



# The distribution of syneresis and dieresis in contemporary French

two  
Testing ~~x~~ methodological tools  
to identify patterns across varieties

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# The topic

## In French

Three phonetic glides [j w ɥ]

The glides alternate with the close vowels [i u y] in certain pre-vocalic contexts

→ syneresis (Glide + Vowel) vs. dieresis (Vowel + Vowel)

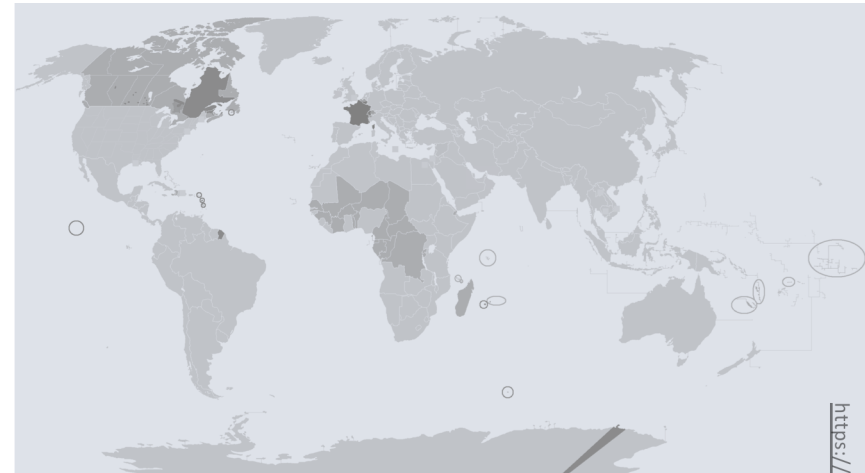
## In the literature

Analyses with different theoretical frameworks

Range of influencing factors

Regional variation

*Few (no?) detailed intra- or inter-regional studies based on systematic, quantitative data*

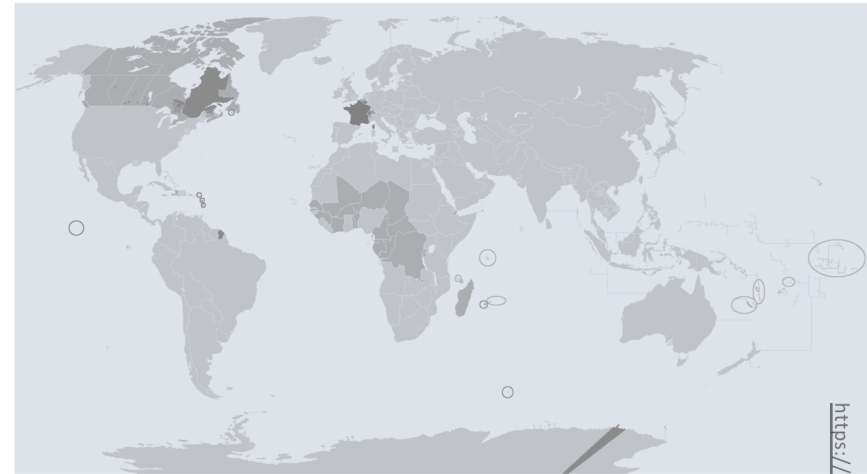


# The objective

Make use of existing corpus data  
(Further) develop annotation and extraction tools

Contribute with systematic data in order to

- confirm distribution presented in previous works
- establish regionally defined variation
- continue the theoretical discussion
- launch a methodological discussion



# Outline

## Distribution of syneresis vs. dieresis

- Previous works

- Hypotheses

## Preliminary study

- Methods

- Corpus

- Results

## Discussion

- Hypotheses revisited

- Discussion and future perspectives

- Closing remarks

This work builds on Andreassen  
(2018), Andreassen & Racine (2019)  
and Andreassen et al. (2019)



# Distribution of syneresis vs. dieresis

Previous works & hypotheses

# Phonotactic constraints

## Word-initial position

#GV     *yaourt*     [jauʁt]  
           *ouest*     [wɛst]  
           *huit*     [ɥit]

#CGV    *pied*     [pje]  
           *couette* [kwɛt]  
           *puis*    [pɥi]

#CCG<sup>1</sup>V                    \*j  
           *trois*     [tʁwa]  
           *fruit*     [fʁɥi]

<sup>1</sup>assumed part of complex nucleus

## Word-medial position

VGV     *caillou*     [kaju]  
           *Kway*     [kawe]  
           *nahuatl*    [naɥatl]

VCGV    *moitié*     [mwatje]  
           *aquatique* [akwatik]  
           *appui*     [apɥi]

VCCG<sup>1</sup>V                    \*j  
           *endroit*    [ãdʁwa]  
           *autrui*     [otʁɥi]

<sup>1</sup>assumed part of complex nucleus

## Word-final position

G#        *soleil*     [solɛj]  
                                   \*w  
                                   \*ɥ

# Factors that condition the alternation

## Inherent sonority

The higher the sonority of the segment, the lesser the chance of being affected by syneresis.

$i < u < y$

<i>scier</i>	SYN
<i>jouer</i>	↓
<i>suer</i>	DIE

## Position in the word

The closer the segment is to the word-initial position, the lesser the chance of being affected by syneresis.

<i>nous dissociions</i>	SYN
<i>nous épions</i>	↓
<i>nous skions</i>	DIE

# Factors that condition the alternation

## Left segmental context

Syneresis occurs less frequently after liquid [ʁ] and [l], and less frequently after voiced consonants in general.

Syneresis is generally blocked after ObsLiq.

*nous oubli-ons* [bli] / \*[blj]

## Right morphological context

Syneresis occurs less frequently when a morphological boundary follows the high vowel.

<i>miette</i>	[miɛt] > [mjɛt]	SYN
		↕
<i>sci+er</i>	[sje] < [sije]	DIE

# Alternation in varieties of French

The majority of theoretically oriented works use information about Standard French or observations from Parisian French as empirical support.

Standard French is very well described and constitutes an exceptional empirical basis for formulating theoretical generalisations. (Morin, 2000)

A few regional studies on glide alternation: Southern France, Belgium, Québec

Distribution of glides generally less described

More frequent dieresis in general (than in Paris, cf. Hansen, 2012)

In derived context, dieresis more frequent in initial syllable than in medial syllable

Inter-generational variation, with more frequent dieresis in older age groups

(Côté, 2018; Durand & Lyche, 1999; Eychenne 2009a, b; Hambye & Simon, 2009, 2012; Lonnemann & Meisenburg, 2009; Pohl, 1986; Walter, 1982)

# Hypotheses

1. Regionally variable data strengthen the general observations made for Standard French.
2. Dieresis is more frequent in varieties spoken in Southern France, Canada and Switzerland compared to varieties spoken in Northern France.
3. In these varieties, dieresis is more frequent in word-initial syllable than in word-medial syllable.
4. In Switzerland, dieresis is less frequent in regional varieties geographically closer to the Northern French dialect area.

# Preliminary study

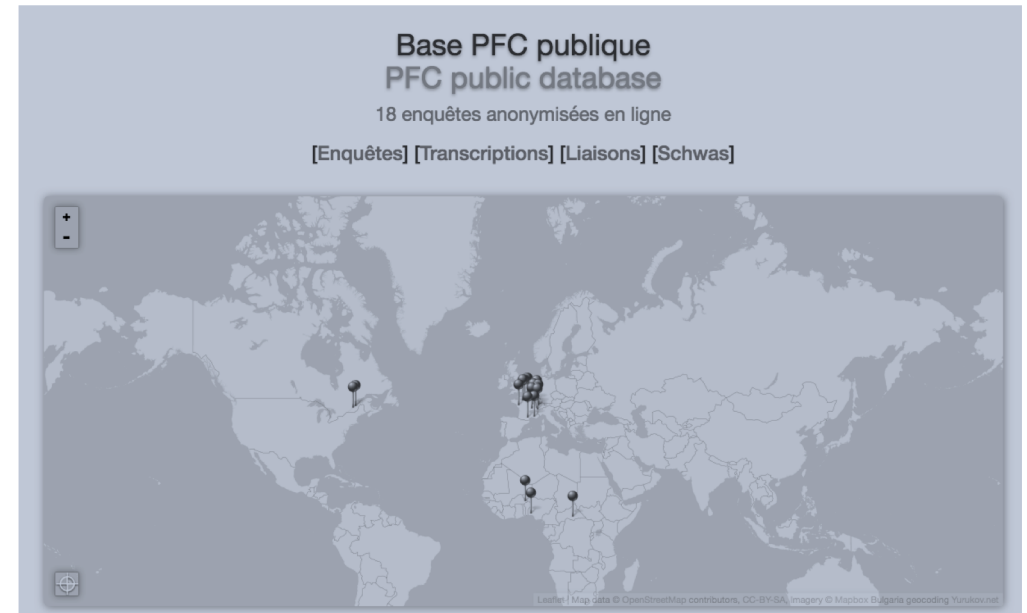
Methods & corpus

# Original corpora

**PFC:** Phonologie du français contemporain  
(Durand et al., 2002, 2009)

The **PFC subproject** “Le rôle de la frontière franco-suisse sur la prononciation du français” (Racine et al., 2018)

