

**Natural Resources Canada
Geomatics Canada
Centre for topographic information
Contrat 23258-055970/001/MTB**

**Interpretation guide of natural geographic features from ETM+
Landsat imagery and aerial photography: intermittent water**

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**Sherbrooke
10^e version, 17-06-2005**

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Introduction

The purpose of this project is to create a visual interpretative guide to the natural geographical entities in the geospatial database (GDB) using Landsat7 ETM+ imagery and aerial photography. The methodology and information fact sheet were developed by Provencher and Dubois (2004a), and the application of this procedure to a test case has already garnered a consensus among the staff of CTI at Sherbrooke (Provencher and Dubois (2004b). The meanings of the sections of the fact sheets are explained in the appendix.

The eight natural entities in the GDB (Centre for Topographic Information, 2004) fall under eight themes that are grouped into three domains: hydrography, landforms, and vegetation (Table 1). In practice, for interpretive purposes they are often subdivided further and represented by 17 fact sheets.

N.B.: Elaboration of the illustrative examples and potential elements of confusion was constrained by the limited time allocated to this guide. It is recommended that they be supplemented as other cases are documented, especially from Landsat ETM+ imagery.

Table 1: Hierarchy of natural geographical entities

Domain	Theme	Sub-theme	GDB entity	Fact sheet	
Hydrography	Watercourse	Perennial watercourse	Permanent water	Permanent water	
		Alluvium	Intermittent water	Intermittent water	
		Waterfall	Water disturbance	Waterfalls and rapids	
			Rapids	Water disturbance	Waterfalls and rapids
	Waterbody	Perennial freshwater body		Permanent water	Permanent water
			Alluvium, rocky surface	Intermittent water	Intermittent water
		Seawater	Permanent water	Permanent water	
		Alluvium, rocky surface (tidal flat)	Intermittent water	Intermittent water	
		Reef	Water disturbance	Reef	
		Wetland	Tundra pond		Saturated soil
	Palsa bog			Saturated soil	Palsa bog
	Marsh, swamp, and uniform peat bog (wetland)			Saturated soil	Wetlands (marshes, swamps, and bogs)
			String bog	Saturated soil	Wetlands (string bog)
Landforms	Glacial landform	Glacial debris	Landform	Glacial debris	
		Esker	Landform	Esker	
		Moraine	Landform	Moraine	
	Periglacial landform	Glacier, glacial ice cap, and ice shelf		Permanent snow and ice	Permanent snow and ice
			Polygonal soil	Landform	Tundra polygon
		Pingo	Landform	Pingo	
		Littoral landform	Barrier beach and spit	Landform (sand)	Barrier beach and spit
Eolian landform	Dunes	Landform (sand)	Dunes		
Vegetation	Wooded region		Wooded region	Wooded region	

1- Name of the entity

Intermittent water

2- Hierarchy

Hydrography – watercourse or waterbody – intermittent water – alluvium or rocky surfaces

3- Definitions

A watercourse or watercourse segment, or waterbody or waterbody segment, that periodically dries out over the course of normal seasonal or annual fluctuations in runoff (low water), rainfall, or tides. The upper limit of the intermittent water surface corresponds to the mean high-water level and its lower limit to the mean low-water level (permanent water).

Desiccated zones may be in unconsolidated formations or bedrock substrate. Unconsolidated formations are represented by alluvium, lacustrine flats, and sandy or gravelly foreshores, while the rocky substrate is represented by lacustrine flats and rocky foreshores, as well as dried-up stretches of karstic watercourses and waterbodies. Dry sectors are generally devoid of vegetation, at least to a large extent.

Alluvium

Sediments of any particle size, but usually sandy or gravelly, that are deposited by watercourses and waterbodies.

Foreshore

The portion of the shore of oceans, seas, and estuaries that lies between average high tide and average low tide (intertidal zone). The foreshore may be as rocky as the unconsolidated formations.

Lacustrine flats

The part of a waterbody that is above water during periods of low rainfall or runoff, which may persist for several years. Hydroelectric reservoirs or lakes with fluctuating levels situated in karstic regions are often susceptible to falling water levels.

Karst

A region of limestone bedrock characterized by a surface dotted with variably-sized depressions left by dissolved rock and a hydrographic network that is disjoint because many watercourse segments run underground. Karstic regions feature many dry riverbeds and waterbodies with variable water levels.

4- Summary table of elements of identification

Table 2 : Overview of the elements of identification of intermittent water (watercourse and waterbody)

Shape	View from top: <ul style="list-style-type: none"> - linear and winding strips on the border of permanent water - occasionally the entire feature
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Dimensions	Strip: Length: decametres to kilometres Width: metres to kilometres Entire area: Diameter: decametres
Topographic position	Valley bottom or topographic depression
Drainage	Not applicable
Vegetation	Generally absent Sometimes aquatic vegetation on the bank Often obscured by the canopy
Emplacement process	Headward fluvial erosion
State	All environments, mainly marine and fluvial
Spatio-temporal variations	Marine environment: Daily variations Lacustrine and fluvial environments: Seasonal variations in water levels
Environment	Generally on the border of permanent water
Identification on imagery	Inferior limit:: Band 4 (permanent water) Superior limit: combination of bands 4-3-2 (land vegetation) Intermittent zone: combination of bands 4-3-2 (bare and dry surface) or band 5 (damp sand)
Identification with B/W aerial photography	Hue: light to mid grey or dark Texture: smooth to rough depending on surface nature Slope: low towards permanent water
Elements of confusion	Sand, rocky surface, marshes, vegetation, water level, permanent water

5- Characteristics

5.1- Specific to the entity

5.1.1- Shape

Sectors of intermittent water are generally devoid of vegetation and lie in strips of variable width along the edge of a watercourse or waterbody. They may, however, be more rounded in shape if they are the result of the complete, or nearly complete, desiccation of a lake or a pond.

5.1.2- Dimensions

A) Watercourse

Length: from several decametres to several kilometres.

Width: from approximately one metre for small streams to several hundred metres for estuarine tidal flats. However, the degree of precision attainable for distinguishing zones of intermittent water depends on the spatial resolution of the imagery (15 m) or photography (ca. 1 m).

B) Waterbody

For a **bordering strip**:

- length: from several metres to several kilometres;
- width: from several metres to several hundred metres. It is, however, difficult, if not impossible, to identify

sectors less than 15 m wide on ETM+ imagery.

For an **entire surface**:

- diameter: from several decametres to several hundred metres.

5.1.3- Topographic position

Zones of intermittent water in, or beside, **watercourses** are found in valley bottoms, between the base-water and the low-water channels (cf. the *permanent water* fact sheet, Section 5.2.3). Intermittent **waterbodies**, or waterbody segments, occupy depressions in any topographic position (cf. the *permanent water* fact sheet, Section 5.1.3).

5.1.4- Drainage

Drainage of zones of intermittent water varies as a function of the type of rocky substrate or unconsolidated formation, and of the slope. However, drainage may be construed as poor during certain periods, which can vary in length from a half a day (tide) to several days (river banks and lake shores). This is the dehydration period that follows the retreat of the waters.

5.1.5- Vegetation

Zones of intermittent water are typically devoid of vegetation. We may, however, encounter sectors covered with aquatic vegetation during low tides (intertidal or infra-littoral algae). In the case of lakes and watercourses, patchy vegetation may grow in exposed areas.

In wooded regions, narrow intermittent watercourses are frequently entirely or substantially obscured by the canopy.

5.2- Relative to the entity's dynamics

5.2.1- Emplacement process

Sectors of intermittent water occur when the surface of a waterbody, or of a stretch of permanent watercourse, falls—potentially to the point of temporarily drying out completely.

A small lake or pond may temporarily dry up for a variety of reasons: extremely low water level recurring annually in karstic regions, temporary draining due to human activity, accidental outflow resulting from the breach of a moraine, ice, manmade, or beaver dam.

