Buoys (IPAB) was held at the Scott Polar Research Institute, Cambridge, UK, 1-3 August 1996. This meeting was attended by 24 scientists, representing 10 countries and 3 international organisations. The report of this meeting has been published as WCRP Informal Report No. 4/1997, and copies can be obtained from WCRP, c/o WMO, Geneva.

IPAB is managed by an Executive Committee, whose members are:

Chairman Dr. Christoph Kottmeier, Germany

Vice-Chairman Mr. David Crane, United Kingdom

Member Mr. Piet le Roux, South Africa

Member Dr. Andrea Pellegrini, Italy

Dr. Ian Allison, Australia, is Co-ordinator of the Programme.

The second session of IPAB will be held in 1998, possibly in conjunction with the 20th anniversary meeting of the International Arctic Buoy Programme (IABP) in Seattle, USA, in August.

5 Data reception and dissemination

Most IPAB data buoys report through System Argos. Data from the programme is archived in two streams. An operational data archive includes all basic data from the Programme transmitted in real-time on the GTS. Participants are urged to ensure that, as far as possible, all platforms deployed for the Programme are issued with an WMO ID number, and that data are inserted to the GTS. A uniform, quality-controlled research data base for ice motion, and surface meteorology and oceanography is also maintained as required by the Antarctic research community. The Programme Co-ordinator is responsible for maintenance of this data set and, since February 1995, the Programme has been a registered user with CLS Argos. All original data from those platforms nominated by the registered owners are copied direct to the co-ordinating office each month from Service Argos, and form the basis of the IPAB Research Data Base at the Antarctic CRC in Hobart, Australia. This includes data from all sensors, and from non-synoptic reporting times.

A report entitled 'Wind and Ice Motion Statistics in the Weddell Sea: A compilation based on data from drifting buoys, vessels, and operational weather analyses' was produced with contributions from Dr C. Kottmeier and many IPAB participants. This work was published as WMO/TD-No. 797, January 1997.

6. Buoy deployments and activities

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During 1995 and 1996 there was a considerable increase in buoy activities in the Antarctic sea ice zone by Participants. In 1995, there were a total of 19 buoys operating in Antarctic ice, and reporting via the GTS, plus an additional 11 deployments of buoys that provided data to the IPAB data base, but not to the GTS. Most buoy activity occurred in August, as part of an Australian sea ice process study, and typically over the whole year there were 9 to 14 buoys operating each month. During 1996 a total of 21 drifters were operating, and all but 3 of these reported via the GTS. Typically there were 10 to 14 buoys reporting each month, with greater activity in March and April.

Activities during 1997 have been somewhat reduced, with only six new IPAB deployments during the year, but a number of earlier deployments continuing to operate. Since June 1997 there have only been 7-9 IPAB buoys operating and reporting via the GTS.

The following Tables and Figure show, for 1995-1997, details of the numbers of IPAB buoys operating each month; buoy deployment locations and characteristics (including manufacturer, model, and sensors); and summary drift tracks.

Most activity has been concentrated in the Weddell Sea and in the Indian Ocean sector, with major data gaps in other areas, and particularly off the coast of West Antarctica. The relatively short life of many of the buoys within the region of interest continues to be a problem to maintaining an optimum array. Short life in the sea ice zone has been partly a result of the high failure rate of some buoys (some manufacturers' products are more susceptible to this). But more importantly, since there is a generally northward divergent component to the pack ice drift in the Antarctic, many buoys deployed at high southern latitude eventually move north of the ice edge and out of the main region of interest. Some buoys are designed specifically for ice deployment and do not survive in open water for a long time, and sometimes it is difficult to directly determine whether the buoy is operating within the ice edge or not.

6. Outlook

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Buoy activity in 1998 is expected to continue at a background level similar to the last few years. In addition there is possibility of increased deployments (yet to be confirmed) associated with a joint US/Australian winter-time field study of an East Antarctic coastal polynya, and a US sea-ice research cruise to the Ross Sea in May.

