PO-AK80

APPENDIX C

BEAUFORT SEA SATELLITE IMAGERY

AVAILABLE FOR SUMMER, 1980 STUDIES

BY

WILLIAM J. STRINGER

OCSEAP RU 267

GEOPHYSICAL INSTITUTE

UNIVERSITY OF ALASKA

FAIRBANKS; ALASKA

NOVEMBER, 1980

REGISTERED

OCSEAP Research Unit 267

Satellite Imagery Available for Summer, 1980 Studies

Last summer, we acquired satellite imagery from both Landsat and large field of view weather satellites. The weather satellite images are currently on hand, while the Landsat data is only now arriving in a format which will allow useful duplication for scientific studies. This report lists the data which will soon be available and gives a short description of the various satellite formats and utilities.

Landsat:

Last summer there were two Landsat vehicles providing data for us: Landsat 2 with a working multi-spectral scanner system (MSS) and Landsat 3 with an operational return-beam vidicon system (lWV) and occasionally, an MSS. Each satellite requires 18 days to repeat a particular orbit and the two satellites are situated nine days apart. However, overlap is sufficiently great that a given location on the ground is imaged on three successive days as the satellite path moves westward (about 50 km/day at Beaufort Sea latitudes.)

The MSS system produces the image most people associate with Landsat. Images are produced in four wavelength bands and are generated by a series of line scans across the earth's surfact by photometers. The RBV system is essentially a television camera with a broad band spectral response. While the RBVdata is not available in single spectral band format, the picture elements are 1/4 the size of the MSS picture elements so that detection of smaller objects should be more possible than with theMSS system. (Each image is actually made up of four parts, labeled starting on the upper right hand corner, A,B,C, and D.) However, the brightness

range on the RBV image is so large that it is impossible to simultaneously show details of ice and land. In fact, in order to even show the coast, ice details are lost. Generally, the ice is so overexposed that nearly all ice appears uniformly white. This can be corrected by special photographic processing of retrospective imagery which arrives approximately two to three months after the "quick-look" image is obtained. The effect of this "over-exposure" is that all ice is well-identified, but thickness and structure information is lost.

The "quick-look" imagery was obtained by the Canadian ground station at Price Albert and after photographic prints were made, sent to us by using commercial phone lines and facsimile machines. However, we were not always able to keep an archival copy of these relatively poor images. Instead, often the only copy we had was sent to Deadhorse to help various research units. Because of this, even to have a complete set of images we have had to wait until they became available through regular channels. They are just now becoming available.

Large Field Imagery:

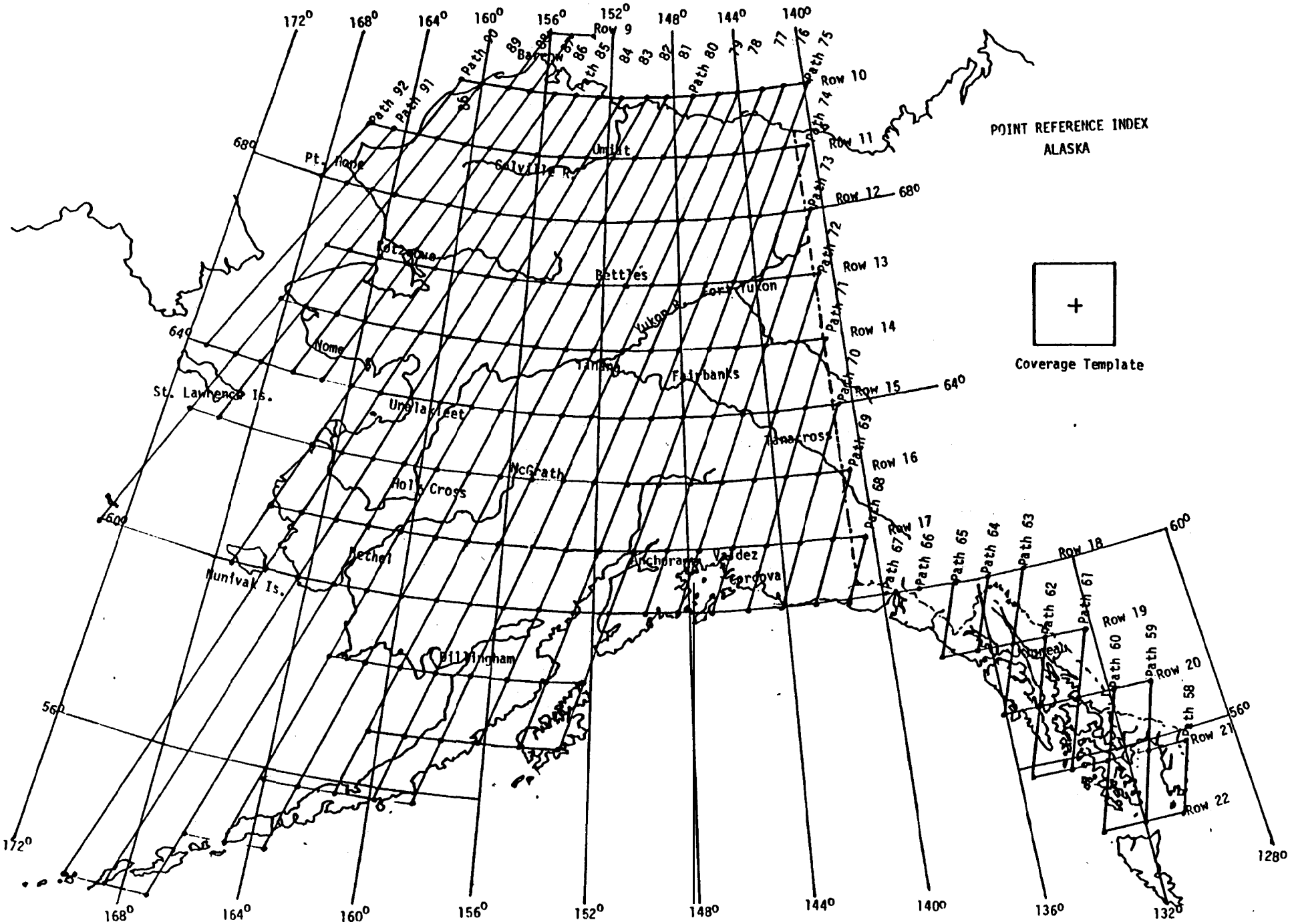
Military and civilian weather satellite imagery is available at approximately 1:10,000,000 scale. This can be enlarged to approximately 1:2,000,000 scale, but since the resolution elements are approximately 400 m square (as opposed to 80 m for Landsat MSS) considerable "graininess" is encountered and details are often obscured. These images are normally obtained daily. They are archived in the form of transparencies. Occasionally, high quality images were enlarged and several copies printed. Copies were sent to various investigators at Deadhorse. Some additional enlargements are still on hand. These are available on a first come, first served basis.

Assistance:

Research Unit 267 maintains a library of satellite images containing all the material described above as soon as it is available. We will be more than happy to conduct data searches, order retrospective imagery or special photographic processing for you.. Our phone number is (907) 479-7487. Mrs. Katie Martz carries out this function. In addition, please feel free to contact me concerning special processing (for instance, computer analysis) of remote sensing data.

The following pages contain a catalog of satellite imagery of the Beaufort Sea coast. Althoughwe do not have all this imagery on hand yet, we believe that this is a complete list of what will soonbe available.

The catalog is preceededby a map showing the location of the Landsat image path and row system. Please note the “coverage template” on the right hand side of this map. This template shows the extent of a single Landsat image. Note that in the Beaufort Sea area a given location has a chance of being imaged on three successive days.


POINT REFERENCE INDEX
ALASKA
Coverage Template
Pt. Hope
Colville R.
Umiat
Kotzebue
Bettles
Fort Yukon
Yukon R.
Nome
Tanana
Fairbanks
St. Lawrence Is.
Unalakleet
Tanacross
McGrath
Holy Cross
Nunivak Is.
Bethel
Anchorage
Valdez
Cordova
Dillingham
Ukmeal
Barrow
Row 9
Row 10
Row 11
Row 12
Row 13
Row 14
Row 15
Row 16
Row 17
Row 18
Row 19
Row 20
Row 21
Row 22
Path 92
Path 91
Path 90
Path 85
Path 80
Path 75
Path 74
Path 73
Path 72
Path 71
Path 70
Path 69
Path 68
Path 67
Path 66
Path 65
Path 64
Path 63
Path 62
Path 61
Path 60
Path 59
Path 58
172°
168°
164°
160°
156°
152°
148°
144°
140°
136°
132°
128°
68°
64°
60°
56°