Part of a permanent watercourse may dry up, especially in its upper reaches, if rainfall fails for an extended duration, if water drains underground during periods of drought in karstic formations, or if channels have been recently abandoned in areas of high sedimentation, such as floodplains, glacial outwash plains downstream from glaciers, or active deltas.

Periodic variations in water levels of permanent watercourses or waterbodies expose zones of rock, alluvium, and various types of unconsolidated deposits. These zones are typically located near the edges, but they may be closer to the centre where they appear as banks of sand, gravel, or boulders, or even rock outcrops.

Karst (Figure 1) is particularly vulnerable to variations in water levels (cf. the *permanent water* fact sheet, Section 5.2.1 and Figure 8 for a schematic representation of a karstic landform).

5.2.2- State

Zones of intermittent water can be found in all milieus, especially the marine environment and areas with high variability in rainfall. Most are periodically regular, but some are sporadic and caused by chance events, which can affect the edges of watercourses and waterbodies and the upper reaches of permanent watercourses. However, a zone designated as intermittent may, in fact, recently have become unwatered on a permanent basis. This could occur, for example, if a waterbody is drained by an unattended breach in a dam or by the definitive abandonment of a channel. Zones of intermittent water may thus be inherited formations, but they are also constantly being created and disappearing as a function of geomorphic and rainfall dynamics and human activity.

5.2.3- Spatio-temporal variations

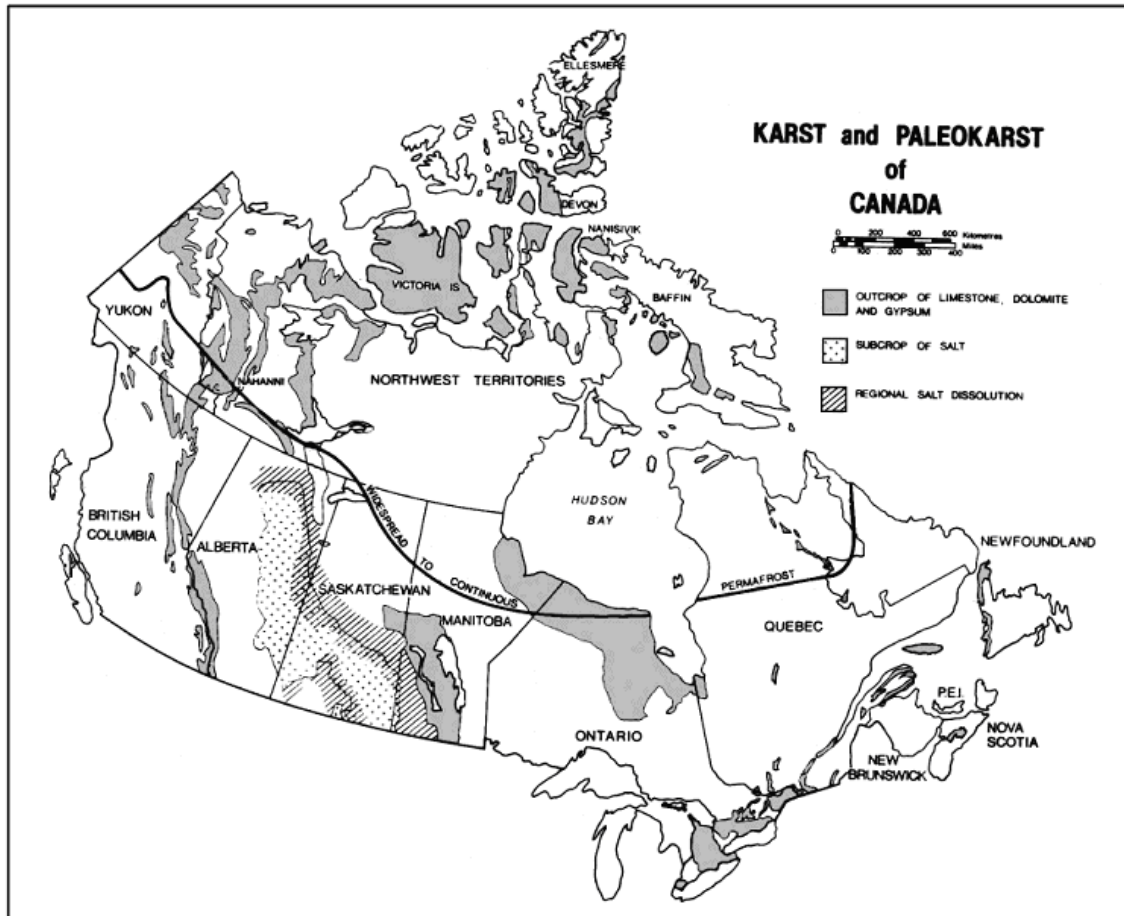
In fluvial and lacustrine environments, variations in water levels are determined by the volume of precipitations and the spring thaw of the snow cover. Typically, these variations are of short duration (a few days) in the case of watercourses and fluvial lakes, but they can last longer in lakes (from several days to a few weeks), since the reaction time of the latter is slower.

Except in the case of lakes that are regulated by dams, water levels gradually ebb during the summer period. This lower water level presents ideal conditions for observing zones of intermittent water.

Water level variations in marine environments are daily (diurnal and semi-diurnal tides) and seasonal (spring and neap tides). The summer neap tide and low tide periods present ideal conditions for observing intermittent water zones (foreshore and tidal flats).

5.3- Relative to the environment

Zones of intermittent water are found in all environments, especially on the edges of permanent watercourses and waterbodies.



Modifié de Ford (1989, p. 314)

Figure 1 : Main limestone regions in Canada

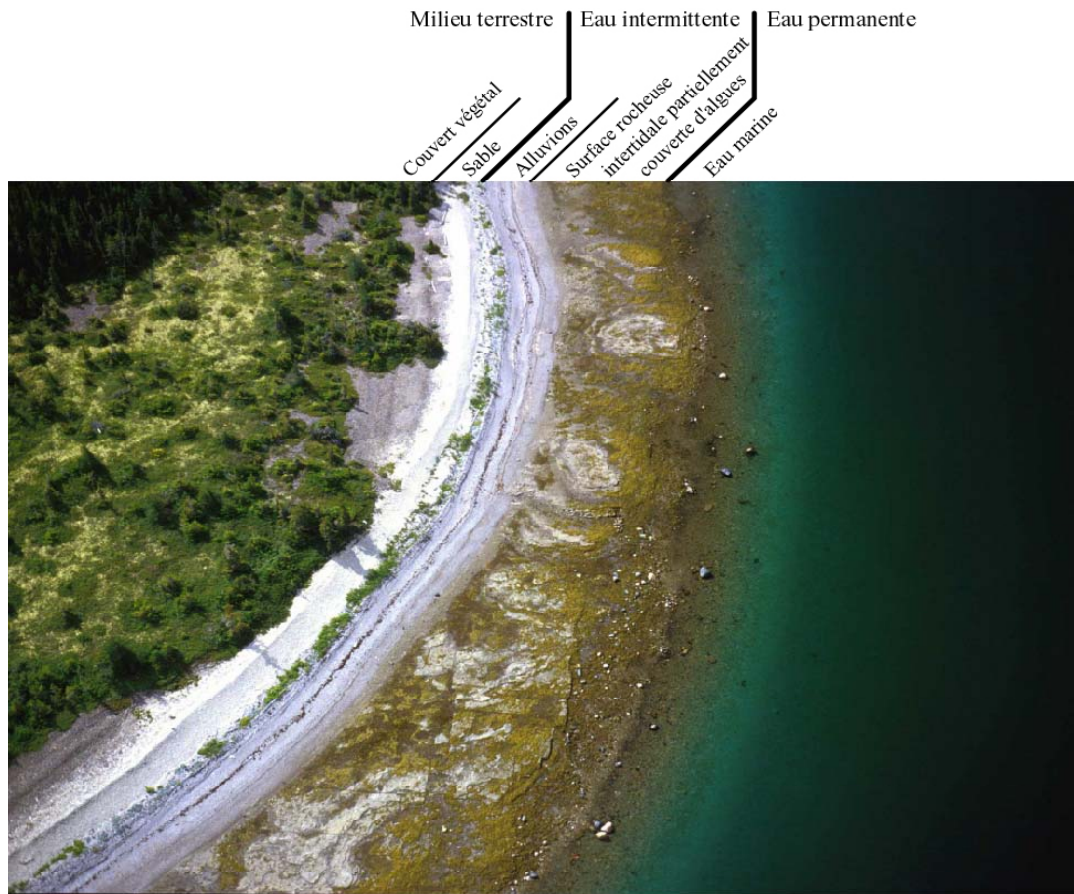
6- Optimal conditions for identification