Ian Allison, IPAB Co-ordinator

International Programme for Antarctic Buoys - 1997 Activities

Abbreviations used in the following Tables:

Sensors Tair Air temperature

Tss Sea surface temperature

Pair Air pressure

Agencies AAD Australian Antarctic Division

Finn Finnish Institute of Marine Research &

Dept. of Geophysics, Univ. of Helsinki

Buoy Type MO MetOcean

Pol.Res.Lab. Polar Research Laboratory

CMI Christian Michelsen Research AS

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Summary Information on IPAB Activities: 1995-1997

Data are tabulated on the following:

IPAB No. Unique identifier given to each IPAB Buoy. GTS WMO Number for buoys reporting via the GTS

Includes code for responsible agency :

AWI Alfred Wegener Institute Drogue Whether ocean drogue fitted (y) or not (n)

AAD Australian Antarctic Division

SPI Scott Polar Research Institute Deployed on ice directly onto or in a floe

CRC Antarctic Cooperative Research Centre ow in ice in open water leads amidst ice

FIN Finnish Institute of Marine Research & open ocean outside the pack ice

Dept. of Geophysics, Univ. of Helsinki

Sensors P atmospheric pressure

Argos PTT Argos transmitter number. Numbers are reused. Ta air temperature

Ti ice temperature

Deployment Date and location of deployment SST sea surface temperature

W wind speed and direction

Buoy Type Manufacturer and model number: Atm other atmospheric parameters

DSI Defense Systems Incorporated GPS GPS positioning

Turo Tasmanian Underwater Res. & Oceanog.

PRL Polar Research Laboratory

CMI Christian Michelsen Research AS

IPAB buoys1997

IPAB No.	Argos PTT	Deployment			Buoy Type	GTS	Drogue	Deployed	P	Ta	SST	W	Other
		First date	Lat	Long									
AWI186	8059	Jan-97	-73.7	322.3	MetOcean Ice Beacon	71541	n	on ice	y	y	/	/	Ti, GPS
AWI187	8060	Jan-97	-74.4	319.8	MetOcean Ice Beacon	71542	n	on ice	y	y	/	/	Ti, GPS
AWI188	8061	Jan-97	-74.0	326.7	MetOcean Ice Beacon	71543	n	on ice	y	y	/	/	Ti, GPS
AWI189	8064	Jan-97	-75.1	326.5	MetOcean Ice Beacon	71544	n	on ice	y	y	/	/	Ti, GPS
AWI190	8068	Jan-97	-74.7	329.1	MetOcean Ice Beacon	71545	n	on ice	y	y	/	/	Ti, GPS
AAD18	4471	Apr-95	-64.6	110.9	CMI	73507	n	on ice	y	y	y	/	/
AAD33	24664	Aug-95	-64.5	141.0	MetOcean Ice TOGA	74534	n	on ice	y	y	y	/	/
AAD40	24668	Apr-97	-64.9	117.3	MetOcean Ice TOGA	73501	n	on ice	y	y	y	/	/
AAD41	18648	Apr-97	-65.2	128.2	MetOcean Ice TOGA	73504	n	on ice	y	y	y	/	/