DATE	LAND SAT IMAGERY			LARGE FIELD IMAGES						REMARKS
	SCENE ID	MSS	RBV	NOAA			DMSP			
		Path/Row	Path/Row,	Pass	IR/Visual		Pass	IR/Visual		
June i				4853	x	x				
June 2				4849	x	x				Mackenzie Bay visible
				4850	x	x				
							4849		x	
June 3				4863	x	x				
				4864	x	x				
							4864		x	
June 4				4877	x	x				
				4878	x	x				
June 5				4892	x	x				
				4893	x	x				
							4892		x	
June 6				4906	x	x				
				4907	x	x				
June 7				4920	x	x				
				4921	x	x				
							4921		x	
June 8				4934	x	x				
				4935	x	x				mostly clear
							4935		x	
June 9				4948	x	x				
				4949	x	x				partly clear
				4950	x	x				
							4949		x	
June 10				4963	x	x				partly clear
				4964	x	x				partly clear
June 11				4977	x	x				
				4978	x	x				
							4977		x	
									x	
June 12				4991	x	x				Mackenzie Bay partly clear
				4992	x	x				coastline partly clear
							4992		x	
June 13				5005	x	x				
				5006	x	x				Mackenzie Bay partly clear
							5295		x	

DATE	LANDSAT IMAGERY SCENE ID	MSS Path/Row	RBV Path/Row	LARGE FIELD IMAGES NOAA Pass	IR/Visual		DMSP Pass	IR/Visual		REMARKS
June 14				5020	x	x				
				5021.	x	x				
June 15				5034	x	x				clear
				5035	x	x				clear
June 16				5048	x	x				partly clear
				5049	x	x				Barrow to Flaxman clear
June 17				5062	x	x				small amount visible
				5063	x	x				Barrow, Mackenzie clear
June 18				5077	x	x				clear
June 19				5091		x				
				5092	x	x				partly clear
June 20				5105	x	x				
				5106	x	x				
June 21				5119	x	x				
				5120	x	x				
				5127		x				
							5120		x	
June 22				5133	x	x				
				5134	x	x				
				5135	x	x				
June 23				5148	x	x				
				5149	x	x				
June 24				5162	x	x				
June 25				5163	x	x				
				5176	x	x				
June 26				5177	x	x				Barrow to Mackenzie Bay clear
				5190	x	x				
				5191	x	x				Barrow to Mackenzie Bay/ " mostly clear
June 27				5205	x	x				Barrow to Mackenzie Bay/ Mostly clear
June 28				5219	x	x				
				5220	x	x				
							5508		x	
June 29				5233	x	x				Mackenzie Bay clear
				5234	x	x				to Mackenzie, mostly clear
June 30				5247	x	x				Mackenzie Bay, partly clear
				5248	x	x				partly clear

DATE	LANDSAT IMAGERY			LARGE FIELD IMAGES						REMARKS
	SCENE ID	MSS	RBV	NOAA			DMSP			
		Path/Row	Path/Row	Pass	IR/Visual		Pass	IR/Visual		
July 1	30849 210819		82/9C							cloudy
	30849 210822		82/9D							cloudy
	30849 210831		82/10A							scattered clouds
	30849 210835		82/10B							scattered clouds
	30849 210844		82/10C							scattered clouds
				5261	x	x				
				5262	x	x				Barrow to Mackenzie clear
							5263		x	
	21987 20231	73/8								scattered clouds
	21987 20233	73/9								scattered clouds
	30850 211429		83/10D							cloudy
	21988 20292	74/9								cloudy
	21988 20294	74/10								clear
	21988 20301	74/11								clear
	21988 04502	145/234*								clear
	21988 04504	145/235*								scattered clouds
	21988 04511	145/236*								clear
				5275	x					clear
				5276	x	x				Mackenzie Bay mostly clear
	21989 20350	75/9								clear
	21989 20353	75/10								cloudy
										cloudy
				5290	x	x				partly clear
				5291	x	x				partly clear