Areas of intermittent water typically correspond to rocky substrata or unconsolidated surfaces devoid of vegetation. These zones occupy the land between surfaces of permanent water and vegetation. On ETM+ images, use band 4 (IR) to bring permanent water—which usually corresponds to the lower limit of the zone of intermittent water—into relief, unless the presence of floating or emergent aquatic vegetation distorts the spectral response or the water level is high. A combination of bands 4-3-2 reveals terrestrial vegetation and barren or dry surfaces (sand or bedrock). This corresponds to the upper limit of the zone of intermittent water. The intermittent water itself can usually be distinguished by band 5, which is sensitive to humidity. When the zone of intermittent water is rocky or dry, it can be confused with a terrestrial landscape. On B/W aerial photographs, the hue of these barren zones varies from whitish to dark grey, depending on the degree of saturation of the surfaces, and the texture can range from smooth to heterogeneous, depending on the materials present.

For proper identification of all segments of an intermittent watercourse or freshwater body, aerial photographs must be taken during low water and several days after a rainfall to ensure that they are not submerged.

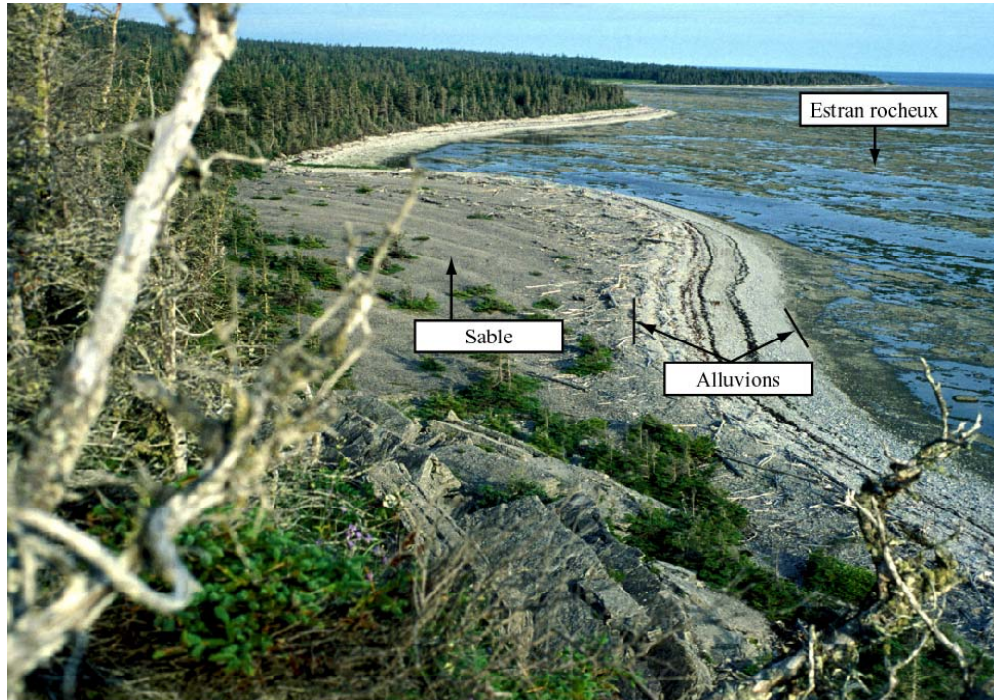
To adequately identify all elements of a saltwater body or estuary, aerial photographs must be taken during low tide.

7- Examples



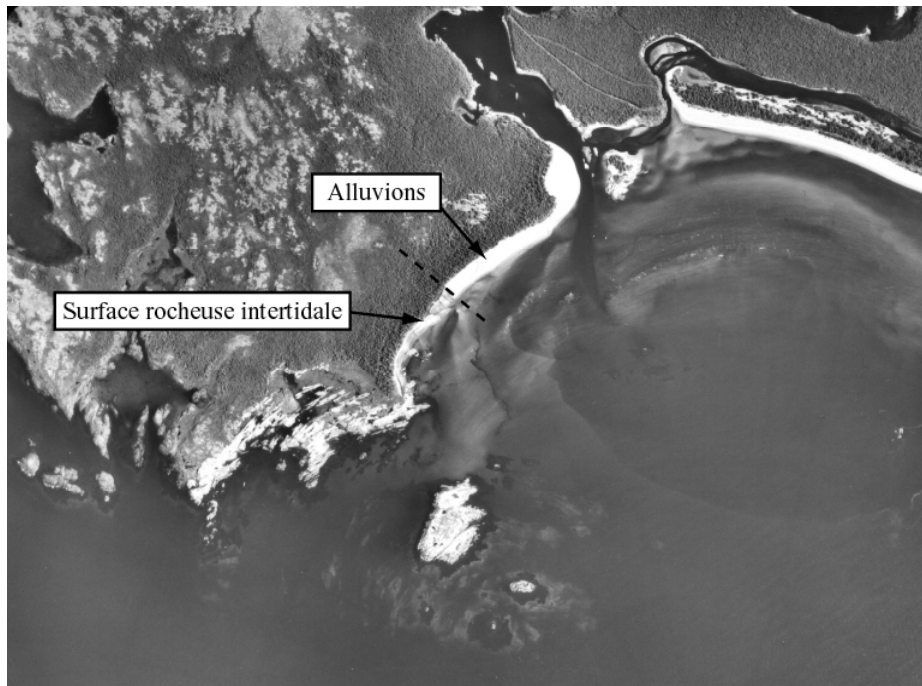
Source : photo Claude Garneau ; " Le Québec en images " no 3468, archipel de Mingan, Côte-Nord du Saint-Laurent (Québec)

Figure 2 : Aerial view of different types of intermittent water in a marine environment



Source : photo J.-M. Dubois no 80-22-36 ; aussi " Le Québec en images " no 8447, est du cap aux Anglais, île d'Anticosti (Québec)

Figure 3 : Ground view of different types of intermittent water in a marine environment