- Wordlists
- Text reading
- Semiformal interview
- Informal interview



[projet.pfc.net](http://projet.pfc.net)

<https://campusrhodanien.unige-cofunds.ch/projetsarchives/le-role-de-la-frontiere-franco-suisse-sur-la-prononciation-du-francais/>



# Selected regions

Northern France  
Southern France  
Romandy, Switzerland  
Québec, Canada



# Selected investigation points

Investigation point	Number of speakers	Recording year	References
Nantes (Northern France)	11	2005	Wauquier-Gravelines (2006)
Lacaune (Southern France)	13	2002	Meisenburg (2002) Lonnemann & Meisenburg (2009)
Genève (Switzerland)	13	2019	Racine, Côté, Prikhodkine, Chevrot & Matthey (2018, in preparation)
Martigny (Switzerland)	16	2011	Avanzi & Racine (unpublished) Andreassen et al. (2010)
Neuchâtel (Switzerland)	12	2009-2011	Racine (2011) Racine & Andreassen (2012)
Trois-Rivières (Canada)	12	2014	Côté (2014a,b)

# Judgment task

## Material

- PFC wordlists
- PFC-Switzerland specific wordlists

## Data

- Lacaune, Nantes & Trois-Rivières: 9 words x 36 speakers = 324 occurrences
- Martigny & Neuchâtel: 11 words x 28 speakers = 308 occurrences
- Genève: 19 words x 13 speakers = 247 occurrences
- **Total number of evaluated occurrences = 879**

	LA/NA/TR	MA	NE	GE
<i>amplifier</i>				√
<i>épier</i>	√	√	√	√
<i>étrier</i>	√	√	√	√
<i>fier</i>				√
<i>jouer</i>				√
<i>manier</i>				√
<i>méfier</i>				√
<i>miette</i>	√	√	√	√
<i>mouette</i>	√	√	√	√
<i>muette</i>	√	√	√	√
<i>nier</i>	√	√	√	√
<i>nouer</i>				√
<i>nuage</i>		√	√	√
<i>nuée</i>		√	√	√
<i>oublier</i>				√
<i>relier</i>	√	√	√	√
<i>reliure</i>	√	√	√	√
<i>scier</i>	√	√	√	√
<i>suer</i>				√



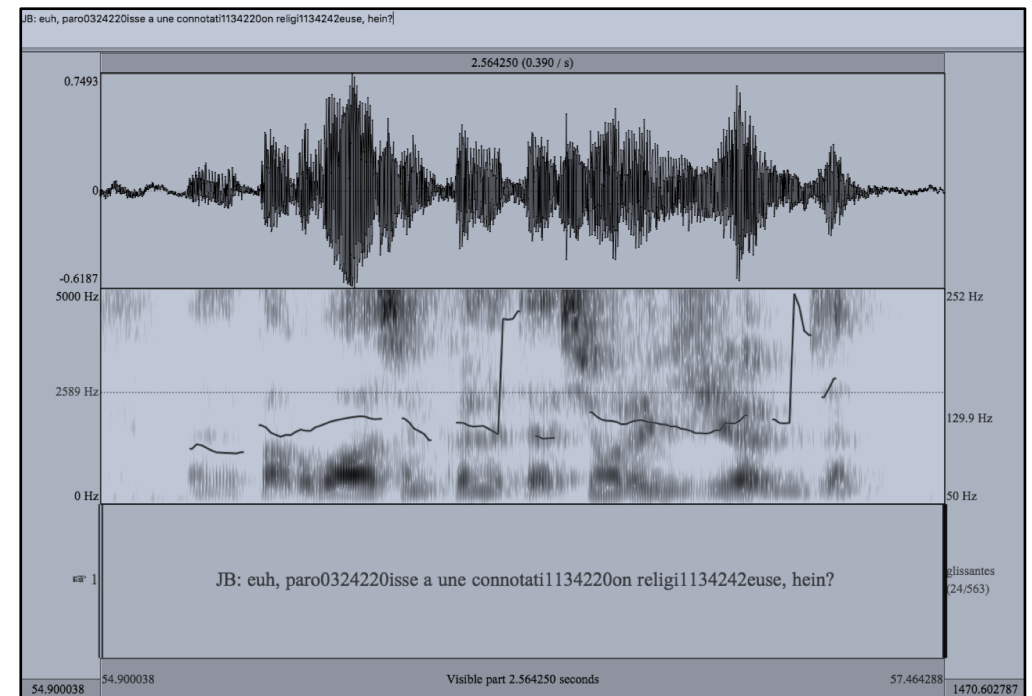
# Coding task

## Material

- PFC semi-formal conversation

## Data

- One speaker per investigation point
- Male, middle age group
- 600 seconds for all except Lacaune and Nantes, where only 300 seconds are available
- One coder per file
- Coded data extracted with Phonometrica (Eychenne & Courdès-Murphy, 2019)
- **Total number of coded occurrences = 818**



# Coding system

<b>Principle</b>	Digital coding system with seven fields, inspired by the PFC schwa coding system (Durand & Lyche, 2003)  1 field with reference to orthography 1 field with reference to perception 4 fields with reference to phonology 1 field with reference to morphology
<b>Target</b>	All close vowels or phonetic glides followed by a vowel, also across word boundaries.

# Coding system

## Field 1: Orthographic status

- 0 oi, oy, oin, ui: historical diphthongs with strong cohesion
- 1 other

## Field 3: Realisation (perceptual eval.)

- 1 hiatus VV
- 2 close V + glide + V
- 3 glide + V
- 4 uncertain

## Field 2: Corresponding close vowel

- 1 [i]
- 2 [y]
- 3 [u]

## Field 4: Position in the word

- 1 phonetic monosyllable (or disyllable with dieresis)
- 2 initial syllable of polysyllable
- 3 medial syllable of polysyllable
- 4 final syllable of polysyllable

# Coding system

## Field 5: Left segmental context

- 1 vowel
- 2 one single consonant
- 3 ObsLiq cluster
- 4 other consonant cluster

## Field 7: Morphological context

- 0 no morphological boundary
- 1 preceded by a morph. boundary
- 2 followed by a morph. boundary
- 3 preceded by a word boundary
- 4 followed by a word boundary
- 5 prec./foll. by a word boundary

## Field 6: Prosodic context

- 1 initial syllable of rhythmic group
- 2 non-final syllable of rhythmic group  
(not followed by h-aspiré)
- 3 non-final syllable of rhythmic group  
(followed by h-aspiré)
- 4 final syllable of rhythmic group

*The first version of the coding system has been developed by Julien Eychenne.*

*The coding system will be slightly revised based on the initial coding tests.*



# Preliminary study

Results judgment task (elicited speech)

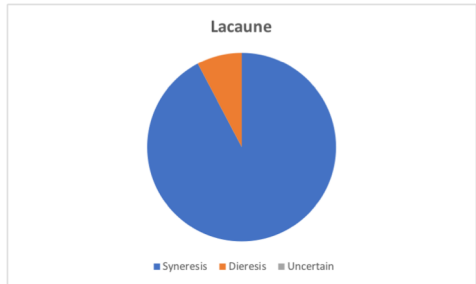
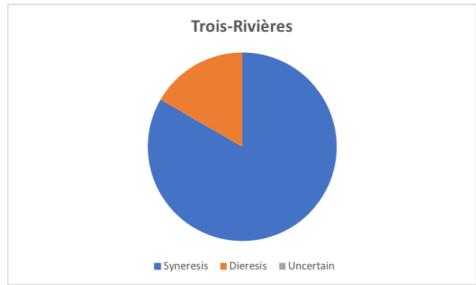
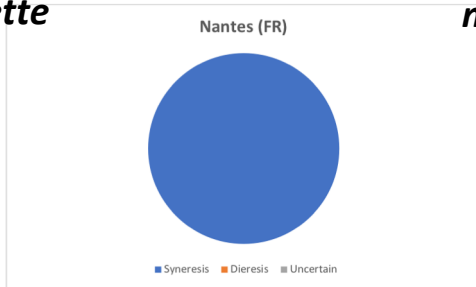
# Non-derived context

