



LREC 2026

**Proceedings of Workshop on Dialects in NLP — A  
Resource Perspective (DialRes) @ LREC 2026**

**Workshop Proceedings**

**Editors**

**Antonios Anastasopoulos, Stella Markantonatou,  
Angela Ralli, Marcos Zampieri, Stavros Bompolas,  
Vivian Stamou**

16 May 2026

©ELRA Language Resources Association (ELRA), 2026  
These proceedings are licensed under a Creative Commons Attribution-  
NonCommercial 4.0 International License (CC BY-NC 4.0)

ISBN 978-2-493814-60-9

## Preface

The proceedings contains the 34 papers accepted for presentation at the Workshop on Dialects in NLP — A Resource Perspective (DialRes-LREC2026, <https://dialres.github.io/dialres/index.html>), co-located with the Fifteenth Biennial Language Resources and Evaluation Conference (LREC). The conference was held at the Palau de Congressos de Palma in Palma de Mallorca, Spain, from 11 to 16 May 2026, with the DialRes workshop taking place on 16 May 2026.

For this first edition of DialRes, we received 43 submissions. We are deeply grateful to the dialect studies and NLP communities for embracing DialRes as a venue for presenting their work. This strong response highlights the growing interest in dialectal research and confirms the need for a dedicated forum focusing on the development and use of dialectal resources.

The accepted papers cover both living and historical dialects from nearly all continents. Contributions on historical dialects include studies on English, German, Heptanesian Greek, Old Irish, and Transcarpathian varieties. Research on living dialects spans a wide range of linguistic contexts, including Arabic, Aromanian, Bangla, Basque, Formosan languages, German, Italian, Kurdish, Modern Greek, and Slavic varieties (such as Pomak and Ukrainian), as well as Wancho.

The contributions address a broad spectrum of topics, ranging from the collection and development of oral and written dialectal resources—such as corpora, treebanks, benchmarks, and specialized databases—to their application in dialectometry and dialect classification. Many papers employ state-of-the-art methodologies, including Automatic Speech Recognition (ASR), neural parsing techniques, and Large Language Models (LLMs).

We would also like to express our gratitude to the Archimedes Research Unit of the Athena Research Center and the UniDive COST Action for endorsing the workshop. In particular, the Archimedes Research Unit generously supported the participation of three of the organizers.

Last but not least, we extend our thanks to the members of the DialRes Program Committee for their contributions to the successful organization of the workshop.

### **The DialRes Workshop Organizers:**

Antonis Anastasopoulos  
Stella Markantonatou  
Angela Ralli  
Marcos Zampieri  
Stavros Bompolas  
Vivian Stamou



## **Organizing Committee**

- Antonios Anastasopoulos
- Stella Markantonatou
- Angela Ralli
- Marcos Zampieri
- Stavros Bompolas
- Vivian Stamou

## **Program Committee**

- Mohamed Aghzal (George Mason University, USA)
- Syeda Sabrina Akter (George Mason University, USA)
- Esra Ayten (Istanbul Medeniyet University, Türkiye)
- Verginica Barbu-Mititelu (Romanian Academy – Research Institute for Artificial Intelligence, Romania)
- Johnatan Bonilla (Humboldt University of Berlin, Germany)
- Cristina Bosco (University of Turin, Italy)
- Stergios Chatzikyriakidis (University of Crete, Greece)
- Antonis Dimakis (National and Kapodistrian University of Athens & Archimedes Center, Greece)
- Fahim Faisal (George Mason University, USA)
- Voula Giouli (Aristotle University of Thessaloniki, Greece)
- Mirjana Ilić (University of Niš, Serbia)
- Brian Joseph (Ohio State University, USA)
- Petros Karatsareas (University of Westminster, UK)
- Panagiotis Krimpas (Democritus University of Thrace, Greece)
- J. Elizabeth Liebl (George Mason University, USA)
- Johann-Mattis List (University of Passau, Germany)
- Nikola Ljubešić (Jožef Stefan Institute, Slovenia)
- Irina Lobzhanidze (Ilia State University, Georgia)
- Chutong Meng (George Mason University, USA)
- Nikolett Mus (Hungarian Research Centre for Linguistics, Hungary)
- Petya Osenova (Sofia University "St. Kliment Ohridski", Bulgaria)

- Joshua Otten (George Mason University, USA)
- Georgios Paraskevopoulos (ILSP/Athena Research Center, Greece)
- Siyao (Logan) Peng (LMU Munich, Germany)
- Alistair Plum (University of Luxembourg, Luxembourg)
- Prokopis Prokopidis (ILSP/Athena Research Center, Greece)
- Christoph Purschke (University of Luxembourg, Luxembourg)
- Josep Quer (ICREA – Universitat Pompeu Fabra, Spain)
- Yves Scherrer (University of Oslo, Norway)
- Krešimir Sojat (University of Zagreb, Croatia)
- Aarohi Srivastava (University of Notre Dame, USA)
- Robert Sviben (Institute for the Croatian Language, Croatia)
- Chihiro Taguchi (University of Notre Dame, USA)
- Zeerak Talat (Simon Fraser University, Canada)
- Alexandros Tantos (Aristotle University of Thessaloniki, Greece)
- Belu Ticona (George Mason University, USA)
- Chara Tsoukala (ILSP/Athena Research Center, Greece)
- Socrates Vakirtzian (University of Crete, Greece)
- Alexandra Vella (University of Malta, Malta)
- Shuly Wintner (University of Haifa, Israel)
- Murong Yue (George Mason University, USA)

## Table of Contents

<i>A Bolu: A Structured Dataset for the Computational Analysis of Sardinian Improvisational Poetry</i> Silvio Calderaro and Johanna Monti .....	1
<i>Saar-Voice: A Multi-Speaker Saarbrücken Dialect Speech Corpus</i> Lena Sophie Oberkircher, Jesujoba Alabi, Dietrich Klakow and Jürgen Trouvain.....	12
<i>MD_NLP: Reconstructing an Australian English Heritage Dialect Corpus from the Mitchell-Delbridge Recordings through LLM-Assisted Speaker Attribution</i> Steven Coats .....	24
<i>Challenges in the Detection of Dialect for Historical Languages; the Case of Old Irish Text Resources</i> Adrian Doyle .....	33
<i>Phonologically-aware Automatic Speech Recognition Evaluation of Low-Resource Languages: The Case of Basque Dialects</i> Christoforos Souganidis, Asier Herranz, Ibon Saratxaga, Eva Navas and Inma Hernaez .....	48
<i>Systematic Normalization of Spoken Mixed-Language, Mixed-Dialect Data</i> Margaret Blevins .....	58
<i>Handling Cross-Dialect Syntactic Variation: a Theory-Driven Web Resource</i> Emanuela Li Destri, Marco Longhin, Gaia Sorge, Sofia Ferroni, Giovanni Battista Matteazzi, Andrea Artioli, Lorenzo Carletti, Federico Motta, Giuseppe Longobardi and Cristina Guardiano .....	70
<i>Can LLM Agents Identify Spoken Dialects like a Linguist?</i> Tobias Bystrich, Lukas Hamm, Maria Hassan Akhter, Lea Fischbach, Lucie Flek and Akbar Karimi .....	83
<i>Beyond Accuracy: Analyzing Dialect Confusion in Automatic Speech-Based Dialect Classification</i> Lea Fischbach, Alfred Lameli and Lucie Flek .....	93
<i>FLEURS-Kobani: Extending FLEURS dataset for Northern Kurdish</i> Daban Q. Jaff and Mohammad Mohammadamini .....	104
<i>Exploring the reusability of Northern Kurdish resources for Badini speech recognition</i> Mohammad Mohammadamini, Aveen Jalal Mohammed, Barzan Hussein Mohammed, Dezhveen H. Abdulazeez, Imad Saeed Sadeeq, Dilgash Mohammed Salih, Amara Ismail Melhum and Abuobaida Abdullah Dheyab .....	110
<i>Wancho Dialectometry: Community-created data and the Living Dictionaries project</i> Kellen Parker van Dam .....	116
<i>Dialectometry and Evaluation of the ePark Corpus for Low-Resource Formosan Language Dialects</i> Henry Gagnier.....	124