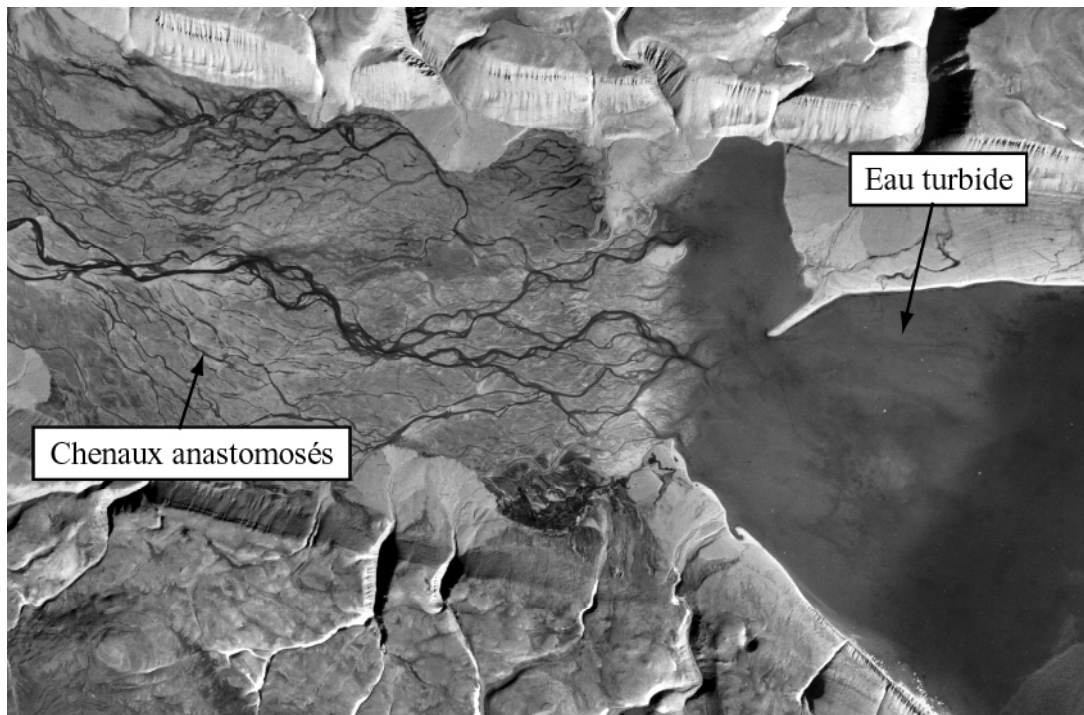
Source : photo Q67313 (93), échelle originale 1 : 15 840, carte 12L/01, 50° 14' N - 62° 18' O, pointe Nabisipi, Côte-Nord du Saint-Laurent (Québec) du 16-07-1967

Figure 4 : Example of differences between alluvium (coastal sediments) and intertidal rocky areas. The alluvium have a whitish tone and uniform texture, the rocky areas are greyish and have a rough heterogeneous texture



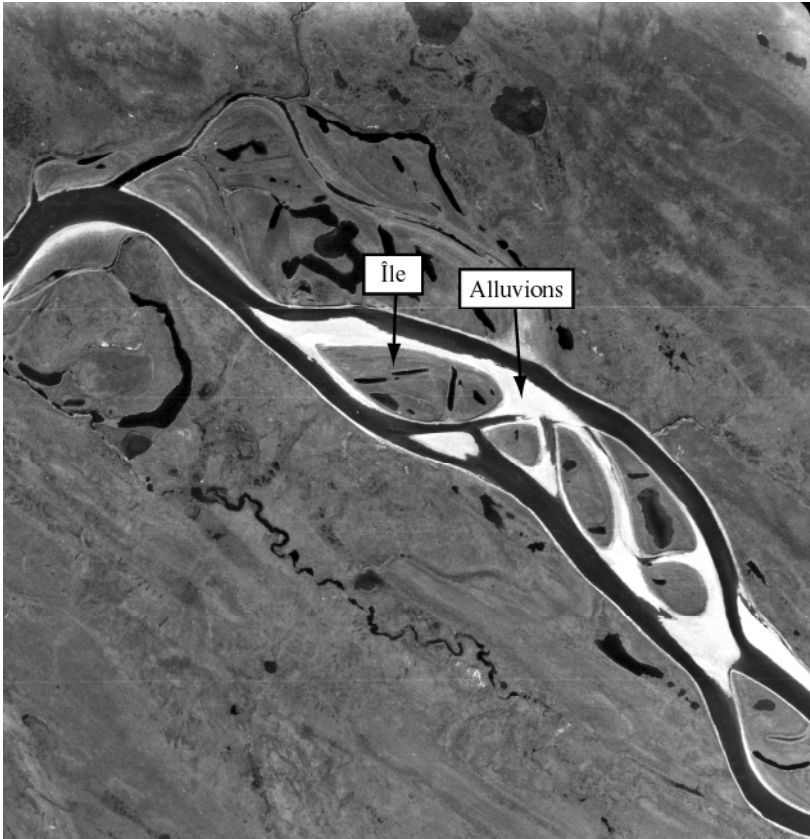
Source : photo J.-M. Dubois no 85-07-14 ; aussi " Le Québec en images " no 8298, pointe du Petit lac Salé, île d'Anticosti (Québec)

Figure 5 : Example of a large intertidal rocky ledge with its border partially covered with alluvium (coastal sediments)



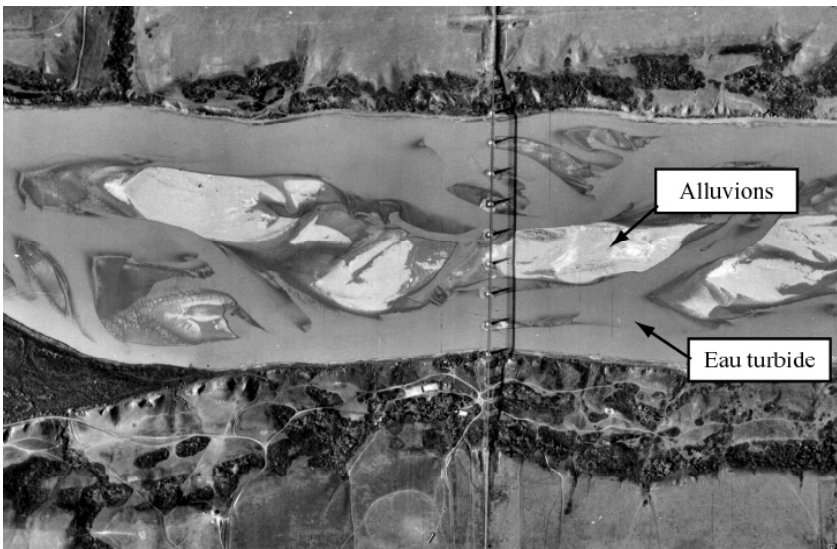
Source : photo A16331 (167), échelle originale 1 : 60 000, carte 58D/12, 73° 35' N - 90° 50' O, rivière North Elwin (T.N.-O.) du 10-08-1958

Figure 6 : Example of a braided stream channel and turbid areas at the outlet.



Source : photo A15048 (90), échelle originale 1 : 60 000, carte 66D/07, 64° 20' N - 102° 55' O, rivière Thelon (T.N.-O.) du 16-09-1955

Figure 7 : Example of fluvial alluvium areas bordering islands



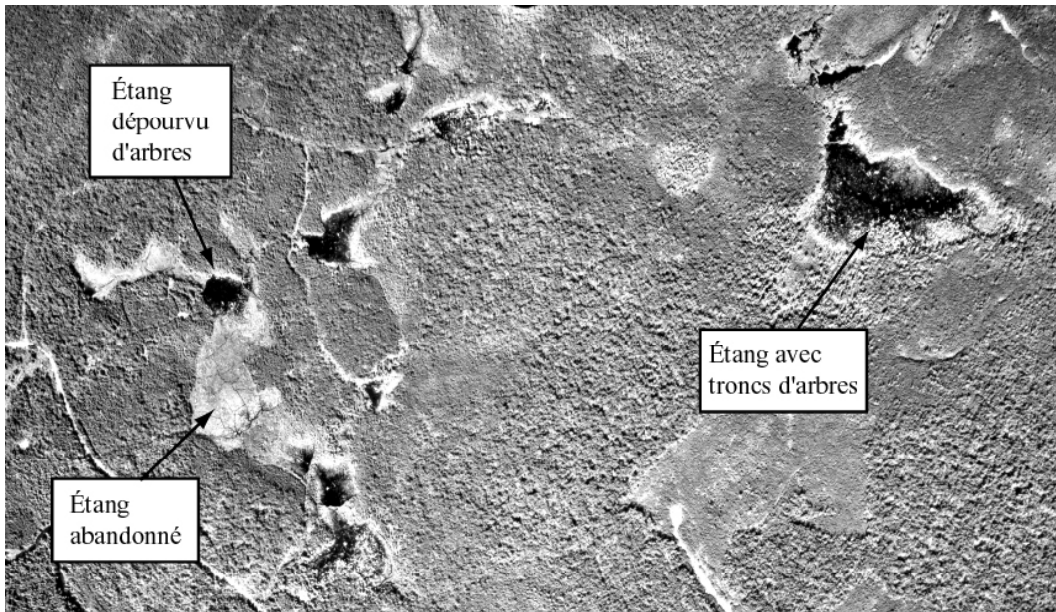
Source : photo A7254 (89), échelle originale 1 : 26 000, carte 72O/06, 51° 29' N - 107° 05' O, Outlook (Saskatchewan) du 28-09-1944