*/i/ miette*

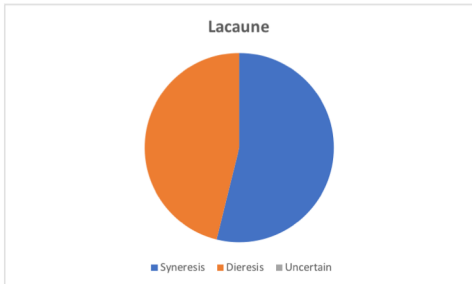
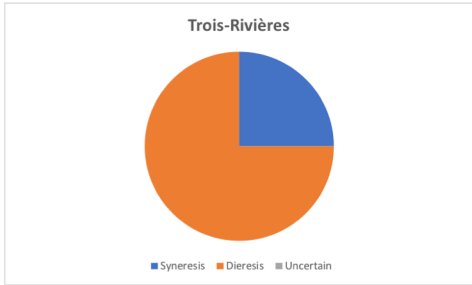
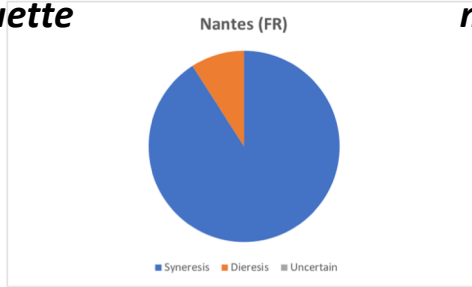
*/u/ mouette*

*/y/ muette*

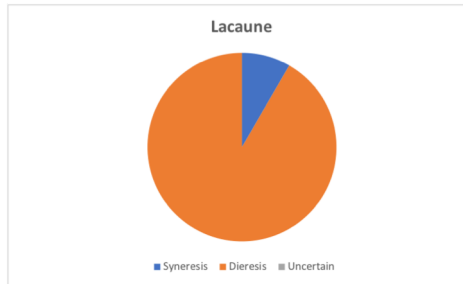
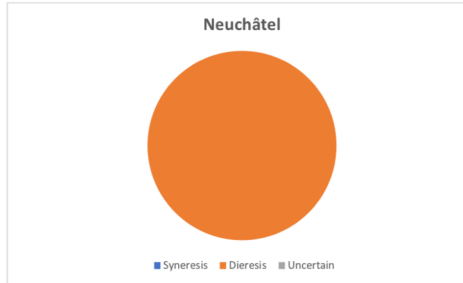
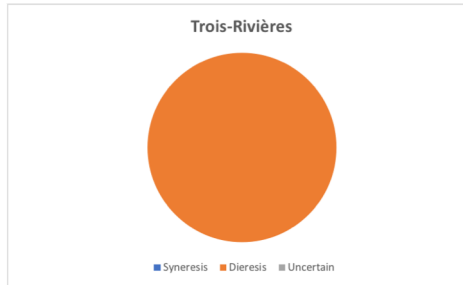
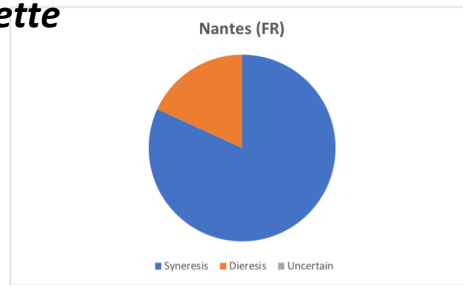
**miette**



**mouette**



**muette**



Legend for pie charts:

- syneresis (blue)
- dieresis (orange)
- uncertain (grey)

# Non-derived context: Summary

## Hierarchy

i > u > y

## Possible regional variation

/i/: Syneresis (few exceptions)

/u/: Syneresis in Nantes, variation in Lacaune and Trois-Rivières, dieresis in Neuchâtel

/y/: Syneresis in Nantes, dieresis in Lacaune, Neuchâtel, Trois-Rivières

# Derived context

*Initial syllable, preceded by fricative: scier – jouer – suer*

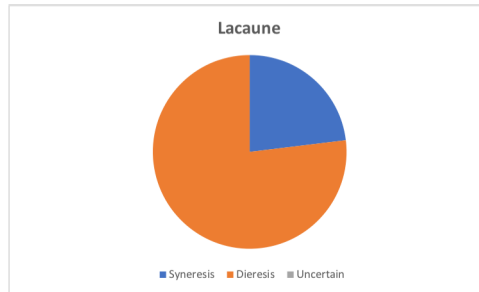
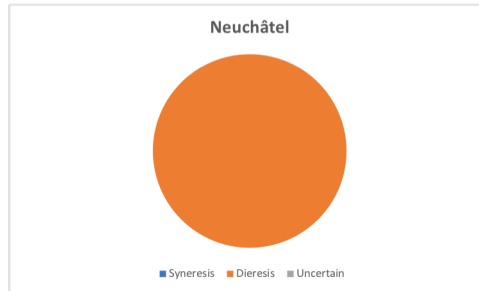
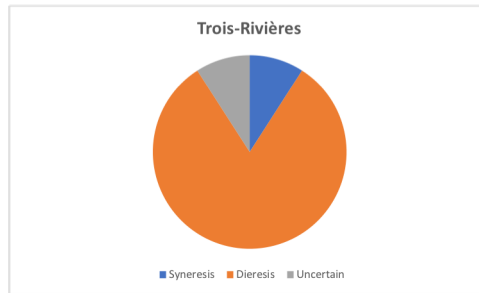
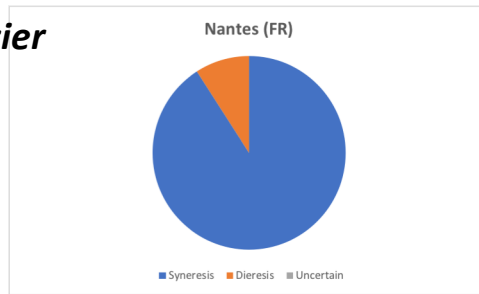
*Initial syllable, preceded by nasal: nier – nouer – nuée*

*Medial syllable, preceded by various consonants: épier – méfier – manier – relier*

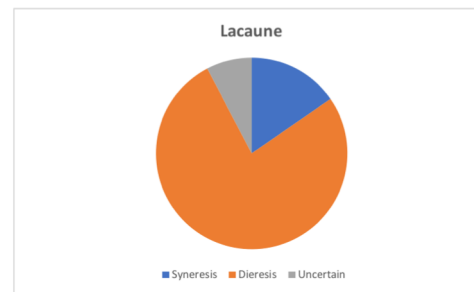
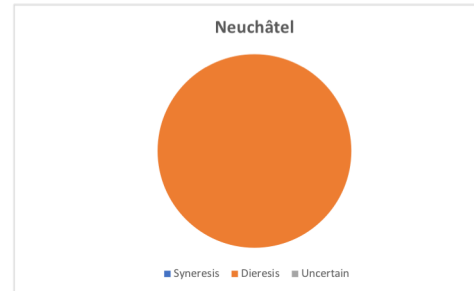
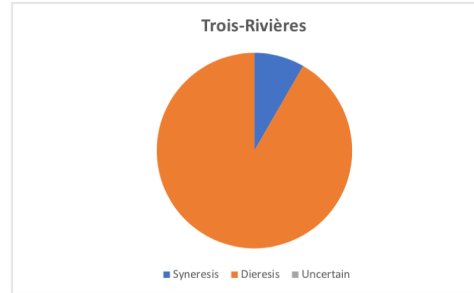
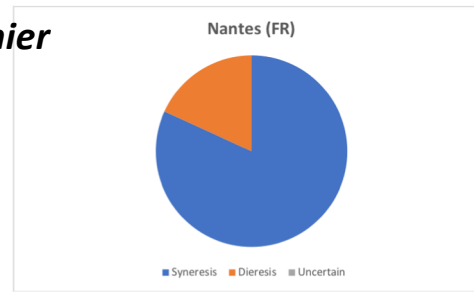
# Initial syllable /i/

different behaviour across regions (Nantes vs. Neuchâtel vs. others)

*scier*



*nier*



Legend for pie charts:

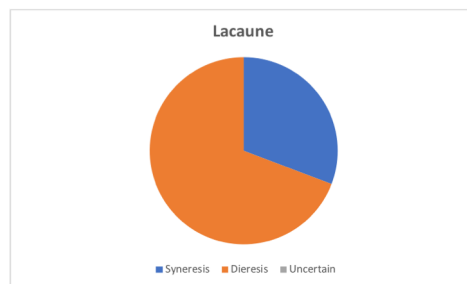
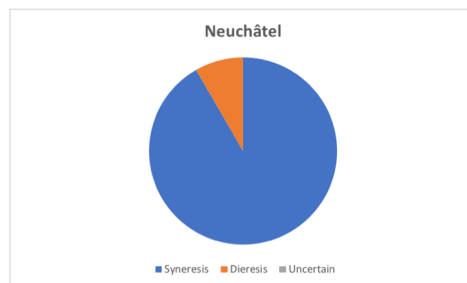
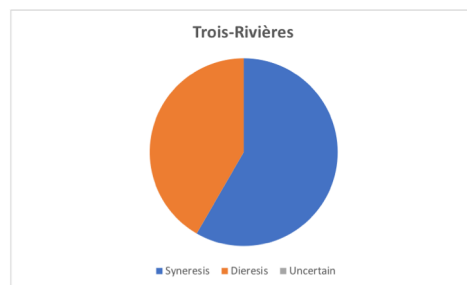
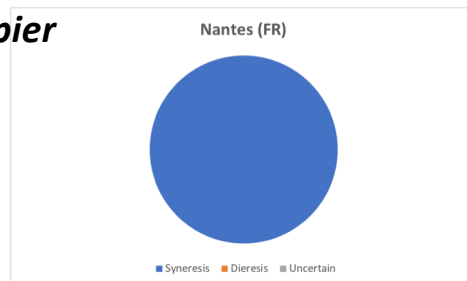
- syneresis (blue)
- dieresis (orange)
- uncertain (grey)