<i>A Dialectal Corpus for Ukrainian: Collection, Classification, and Standardization</i> Yuliia Frund and Sina Ahmadi.....	135
<i>German Dialects Across Situations, Generations, and Regions: The REDE corpus as an Oral Resource for NLP</i> Hanna Fischer and Alfred Lameli .....	144
<i>A Catalog of Basque Dialectal Resources: Online Collections and Standard-to-Dialectal Adaptations</i> Jaione Bengoetxea, Itziar Gonzalez-Dios and Rodrigo Agerri.....	153
<i>WoVis: Interactive Visualization of Word Embeddings for Semantic Change in Historical and Dialectal Language Resources</i> Filip Miletić, Maximilian Henkel, Rene Cutura, Sophie Sadler, Quynh Quang Ngo, Michael Sedlmair and Sabine Schulte im Walde.....	165
<i>Speaker Normalization via Voice Conversion Reveals a Human-Machine Dissociation in Dialect Classification</i> Caroline Kleen, Lea Fischbach, Akbar Karimi, Lucie Flek and Alfred Lameli .....	177
<i>South Tyrolean Dialect-to-Standard Speech Translation: A Resource</i> Greta H. Franzini and Luca Ducceschi .....	188
<i>TransVar – the Corpus for Variation and Change Study of the Historical Transcarpathian lects</i> Iliia Afanasev .....	195
<i>The Generator-Eraser Paradox: Community Guidelines for Responsible LLM-Assisted Dialect Resource Creation</i> Wajdi Zaghouani .....	209
<i>The Texas German Dialect Project Corpus as a Diachronic Resource for Investigating Language Contact</i> Thomas Schmidt, Margaret M. Blevins, Hans C. Boas and Glenn Gilbert .....	221
<i>Pontic Greek in the Caucasus: an online corpus</i> Svetlana Berikashvili and Stavros Skopeteas.....	230
<i>Meaning Over Morphology: A Multi-Metric Benchmark of LLMs for Bangla Dialect Translation</i> Soumik Deb Niloy, Subhey Sadi Rahman, Mahbub E Sobhani, Md. Golam Rabiul Alam, Farig Yousuf Sadeque and Md. Rezuwan Hassan .....	238
<i>Sociolinguistic aspects of crowdsourcing for a vocal corpus of Alsatian</i> Pascale Erhart, Lucile Hamm, Sam Bigeard, Carole Werner, Malek Yaich and Slim Ouni .....	256
<i>HeptaTAX: A Neuro-Symbolic Pipeline and Benchmark for Classifying 16th-Century Heptanesian Notarial Acts</i> Stergios Chatzikyriakidis, Eleni Karantzola and Vasiliki Makri.....	265
<i>Towards Semantic Access and Interoperability in Digital Dialectal Atlases. A Case Study</i> Paola Marongiu and Simonetta Montemagni .....	274

<i>A CLDF-Compliant Lexical Database for Modern Greek Dialects: Resource Design and Dialectometric Analysis</i>	
Stavros Bompolas, Natalia Chousou-Polydouri, Manuela Genitsaridi, Danae Karatzanou, Georgios Kostopoulos, Elena Anagnostopoulou and Dimitra Melissaropoulou .....	287
<i>A Speech Resource for the Pontic Greek Dialect: Transcription Choices and Baseline ASR Evaluation</i>	
Rodanna Konstantinidou, Chara Tsoukala, Vivian Stamou, Voula Giouli and Stella Markantonatou .....	300
<i>First Steps in ASR for Cypriot Greek: Challenges and Insights</i>	
Vivian Stamou, Spyros Armostis, Antigoni Klimi, Georgios Paraskevopoulos, Vassilis Katsouros and Antonios Anastasopoulos .....	308
<i>Structural Divergence under Shared Language-Level Specification: Griko in Universal Dependencies</i>	
Stavros Bompolas, Emanuela Pinna, Josep Quer, Marika Lekakou and Stella Markantonatou .....	315
<i>Digital Preservation of Aromanian Through Knowledge Management and Automatic Speech Recognition Evaluation</i>	
Marija Pendevska and Hristina Nastevska .....	327
<i>A Novel Typology of Mutually Intelligible Words: The Case of Slavic Languages</i>	
Edward Klyshinsky and Yulia Badryzlova .....	337
<i>Transfer Learning for an Endangered Slavic Variety: Dependency Parsing in Pomak Across Contact-Shaped Dialects</i>	
Sercan Karakas .....	345

# TransVar – the Corpus for Variation and Change Study of the Historical Transcarpathian lects

Ilia Afanasev

University of Vienna

Vienna, Austria

ilia.afanasev.1997@gmail.com

## Abstract

The paper introduces TransVar – the corpus of the historical Transcarpathian lects (the first half of the XX century, the territories of modern Ukraine, Poland, Slovakia, and Romania). The corpus contains data from Lemko, Bojko and Hutsul small territorial lect groups. It is crucial for studies of the people of these territories, who witnessed forceful deportation from their homeland in the 1940s – 1950s, soon after the recordings were made (1920s – 1930s). The article also provides a brief overview of their linguistic properties, as evident in the material.

The corpus is morphosyntactically tagged. It contains data on part-of-speech, morphological features, lemmata and syntactical dependencies. The study stresses the crux of manual analysis of the errata made in an automatic tagging phase for further improvement. The supplementary information includes named entities encountered in the text and the basic vocabulary. All the texts are accompanied by metalinguistic information, required for the sociolinguistic study.

After the analysis of the current stage of the corpus creation, the article outlines further research prospects. Apart from more thorough manual annotation, one of the prospects is to add English translation with the purpose of making the material more accessible to scholars without a background in Slavic studies.

**Keywords:** Transcarpathian, sociolinguistics, Universal Dependencies, low-resourced language modelling, part-of-speech tagging, lemmatisation, dependency parsing, qualitative analysis

## 1. Introduction

Historical low-resourced, small territorial lects<sup>1</sup> are probably among the most understudied types of resources in computational linguistics (Miletić and Siewert, 2023). This material is severely low-resourced and highly non-standard, lacking normalisation. This makes it especially challenging for NLP tools, even in comparison with modern non-standard varieties (Piotrowski, 2012). Still, there is a significant number of resources containing texts produced by speakers of these lects. This article considers material gathered in the Transcarpathian region in the twentieth century (in the territories of modern Ukraine, Poland, Slovakia, and Romania) by several groups of scholars and published either concurrently (Nakonečna and Rudnyc'kyj, 1940) or subsequently (Kuraszkiewicz, 1963; Zheguc, 2001), and presents a corpus based on this material. An overview of the resources used to compile the corpus is provided in Section 4.

---

<sup>1</sup>The article denotes any given language variety (idiolet, doculect, dialect, regiolect, sociolect, standard) as *lect*. This choice enables the elimination of overly hierarchical dichotomies, namely, **X** is a dialect of **Y**, which imply some degree of **X** being a lesser version of **Y**; the study of **X** can thus only be comparative, guided by differences from **Y**. Rejecting this differential approach is paramount for building a corpus, an integrative endeavour by definition (Goldin and Kryuchkova, 2011).

All the lects are East Slavic<sup>2</sup>. They belong to three main groups: Bojko, Lemko, and Hutsul (Section 3 describes their linguistic features and position within the Slavic clade). These lects have never been the subject of a quantitative variationist study due to the absence of an open-access corpus—a gap this study intends to close (Section 2 contains a short overview of variationist studies of East Slavic languages, including the Transcarpathian lects, using NLP tools).

The corpus contains part-of-speech and morphological tags, along with lemmatisation and dependency parsing. It also includes specific tags for basic vocabulary items and named entities that facilitate historical research. Each text is accompanied by a set of extralinguistic (metadata) tags containing information about the speaker, the dialectologist who conducted the recording, and the source itself. Section 5 outlines the corpus design, the tagging schema, and the annotation tools. It

---

<sup>2</sup>Within historical Slavic studies, there is no consensus on whether West Slavic, South Slavic, and East Slavic are valid groupings or whether Proto-West Slavic, Proto-South Slavic, or Proto-East Slavic actually existed (Nikolaev, 1988, p. 116; Kryś'ko, 1998, p.85–89; Zaliznyak, 2004, p. 7–8; Matasović, 2008, p. 83; Saenko, 2020). This article uses the term *East Slavic* in a purely geographical sense to denote the eastern part of the Slavic continuum, including the territory from eastern Slovakia in the south-west to the coast of the White Sea in the north-east.

also discusses the importance of shared lexicons for NLP in low-resourced settings. Section 6 places this analysis in the context of possible future improvements.