(*) denotes northbound night pass

DATE	LANDSAT IMAGERY			LARGE FIELD IMAGES				REMARKS
	SCENE ID	MSS	RBV	NOAA		DMSP		
		Path/Row	Path/Ro	Pass	IR/Visual	Pass	IR/Visual	
July 4	21990 05021	147/235*						cloudy
	21990 05024	147/236*						cloudy
	21990 20402	76/8						clear
	21990 20405	76/9						scattered clouds
	21990 20411	76/10						scattered clouds
				5304	x x			
				530:	x x			
July 5	21991 20461"	77/8						clear
	21991 20463	77/9						cloudy
	21991 20470	77/10						scattered clouds
	30853 213109		86/9D					cloudy
				5319	x x			mostly cloudy
				5320	x x			
July 6	21992 20515"	78/8						cloudy
	21992 20522"	78/9						cloudy
	21993 20583	78/10						clear
				5332	x x			
				5333	x x			mostly cloudy
				5334	-x- x			
July 7	21993 20574	79/8						cloudy
	21993 20580	79/9						cloudy
	21993 20583	79/10						clear
				5347	x x			
				5348	.x- x			
July 8	21994 21032	80/8						cloudy
	21994 21041	80/10						cloudy
				5361	X x			
				5362	x x			partly clear

*) denote: orthbound ight pas:

DATE	LANDSAT IMAGERY			LARGE FIELD IMAGES						REMARKS
	SCENE ID	MSS	RBV	NOAA			DMSP			
		Path/Row	Path/Row	Pass	IR/Visual		Pass	IR/Visual		
July 9				5375	x	x				
				5376						Mostly clear
July 10	21996 21150	82/8								cloudy
	21996 21152	82/9								cloudy
	21996 21155	82/10								cloudy
				5390	x	x				
July 11	21997 21211	83/9								partly clear
	21997 21213	83/10								scattered clouds
				5404	x	x				scattered clouds
				5405	x	x				
							5692		x	
July 12	30860 202703		75/8A							cloudy
	30860 202706		75/8B							clear
	30860 202715		75/8C							cloudy
	30860 202719		75/8D							clear
	30860 202731		75/9B							clear
	30860 202744		75/9D							scattered clouds
				5418	x	x				
				5433	x	x				
				5447						
	22001 21434	87/8								cloudy
				5460	x	x				
				5461	x	x				
				5462	x	x				

DATE	LANDSAT IMAGERY			LARGE FIELD IMAGES						REMARKS
	SCENE ID	MSS	RBV	NOAA			DMSP			
		Path/Row	Path/Row	Pass	IR/Visual		Pass	IR/Visual		
July 16	30864 205031		79/9A							cloudy
	30864 205031		79/9B							cloudy
	30864 205052		79/10A							scattered clouds
	30864 205056		79/10B							clear
	30864 205428		79/18D							scattered clouds
	30864 205437		79/19A							cloudy
				5475	x	x				partly clear
				5476	x					
[illegible]	[illegible]		[illegible]							cloudy
	30865 205613		80/9B							clear
	30865 205622		80/9C							clear
	30865 205625		80/9D							clear
	30865 205634		80/10A							scattered clouds
	30865 205638		80/10B							clear
				5489	x	x				partly clear
				5490	x	x				partly clear
							5772			
July 18	[illegible] 20121	81/10								scattered clouds
	30866 210206		81/10B							scattered clouds
	30866 210215		81/10C							scattered clouds
	30866 210219		81/10D							scattered clouds
				5504	x	x				
				5505	x					
July 19	30867 210810		82/10C							scattered clouds
	30867 210813		82/10D							scattered clouds
	30867 210822		82/11A							scattered clouds
	30867 210826		82/11B							scattered clouds
	30867 210835		82/11C							clear
	30867 210838		82/11D							clear