AAD42	18647	Apr-97	-65.2	140.0	MetOcean Ice TOGA	73503	n	on ice	y	y	y	/	/
AAD43	18649	Apr-97	-64.3	148.8	MetOcean Ice TOGA	73502	n	on ice	y	y	y	/	/
AAD44	24667	Apr-97	-75.6	176.2	MetOcean Ice TOGA	72503	n	on ice	y	y	y	/	/
AAD45	24666	Apr-97	-74.0	176.1	MetOcean Ice TOGA	72502	n	on ice	y	y	y	/	/
FIN04	25161	Jan-96	-73.7	323.1	MetOcean T-916	71558	n	on ice	y	y	/	y	Atm.
FIN05	25933	Jan-96	-73.5	321.8	Technocean	71560	n	on ice	y	y	/	y	Atm.
FIN06	25932	Jan-96	-73.9	321.5	Technocean	71559	n	on ice	y	y	/	y	Atm.
FIN07	10855	Jan-96	-73.9	324.0	CMI	n	n	on ice	/	/	/	/	/
FIN08	10856	Jan-96	-73.9	324.0	CMI	n	n	on ice	/	/	/	/	/
FIN09	5895	Feb-96	-73.4	322.4	PRL Met	71591	n	on ice	y	y	/	y	Atm.
FIN10	10858	Feb-96	-72.5	343.5	CMI	n	n	on ice	/	/	/	/	/

1997 activity (until October)

IPAB No.	Argos PTT	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
AWI186	8059	X	X	X	(X)	(X)	(X)	(X)	X	X	X	/	/
AWI187	8060	X	X	X	(X)	(X)	(X)	(X)	X	X	X	/	/
AWI188	8061	X	X	X	X	X	X	X	X	X	X	/	/
AWI189	8064	X	X	X	X	X	(X)	(X)	X	X	X	/	/
AWI190	8068	X	X	X	X	X	X	X	X	X	X	/	/
AAD18	4471	X	X	X	X	X	X	X	X	/	/	/	/
AAD33	24664	X	X	X	X	X	/	/	/	/	/	/	/
AAD40	24668	/	/	/	X	X	X	X	X	X	X	/	/
AAD41	18648	/	/	/	X	X	/	/	/	/	/	/	/
AAD42	18647	/	/	/	X	X	X	X	X	X	X	/	/
AAD43	18649	/	/	/	X	X	X	X	X	/	/	/	/
AAD44	24667	/	/	/	X	/	/	/	/	/	/	/	/
AAD45	24666	/	/	/	X	X	X	X	/	/	/	/	/
FIN04	25161	X	X	X	X	X	/	/	/	/	/	/	/

FIN05	25933	X	/	/	/	/	/	/	/	/	/	/	/
FIN06	25932	X	/	/	/	/	/	/	/	/	/	/	/
FIN07	10855	X	/	/	/	/	/	/	/	/	/	/	/
FIN08	10856	X	X	X	X	X	/	/	/	/	/	/	/
FIN09	5895	X	X	X	/	/	/	/	/	/	/	/	/
FIN10	10858	X	X	X	X	X	/	/	/	/	/	/	/
Buoys reporting		14	11	11	14	13	7	7	9	7	7	/	/
Addnl. without position					+2	+2	+3	+3					

IPAB buoys1996

IPAB No.	Argos PTT	Deployment			Buoy Type	GTS	Drogue	Deployed	P	Ta	SST	W	Other
		First date	Lat	Long									
AWI168	14955	Feb-95	-74.6	312.2	MetOcean	71548	n	on ice	y	y		/	GPS
AWI169	14956	Feb-95	-76.0	310.6	MetOcean	71549	n	on ice	y	y		/	GPS
AWI170	14957	Feb-95	-74.7	302.7	MetOcean	71550	n	on ice	y	y		/	GPS
CRC05	6550	Dec-95	-62.5	79.7	Turo T-701	74537	y	open ocean	y	y	y	/	/
AAD18	4471	Apr-95	-64.6	110.9	CMI	73507	n	on ice	y	y	y	/	/
AAD19	4473	Apr-95	-64.6	120.0	CMI	73508	n	on ice	y	y	y	/	/
AAD32	24665	Aug-95	-64.6	141.2	MetOcean Ice TOGA	74535	n	on ice	y	y	y	/	/
AAD33	24664	Aug-95	-64.5	141.0	MetOcean Ice TOGA	74536	n	on ice	y	y	y	/	/
AAD34	24669	Mar-96	-65.7	150.0	Turo T-AN-302	n	y	ow in ice	y	y	y	/	/
AAD35	24673	Mar-96	-65.7	149.9	Turo T-AN-302	n	y	ow in ice	y	y	y	/	/
AAD36	24672	Apr-96	-65.2	79.3	Turo T-AN-302	n	y	on new ice	y	y	y	/	/
AAD37	24674	Apr-96	-64.3	89.7	Turo T-AN-302	n	y	ow in ice	y	y	y	/	/
AAD38	24670	Apr-96	-63.7	99.9	Turo T-AN-302	n	y	ow in ice	y	y	y	/	/
AAD39	24671	Apr-96	-64.4	114.4	Turo T-AN-302	n	y	on new ice	y	y	y	/	/
FIN04	25161	Jan-96	-73.7	323.1	MetOcean T-916	71558	n	on ice	y	y	/	y	Atm.
FIN05	25933	Jan-96	-73.5	321.8	Technocean	71560	n	on ice	y	y	/	y	Atm.