### 1.1. Contribution

The study introduces a new resource for the study of historical Transcarpathian lects from both quantitative and qualitative perspectives: a morphosyntactically tagged corpus in the Universal Dependencies (UD) format (de Marneffe et al., 2021). It also provides a linguistic analysis of the performance of the Stanza model trained on modern Ukrainian and initiates the development of guidelines for the automatic annotation of small territorial East Slavic lects.

## 2. Related Work

### 2.1. East Slavic Small Territorial Lects Corpora

While gathering the material of small territorial lects has been a pivotal part of dialectology studies from their wake (Wenker et al., 1889–1923) for the recent two hundred years (Kalnyn', 1973; Nazarova, 1977), the push for digitisation is relatively recent, especially for the digitisation of texts (Goldin, 1990). Most digitisation efforts still consider atlases (Trüb, 1989) that get transformed into digital maps (Marchenko et al., 2025). Nevertheless, the Russian National Corpus (Kachinskaya and Sichinava, 2015) and the Belarusian N-Corpus both (National Corpus of the Belarusian Language, 2018) have dialectological subcorpora. While the General Regionally Annotated Corpus of the Ukrainian Language includes some regional variation, there are almost no autochthonous small territorial lects within the material (Shvedova et al., 2017–2025). Aside from the large national-level corpora, there are other initiatives. The most notable are the TrimCo corpus (Wiemer and Seržant, 2020), containing small territorial lects of East Baltic, including multiple Belarusian and Russian small territorial lects, and the HSE collection of the East Slavic small territorial lect corpora (Daniel et al., 2013–2018; Garder et al., 2018; Ter-Avanesova et al., 2018, 2019; Ronko et al., 2019; Ryko and Spiricheva, 2020), each containing some hundred thousand tokens, enabling medium-scale variation research, including quantitative approaches. Aside from them, there are local initiatives dedicated to thorough investigation of a particular group of lects. The Saratov dialectological corpus comprises material from three small territorial lects, Northern Russian Megra, Middle Russian Belogornoje, and Middle Russian Zemlianye Hutora, gathered over the last forty years (Goldin, 1990;

Goldin and Kryuchkova, 2011). The Tomsk dialect corpus is a digitisation of materials from many different lects of the Tomsk Region and Western Siberia in general, adding up to 3.5 million tokens (Zemicheva et al., 2023).

Overall, there is a significant number of corpora for modern East Slavic territorial lects. Yet, historical variations are clearly underrepresented, and there are no corpora for the western part of the continuum representing the small territorial lects and not the more modern regiolects (for the whole territory of the standard Ukrainian distribution and further to the West into the territories of Poland and Slovakia).

### 2.2. East Slavic Language Variation and NLP Tools

There is a rich tradition of variationist studies of Slavic languages in general, and East Slavic in particular. There are works dedicated to the variation in phonetics (Moroz, 2024), morphology (Ryko, 2024), lexicon (Zemicheva, 2020), and syntax (Moroz, 2016). Some take a wider typological approach (Wiemer et al., 2017), others restrain the comparison to the smaller areas (Ryko and Spiricheva, 2022).

However, there is one gap in this body of research. Despite the widening application of computational methods in variationist studies of East Slavic languages (Koile and Moroz, 2024), there is a relatively small number of studies that consider the role of variation in building language resources, specifically oriented towards East Slavic in general and Transcarpathian in particular (Scherrer and Rabus, 2017; Rabus and Scherrer, 2017), when contrasted to the other Slavic groups (Ondrejová and Šuppa, 2024; Lendvai et al., 2025). This article aims to outline the project of a corpus that facilitates closing the gap.

## 3. Transcarpathian Lects

This section gives a short overview of all of the Transcarpathian lects used to build the corpus from both the diachronic and synchronic perspectives.

### 3.1. The General Description History of the Clade

The *Transcarpathian* lects are a group of East Slavic small territorial lects spoken in the geographical region of Transcarpathia. There are three main groups, for which the researchers collected the databases: Bojko, Lemko and Hutsul (Kuraszkiewicz, 1963, pp. 67–72; Zilyns'kyj, 1933, pp. 8–10; Del Gaudio, 2017, pp. 64–85). The

first two are Slavic lects that are the closest to being autochthonous (by the terminology of [Barannikova \(2005, p. 193\)](#)) on these territories. The Hutsul lects are late settlement (by the terminology of [Barannikova \(2005, p. 193\)](#)). The map 1 from ([Zilyns'kyj, 1933](#)) shows the geographic distribution of the lects in the 1920s – 1930s.

### 3.2. Morphology

The scholars ([Kuraszkiewicz, 1963](#); [Myholynec', 2004](#); [Del Gaudio, 2017](#)) report on a set of common Transcarpathian features that divide this area from the neighbouring East Slavic languages. The most prominent features include:

- Transcarpathian lects retain short forms of personal pronouns, for instance, *ç'a* 'self-Acc.SG' that in some cases can undergo root reduplication: *seç'a* 'self-Acc.SG'. The frozen form *ç'a* 'self-Acc.SG' denoting the reflexivity of the verb is not restricted in its distribution within the clause, in contrast ([Kuraszkiewicz, 1963, p.71](#)).
- In Transcarpathian lects *INS.PL* of names has *-ma*, a former *INS.DU* ending, cf. *ps'oma* 'dog-INS.PL'. The standard Ukrainian has form *ps'ami* 'id.'.
- Present tense third person singular and plural, along with imperative, have *-t* ending, in contrast to standard Ukrainian  $\emptyset$  or *-t<sup>j</sup>*: Transcarpathian *xod'i-t* 'walk-PRES.3SG' – standard Ukrainian *xod'i-t<sup>j</sup>* 'id.' ([Myholynec', 2004, p. 18](#)).

To summarise, there are many common archaisms within the Transcarpathian area, which alternate the texts enough for the NLP tools to struggle, presenting a well-suited material for variation study research.

### 3.3. Lexicon

The lexicon of Transcarpathian lects is both highly innovative and highly archaic. There are many borrowings from the neighbouring languages across all the Transcarpathian lects ([Nakonečna and Rudnyc'kyj, 1940, p. 71](#)). At the same time, there are a lot of archaisms ([Del Gaudio, 2017, p. 85](#)). One of the most prominent features is the word for 'one'. In the Transcarpathian lects it is *jed'en*, a form closer to West and South Slavic, while in standard it is the usual East Slavic *od'in* ([Kuraszkiewicz, 1963, p.72](#)). This may cause some issues, similar to the out-of-domain problem ([Afanasev and Lyashevskaya, 2023](#)), but as the Transcarpathian lects contributed a lot to the standard Ukrainian vocabulary ([Del Gaudio, 2017, p. 85](#)), not crucial ones.

### 3.4. Syntax

There are several peculiar constructions in the Transcarpathian lects not present in standard Ukrainian, including:

- The Transcarpathian lects use prepositions *na* 'on' and *k* 'to' to express the direction instead of the standard Ukrainian *do* 'towards'.
- The Transcarpathian lects use conjunction *ñi* in comparative constructions.

Some of these, like the accusative possessed construction, are less likely to cause issues with syntactic tagging. The others, like the causative construction, seem to present a bigger problem.

## 4. Resources

The texts that comprise the corpus are mostly a product of the collective effort of a single group of scholars, who, during the 1920 – 1930s, documented various East Slavic lects spread mostly in the Transcarpathian geographical region from Central Slovakia to Western Ukraine and from Southern Poland to Northern Romania. More texts are available via the efforts of the 1950s researchers, but these are relatively more scarce. The following paragraphs describe each of the books that came out of the efforts in terms of the presented texts, their description, and metalinguistic information.