Figure 8 : Example of alluvial banks in a turbid watercourse



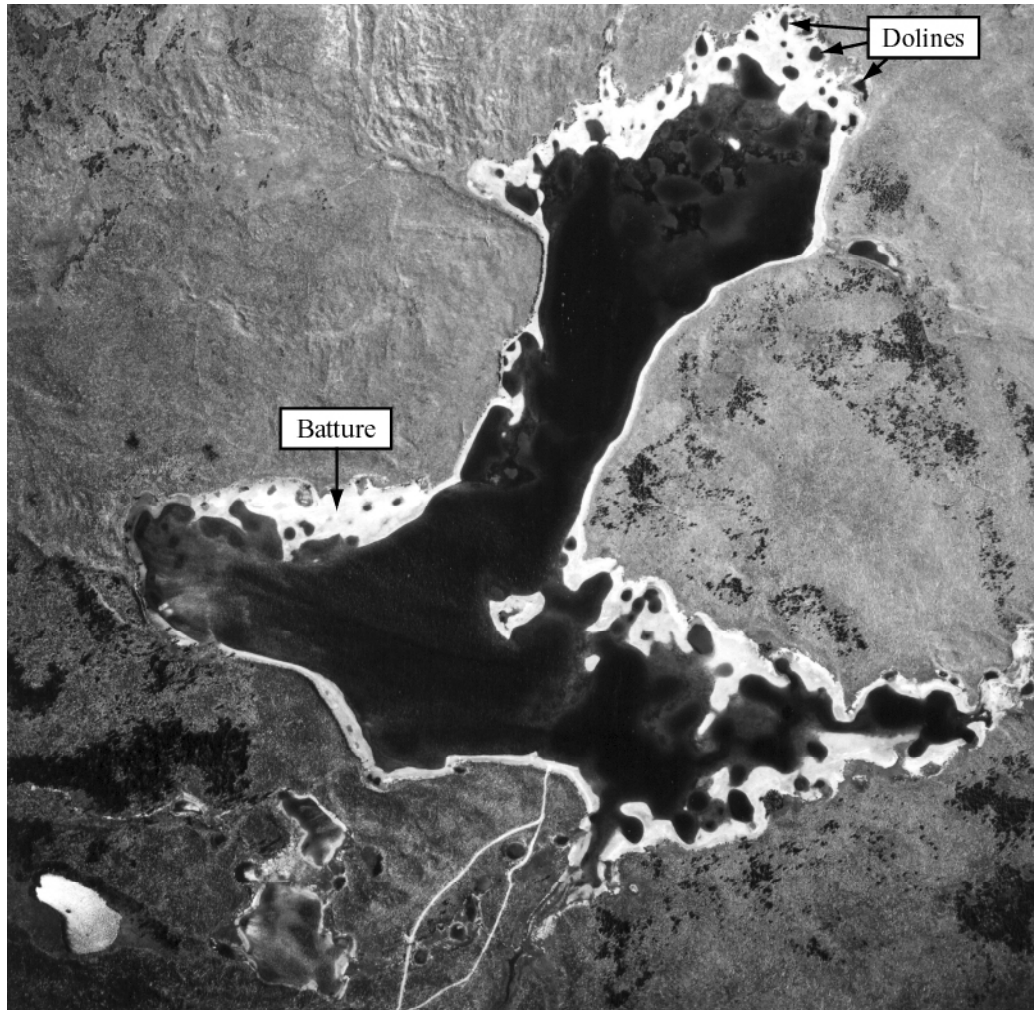
Source : photo J.-M. Dubois no 94-18-23 ; aussi " Le Québec en images " no 16850, rivière Caniapiscou (Québec)

Figure 9 : Example of alluvium and rocky surface in a minor channel of a permanent watercourse



Source : photo HMQ98-128 (155), échelle originale 1 : 15 000, carte 21E/11, 45° 40' N - 71° 20' O, région de Lingwick (Québec) du 07-07-1998

Figure 10 : Example of areas occupied by beaver ponds. Several ponds with tree trunks are identifiable as intermittent water. A pond without trees can be identified as permanent water. Abandoned ponds are associated to marshes.



Source : photo IR Q73329 (234), échelle originale 1 : 15 000, carte 12E/11, 49° 35' N - 63° 08' O, lac Smith, île d'Anticosti (Québec) du 18-07-1973

Figure 11 : Example of a lake with a variable water level in a karst environment, with the presence of sink holes where water infiltrates the limestone. The whitish strip represents the lacustrine flat which refers to a 1 m drop in water level. There is 1 to 2 m of water left in the lake.



Source : photo J.-M. Dubois no 83-02-28; aussi "Le Québec en images" no 9246

Figure 12 : Example of a lake with a variable water level in a karst environment at Anticosti Island, Québec: high water level, June 15 (see **Figure 13**)



Source : photo J.-M. Dubois no 83-02-28 ; aussi " Le Québec en images " n° 9247

Figure 13 : Example of a lake with a variable water level in a karst environment at Anticosti Island, Québec: drained lake 3 weeks later, July 3 (see **Figure 12**)

8- Interpretation

8.1- Critical path

The critical path encompasses two phases: distinguishing and delimiting the form, and identifying it.

8.1.1- Distinction and delimitation

The first criterion for identifying a zone of intermittent water is the proximity of a permanent watercourse or waterbody.

The second point of contrast with all other entities is the presence of denuded zones in topographically low-lying areas. However, marshes constitute an exception to this rule (cf. the *marshes, swamps, and bogs* fact sheet).

To be able to correctly identify zones of intermittent water, we must ensure that the image was taken during low tide in marine, estuarine, or lagoonal environments, or during low water in fluvial and lacustrine environments.

8.1.2- Identification

The identification process requires that the analyst address the various elements of confusion and recognition (Tables 3 and 4). The greater the analyst's knowledge and experience, the more accurate the outcome of this labour of discrimination will be.

8.2- Cross-checking with complementary sources of information

In a **coastal environment**, the level of the tide at the time the image was taken must be known to ensure that the lower limit of the zone of intermittent water (the foreshore) is correctly delimited. Section 8.2 of the *permanent water* fact sheet discusses how to obtain that information.

In **fluvial and lacustrine environments**, ensuring that the lower limit of the zone of intermittent water is correctly established requires knowing rainfall conditions, lake water levels, and watercourse discharge for the days and weeks preceding the time at which the image was taken. Section 8.2 of the *permanent water* fact sheet discusses how to obtain that information.