FIN10	10858	/	X	X	X	X	X	X	X	X	X	X	X
Buoys reporting		13	12	14	18	17	12	10	10	9	9	7	7

IPAB buoys1995

IPAB No.	Argos PTT	Deployment			Buoy Type	GTS	Drogue	Deployed	P	Ta	SST	W	Other
		First date	Lat	Long									
AWI163	8060	Jul-94	-67.9	354.9	MetOcean	71545	n	on ice	y	Y	/	/	GPS
AWI166	8064	Feb-95	-75.9	313.8	DSI	71557	n	on ice	y	/	/	/	/
AWI167	14954	Feb-95	-75.2	308.8	MetOcean	71547	n	on ice	y	Y	/	/	GPS
AWI168	14955	Feb-95	-74.6	312.2	MetOcean	71548	n	on ice	y	Y	/	/	GPS
AWI169	14956	Feb-95	-76.0	310.6	MetOcean	71549	n	on ice	y	Y	/	/	GPS
AWI170	14957	Feb-95	-74.7	302.7	MetOcean	71550	n	on ice	y	Y	/	/	GPS
AWI171	14958	Feb-95	-73.9	300.0	MetOcean	71553	n	on ice	y	Y	/	/	GPS
AWI172	14959	Feb-95	-73.8	302.6	MetOcean	71555	n	on ice	y	Y	/	/	GPS
SPI16	23008	Oct-94	-70.1	204.3	MetOcean	n	n	on ice	y	Y	Y	Y	Atm.
CRC03	23380	Feb-95	-62.4	90.1	Turo T-701	74531	y	open ocean	y	Y	Y	/	/
CRC05	6550	Dec-95	-62.0	79.6	Turo T-701	74537	y	open ocean	y	Y	Y	/	/
AAD15	4475	Mar-95	-66.0	70.0	Turo T-AN-301	74532	y	ow in ice	y	Y	Y	/	/
AAD16	6983	Mar-95	-65.9	145.2	Turo T-AN-302	73510	y	ow in ice	y	Y	Y	/	/
AAD17	6984	Mar-95	-66.0	62.0	Turo T-AN-302	73533	y	ow in ice	y	Y	Y	/	/
AAD18	4471	Apr-95	-64.6	110.9	CMI	73507	n	on ice	y	Y	Y	/	/
AAD19	4473	Apr-95	-64.6	120.0	CMI	73508	n	on ice	y	Y	Y	/	/
AAD20	4474	Apr-95	-65.2	127.8	CMI	73509	n	on ice	y	Y	Y	/	/
AAD21	24663	Aug-95	-64.6	140.3	MetOcean Ice TOGA	74534	n	on ice	y	Y	Y	/	/
AAD22	24773	Aug-95	-64.7	141.7	AAD/Telonics	n	n	on ice	/	/	/	/	GPS
AAD23	24774	Aug-95	-65.0	141.5	AAD/Telonics	n	n	on ice	/	/	Y	/	GPS
AAD24	24775	Aug-95	-65.1	141.3	AAD/Telonics	n	n	on ice	/	Y	Y	Y	GPS