### 4.1. Nakonečna and Rudnyc'kyj (1940)

[Nakonečna and Rudnyc'kyj \(1940\)](#) contains texts, a dictionary and general information on three south-westernmost East Slavic small territorial lects of Transcarpathian territories. The book consists of three parts: the general introduction, the description of the material lect by lect, and the short differential<sup>3</sup> dictionary of the lexical items from all the lects. Of these three, all are relevant for the digitisation effort and corpus creation.

The introduction starts with the general information on the linguistic features of the analyzed lects, which are common for all of the analysed lects, when they are compared to other East Slavic lects and especially Ukrainian ([Nakonečna and Rudnyc'kyj, 1940, pp. 7–8](#)).

The introduction continues by providing meta-information on the speakers of all three lects, mainly stating their linguistic and social background (date of birth, education, exposure to standard Ukrainian).

<sup>3</sup>The one that contains only the items that differ from the standard language, in this case, Ukrainian, as opposed to the full, which contains all the lexical items from the studied lect.

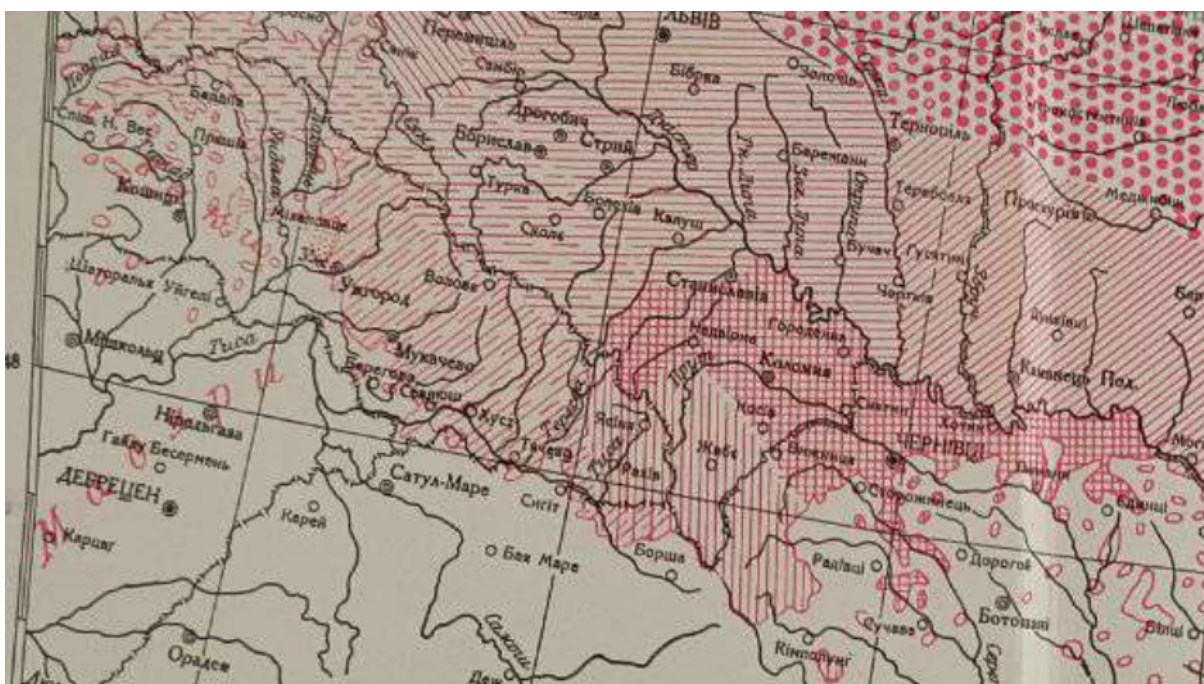


Figure 1: The map of Transcarpathian lects distribution in the beginning of the XX century (Zilyns'kyj, 1933). Rare horizontal strikes denote Lemko (in the left corner), more dense horizontal strikes (closer to the center) denote Bojko, dense vertical strikes (closer to the right) denote Hutsul.

The introduction also outlines the research methodology. The crucial part is an extremely detailed table of phonetic transcription (Nakonečna and Rudnyc'kyj, 1940, pp. 17–18) providing key information for digitising the texts in a more common format.

The next section of Nakonečna and Rudnyc'kyj (1940) consists of three parts, each dedicated to one particular idiolect from Lemko (Nakonečna and Rudnyc'kyj, 1940, pp.23–37), Bojko (Nakonečna and Rudnyc'kyj, 1940, pp.49–62) and Hutsul (Nakonečna and Rudnyc'kyj, 1940, pp. 65–82) parts of the continuum. Each of these parts outlines the phonetic, morphological, and lexical peculiarities of the lect, as well as provides the texts in these lect. The main issue is that the comparative research does not represent small territorial groups of Lemko, Bojko and Hutsul, but a single speaker out of each of these groups, which can complicate a variation study (including a historical phonology one). Metainformation on the texts (there is no split between the texts, only between – it seems – the recordings) and the speakers is not present in these parts, which is especially problematic, given that it is already significantly restricted in the introductory part of the book.

The representation of texts is rather detailed, with three forms: the phonetic transcription<sup>4</sup>, the standardised<sup>5</sup> transcription, and the German translation<sup>6</sup>.

to sut fʃ'utkɣ lem'öwskɣ s'ela
de po lem'öwskɣ fiv'arjat
-----
То сʏт вш'іткѣ лемк'івскі с'єла,
де по лемк'івскі гв'арјат
-----
Das sind alles lemkoische Dörfer,
wo lemkoisch gesprochen wird.

Table 1: LA1407.1.4, an example of a sentence from Nakonečna and Rudnyc'kyj (1940, p. 31). At the top, there is phonetic representation and in the middle is a standard-based transcription. The German translation is at the bottom. The translation of the sentence is *These all are Lemko villages, where one speaks Lemko*.

tion<sup>6</sup>. Table 1 shows an example.

The fine-grained transcription is, on the one hand, a serious advantage for the reconstruction of the phonetic system. However, there is no understanding of how reliable it actually is, especially without surviving recordings. One more issue is that there is almost no possibility to use either original transcription or its IPA rendering for automatic tagging. For the latter purposes, the study is going to use a standard-based transcription, also provided in Nakonečna and Rudnyc'kyj (1940).

After a short conclusion (Nakonečna and Rudnyc'kyj, 1940, pp. 83–85), the book provides a dic-

<sup>4</sup>I provide the IPA version, as it is more well-known and easy to use than the original transcription.

<sup>5</sup>Using the same set of graphemes as standard

Ukrainian of the time.

<sup>6</sup>German seems to be L2 for authors, as previous research has claimed (Afanasev, 2025).

tionary of the words, specific for the small territorial lects under study. While not providing the full information required for a lexical study, this is especially helpful for lemmatisation. Overall, [Nakonečna and Rudnyc'kyj \(1940\)](#) provides a material of high quality for the time given, though lacking clarity and transparency.

#### 4.2. Zheguc (2001)

[Zheguc \(2001\)](#) is a collection of texts, collected in different time periods (1920s – 1930s and 1990s) in the Hutsul part of the Transcarpathian region. For chronological uniformity, the corpus takes only the texts that come from the 1920s – 1930s. While this restricts the overall quantity of the material and does not allow for a proper language change study, it greatly assists in balancing the corpus. The modern material is the result of continuous field trips; thus, it is going to reduce the historical material to residuals if put in the same corpus. This is not to mention that due to the Soviet era deportations the linguistic landscape has probably drastically changed between the 1920s – 1930s and the 1990s, therefore it is hardly suitable for a proper comparison.

The transcription system of texts is clear. It is standardised phonetic/phonematic transcription, based on standard Ukrainian, but depicting the key phonetic and lexical features of the Transcarpathian lects, relevant for the purposes of the study. It does not represent all the phonetic nuances and inter-dialect variation, but preserves the crucial characteristics and acts as a compromise solution, necessary for the texts for which there is no recording available. The established rules of the transcription system allow it to be unified with the standardized transcription system of [Nakonečna and Rudnyc'kyj \(1940\)](#). Pivotaly, [Zheguc \(2001, p. 8\)](#) provides the description of the phonetic features of the lects, which assists in unifying the transcription.