9- Elements of confusion

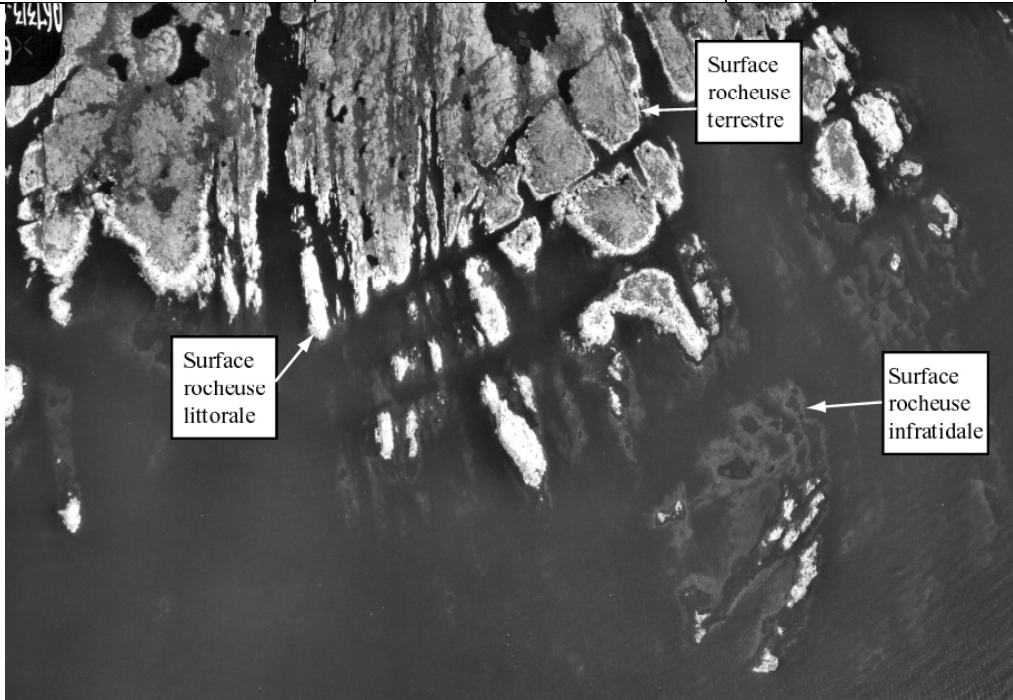
Table 3: Elements of confusion and recognition between intermittent waterbodies (including large watercourses) and other entities or forms

Entity or form	Elements of confusion	Elements of recognition	Examples
Sand (coastal, fluvial, lacustrine)	- Distinction between alluvium and exposed sediments (sand)	- Altitude relative to the mean high-water level - Frequently bordering micro-scarps - Alluvium usually moister - Geomorphic context - Often identifiable on band 5	Figure 2 Figure 3 Figure 4
Rocky surface	- Distinction on either side of mean high-water line	- Scoured zone paler below the mean high-water line	Figure 2 Figure 4 Figure 5 et 14
Marshes and swamps	- Presence of aquatic vegetation	- Spectral response or hue different because plant species different	Figures 2, 3, 10, 15, 16
Marsh	- Presence of herbaceous vegetation if submersion period relatively long	- Spectral response or hue different because sites different	Figure 18
Bog	- Floating or emergent vegetation - Located beside permanent water - High water level	- Spectral response different because species different - Use imagery from low-water levels	Figure 16
Vegetation	- Edge obscured by the canopy	- Continuity of the shape's outline	Figure 16
Water level	- Level too high: underestimation of intermittent water - Level too low: encroachment on permanent water	- None, except using imagery corresponding to the level sought and complementary sources of documentation	Figures 11, 12, 13, 16, 19, <i>perm. water fact sheet (Fig. 17)</i>
Permanent water	- Floating aquatic vegetation confused with alluvium	- Different spectral response or hue	Figure 17
Shade	- Modification of the hue of part of the surface	- Topographic position - Geomorphic context	<i>perm. water fact sheet (Fig. 30)</i>

Table 4: Elements of confusion and recognition between intermittent watercourses (<25 m) and other entities or forms

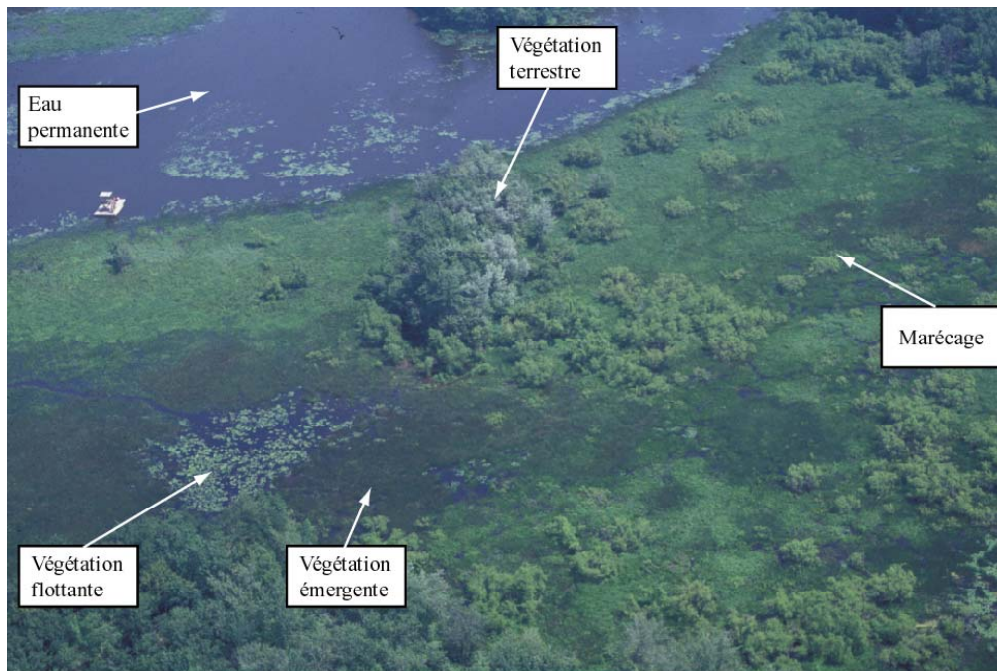
Entity or form	Elements of confusion	Elements of recognition	Examples
Vegetation	- Watercourse obscured by the canopy	- Topographic position - Continuity of shape - Consistency of the hydrographic network	Figure 20

Permanent water	- High water level	- None, except using imagery corresponding to the level sought and complementary sources of documentation	
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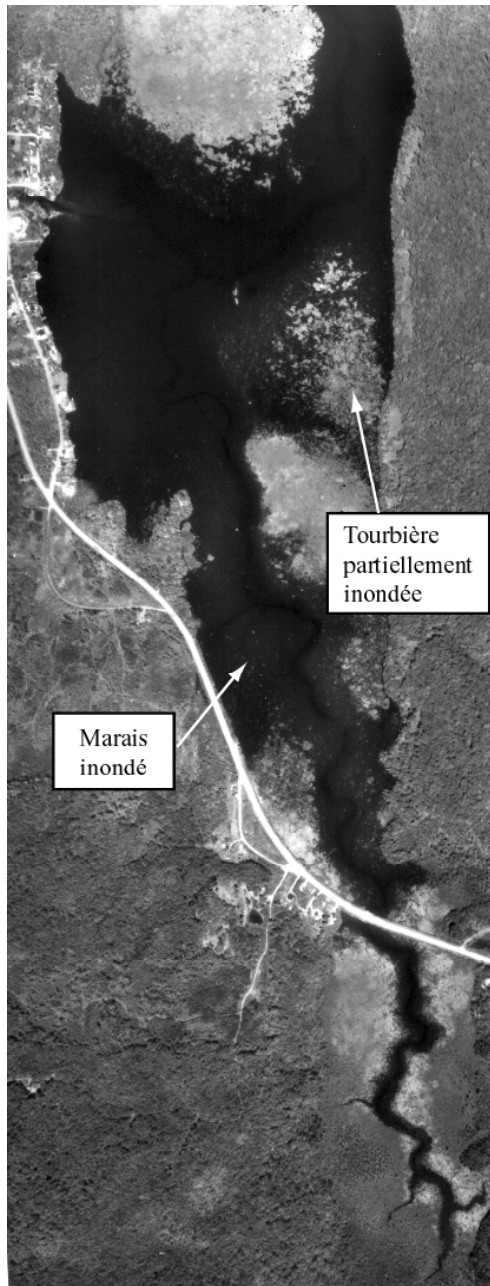
Source : photo Q67313 (86), échelle originale 1 : 15 840, carte 12L/08, 50° 14' N - 62° 27' O, baie Pontbriand (Québec) du 16-07-1967

Figure 14 : Example of coastal rocky areas. These intertidal areas are whitish to light grey tone with a heterogeneous rough texture. The emerged areas vary from mid grey to dark grey. The subtidal areas are mid grey with a smooth texture.