AAD25	24776	Aug-95	-65.1	141.4	AAD/Telonics	n	n	on ice	/	/	/	/	GPS
AAD26	24771	Aug-95	-65.1	141.3	AAD/Telonics	n	n	on ice	/	/	/	/	GPS
AAD27	24772	Aug-95	-65.0	141.6	AAD/Telonics	n	n	on ice	/	/	/	/	GPS
AAD28	24770	Aug-95	-65.0	141.8	AAD/Telonics	n	n	on ice	/	Y	Y	Y	GPS
AAD29	24777	Aug-95	-64.9	141.3	AAD/Telonics	n	n	on ice	/	/	/	/	GPS
AAD30	24777	Aug-95	-64.7	139.5	AAD/Telonics	n	n	on ice	/	/	/	/	GPS
AAD31	24774	Aug-95	-65.1	139.7	AAD/Telonics	n	n	on ice	/	/	Y	/	GPS
AAD32	24665	Aug-95	-64.6	141.2	MetOcean Ice TOGA	74535	n	on ice	y	y	Y	/	/
AAD33	24664	Aug-95	-64.5	141.0	MetOcean Ice TOGA	74536	n	on ice	y	y	Y	/	/

1995 activity

IPAB No.	Argos PTT	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
AWI163	8060	X	X	X	X	X	X	X	/	/	/	/	
AWI166	8064	/	X	X	X	X	X	X	X	X	X	X	X
AWI167	14954	/	X	X	X	X	/	/	/	/	/	/	
AWI168	14955	/	X	X	X	X	X	X	X	X	X	X	X
AWI169	14956	/	X	X	X	X	X	X	X	X	X	X	X
AWI170	14957	/	X	X	X	X	X	X	X	X	X	X	X
AWI171	14958	/	X	X	/	/	/	/	/	/	/	/	/
AWI172	14959	/	X	X	/	/	/	/	/	/	/	/	/
SPI16	23008	X	X	X	X	X	X	X	X	X	X	X	/
CRC03	23380	/	X	X	X	X	X	X	/	/	/	/	/
CRC05	6550	/	/	/	/	/	/	/	/	/	/	/	X
AAD15	4475	/	/	X	X	X	/	/	/	/	/	/	/
AAD16	6983	/	/	X	X	X	X	X	X	X	/	/	/
AAD17	6984	/	/	X	X	X	/	/	/	/	/	/	/
AAD18	4471	/	/	/	X	X	X	X	X	X	X	X	X
AAD19	4473	/	/	/	X	X	X	X	/	/	X	X	X

AAD20	4474	/	/	/	X	X	X	X	X	/	/	/	/
AAD21	24663	/	/	/	/	/	/	X	X	/	/	/	/
AAD22	24773	/	/	/	/	/	/	/	X	/	/	/	/
AAD23	24774	/	/	/	/	/	/	/	X	/	/	/	/
AAD24	24775	/	/	/	/	/	/	/	X	/	/	/	/
AAD25	24776	/	/	/	/	/	/	/	X	/	/	/	/
AAD26	24771	/	/	/	/	/	/	/	X	/	/	/	/
AAD27	24772	/	/	/	/	/	/	/	X	/	/	/	/
AAD28	24770	/	/	/	/	/	/	/	X	/	/	/	/
AAD29	24777	/	/	/	/	/	/	/	X	/	/	/	/
AAD30	24777	/	/	/	/	/	/	/	X	/	/	/	/
AAD31	24774	/	/	/	/	/	/	/	X	/	/	/	/
AAD32	24665	/	/	/	/	/	/	/	X	X	X	X	X
AAD33	24664	/	/	/	/	/	/	/	X	X	X	X	X
Buoys reporting		2	10	13	14	14	12	12	22	9	9	9	9