Mission Types

MT 1a-e: Turbulent and radiative fluxes
MT 2:   Mixed-phase clouds – horizontal phase distribution
MT 3a-e: Polarstern – vertical column
MT 4a-f: Ny Alesund – vertical column
MT 5:   Arctic clouds and precipitation
MT 6:   Arctic clouds and aerosol
MT 7a-b: Air mass pollution and transport
MT 8:   Satellite validation
MT 9:   Microphysical and scattering properties of
                arctic ice crystals
MT 10a-e: Surface albedo

	P5	P6	Duration without	Speed	Distance	Area / type	Altitude	Clouds	Clear Sky	Sea Ice	Near PS	Near NyA	similar to?	Comments
								Weather						
MT1 Calibration 1	X	X	2.0 h	diff.	diff.		diff.	not in situ	opt	opt	no	no		off orograph
MT1 Calibration 2	X	X	1.0 h	diff.	diff.		150 ft	not in situ	opt	opt	no	no		off orograph
MT1-B		X	1.5 h	100-120 kn	160 NM	straight leg	low or cloud level	both		YES	preferred	no		along wind
MT1-C	one or two to add level		1.5 h	100-120 kn		2-3 boxes with 6 NM length	6 levels in BL	both		YES	YES	no	MT3 C/D	along wind
MT1-D	X	X	5.0 h	???	max.	straight leg	diff. Alt	both		YES	no	no		along wind
MT1-E	X	X	0.75 h	160 kn	30 NM	profiles within in box of 30 NM	profiles through cloud layer	YES	no	opt.	preferred	opt.	MT3 A	
MT2		X	1.5 h	160 kn	60+120+90		P5 @10000 ft, const	YES			opt.	opt.		can also be
							P6 @cloud ,various + profile							
MT3 A	X ??? Only P6 ?		0.75 h	140 kn	20 NM (down + up for 2000ft thick	several fast profiles in a box ~20NM	profiles 500 ft per minute	YES	no (once)	opt.	YES	opt.		number of p
MT3 C/D		X	0.75 h	140 kn	6x2 NM	box pattern 6 NM length	different altitudes below-above cloud	YES	no (once)	opt.	YES	opt.	MT1-C	
MT3 E		X	0.5 h	160 kn	30+30+30 NM	straigth legs each 30 NM	P5 @10000 ft, const	YES	no (once)	opt.	YES	opt.	MT4 A MT8???	
							P6 @cloud ,various + profile							
MT4 A	X		1.5 h	120 kn	4x50 NM	cross along and across Kongsfjord	10 000 ft	opt.	opt.	no	opt.	YES	MT3 E	straight alo
MT4 A light	X		0.25 h	120 kn	30 NM	straight along Kongsfjord	10 000 ft	opt.	opt.	no	opt.	YES		
MT4 B		X	0.75 h	160 kn		several fast profiles in a box ~20NM	profiles through cloud layer						MT1-E, MT3	landing app
MT4 D/E		X	0.75 h	140 kn	6x2 NM	box pattern 6 NM length	different altitudes in cloud	YES	no (once)	opt.	opt.	YES	MT1-C, MT3	for low clou
MT4 F		X	0.5 h	160 kn	40+40 NM	straigth leg 30 NM along Kongsfjord	P5 @10000 ft, const	YES	no (once)	opt.	opt.	YES	MT3 E, MT8???	
							P6 @cloud ,various + profile							
MT6		X	2.0 h	140 kn	7x40 NM	15 min horizontal legs	P5 @10000 ft, const	YES	no	opt.	opt.	opt.	any box pattern	
							P6 @different altitudes below-in-above cloud							
MT7 A		X	0.5 h	180 kn ???	90 NM	straight staircases 3min steps	150 ft up to 15 000 ft	no	yes	opt.	opt.	opt.		several prof
MT7 B		X	0.5 h	180 kn ???	45 NM	contineous climb and local staircases 3min st	150 ft up to 10 000 ft	no	yes	opt.	opt.	opt.		North-South
MT8		X	0.5 h	180 kn	90 NM	straight leg along satellite overpass	P5 @10000 ft, const	YES	no	opt.	opt.	opt.		coordinatio
							P6 @cloud profile							