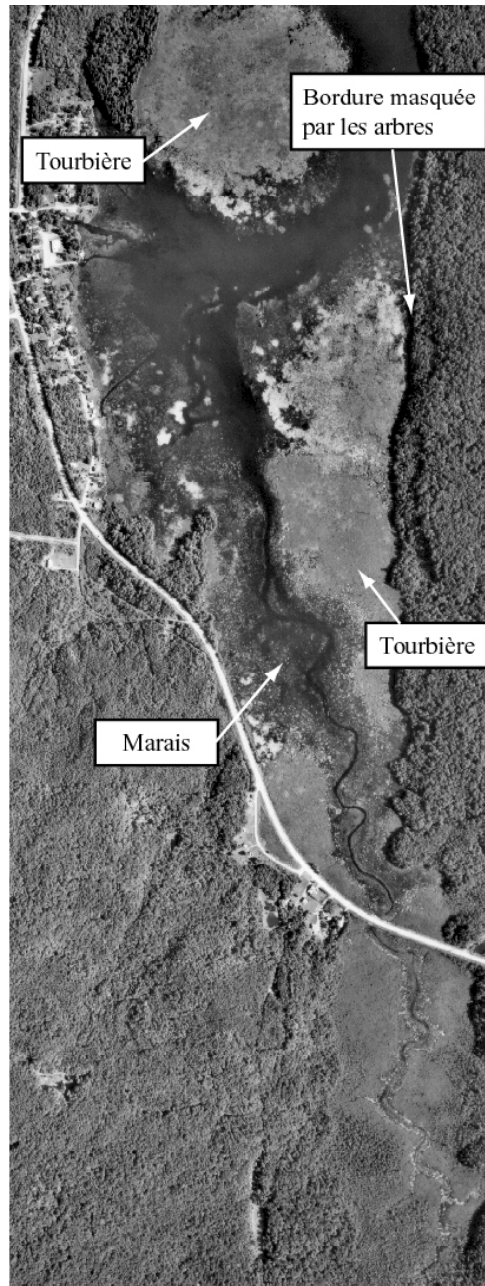


Source : photo Michel Leblond ; aussi " Le Québec en images " n° 15669, parc de la Rivière-des-Mille-Îles, Sainte-Rose (Québec)

Figure 15 : Example of floating or emerging vegetation in permanent water, and a marsh that can be confused with intermittent water areas.



Source : photo Q85346 (98), échelle originale 1 : 15 000, carte 31H/08, 45° 22' N - 72° 09' O, marais du lac Brompton (Québec) du 29-05-1985



Source : photo HMQ98-131 (192), échelle originale 1 : 15 000, carte 31H/08, 45° 22' N - 72° 09' O, marais du lac Brompton (Québec) du 19-07-1998

Figure 16 : Example of confusion between intermittent and marsh areas. The high water level marks the upper limit of the intermittent water. The bogs are partially flooded and the marshes are flooded. The low water level marks the lower limit of the intermittent water. Most of the intermittent area is a marsh.



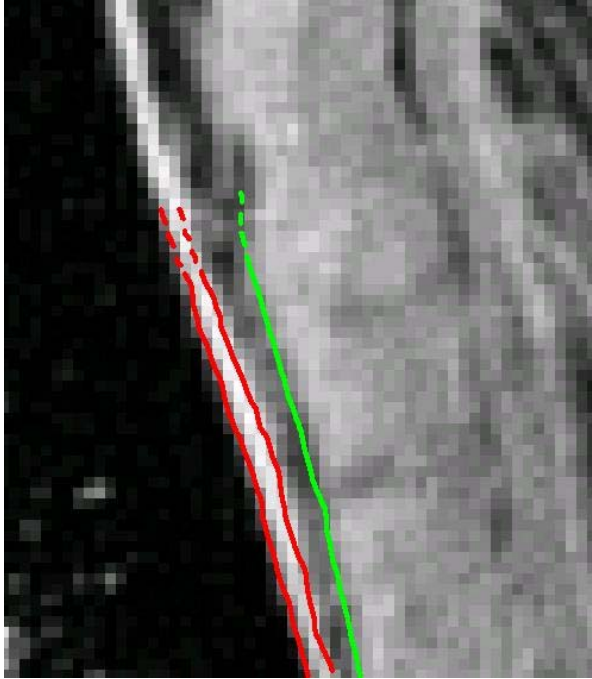
Source : photo HMQ98-130 (79), échelle originale 1 : 15 000, carte 21E/?, 45° 37' N - 71° 42' O, région de Marbleton (Québec) du 15-07-1998

Figure 17 : Example of aquatic vegetation bordering a waterbody that could be confused with alluvium.



Source : photo J.-M. Dubois no 94-12-05 ; aussi " Le Québec en images " n° 11411, rivière Caniapiscou (Québec)

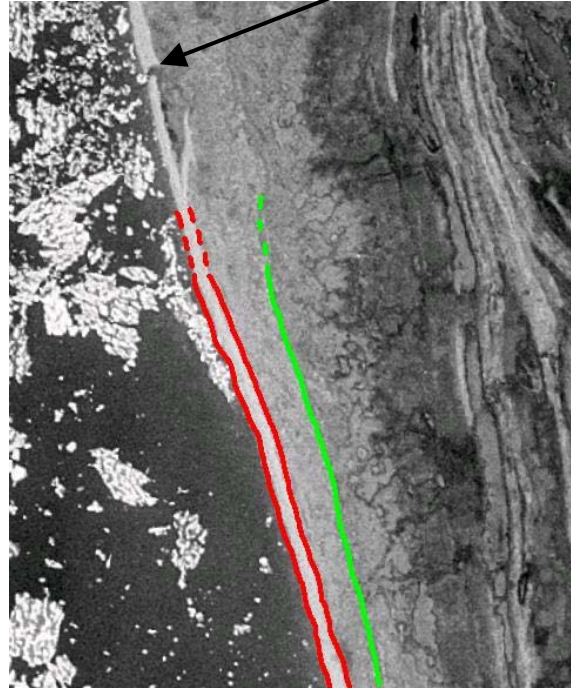
Figure 18 : Example of an area recently emerged that is being vegetated and an intermittent water area (1994) bordering a watercourse upstream. The new vegetation strip could be interpreted as being a marsh on an imagery.



Landsat band 4 Image

In red :

Barrier beach slightly higher than sea level. Exclude the intermittent water and code SAND if it respects minimum size.



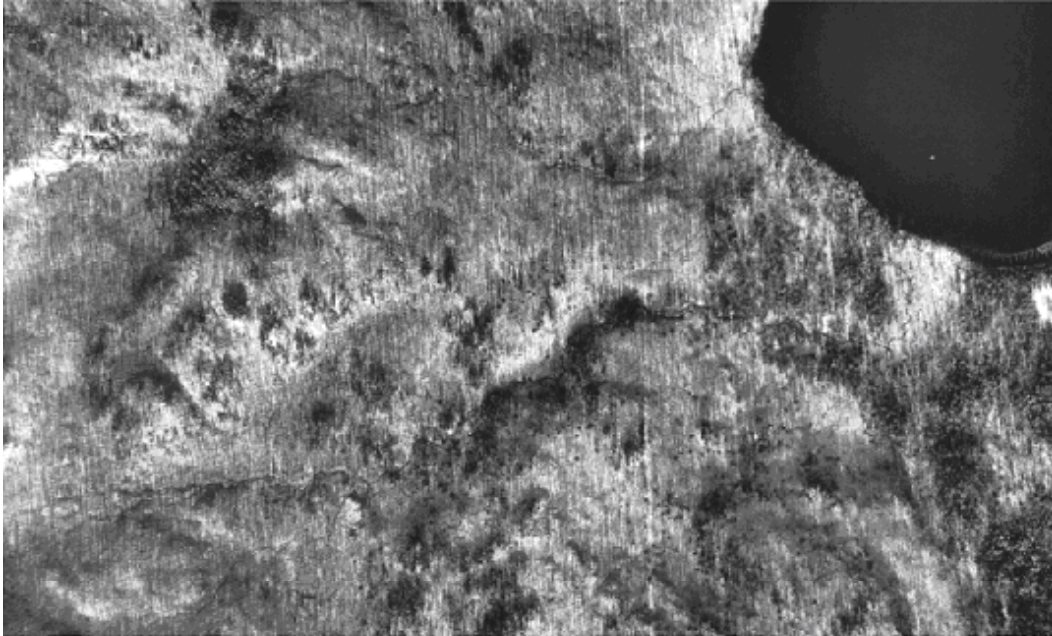
Air photography

In green :

Lagoon, elevation near sea level. On the air photography the area is dry but the Landsat image shows presence of water (variable quantity). Code INTERMITTENT WATER OCEAN ALLUVIUM. (source CTI-Sherbrooke).