# Medial syllable /i/

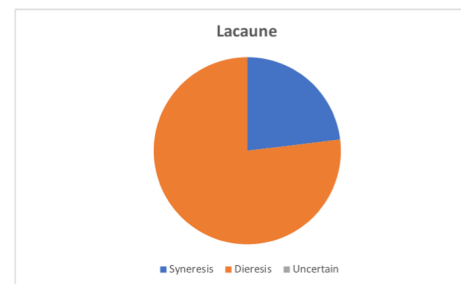
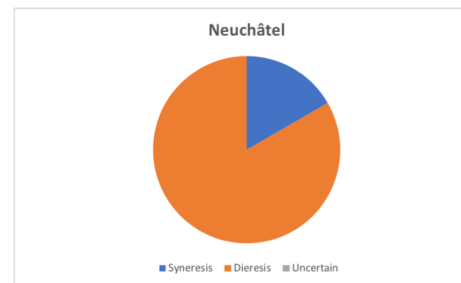
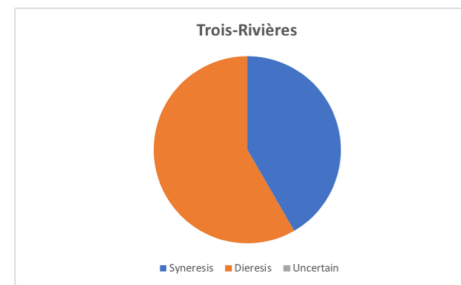
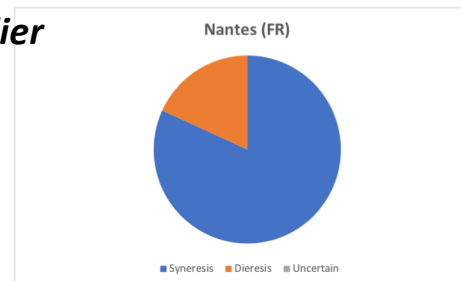
different behaviour across regions

little different behaviour across segmental contexts, except for Neuchâtel

*épier*



*relier*



syneresis

dieresis

uncertain

# Derived context: Summary

## Position

Medial syllable > initial syllable

### Possible regional variation

Initial syllable: Syneresis in Nantes, preference for dieresis in Lacaune and Trois-Rivières, dieresis in Neuchâtel.

## Left segmental context

Plosive > Liquid (small difference)

### Possible regional variation (medial syllable)

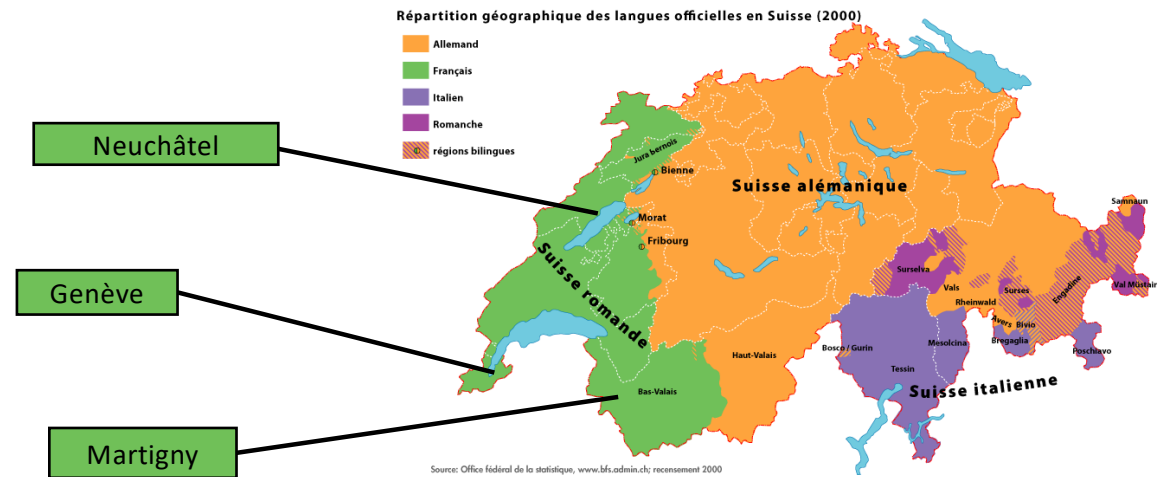
Nantes: Preference for syneresis in both contexts.

Trois-Rivières: Variation in both contexts.

Lacaune: Preference for dieresis in both contexts.

Neuchâtel: Syneresis after plosive, dieresis after liquid.





# Case study: Romandy

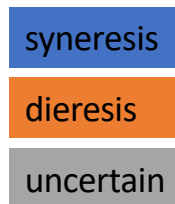
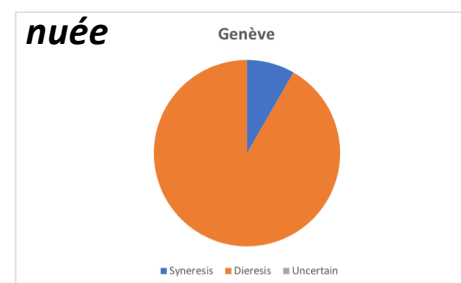
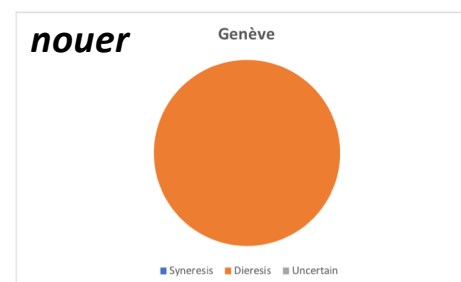
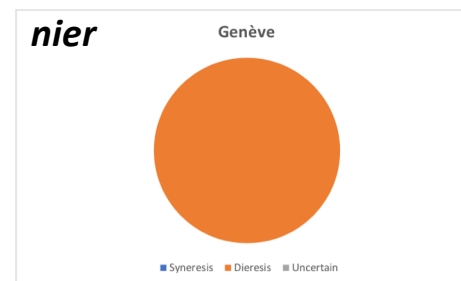
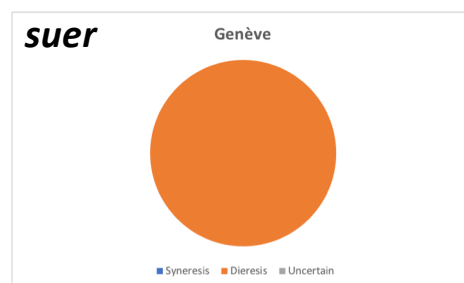
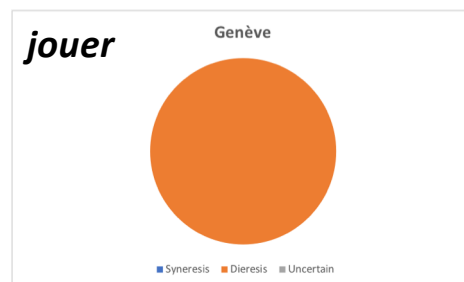
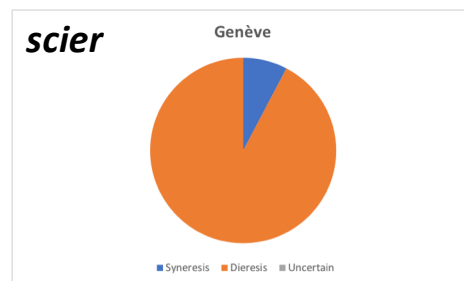
*Genève*