11 flight segments

Streight Legs P5 remote P6 in situ

P5	P6	Min. Duration	Short description (numbers adjustable)	Mission Types
	X	0.5 h	P5 at 10 000 ft for remote sensing	MT2
			P6 in situ cloud at different levels or contineous profiles	MT3-E
				MT4-F
			almost identical to satellite pattern	MT8
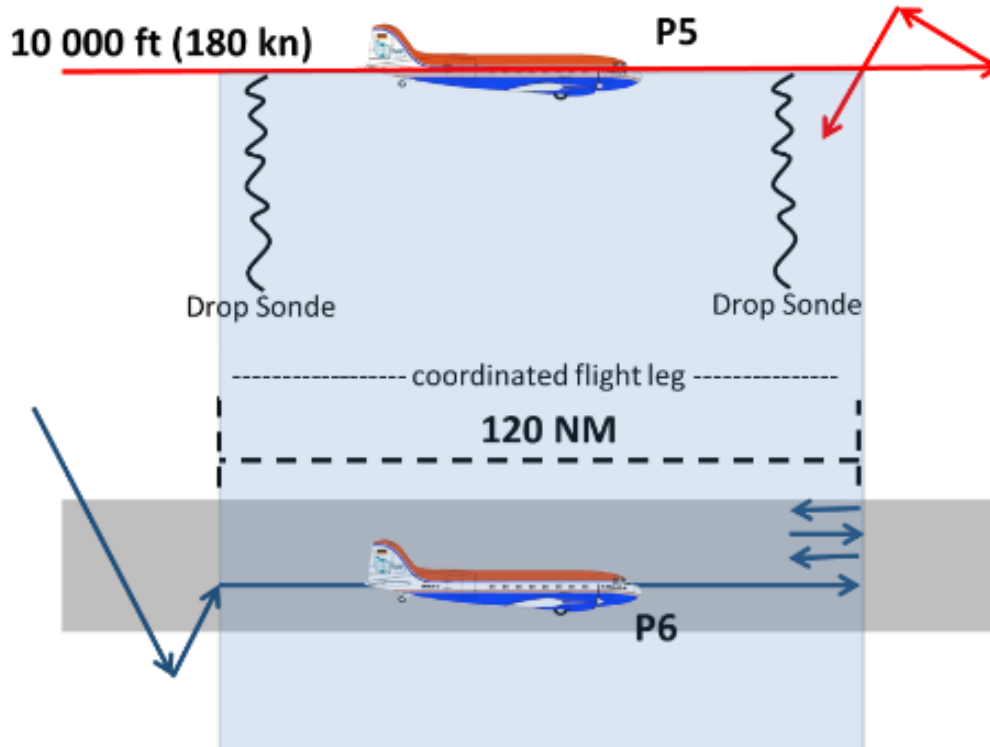
Fast continuous profile in clouds

P5	P6	Min. Duration	Short description (numbers adjustable)	Mission Types
X	X	0.5 h	contineous profile from above to below cloud layer and back	MT1-E
			for second or third profile aircraft should turn to have measurement in the same area	MT3-A
				MT4-B
			alternatively profiles back and forth	