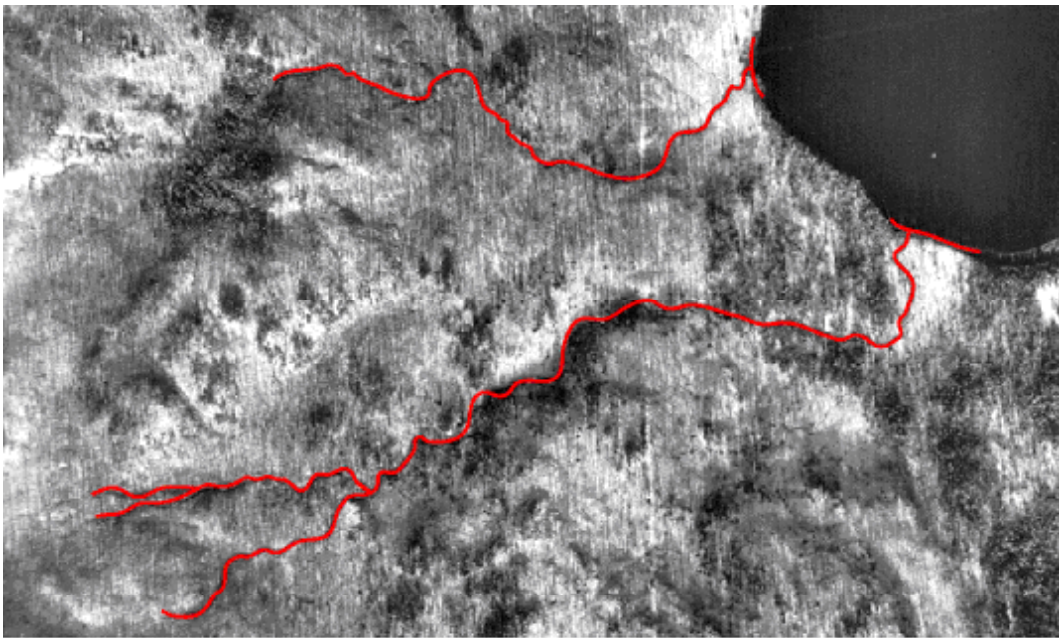
Figure 19 : Example of an intermittent area behind a barrier beach (SAND) interpreted on the ETM+ imagery as being permanent water. It is in fact a lagoon with shallow water that is dry when air photography was taken (low tide) and with water when the imagery was taken (high tide)

Region south of lake Fraser (Québec), map 31H/08, 45° 22' N - 72° 11' O



Source : photo AP784(42), échelle originale 1 : 10 000 du 27-11-1974

a)- Original photography. Watercourses are visible because photography was taken after leaves had fallen and they are now enhanced by the thin snow cover.



Source : photo AP784(42), échelle originale 1 : 10 000 du 27-11-1974

b)- Intermittent watercourses



Source : photo HMQ98-131(194), échelle originale 1 : 15 000 du 19-07-1998

c)- Intermittent watercourses masked by tree canopy

Figure 20 : Example of intermittent watercourses masked by tree canopy

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Côté, D., Dubois, J.-M.M. et Gwyn, Q.H.J. (1990) Mysterious lakes - Les lacs mystérieux de l'île d'Anticosti. GEOS, vol. 19, n° 3, p. 20-25.

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Appendix: the meanings of the sections

1. Name of entity

The name of the entity as it appears in the GDB and in Topolan7.

2. Position in hierarchy

The position of the entity in the hierarchical structure of entities in the GDB.

3. Definition

A brief description based on the entity's principal characteristics and allowing it to be distinguished from any other natural or manmade entity in the GDB.

Only the core features are part of the definition. A detailed description of the characteristics necessary for identification is given in Section 4.

4. Summary table of elements of identification

Presentation of a table summarizing the entity's characteristics (Section 5), of the optimal conditions for identification on ETM+ imagery and black and white (B/W) aerial photography (Section 6), and of the elements of confusion (Section 9).

5. Characteristics

Categorization and description of the characteristics useful for visual identification of the entity.

5.1. Specific to the entity

Characteristics unique to the entity that allow all aspects useful for its identification to be grasped.

5.1.1. Shape

Distinction between linear, point, and areal shapes, three-dimensional pattern of the entity.

5.1.2. Dimensions

Expanse (length, width, diameter) and height of the entity: minima, maxima, and means.

5.1.3. Topographic position

Location of the entity relative to major landforms: drainage basin, mountain, plateau, plain, valley, slope, etc.

5.1.4. Drainage

Surface moisture, outside of saturated zones, in connection with the texture of the materials in the entity.

5.1.5. Vegetation

Presence of vegetation typical of the entity or patterns of plant associations making it possible to distinguish the entity.

5.2. Relative to the entity's dynamics

Characteristics pertaining to the origin and the state of the entity.

5.2.1. Emplacement process

The agent or set of agents responsible for the entity's emplacement and evolution.

5.2.2. State

Dynamic state of the entity: inherited or current. In the case of inherited features, we speak of paleolandforms; in the case of current landforms, we speak of their ongoing formation.

5.2.3. Spatio-temporal variations

Variations in the entity or its appearance that are functions of cyclical conditions (seasonal, multi-year, etc.) or event driven.

5.3. Relative to the environment

Characteristic of the conditions in the entity's milieu and its relationship with other entities or forms present in this milieu.

6. Optimal conditions for identification

Drawing on documentary sources and the experience of the participants, establishment of the optimal conditions for visual identification of the entity. Using satellite imagery, determine the capability of Landsat7 ETM+ to capture the characteristics of the entity and identify the band or combination of bands best for visually distinguishing and identifying the entity. Using B/W aerial photography, identify the hues and textures that are most representative of the entity. In cases in which the relief may be significant, recommend the use of stereoscopy.

7. Examples

Illustrating the entity with examples reflecting several of its aspects:

7.3. Land-based photography

Photographs of the landscape that present one or several examples of the entity's aspects, as they might be seen from the ground.

7.3. Aerial photography

Oblique or vertical aerial photographs that present one or several examples of the entity's aspects, as they might be seen from the air.

7.3. Satellite imagery

Satellite images (from Landsat7 ETM+) that present one or several examples of the entity's aspects, as they might be seen from space.

8. Interpretation

Identification of the entity proceeds from interpreting the information in the imagery or aerial photography and complementary sources of information. The quality of the outcome of this interpretive activity will depend upon the knowledge and the experience of the analyst.

8.1. Critical path

Establishing a unique critical path of interpretation for each entity from the imagery or aerial photography on the basis of its characteristics.

8.1.1. Distinction and delimitation

The possibility of distinguishing and delimiting the shape on the image or aerial photograph has been established and the criteria for success have been described.

8.1.2. Identification

Contrasting the various elements of confusion and recognition with other entities or forms for purposes of identification.

8.2. Use of complementary sources of information

Complementing or cross-checking the interpretation with additional sources of information that are easily accessible, such as those on known Internet sites.

9. Elements of confusion

Identifying the entities and forms with which the entity in question can be confused in a table, along with the differentiating features.

10. Bibliography

A list of useful documents quoted in the previous sections.