From the sociolinguistic point of view, [Zheguc \(2001\)](#) provides the best possible ground for tagging metadata. It contains standard sociolinguistic information about the speakers (age, occupation, level of education, name) and the dialectologist who had initially recorded the texts, Ivan Paňkevyc̣. This not only enables providing the research with more data for the variationist study, but possibly facilitates insight into how a particular scholar chooses to represent a non-standard variety ([Saenko, 2018](#)).

Thus, while the representation of the texts is not the most detailed among the other resources, the quality of the material is probably the best. The transcription transparency and the relative abundance of sociolinguistic information make the data useful for sociophonetic, sociolexical, and sociogram-matical studies alike and necessitate including this resource in the corpus.

#### 4.3. Kuraszkiewicz (1963)

[Kuraszkiewicz \(1963\)](#) contains a short description of each of the East Slavic small territorial lect groups, as well as texts from the lects of these groups. Among these are several texts from the Transcarpathian lects, recorded and transcribed mostly at the beginning of the XX century ([Kuraszkiewicz, 1963](#), pp. 124–128).

The possible digitisation of the texts from [Kuraszkiewicz \(1963\)](#) faces some significant issues. The transcription system here, on the contrary to [Nakonečna and Rudnyc'kyj \(1940\)](#), is not explained, and it is rather hard to make a proper correspondence between it and IPA, or even standard Ukrainian. There are also no signs of either a standard-based additional transcription or a translation into any other language. Given the lack of audio recordings, this is quite problematic. The crucial issue, however, is the lack of metadata, aside from the group (Lemko/Bojko/Hutsul) and the source of transcription, including the dialectologist's name. [Kuraszkiewicz \(1963\)](#) also generally provides the particular area where the recording took place. This facilitates some understanding on how different researchers represented different varieties; however, studying the varieties themselves is going to be significantly complicated.

While not exactly rich with metalinguistic and linguistic information, [Kuraszkiewicz \(1963\)](#) possesses one crucial advantage over all the other sources, namely, the geographical distribution of the lects. It covers at least two lects from each group, bringing much-needed diversity to the dataset.

## 5. Corpus Creation

### 5.1. Corpus Design

The main purpose of the corpus is to provide insights into the processes of variation and change that were going on in the Transcarpathian lects, as illustrated by the morphosyntactic properties of the texts. The most widely distributed format to represent the morphosyntactic properties is `.conllu`, so this is the main format of the corpus.

The transcriptions within the different sources are drastically different, so the research opts to unify them. The main transcription system is IPA. The main representation system for morphological tagging, however, is a standard Ukrainian phonetic/phonematic rendering, applied by both [Nakonečna and Rudnyc'kyj \(1940\)](#) and modern small territorial lects corpora of East Slavic languages, for instance, [Goldin and Kryuchkova \(2011\)](#) or [Ryko and Spiricheva \(2020\)](#). This system renders non-standard texts in something more resembling a neighbouring standard, but with faith-

ful depiction of key phonetic, morphological, lexical and syntactical features (von Waldenfels et al., 2014). This helps to present the corpus to the audience unfamiliar with the IPA conventions. Crucially, this system also facilitates more effective automatic processing. The corpus has two layers of tagging: morphosyntactic for each token (part-of-speech, morphological tags, lemma, syntactic features), and an additional linguistic one. When possible, the corpus also provides translations into other languages.

## 5.2. Manual Digitisation

Due to the specific system of transcription for the given lects, using OCR techniques of e-Scriptorium (Kiessling et al., 2019) or Transkribus (Kahle et al., 2017) proved to be impossible. Therefore, the performance of digitisation process is manual.

The workflow was the following:

- Manually type the material into a machine-readable form.
- In cases of Kuraszkiewicz (1963) and Zheguc (2001) it is necessary to add a standardised layer.
- Split the whole material into documents (especially relevant for Kuraszkiewicz (1963) and Zheguc (2001); Nakonečna and Rudnyc'kyj (1940) already contains splits by document).
- Split the document into texts (especially relevant for Nakonečna and Rudnyc'kyj (1940), which does not provide splits by texts within the documents).
- Split the texts into sentences (mostly done by the scholars).
- Perform manual word tokenisation.
- Put data in .conllu format.
- When required, provide additional information about the ASJP basic vocabulary list and named entities to the *misc* section of the token. In the *misc* section, there are also *wf* and *tf* fields, the latter providing the IPA-based transcription (if the original data contains phonetic transcription), and the former – normalised token (standard-based representation with removed diacritics).

### 5.2.1. Manual Digitisation Case Study: Kuraszkiewicz (1963)

The section outlines the workflow of transforming the original transcription from Kuraszkiewicz (1963) to IPA transcription and standardised Ukrainian orthography. Example 1 below shows the original

rendering. It is accompanied by a glossed<sup>7</sup> version and a translation of the sentence.

- (1) Hutsul (Kuraszkiewicz, 1963, p. 125)

Taj̃	p̃ip
taj̃	p̃ip-∅
and.so	priestling-NOM.SG
l̃edwy	ũk̃ik
l̃edwy	ũ-k̃ik-∅
barely	away-run-PST.MASC.3SG
witt'oŋo	g̃ik̃ka
wit-t-'oŋo	g̃ik̃k-a
from-DET-MASC.GEN.SG	devil-GEN.SG

.

.

.

'And so the priestling barely ran away from that devil.'

The next step requires the conversion of this example into IPA and standardised Ukrainian, with the preservation of its main features. In this text, the most notable feature distinguishing Hutsul from Modern Standard Ukrainian is the sound change from the dental plosive *t̃* to the velar plosive *k* before palatal vowels or palatalised consonants. Two words exhibit this change: *ũk̃ik* 'ran away' (Modern Standard Ukrainian *ũt̃'ik* 'id.') and *g̃ik̃ka* 'devil' (Modern Standard Ukrainian *d̃ad̃ko* 'uncle'). As this appears to be an important feature of the lect, it should be preserved. At the same time, since the preposition *від* is generally a separate token in Modern Standard Ukrainian, the standardised version should separate it from the determiner *того*. Thus, the preliminary reconstruction, based on other already processed texts from the corpus that have been standardised by the scholars who originally transcribed them, as well as on corpora of Modern Standard Ukrainian (Kopp et al., 2023), would be as follows: *Тай п̃іп л̃едви вк̃ік від то́го г̃ік̃кя*.

IPA transcription should also rely on other texts and previous studies (Zilyns'kyj, 1932; Nakonečna and Rudnyc'kyj, 1940; Ševel'ov, 1979; Zhovto-briukh et al., 1979). Using this information, it is possible to reconstruct the following sound form of the sentence: *taj p̃'ip ledṽi wk̃'ik wit-t'ofo gik̃'k'a //*. One of the key changes employed here is the placement of stress on the last syllable of *gik̃'k'a* (by analogy with *p'ip – pop'a*). Another change is the substitution of *a* with *α*, which is characteristic of Hutsul in the GEN.SG of masculine nouns (Nakonečna and Rudnyc'kyj, 1940, p. 74). It is unclear what sound *l* designates; given other contexts in Kuraszkiewicz (1963) and the data from Nakonečna and Rudnyc'kyj (1940), the best option seems to be the IPA *l*. As the transcriber joined

<sup>7</sup>Glosses are given according to Comrie et al. (2008)

wit~t'ofio into a single sequence, the IPA transcription uses the `~` symbol to indicate the pronunciation of two words without a pause. The IPA transcription also uses `ː` instead of an acute accent to indicate the palatalisation of consonants. Consequently, word stress is marked with the special symbol `'`. The last crucial transformation is the use of `v` for original `w`, as the latter is most probably due to the transcriber using the Polish designation of this sound as part of the transcription, and `w` for original `u`, as `w` is a standard IPA designation of non-syllabic `u`. Other symbols coincide between the transcription in Kuraszekiewicz (1963) and the IPA. The only addition in this transcription is the `/` symbol marking the end of the sentence to denote a pause in the speaker's speech. After this conversion, the next step was to transform all the gathered data into the `.conllu` format. Table 2 shows the result.

```
# sent_id = chłopiec000.14
# IPA_transcription = tɔj pʲip ledvʲi wkʲik
wit~t'ofio gikʲkʲa //
# standard_text = Тай піп ледви вкік від того
гіккя.
# english_text = And so the priestling barely ran
away from that devil.

1 Тай _____ wf="Тай"|tf="tɔj"

(...)
```

Table 2: The `.conllu` representation of `chłopiec000.14`. As the table is an illustration, it shows (for brevity) only the first token.