P6 = In Situ
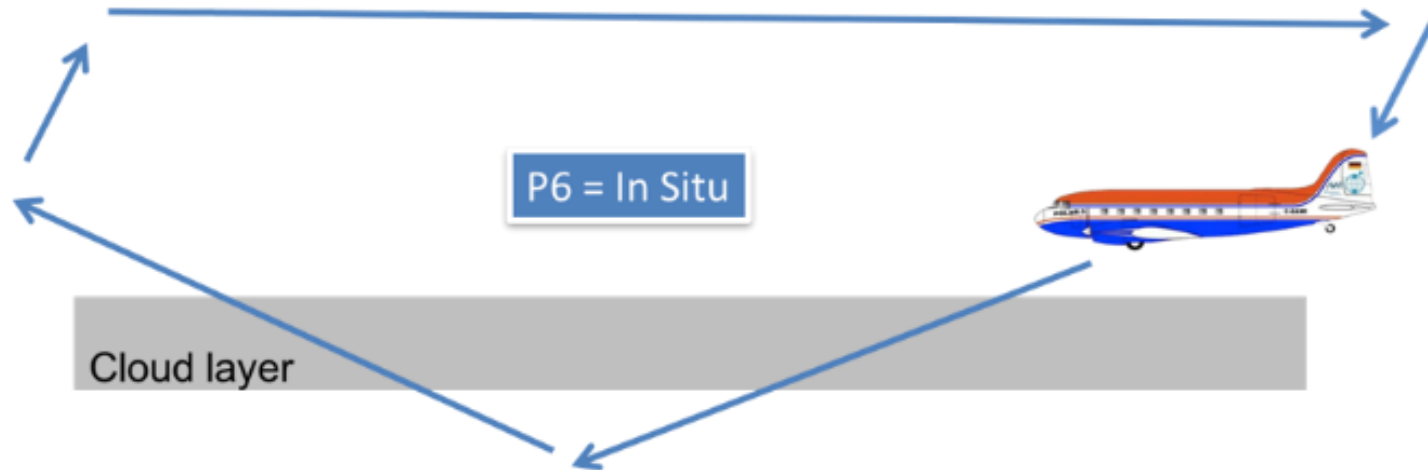
Cloud layer

Box Pattern in/below/above clouds

P5	P6	Min. Duration	Short description (numbers adjustable)	Mission Types
X	X	1.0 h	profiling of cloud layer by straight legs in different altitude but same area	MT1-C
				MT3-C,D
				MT4-D,E
				MT6
				MT9

altitude
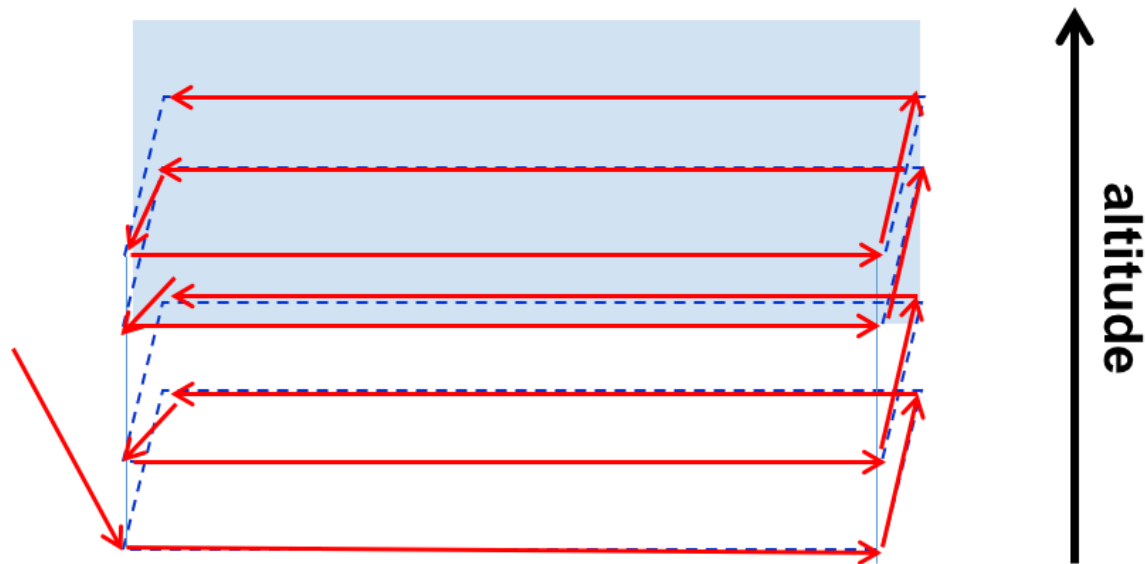
Polarstern/NYA Remote Sensing Overpass