*Martigny*

*Neuchâtel*

# Initial syllable /i, u, y/ in Genève

similar behaviour  
for all three vowels  
across segmental  
contexts

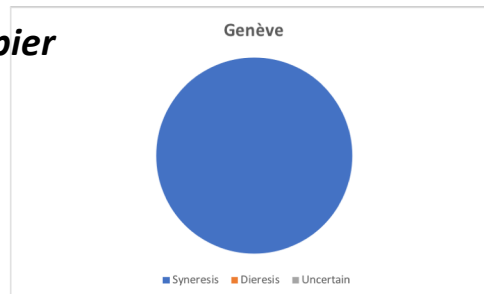


# Medial syllable /i/ in two different segmental contexts

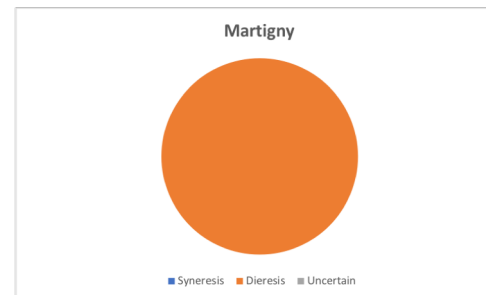
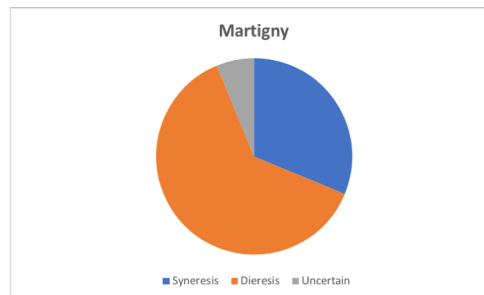
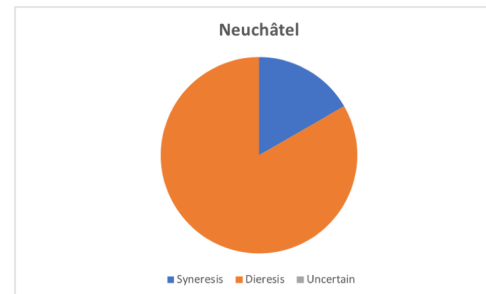
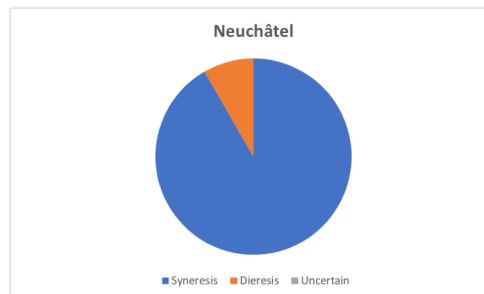
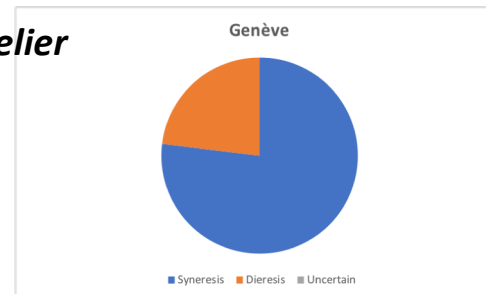
different behaviour across contexts

different behaviour across regions

*épier*



*relier*

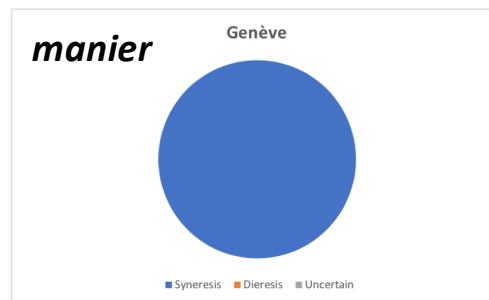
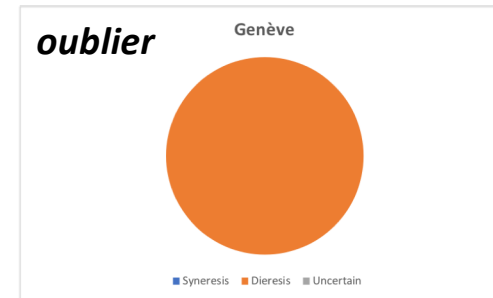
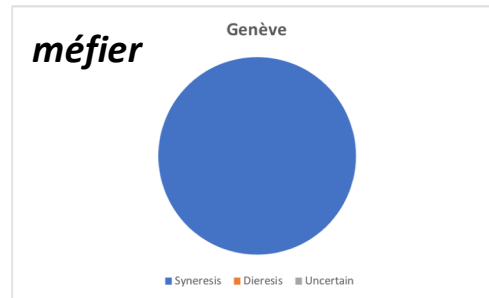
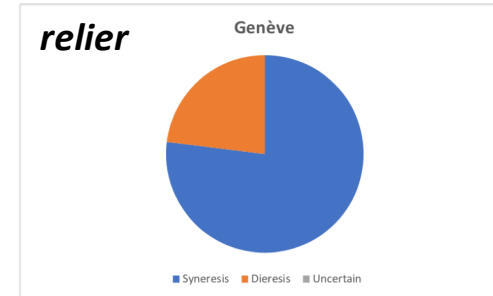
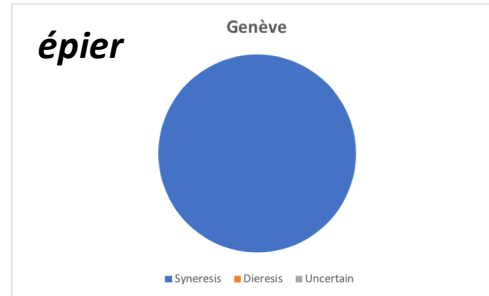


## Medial syllable

/i/ in different segmental contexts in Genève

similar behaviour after plosive, fricative and nasal

different behaviours after liquid and ObsLiq



# Derived context Romandy: Summary

## Hierarchy

i, u, y

Initial syllable: No vowel subject to syneresis in Genève.

(to confirm for other Romand regions)

## Left segmental context (medial syllable)

Plosive, Fricative, Nasal > Liquid > ObsLiq

(to confirm for other Romand regions)

# Derived context Romandy: Summary

## Possible regional variation (medial syllable)

Genève: Syneresis after plosive, preference for syneresis after liquid

Neuchâtel: Syneresis after plosive, preference for dieresis after liquid

Martigny: Preference for dieresis after plosive, dieresis after liquid

# Preliminary study

Results coding task (spontaneous speech)

# The context that interests us today

All sequences assumed to not surface as complex nuclei (/wa, wẽ, ɥi/), post-consonantal and within word boundaries.

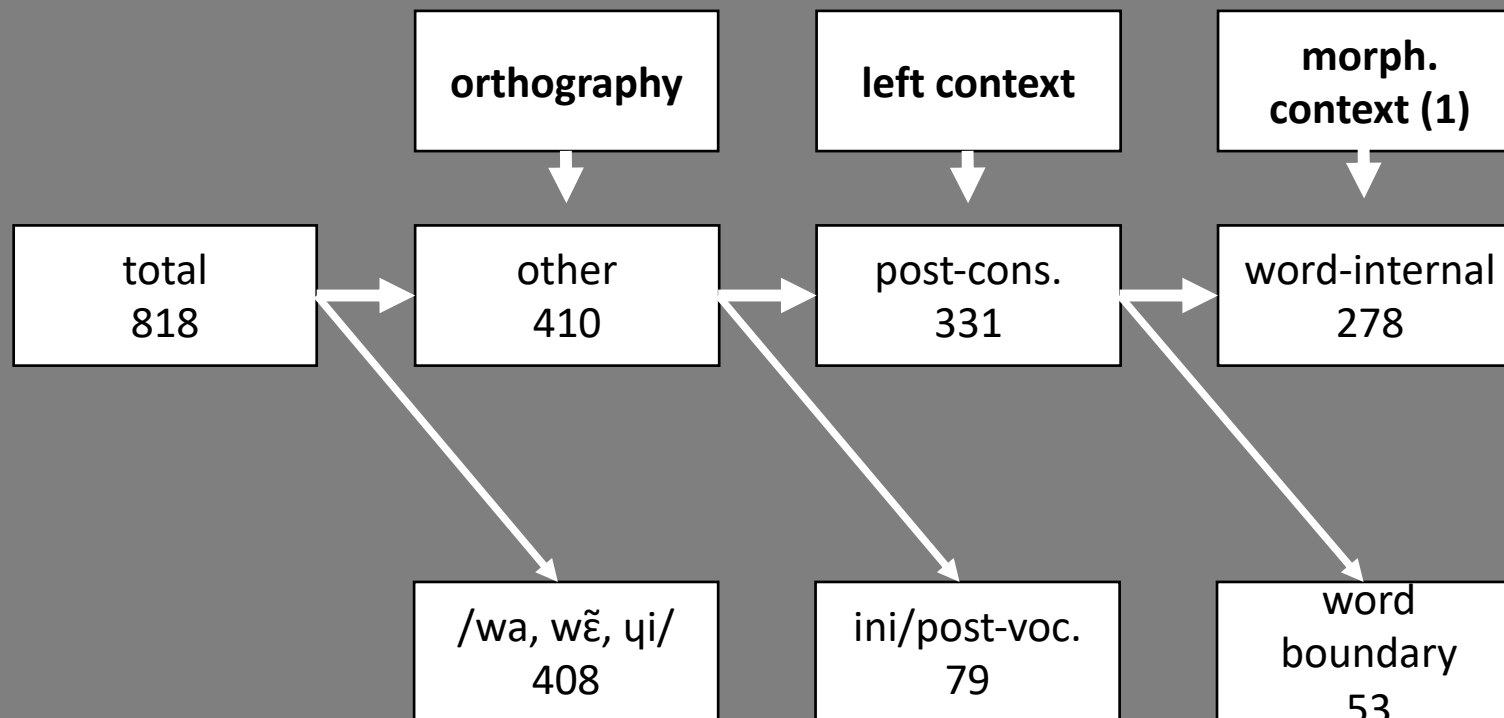
*couette*      [wɛ] – [uɛ]