Repeating these steps for all sentences prepared the corpus for the next phases of tagging. These stages included automatic annotation, manual correction, and the provision of sociolinguistic information about the speakers.

### 5.3. Automatic Annotation

The code used for automatic annotation is available in an Open Science Framework (OSF) repository<sup>8</sup>. The annotation process follows the workflow described in the `README.md` file in the repository.

The main tool of automatic annotation is Stanza (Qi et al., 2020), a well-known set of pre-trained models designed to perform basic NLP tasks, providing output in the Universal Dependencies (UD) format (de Marneffe et al., 2021). Among others, the ones especially relevant for this study are: part-of-speech tagging, morphological tagging, lemmatisation, and dependency parsing. The automatic annotation pipeline includes running the Stanza

<sup>8</sup>OSF link: <https://osf.io/528zy/overview> (last accessed: March 22, 2026).

model, trained on the standard Ukrainian corpus from UD (Nivre et al., 2020). This is due to the similarity of the selected representation system and the standard Ukrainian graphic system: it allows for the best possible results.

When having performed tagging, the script deletes XPOS, replacing them with underscore symbol: these are language-specific tags for standard Ukrainian. While, due to the high degree of similarity, some of them still can be applicable to the Transcarpathian lects, the differences within the grammatical systems of even rather closely related varieties are generally still significant enough to cause issues in the XPOS schema (Shishkina and Lyashevskaya, 2021). Thus, the decision was to temporarily remove this feature. After XPOS deletion, the data are ready for manual correction.

#### 5.3.1. Note on the Use of GenAI

While Generative AI (GenAI) is extremely useful in low-resourced settings, when compared to the more traditional models (Baturova et al., 2025), its zero-shot application, even when there are high-resource closely related languages in the pre-training dataset, may still be problematic (Umbet et al., 2025). At this stage, there are not enough resources in the corpus to provide examples for GenAI prompts. For the further stages of the research, when the first texts for each Bojko, Hutsul and Lemko are fully digitised and cross-checked, the experiments with GenAI, as compared to the traditional tools, are necessary.

### 5.4. Manual Correction and Preliminary Analysis

Manual correction includes the editing of incorrect part-of-speech and syntactic feature tags, along with lemma assignment. The manual correction was carried out by a single annotator with previous expertise in annotating East Slavic languages.

A crucial stage of manual correction is error analysis. As the automatic tagging stage relies on Stanza applied cross-linguistically, there are many errors, especially those caused by errors in previous tagging phases. Table 3 shows the quantitative evaluation of each category using traditionally applied metrics; the following paragraphs provide a qualitative analysis.

#### 5.4.1. Part-of-Speech/Morphological Tagging

The errata in part-of-speech tagging and, subsequently, morphological tagging emerge heavily from the differences in distributions of some items between standard Ukrainian and the Transcarpathian lects. In this fashion, Stanza tags `To` (`t-o`, `DET-NEUT.NOM.SG`) in `LA1407.1.4` as a particle



```
# sent_id = LA1407.1.4
# IPA_transcription = to sut fʂ'utkɤ lem k'öwskɤ s'ela de po lem k'öwskɤ fɪw'arjat
# standard_text = То сут вшитки лемківски сѣла, де по лемківски гварят
# variation_text = {То=>Тото::variation_type=Morph~Pronoun_Long} сут вшитки лемківски
сѣла, де по лемківски {г=>г::variation_type=Phon~G}варят.
# german_text = Das sind alles lem kische Dörfer, wo lem kisch gesprochen wird.
# english_text = These are all Lemko villages where Lemko is spoken.
```

```
1 То то PRON_ Animacy=Inan|Case=Nom|Gender=Neut|Number=Sing|PronType=Dem
2 nsubj 2:nsubj wf="То"|tf="То"
```

(...)

Table 4: The manually checked annotation of LA1407.1.4. As the table is an illustration, it shows (for brevity considerations) only the first token.

of the year of birth, otherwise 000". Thus, Василь Кабальюк<sup>9</sup>, born in 1870, has id *vkabaluk870*, while Гафія Прумштула<sup>10</sup>, information on whose year of birth is not in the data, has id *hprumptula000*. This is due to the variationist studies conventions and the consensus about the anonymity of the speakers<sup>11</sup> (Tagliamonte, 2025, pp. 48–50). Other features of the speakers include year of birth, place of birth (if known), education and occupation, where available.

More information is available from the recordings themselves. The corpus takes date and place of original publishing, genre and form (there are some songs in the dataset, so it is necessary to distinguish between poetry and prose). This enables the basic discourse analysis.

## 5.6. Representation and Access

The corpus is available on Zenodo as a separate language resource<sup>12</sup>. The results of the experiments are available in the OSF repository<sup>13</sup>.

## 6. Current State: Conclusion

The article presents the design of a corpus of historical Transcarpathian lects. The study outlines the resources used for the creation of this corpus. It demonstrates the research pipeline utilised in building the corpus, from resource collection and

<sup>9</sup>Fictionalised name, not attested in the data.

<sup>10</sup>Fictionalised name, not attested in the data.

<sup>11</sup>While the original resources are available for research purposes and have a permissive license, they have not been widely accessed before the publication. Thus, it is better to adapt additional measures for privacy safety.

<sup>12</sup>Zenodo link: <https://doi.org/10.5281/zenodo.19158682> (last accessed: March 22, 2026).

<sup>13</sup>OSF link: <https://osf.io/528zy/overview> (last accessed: March 22, 2026).

Parameter	Value
Number of lects	3
Number of speakers	3
Number of texts	9
Number of sentences	90
Tagging status	Gold
Number of data collectors	2
Number of annotators	1
Token count	1949

Table 5: Key characteristics of the corpus; a more detailed overview is provided in the supplementary material.

manual digitisation to the manual correction of errors produced by the Stanza model. The main contribution is the open-access texts forming the Lemko part of the corpus. Table 5 demonstrates the main characteristics of the corpus.

The study provides an analysis of the errors produced by the Stanza model. It shows that the performance of the part-of-speech and morphological models is pivotal for all subsequent stages. The analysis also demonstrates that lexical differences are among the most crucial factors affecting model performance and that Stanza is not able—at least when trained on 110,000 tokens—to capture certain phonetic change patterns present in the dataset.

The next stage involves further expanding the corpus. Now that part of the material has been manually checked, the next step is to use GenAI either as an aid to the Stanza toolkit or as the main tagger. The corpus also requires English translations of the sentences for improved accessibility and, possibly, a TEI representation for a more qualitative study.

## Limitations

The corpus by now is in its development phase, which means that not all the texts from the resources are present and tagged. One of the key

issues is that only a single annotator worked on the gold tagging, which could have introduced bias into it.

## Ethical Considerations

The data has been published in the printed form and available for research purposes for fifty to ninety years by the time this article was written. Still, I anonymise the metadata, where possible, masking the names of the speakers, to compensate for possible ethics violations that could have happened at the time of the material collection.

The data themselves can contain slight mentions of xenophobic behaviour and religious (mostly, Christian) imagery. Discretion is advised.

## Disclosure of Generative AI use

This study does not employ generative AI in the research process. While Stanza (Qi et al., 2020) technically belongs to the broader class of generative models in the modern colloquial meaning (the decoder models with more than a billion parameters trained on high-resource corpora), it operates at a much smaller scale and is locally reproducible. During the editing stage, the author used generative AI tools (Grammarly and OpenAI) solely for language polishing where non-native proficiency might otherwise have limited grammatical or stylistic clarity. The intellectual content of the article is entirely human-authored.