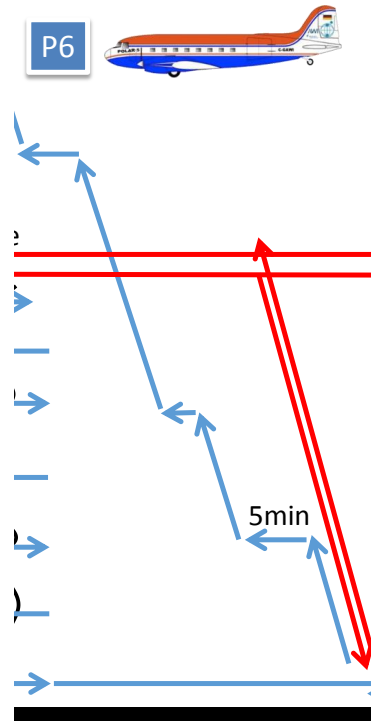| P5	P6	Min. Duration	Short description (numbers adjustable)	Mission Types
X		0.5 h	two perpendicular straight legs at 10 000 ft above the ground stations	MT3-E
				MT4-A
			alternatively only one leg for overpass	
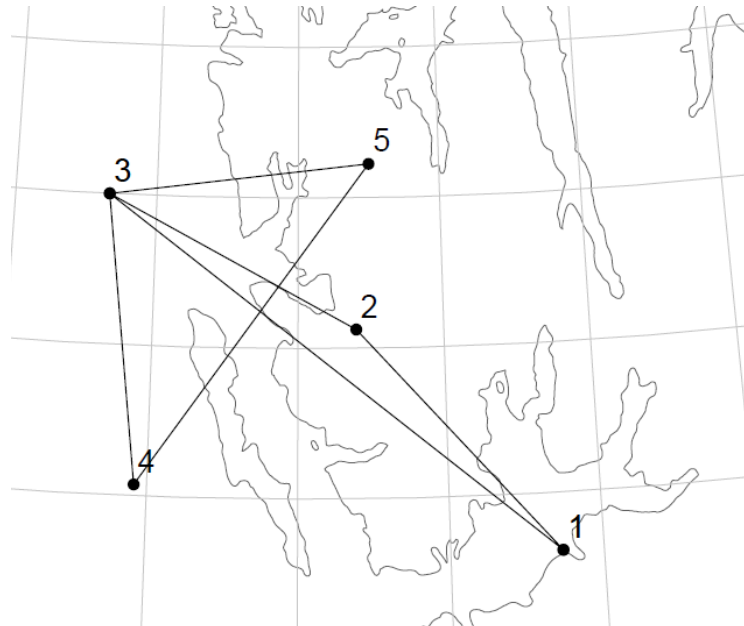
Aerosol Trace gas Profile - local staircase

P5	P6	Min. Duration	Short description (numbers adjustable)	Mission Types
	X	0.5 h	fast climb and 3min legs/steps in different altitudes (max 10 000 ft or only in boundary layer)	MT7-A,B
				MT11
			alternatively also steps upwards	

Drop
Sonde
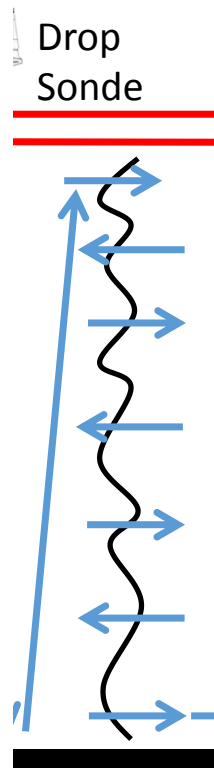
Aerosol Trace gas Profile - straight staircase