DATE	LANDSAT IMAGERY			LARGE FIELD IMAGES						REMARKS
	SCENE ID	MSS	RBV	NOAA			DMSP			
		Path/Row	Path/Row	Pass	IR/Visual		Pass	IR/Visual		
June 19				5518	x	x				
				5519	x	x				
July 20				5532	x	x				
				5533	x	x				
July 21	30869 211858		84/9D							cloudy
	30869 211910		84/10B							cloudy
	22007 20350	75/8								scattered clouds
	22007 20352	75/9								clear
	22007 20355	75/10								scattered clouds
	22007 20361	75/11								scattered clouds
				5547	x	x				
July 22	22008 0S021	147/234*								scattered clouds
	22008 05023	147/235*								scattered clouds
	22008 05030	147/236*								scattered clouds
				5561	x	x				
July 23	22010 20530	78/10								cloudy
	22010 20533.	78/11								clear
	30871 213018		86/9C							cloudy
	30871 213022		86/9D							, scattered clouds
	30871 213031		86/10A							cloudy
	30871 213034		86/10B							clear
	22010 05134	149/234*								cloudy
	22010 05140	149/235*								scattered clouds
	22010 05143	149/236*								cloudy
				5575	x	x				
July 24				5589	x	x				
July 25				5603	x	x				
				5604	x	x				
July 26				5617	x	x				
				5618	x	x				
							5909		x	
July 27	22013 21093	81/8								scattered clouds
	22013 21095	81/9								scattered clouds
				5632	x	x				

*) denote: orthbound ight pass

DATE	LANDSAT IMAGERY SCENE ID	MSS Path/Row	RBv Path/Row	LARGE FIELD IMAGES NOAA Pass	IR	Visual	DMSP Pass	I	Visual	REMARKS
July 28				5646	x	x				
				5647		x				
July 29	2201s 21212	83/9								cloudy
				5660	x	X				
				5661	x	x				
July 30	22016 21264	84/8								clear
	22016 21271	84/9								**scattered clouds**
				5675	x	x				
July 31	22017 21323	85/8								scattered clouds
	22017 21325	85/9								cloudy
	22017 21332	85/10								cloudy
				5689	x	x				
August 1	22018 21381	86/8								scattered clouds
	22018 21390	86/10								cloudy
	22018 21393	86/11								clear
				5703	x	x				
August 2	22019 21440	87/8								cloudy
	22019 21442	87/9								cloudy
	22019 21445	87/10								cloudy
				5717	x	x				partly clear
				5718	x	x				
August 3	30882 204939		-m7Fir-							cloudy
				5731	x	x				
				5732	x	x				
August 4				5745	x	x				
				5746	x	x				
August 5	30884 250059		81/9C							scattered clouds
	30884 210111		81/10A							scattered clouds
	30884 210115		81/10B							scattered clouds
				5759	x	x				
				5760	x	x				
							6048			
August 6				5773	x	X				
				5774	x	X				

DATE	LANDSAT IMAGERY SCENE ID	MSS Path/Row	RBV Path/Row	LARGE FIELD IMAGES. NOAA Pass	IR	Visual	DMSP Pass	I	/Visual	REMARKS
August 7	22024 04511	145/235*								clear
				5788	x	X				
				5789	x	X				
							,5559		X	
'-August 8	22025 04563	146/234*								scattered clouds
	22025 04570	146/235*								scattered clouds
				5803	x	X				
August 9				5817	x	X				
August 10				5831	x	X				
August 11				5845	x	X				
				5846	x	X				
August 12				5859	x	X				
				5860	x	X				
August 13	22030 21040	80/8								cloudy
	22030 05255	151/236*								scattered clouds
				5873	x	X				
				5874	x	X				
August 14				5887	x	X				
				5888	x	X				
August 15	22032 21153	82/8								scattered clouds "' "'
	22032 21155	82/9								cloudy
	22032 21162	82/10								cloudy
	22032 05372	153/235*								cloudy
				5901	x	X				
				5902	x	X				
				5903		X				
August 16	22033 21211	83/8								cloudy
	22033 21213	83/9								cloudy
				5916	X	X				
				5917	X	X				
							5902		X	
August 17				5930	x	X				
				5931	x					
August 18				5945	x	X				

*)denote: orthbound ight pas:

DATE	LANDSAT IMAGERY			LARGE FIELD IMAGES						REMARKS
	SCENE ID	MSS	RBV	NOAA			DMSP			
		Path/Row	Path/Row	Pass	IR/Visual		Pass	IR/Visual		
August 19	30898 20375	77/10								clear/partial
	22036 21382	86/8								cloudy
	22036 21385	86/9								cloudy
	22036 21391	86/10								scattered clouds
	22036 21394	86/11								scattered clouds
				5959	x	x				
				5960	x	x				
August 20	30899 20432	78/10								clear/partial
				5973	x	x				partly clear
				5974	x	x				
							5944		x	
							5973		x	
August 21	30900 204841		79/9C							cloudy
	30900 204844		79/9D							scattered clouds
	30900 20490	79/10								clear
	30900 204853		79/10A							cloudy
	30900 204857		79/10B							cloudy
	30900 204906		79/lot							cloudy
	30900 204909		79/10D							scattered clouds
				5987	x	x				
				5988	x	x				
							5987		x	
August 22	30901 245427		80/9C							scattered clouds
	30901 205430		80/9D							clear
	30901 21544	80/10								cloudy
	30901 205433		80/10A							scattered clouds
	30901 205443		80/10B							scattered clouds
	30901 205352		80/10C							scattered clouds
	30901 205455		80/10D							scattered clouds
				6001	x	x				
				6002	x	x				
							6001		x	
August 23	30902 21003	81/10								clear
	30902 210011		81/9C							clear
	30902 210014		81/9D							clear
	30902 210023		81/10A							scattered clouds

DATE	LANDSAT IMAGERY			LARGE FIELD IMAGES						REMARKS
	SCENE ID	MSS	RBV	NOAA			DMSP			
		Path/Row	Path/Row	Pass	IR	Visual	Pass	IR	Visual	
August 23	30902 210027		81/10B							scattered clouds
	30902 210039		81/10D							scattered clouds
				6015	x	x				
				6016	x	x				partly clear
							6015		x	
August 24				6030	x	x				
August 25				6044	x	x				
				6045	x	x				
August 26				6058	x	x				
				6059	x	x				
							6058		x	
August 27				6073	x	x				
August 28				6087	x	x				
August 29				6101	x	x				
				6102	x	x				
August 30				6115	x	x				
				6116	x	x				
September 1				6143	x	x				
				6144	x	x				
September 2				6157	x	x				
				6158	x	x				
September 3				6172	x	x				partly cloudy
				*	x	x				partly cloudy
September 4					x	x				Mackenzie Bay partly clear
				6187	x	x				
September 5				6201	x	x				
September 6				6215	x	x				
September 7				29	x	x				
				6230	x	x				
September 8				6243	x	x				
				6244	x	x				
September 9				6257	x	x				

MTE	LAND SAT IMAGERY			LARGE FIELD IMAGES						REMARKS
	SCENE ID	MSS	RBV	NOAA			DMSP			
		Path/Row	Path/Row	Pass	IR/Visual		Pass	IR/Visual		
September 10				6271	x	x				
				6272	x	x				
September 11				6286	x	x				
				6287	x	x				
September 12				6301	x	x				
September 13				6314	x	x				
				6315	x	x				
September 14				6329	x	x				
September 1S				6343	x	x				
				6344	x	x				
September 16				6357	x	x				
September 17				6371	x	x				
				6372	x	x				
September 18				6385	x	x				
				6386	x	x				
September 19				6399	x	x				
				6400	x	x				
	22067 21095	81/8								cloudy
	22067 21102	81/9								partly cloudy
September 20	22068 21160	82/9								clear
				6414	x	x				
				6415	x	x				
September 21	22069 21212	83/8								cloudy
	22069 21215	83/9								clear
	22069 21221	83/10								cloudy
				6427		x				
				6428	x	x				
				6429	x	x				
September 22				6442	x	x				
				6443	x	x				
September 23				6457	x	x				
September 24				6471	x	x				
September 25	30935 20422	78/10								clear/partial
				6485	x	x				
				6486	x	x				
September 26				6499	x	x				
				6500	x	x				

DATE	LAND SAT 1MAGER%			LARGE FIELD IMAGEs ,				REMARKS
	SCENE ID	MSS	RBv	NOAA		DMSP		
		Path/Row	Path/Row	Pass	IR/Visual	Pass	11 /Visual	
September 27				6513	x x			
September 28				6514	x x			
				6527	-i- x			
September 29				6528	x x			
				6541	-i- x			
September 30				6542	x x			
				6556	x x			
				6557	x x			