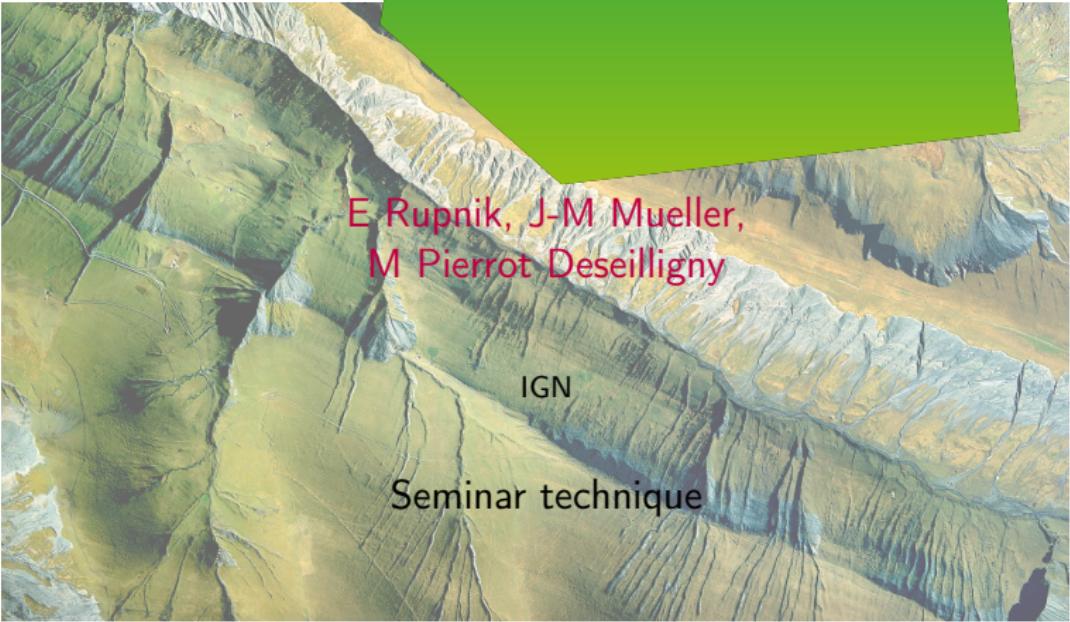




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MicMac – un aperçu global



An aerial photograph of a mountainous region showing green fields, blue lakes, and rocky mountain ridges. The terrain is rugged with deep valleys and glacial features.