*canad+ien*    [jẽ] – [iẽ]

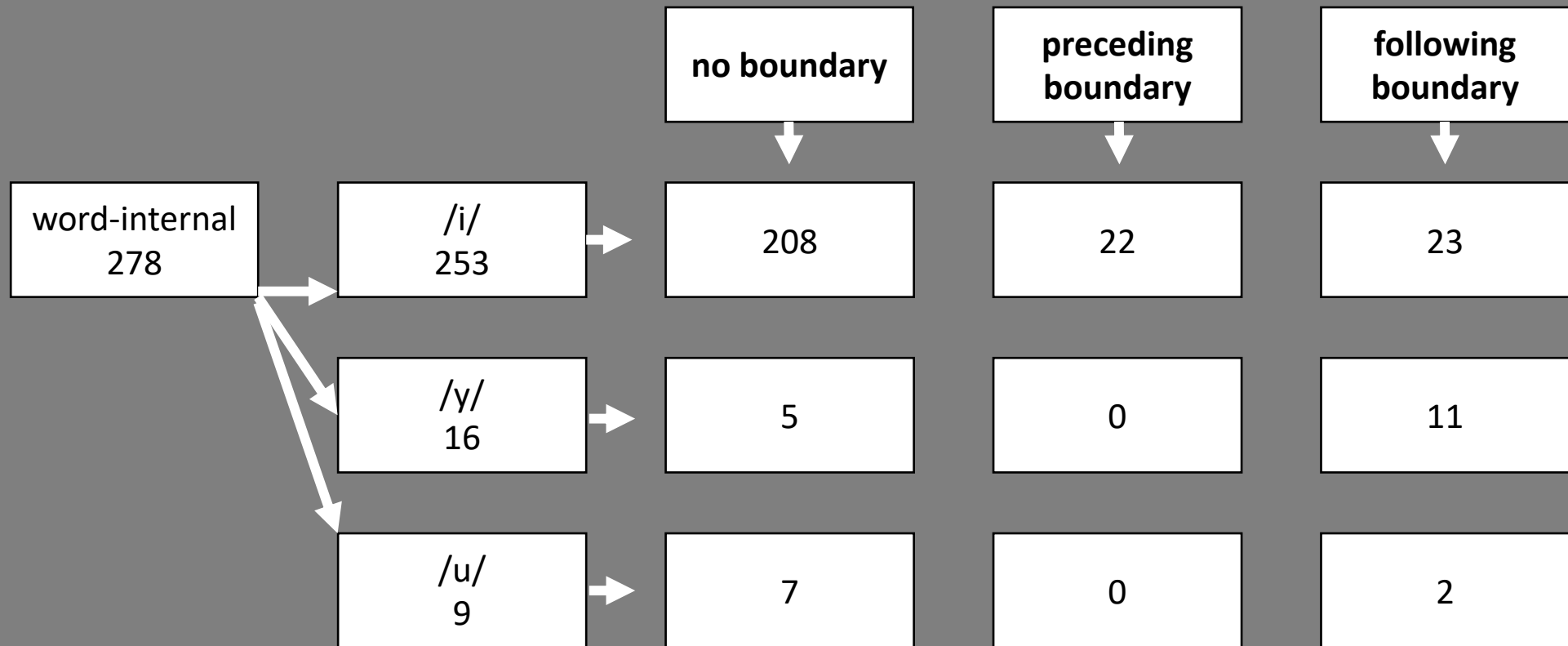
*tu+er*        [ɥe] – [ye]