P5	P6	Min. Duration	Short description (numbers adjustable)	Mission Types
	X	0.5 h	stepwise climb 3-5min legs in different altitudes (max 15 000 ft)	MT7-A,B
			can be included in any start/ferry	

P6

5min

Satellite overpass

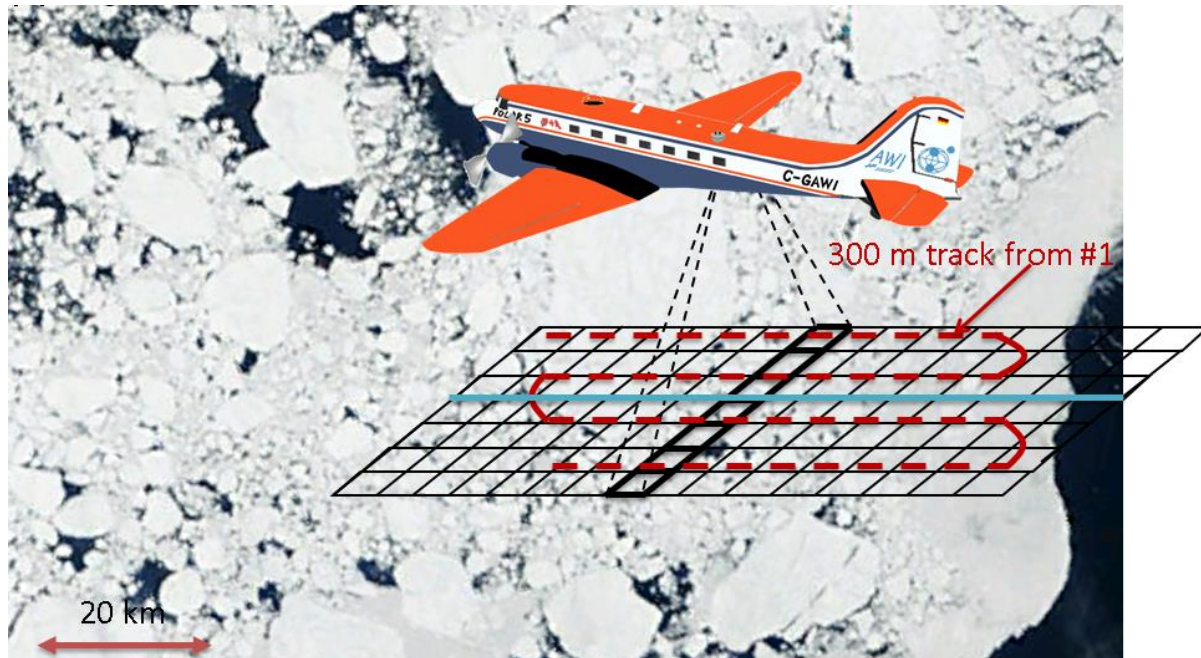| P5	P6	Min. Duration	Short description (numbers adjustable)	Mission Types
	X	0.5 h	P5 at 10 000 ft for remote sensing	MT8
			P6 in situ cloud contineous profiles down+up	
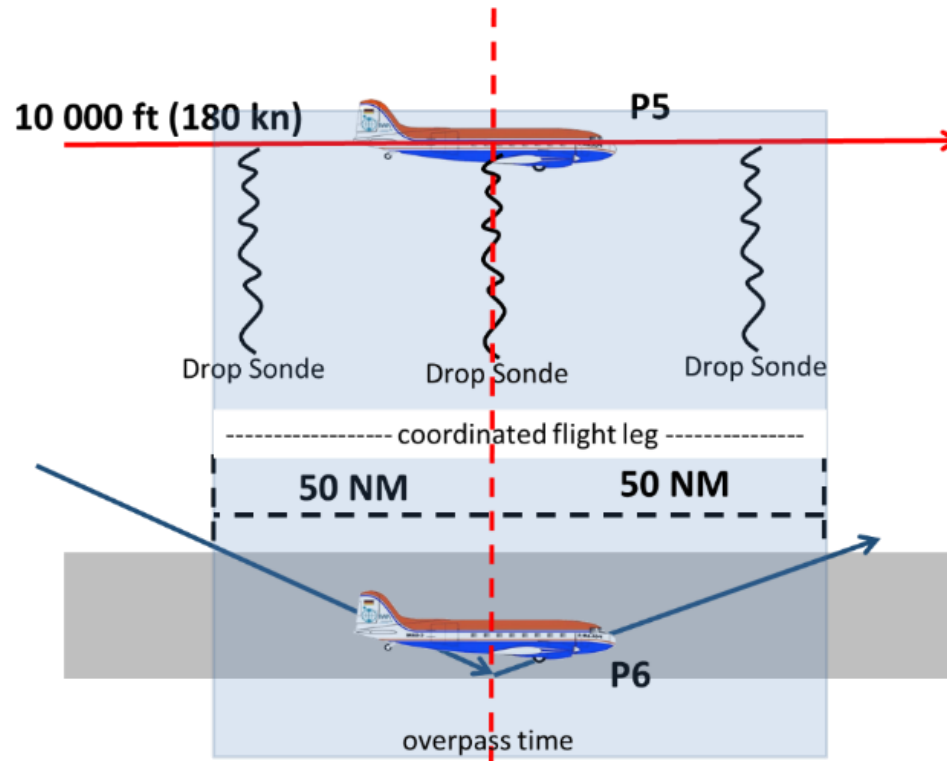
Turbulence - long straight legs