E Rupnik, J-M Mueller,
M Pierrot Deseilligny

IGN

Seminar technique

Introduction

Tie points extraction

No a priori about the geometry

With a priori about the geometry

Reduction algorithms

Image orientation

SfM

Collinearity-based BBA

Structureless BBA

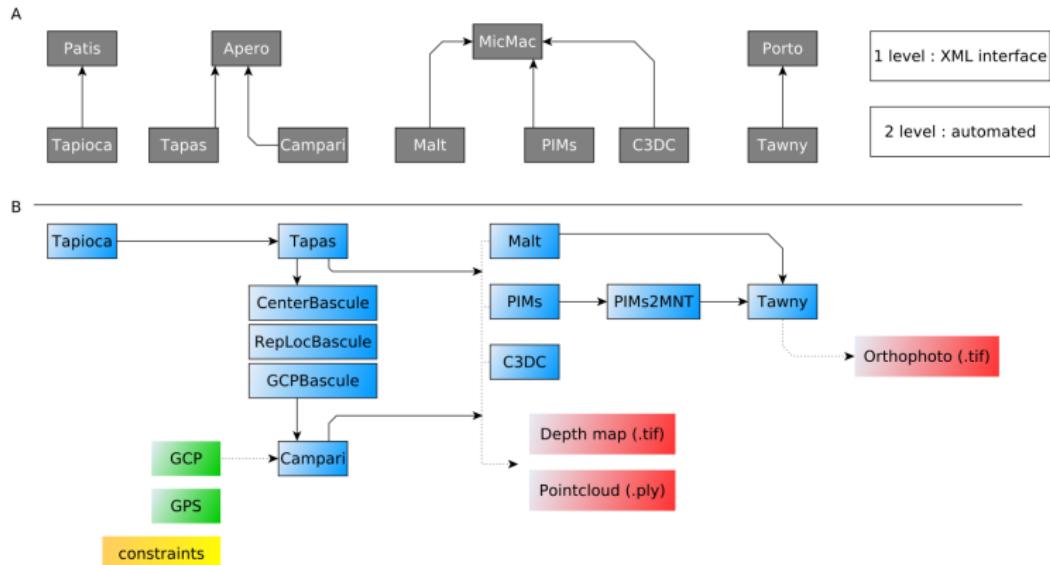
Georeferencing



1

Introduction

Overview of the processing pipeline





2

Tie points
extraction



Tie points extraction

No a priori about the geometry

Tie points extraction
No *a priori* about the geometry

Extraction algorithms

- ▶ SIFT,
different modes of SIFT (Line, MuLScale), i.e. when topology of the acquisition is known (e.g. linear in drone acquisitions or Stereopolosh acquistion)
- ▶ AIME (presented by MPD during spotlight), under developpment; generally faster than SIFT



Tie points extraction

With a priori about the geometry

Tie points extraction

With *a priori* about the geometry

- ▶ TiePTri



2

Tie points extraction

Reduction algorithms

Tie points reduction algorithms

- ▶ bla bla



Image orientation

Image orientation Approaches

1. no a priori, iterative (i.e. SfM)
2. with a priori, collinearity-based bundle block adjustment (BBA) when initial orientations are known
3. structureless BBA



Image orientation

SfM



Image orientation

Collinearity-based BBA

Collinearity-based BBA



Image orientation

Structureless BBA

Structureless BBA



4

Georeferencing

Mathematical model

- ▶ rigid spatial similarity transformation (SST)
(i.e. 7-param trafo)
- ▶ "non-rigid" SST (i.e. 7-param and a polynomial)

Mathematical model

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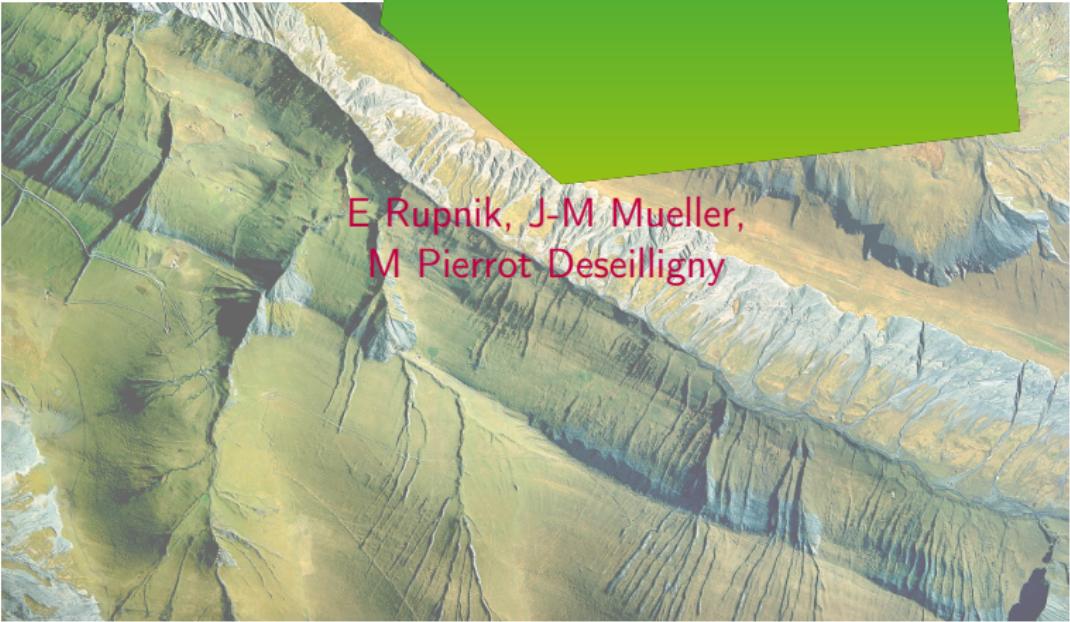
Possible input data

1. ground control points
2. GNSS perspective centers



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Thank you for your
attention!



E Rupnik, J-M Mueller,
M Pierrot Deseilligny

A large, semi-transparent green rectangular box is positioned in the upper right area of the slide. Below it, a detailed aerial photograph shows a mountainous terrain with various colored layers representing different geological or vegetative zones. Green areas indicate forested or grassy slopes, while blue and grey areas suggest rocky outcrops or glacial features. Several small, dark blue bodies of water, likely glacial lakes, are scattered across the landscape.