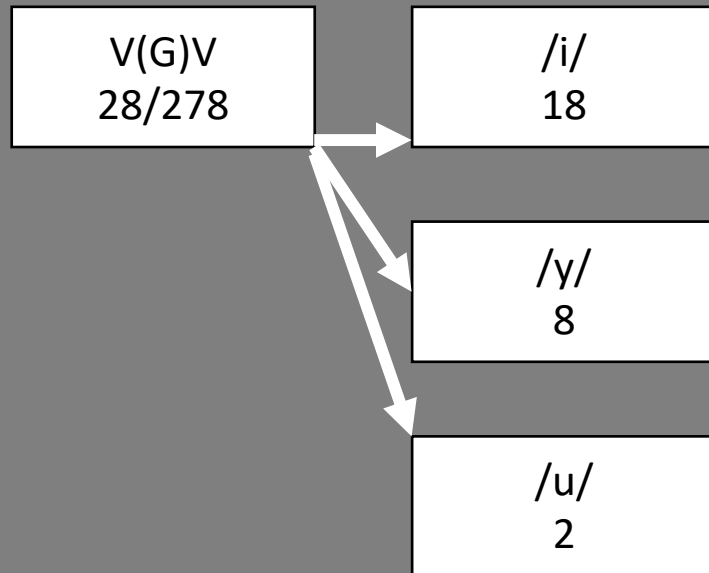
# Global results



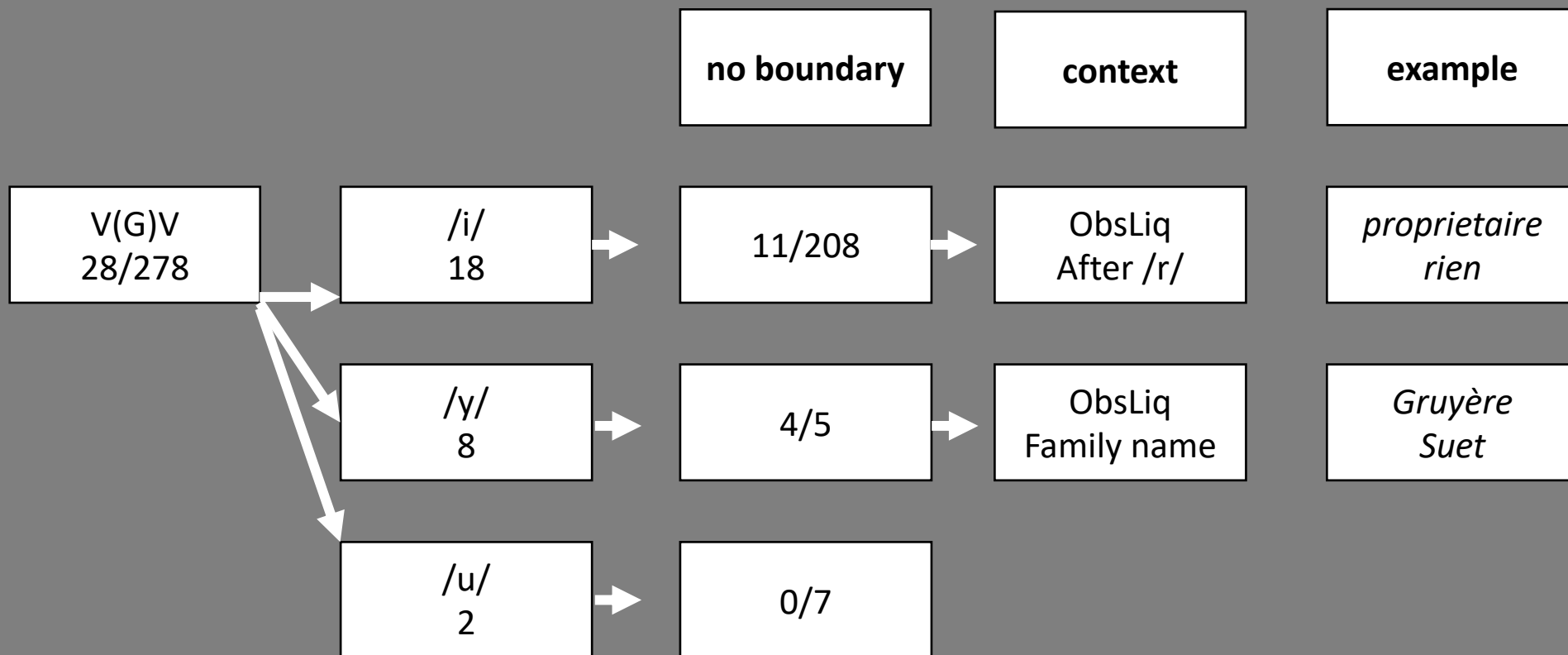
# Word-internal occurrences



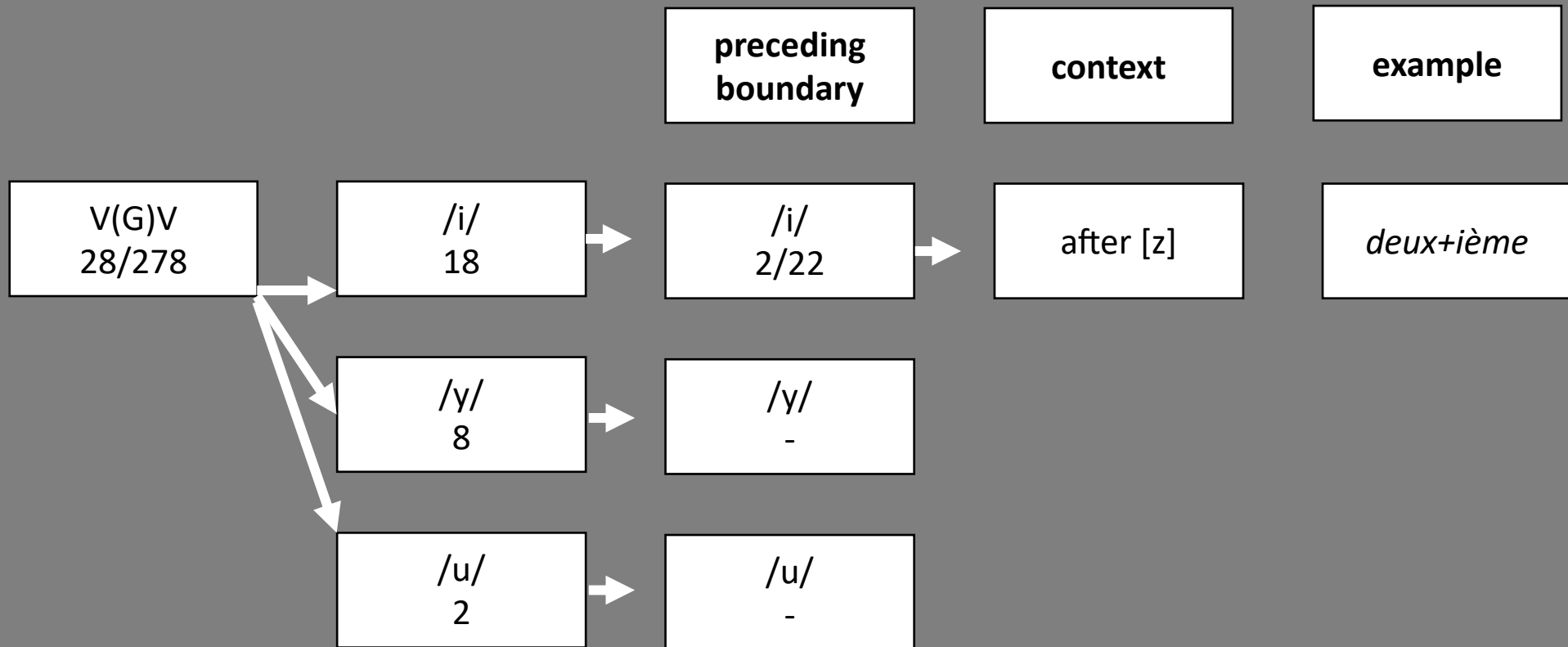
# Dieresis word-internally



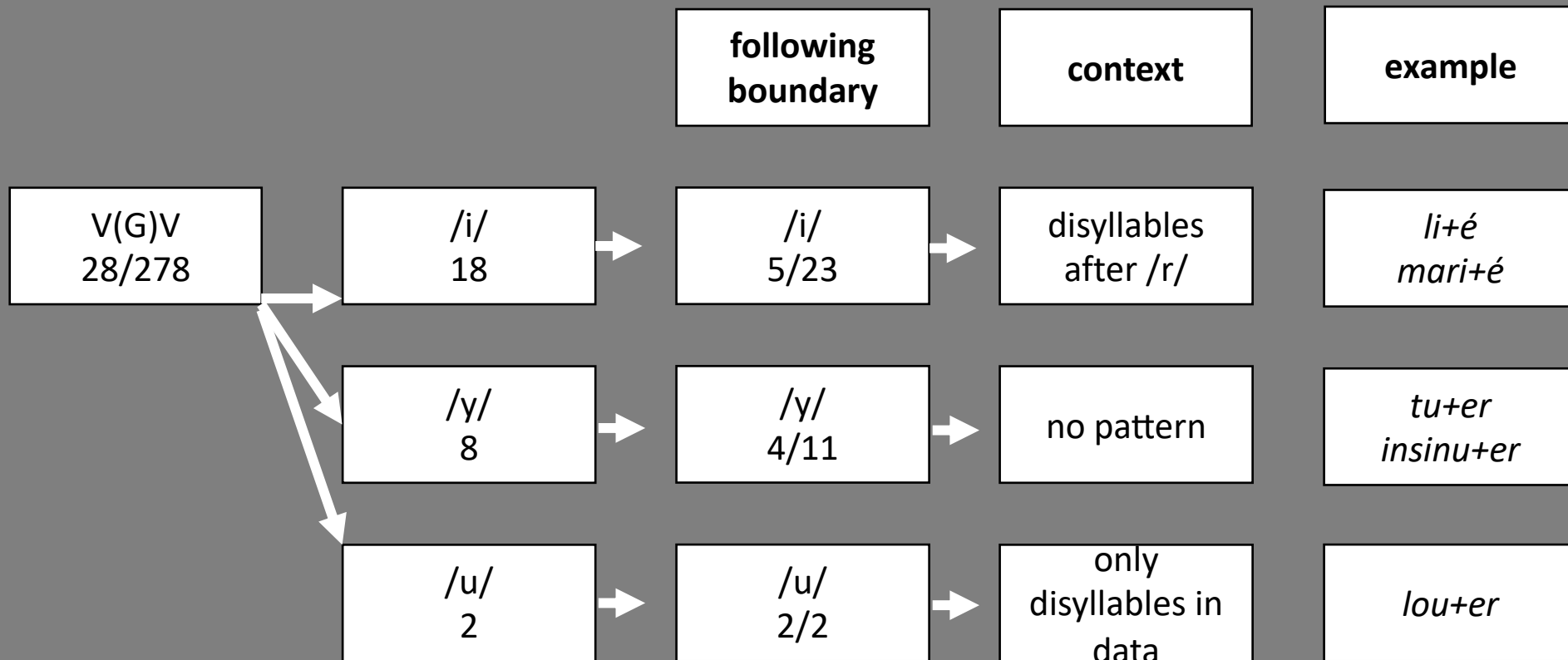
# Dieresis word-internally



# Dieresis word-internally



# Dieresis word-internally



# Spontaneous data: Summary

## Hierarchy i > u > y

too few data on /u/ and /y/ to confirm reflection of a hierarchy

## Medial > initial syllable

too few data to confirm a lower preference for syneresis in initial syllable

## Left segmental context

small tendency: for /i/, dieresis is primarily observed after ObsLiq and voiced consonants

# Spontaneous data: Summary

## Hierarchy i > u > y

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## Left segmental context

small tendency: for /i/, dieresis is primarily observed after ObsLiq and voiced consonants

## Right morphological context

small tendency: dieresis in 50% of occurrences with a following morphological boundary

## Regional variation

too few data to confirm inter-regional variation



# Discussion

# Hypotheses revisited

1. Regionally variable data strengthen the general observations made for Standard French. **Yes**
2. Dieresis is more frequent in varieties spoken in Southern France, Canada and Switzerland compared to varieties spoken in Northern France. **Yes**
3. In these varieties, dieresis is more frequent in word-initial syllable than in word-medial syllable. **Yes**
4. In Switzerland, dieresis is less frequent in regional varieties geographically closer to the Northern French dialect area. **Yes, but only in medial syllable**

# Discussion and future perspectives

## **Empirical approach: Promising tendencies, but get a fuller picture**

- Examine more conversational data, with minimised influence of orthography (cf. Kelly, 2015).
- Add data from the French region neighbouring Genève (Racine et al., 2018).

# Discussion and future perspectives

## **Empirical approach: Promising tendencies, but get a fuller picture**

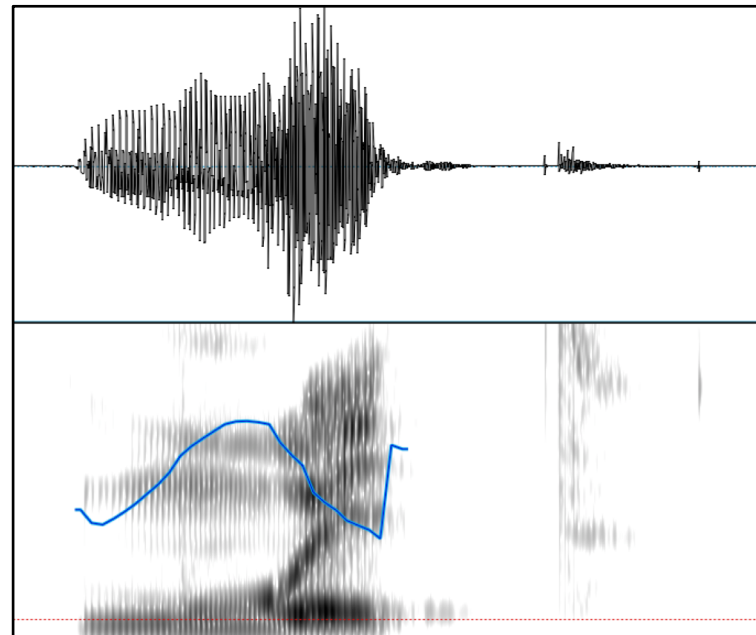
- Examine more conversational data, with minimised influence of orthography (cf. Kelly, 2015).
- Add data from the French region neighbouring Genève (Racine et al., 2018).
- (Re-)read studies on the different varieties in order to identify characteristics susceptible of influencing the usage of syneresis vs. dieresis. E.g. for Swiss French:
  - Articulation speed (Schwab & Racine, 2012)
  - Accentual system and non-final syllable prominence (Avanzi et al., 2012; Sertling Miller, 2007)

# Discussion and future perspectives

## Methodological approach: Strengthen and facilitate evaluation

*mouette* (Neuchâtel)

- judged disyllabic
- no clear close vowel but non-final rise
  
- which criteria to use to decide?