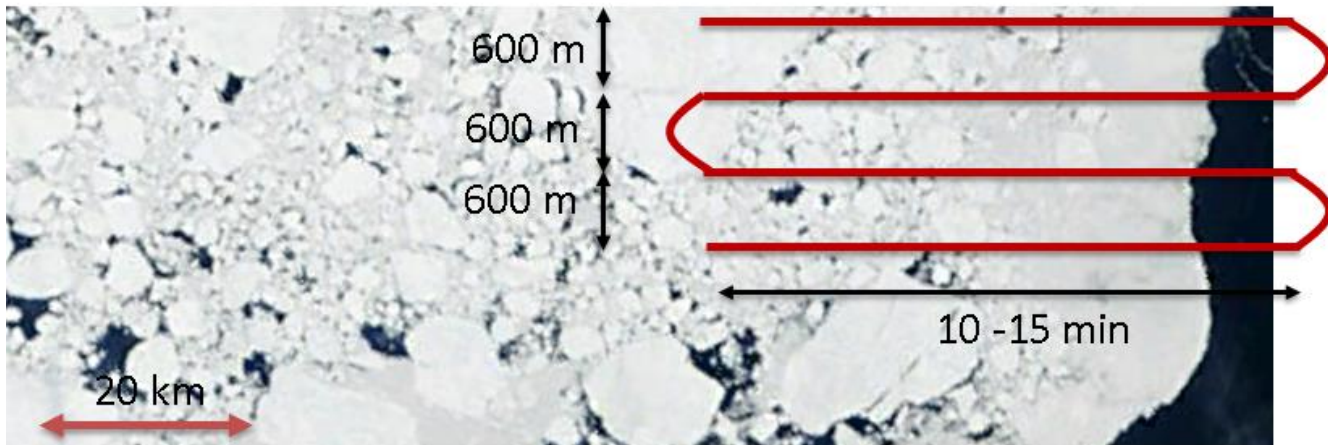| P5	P6	Min. Duration	Short description (numbers adjustable)	Mission Types
	X	1.5 h (MT1-B)	2x80 NM straight legs along wind at 150/500 ft (P5) and 300/650 ft (P6)	MT1-B
		5 h (MT1-D)	2x200 NM straight legs along wind at 10 000/500 ft (P5) and different levels in cloud (P6)	MT1-D