## Acknowledgements

I thank the anonymous reviewers for their insightful feedback, which substantially improved the article. I am also grateful to the speakers whose recorded speech preserves the studied lects, to the scholars responsible for the original transcriptions, and to the research teams who produced the revised versions. Special thanks are due to Olha Fedorivna Mygolynets (ukr. Ольга Федорівна Миголинець, University of Uzhhorod) for her invaluable assistance with transcription systems and the phonetics of the analysed lects.

## 7. Bibliographical References

### References

- Iliia Afanasev. 2025. [Computer-assisted study of historical Lemkian \(Transcarpathian\) lects: Basic vocabulary approach](#). *Scripta & e-Scripta*, 25:11–24.
- Iliia Afanasev and Olga Lyashevskaya. 2023. [From web to dialects: how to enhance non-standard Russian lects lemmatisation?](#) In *Proceedings of the 2023 CLASP Conference on Learning with Small Data (LSD)*, pages 167–175, Gothenburg, Sweden. Association for Computational Linguistics.
- Ludmila I. Barannikova. 2005. Govory territorij pozdnego zaselenija i problema ih klassifikacii [dialects of late-settled territories and the problem of their classification]. In Valentin E. Goldin and Olga Yu. Kryuchkova, editors, *Barannikova L. I. Obshhee jazykoznanie: izbrannye raboty [L. I. Barannikova. General linguistics: Selected works]*, pages 192–203. KomKniga.
- Dari Baturova, Sarana Abidueva, Dmitrii Lichko, and Ivan Bondarenko. 2025. [Low-resource buryat-Russian neural machine translation](#). In *Proceedings of the Fourth Workshop on NLP Applications to Field Linguistics*, pages 85–93, Vienna, Austria. Association for Computational Linguistics.
- Bernard Comrie, Martin Haspelmath, and Balthasar Bickel. 2008. [The Leipzig Glossing Rules: Conventions for inter-linear morpheme-by-morpheme glosses](#). <https://www.eva.mpg.de/lingua/resources/glossing-rules.php>. Department of Linguistics of the Max Planck Institute for Evolutionary Anthropology and the Department of Linguistics of the University of Leipzig.
- Marie-Catherine de Marneffe, Christopher Manning, Joakim Nivre, and Daniel Zeman. 2021. Universal dependencies. *Computational Linguistics*, 47(2):255–308.
- Salvatore Del Gaudio. 2017. *An introduction to Ukrainian dialectology*. Wiener slawistischer Almanach. Linguistische Reihe Sonderband 94. Peter Lang, Frankfurt am Main Bern Wien.
- Valentin E. Goldin. 1990. K proektu tekstovogo dialektologicheskogo podfonda mashinnogo fonda russkogo jazyka [on the project of the textual dialectological sub-fund of the machine fund of the russian language]. In *Materialy III Vsesojuznoj konferencii po sozdaniju Mashinnogo fonda russkogo jazyka [Materials of the 3rd All-Union Conference on the Creation of the Machine Fund of the Russian Language]*, pages 92–103, Moscow. Izd-vo Moskovskogo universiteta.
- Valentin E. Goldin and Olga Yu. Kryuchkova. 2011. Korpus russkoi dialektnoi rechi: kontseptsiia i parametry otsenki [Corpus of Russian Dialectal Speech: Concept and Evaluation Parameters]. In *Komp'uternaia lingvistika i intellektual'nye*

- tehnologii : Materialy ezhegodnoi Mezhdunarodnoi konferentsii, Bekasovo, 25–29 maia 2011 goda [Computational Linguistics and Intellectual Technologies: Proceedings of the Annual International Conference, Bekasovo, May 25–29, 2011], volume 10, pages 359–367, Moscow. Russian State University for the Humanities.
- Irina B. Kachinskaya and Dmitrii V. Sichinava. 2015. Dialektnyj korpus segodnja [the dialect corpus today]. *Trudy Instituta ruskogo jazyka im. V.V. Vinogradova*, 6:142–163.
- Philip Kahle, Sebastian Colutto, Günter Hackl, and Günter Mühlberger. 2017. [Transkribus - a service platform for transcription, recognition and retrieval of historical documents](#). In *2017 14th IAPR International Conference on Document Analysis and Recognition (ICDAR)*, volume 04, pages 19–24.
- Ljudmila Ė. Kalnyn'. 1973. *Opyt modelirovanija sistemy ukrainskogo dialektного jazyka: fonologičeskaja sistema [An attempt at modeling the system of the Ukrainian dialectal language: The phonological system]*. Nauka, Moscow.
- Benjamin Kiessling, Robin Tissot, Peter Stokes, and Daniel Stökl Ben Ezra. 2019. [escriptorium: An open source platform for historical document analysis](#). In *2019 International Conference on Document Analysis and Recognition Workshops (ICDARW)*, volume 2, pages 19–19.
- Ezequiel Koile and George A. Moroz. 2024. Detecting linguistic variation with geographic sampling. *Journal of Linguistic Geography*, 12(1):24–31.
- Vladimir B. Krys'ko. 1998. Drevnij novgorodskopskovskij dialekt na obshčeslavjanskom fone [the Old Novgorod-Pskov dialect against a common Slavic background]. *Voprosy Jazykoznanija*, 3:74–93.
- Władysław Kuraszkiewicz. 1963. *Zarys dialektologii wschodniostowiańskiej z wyborem tekstów gwarowych*, wyd. 2., zmien. i rozsz. edition. Państwowe Wydawn. Naukowe, Warszawa.
- Piroska Lendvai, Uwe Reichel, Anna Jouravel, Achim Rabus, and Elena Renje. 2025. [Retrieval of parallelizable texts across Church Slavic variants](#). In *Proceedings of the 12th Workshop on NLP for Similar Languages, Varieties and Dialects*, pages 105–114, Abu Dhabi, UAE. Association for Computational Linguistics.
- Olga Lyashevskaya and Ilia Afanasev. 2021. [An hmm-based pos tagger for old church slavonic](#). *Journal of Linguistics/Jazykovedný časopis*, 72(2):556–567.
- Ranko Matasović. 2008. *Poredbenopovijesna gramatika hrvatskoga jezika [The historical-comparative grammar of the Croatian language]*. Matica hrvatska, Zagreb. Biblioteka Theoria.
- Aleksandra Miletić and Janine Siewert. 2023. [Lemmatization experiments on two low-resourced languages: Low Saxon and Occitan](#). In *Tenth Workshop on NLP for Similar Languages, Varieties and Dialects (VarDial 2023)*, pages 163–173, Dubrovnik, Croatia. Association for Computational Linguistics.
- George A. Moroz. 2016. Adverbial'nye konstrukcii vremennoj distribucii v balto-slavjanskih jazykah: areal'noe i korpusnoe issledovanie [adverbial constructions of temporal distribution in the balto-slavic languages: An areal and corpus study]. In N. Kazanskij and D. V. Gerasimov, editors, *Acta Linguistica Petropolitana. Trudy Instituta lingvističeskikh issledovanij RAN (Tom XII, chast' 1) [Acta Linguistica Petropolitana. Proceedings of the Institute for Linguistic Studies of the Russian Academy of Sciences (Volume XII, Part 1)]*, volume XII/1, pages 151–167. Nauka, Saint Petersburg.
- George A. Moroz. 2024. Skorost' russkoj reči na osnove bilingval'nyh i dialektnyh ustnyh korpusov [the speed of russian speech based on bilingual and dialectal oral corpora]. In N. A. Korotaev and N. R. Sumbatova, editors, *Sostav nauki: Sbornik statej k jubileju Very Isaakovny Podleskoj [The Composition of Science: A Collection of Articles for the Anniversary of Vera Isaakovna Podleskaya]*, pages 366–378. Buki Vedi, Moscow.
- Ol'ha F. Myholynec'. 2004. *Ukrains'ki zakarpats'ki hovirky : teksty*. Lira, Užhorod.
- Hanna Nakonečna and Jaroslav Bohdan Rudnyc'kyj. 1940. *Ukrainische Mundarten : Südkarpatoukrainisch ; (Lemkisch, Bojkisch und Huzulisch) [Ukrainian dialects: South Carpathian Ukrainian; Lemkian, Bojkian and Huzulian]*. Arbeiten aus dem Institut für Lautforschung an der Universität Berlin ; 9. Otto Harrassowitz, Berlin.
- National Corpus of the Belarusian Language. 2018. [Nacyjanalny korpus bielaruskaj movy ŭ kančeskie corpusnaj linhvistyki slavjanskich krain \[the national corpus of the belarusian language in the context of corpus linguistics of slavic countries\]](#). In *XVI International Congress of Slavists*, Belgrade.
- Tetjana V. Nazarova. 1977. *Hovory ukrains'koi movy: zbirnyk tekstiv [Dialects of the Ukrainian language: A collection of texts]*. Naukova Dumka, Kyiv.