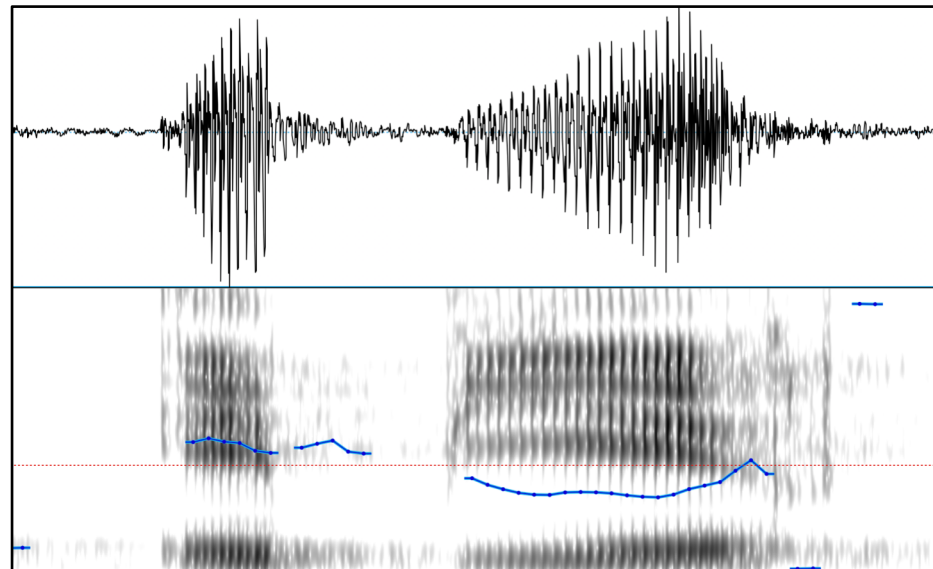


# Discussion and future perspectives

**Methodological approach: Strengthen and facilitate evaluation**

*épier* (Lacaune)

- disagreement
- which criteria to use to decide?



# Discussion and future perspectives

## **Methodological approach: Strengthen and facilitate evaluation**

- Complete judgment task to have 3 expert evaluators for all data.
- Complete with judgment task with naïve evaluators? (cf. Kelly, 2015).
- Establish, on the basis of results from the judgment task, any acoustic characteristics that may distinguish cases of perceived syneresis vs. dieresis (cf. Kelly, 2015).

# Discussion and future perspectives

## **Theoretical approach: Test existing analyses on PFC data**

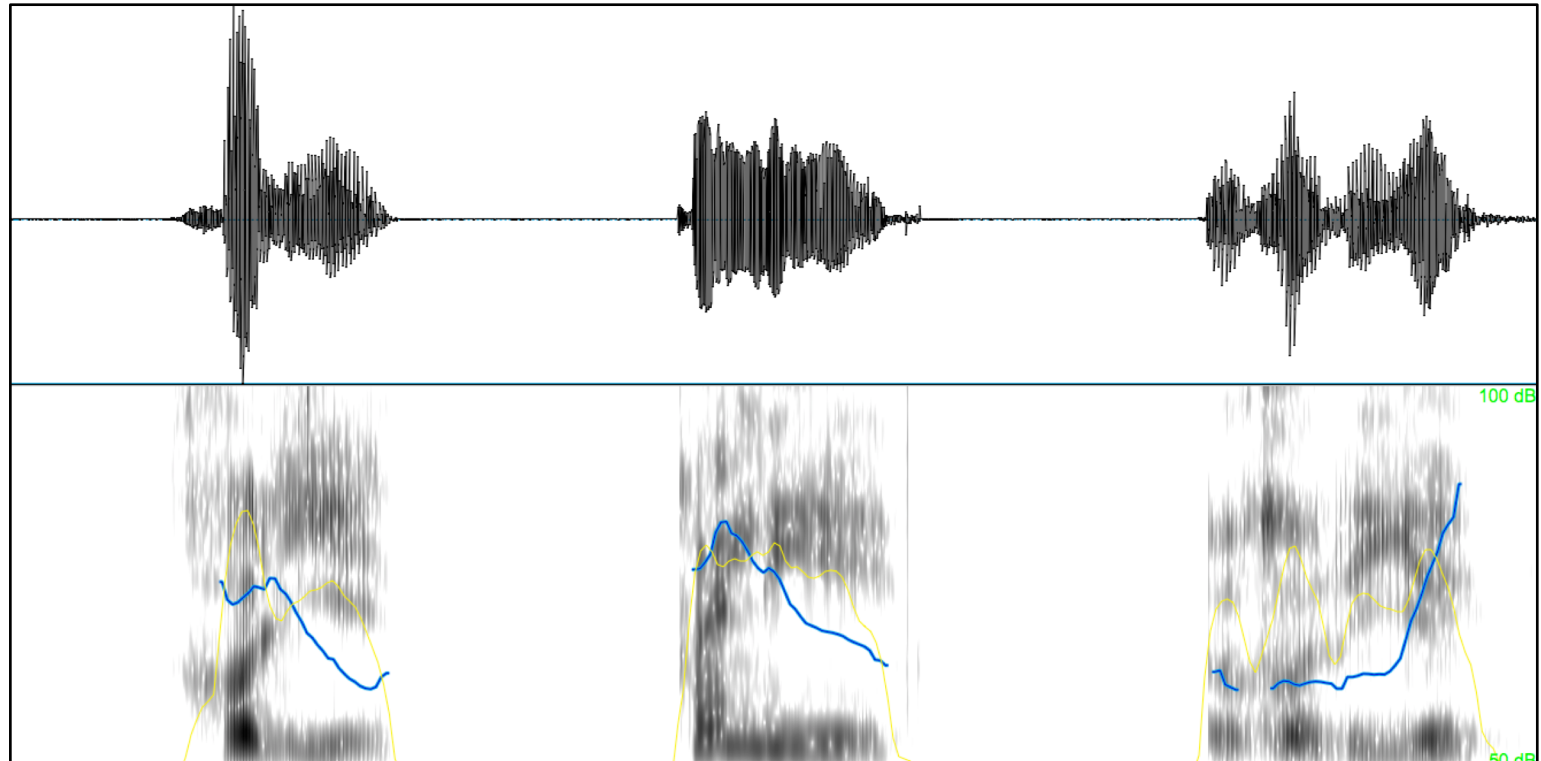
- “Traditional” aspects to look at:
  - The nature of the glides
  - Faithfulness
  - Phonotactic constraints, syllabification
  - The effect of morphological boundaries, word boundaries
- Classical derivational analysis: Schane (1968), Morin (1971), Dell (1972)
- Syllabic analysis: Kaye & Lowenstamm (1984), Klein (1991)
- OT analysis: Durand & Lyche (1999), Bullock (2002), Hall (2006)



# Discussion and future perspectives

## **Theoretical approach: Test existing analyses on PFC data**

- Phonetic reduction: Côté (2018)
  - Syneresis depends on the segmental context, number of syllables, articulation speed, frequency, i.e. factors that typically trigger reduction (cf. also French schwa).
- **Perhaps not a binary pattern, but a continuum between dieresis and syneresis, with gradual reduction towards syneresis and syllable deletion.**



*relier*

continuum, from clear  
syneresis to clear  
dieresis, with one  
instance judged as  
somewhere in between

# Closing remarks

One objective of this project: Make use of existing PFC corpus data and contribute with systematic, quantitative data to the overall study of glide formation in French.

- Conversation = unmonitored speech → large amounts of natural data ← coding
- Wordlist = elicited speech → comparable data ← multi-judge evaluation
- Limitations due to modifications on the interview protocol over the twenty years.
- Yet, the best existing window to French oral speech in all its variation → need to determine how to make best use of these data to test theoretical claims.

# Thank you for your attention!

& thanks to Sylvain Didelot for developing the Praat script!



# The distribution of syneresis and dieresis in contemporary French

two  
Testing ~~x~~ methodological tools  
to identify patterns across varieties

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Isabelle Racine (University of Genève)  
Marie-Hélène Côté (University of Lausanne)  
Julien Eychenne (Hankuk University of Foreign Studies)  
Sylvain Detey (Waseda University)

Fonologi i Norden (FiNo), February 21-22, 2020, Drammen, Norway



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