Pattern MT1-B (Horizontal collocated flights) vertical cross-section

Pattern MT1-D (Horizontal collocated flights) vertical cross-section
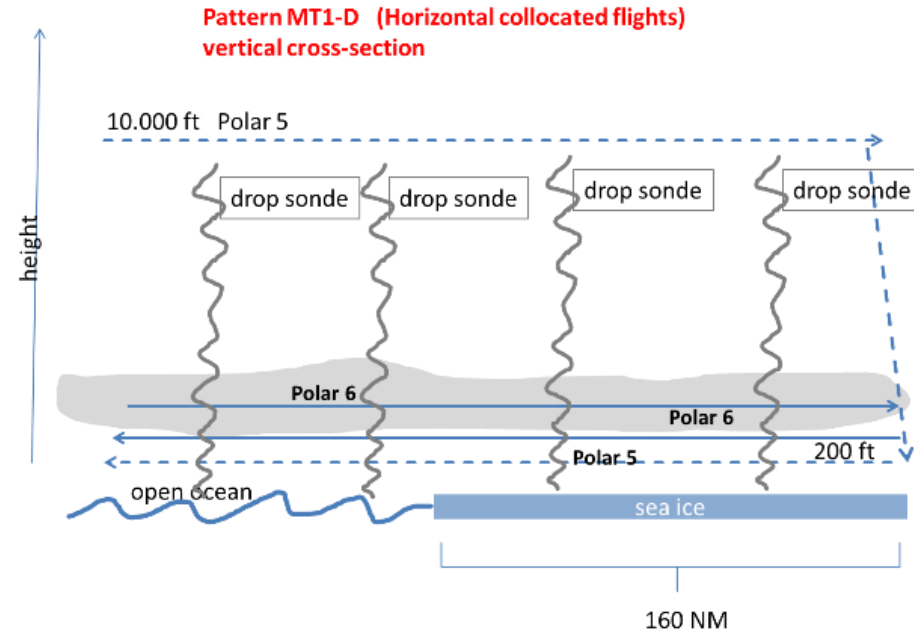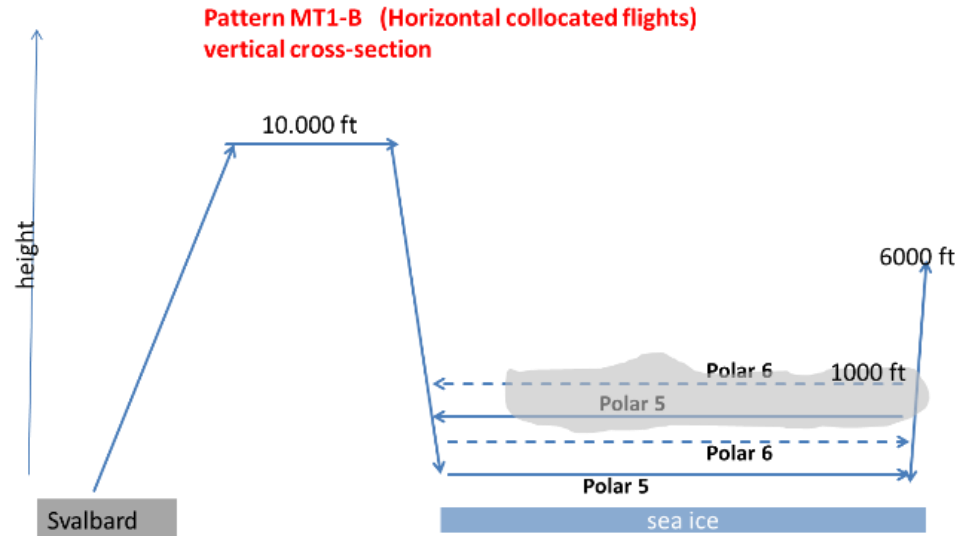
Albedo mapping high

P5	P6	Min. Duration	Short description (numbers adjustable)	Mission Types
X			P5 at 10 000 ft, mapping a 2.5 x 2.5 NM area by straight legs (0.15 NM distance)	
		0.25 h		MT10-C

300 m track from #1

20 km

Albedo leg - low

P5	P6	Min. Duration	Short description (numbers adjustable)	Mission Types
X	x	0.5 h	P5 at 1 000 ft, straight legs 1x75 NM or 3x25 NM	MT10-A,D
			P6 cloud characterization	

P5	P6	Min. Duration	Short description (numbers adjustable)	Mission Types
X	x		P5 at 1 000 ft with Circles 30° bank above homogeneous surface	
		0.25 h		MT10-B,E
			P6 cloud characterization	
			can be included in many turns at low level	
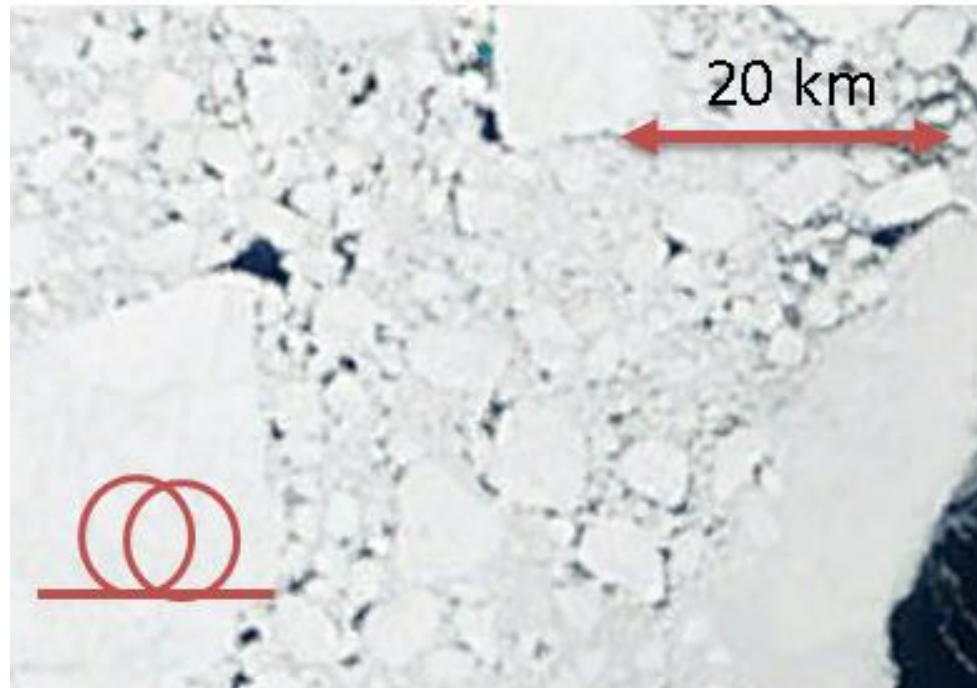
Operators

1) Mission PI   xxxxxx xxxxxx
2) AWI   xxxxxx xxxxxx
3) SMART   xxxxxx xxxxxx
4) Eagle/Hawk   xxxxxx xxxxxx
5) MiRAC   xxxxxx xxxxxx
6) AMALi   xxxxxx xxxxxx

1) Mission PI   xxxxxx xxxxxx
2) AWI   xxxxxx xxxxxx
3) PMS   xxxxxx xxxxxx
4) Aerosol 1   xxxxxx xxxxxx
5) Aerosol 2   xxxxxx xxxxxx
6) A+G   xxxxxx xxxxxx
7) opt.

AWI	SMART/E&H	MiRAC/AMALi	PMS	A+G	Meteo
Martin	Elena	Roland	Delphine	Stephan	Jörg
Christoph	Johannes	Mario	Christophe	Heiko	Dmitry
Daniel	Michael	Tobias	Emma	Johannes	Christof (PI)
	Evi	Tatiana	Martin	Hans-Chr.	
	Manfred (PI)	Friedhelm		Dirk	
	André (PI)				