- Sergei L. Nikolaev. 1988. Sledy osobennosti vostochnoslavianskikh plemennykh dialektov v sovremennykh velikorusskikh govorakh. 1. Krivichi [Traces of Features of East Slavic Tribal dialects in Modern Great Russian Dialects. 1. Krivichi]. In *Baltoslavianskie issledovaniia 1986 [Balto-Slavic Investigations 1986]*, pages 115–154. Nauka, Moscow.
- Joakim Nivre, Marie-Catherine de Marneffe, Filip Ginter, Jan Hajič, Christopher Manning, Sampo Pyysalo, Sebastian Schuster, Francis Tyers, and Daniel Zeman. 2020. Universal dependencies v2: An evergrowing multilingual treebank collection. In *Proceedings of the 12th International Conference on Language Resources and Evaluation (LREC 2020)*, pages 4034–4043, Marseille, France.
- Viktória Ondrejová and Marek Šuppa. 2024. [Can LLMs handle low-resource dialects? a case study on translation and common sense reasoning in šariš](#). In *Proceedings of the Eleventh Workshop on NLP for Similar Languages, Varieties, and Dialects (VarDial 2024)*, pages 130–139, Mexico City, Mexico. Association for Computational Linguistics.
- Michael Piotrowski. 2012. *Natural Language Processing for Historical Texts*. Morgan & Claypool Publishers.
- Peng Qi, Yuhao Zhang, Yuhui Zhang, Jason Bolton, and Christopher D. Manning. 2020. [Stanza: A python natural language processing toolkit for many human languages](#). In *Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics: System Demonstrations*, pages 101–108, Online. Association for Computational Linguistics.
- Achim Rabus and Yves Scherrer. 2017. [Lexicon induction for spoken Rusyn – challenges and results](#). In *Proceedings of the 6th Workshop on Balto-Slavic Natural Language Processing*, pages 27–32, Valencia, Spain. Association for Computational Linguistics.
- Anastasiia Ryko. 2024. [A study of russian-belarusian border dialects: The use of the genitive case ending -u in the khislavichi dialect](#). *Zeitschrift für Slavistik*, 69(4):747–765.
- Anastasiia I. Ryko and Margarita V. Spiricheva. 2022. [The degree of preservation of dialectal features in different generations \(khislavichi district of the smolensk region\)](#). *RSUH/RGGU Bulletin: “Literary Theory. Linguistics. Cultural Studies” Series*, 5:121–141. (In Russian).
- Mikhail N. Saenko. 2018. Netochnosti v opisanií semantiki, vyzvannye vospriatiem dialektnoj lek-siki skvoz’ prizmu literaturnogo jazyka: neskol’ko primerov [inaccuracies in the description of semantics caused by the perception of dialectal vocabulary through the prism of the literary language: Several examples]. In *Issledovanija po slavjanskoj dialektologii 19–20. Slavjanskije dialektnyj slovar’ kak sposob issledovanija slavjanskix dialektov [Studies in Slavic dialectology 19–20. Slavic dialects in the modern language situation. Dialect dictionary as a method of studying Slavic dialects]*, pages 218–222. Institut slavjanovedenija RAN, Moscow.
- Mikhail N. Saenko. 2020. [Taxonomy of Slavic languages, history of the](#). In M. L. Greenberg, editor, *Encyclopedia of Slavic Languages and Linguistics Online*. Brill.
- Yves Scherrer and Achim Rabus. 2017. [Multi-source morphosyntactic tagging for spoken Rusyn](#). In *Proceedings of the Fourth Workshop on NLP for Similar Languages, Varieties and Dialects (VarDial)*, pages 84–92, Valencia, Spain. Association for Computational Linguistics.
- Yana Shishkina and Olga Lyashevskaya. 2021. [Sculpting enhanced dependencies for belarusian](#). In *Analysis of Images, Social Networks and Texts: 10th International Conference, AIST 2021, Tbilisi, Georgia, December 16–18, 2021, Revised Selected Papers*, page 137–147, Berlin, Heidelberg. Springer-Verlag.
- Sali A. Tagliamonte. 2025. *Analysing Sociolinguistic Variation*. Cambridge University Press.
- Rudolf Trüb. 1989. Der Sprachatlas der deutschen Schweiz (SDS): ein Grossatlas für einen Kleerraum [the language atlas of german-speaking switzerland (sds): A large atlas for a small area]. In Werner H. Veith and Wolfgang Putschke, editors, *Sprachatlanten des Deutschen: laufende Projekte [Language Atlases of German: Ongoing Projects]*, pages 133–177. Niemeyer, Tübingen.
- Sanzhar Umbet, Sanzhar Murzakhmetov, Beksultan Sagyndyk, Kirill Yakunin, Timur Akishev, and Pavel Zubitski. 2025. [KazBench-KK: A cultural-knowledge benchmark for Kazakh](#). In *Proceedings of the Fourth Workshop on NLP Applications to Field Linguistics*, pages 38–57, Vienna, Austria. Association for Computational Linguistics.
- Ruprecht von Waldenfels, Michael Daniel, and Nina Dobrushina. 2014. Why standard orthography? building the ustya river basin corpus, an online corpus of a russian dialect. In *Komp’juternaja*

- lingvistika i intelektual'nye technologii: Po materialam ežegodnoj Meždunarodnoj konferencii «Dialog» (Bekasovo, 4 — 8 ijunja 2014 g.) [Computational Linguistics and Intellectual Technologies: Based on the materials of the Annual International Conference "Dialog" (Bekasovo, June 4-8, 2014)]*, volume 13, Moscow. Izd-vo RGGU.
- Björn Wiemer, Ilja Seržant, and Aksana Erker. 2017. Convergence in the Baltic-Slavic contact zone: Triangulation approach. In Juliane Besters-Dilger, Cynthia Dermarkar, Stefan Pfänder, and Achim Rabus, editors, *Congruence in Contact-Induced Language Change*, pages 15–42. De Gruyter.
- Björn Wiemer and Ilja A. Seržant. 2020. East Slavic dialectology: Achievements and perspectives of areal linguistics. In I. A. Seržant and B. Wiemer, editors, *Contemporary Approaches to Dialectology: The Area of North, Northwest Russian and Belarusian Vernaculars*, volume 13 of *Slavica Bergensia*, pages 11–80. John Grieg AS, Bergen.
- Andrej Zaliznyak. 2004. *Drevnenovgorodskij dialekt [The Old Novgorodian Dialect]*. Jazyki slavjanskoj kul'tury, Moscow.
- Svetlana S. Zemicheva. 2020. Ot abarma do jashhichishka: razrabotka leksikograficheskogo komponenta tomskogo dialektного korpusa [from *abarm* to *jashhichishka*: Development of the lexicographic component of the tomsk dialect corpus]. *Voprosy Leksikografii*, 18:98–117.
- Ivan Zheguc. 2001. *Vybrani teksty z hucul's'koho hovoru v Zakarpatti [Selected texts from the Hut-sul dialect in Transcarpathia]*. I. Zheguc, Munich.
- Mikhailo Andriiovych Zhovtobriukh, Vitalii M. Rusaniv's'kyi, and Vitaliy H. Skliarenko. 1979. *Istoriia ukraïns'koï movy. Fonetyka [History of the Ukrainian Language. Phonetics]*. Naukova dumka, Kyiv.
- Ivan Zilyns'kyj. 1932. *Opis fonetyczny języka ukraińskiego*. Polska Akademia Umiejętności <Kraków> / Komisja Językowa: Prace 19. Nakładem Polskiej Akad. Umiejętności, Kraków.
- Ivan M. Zilyns'kyj. 1933. *Karta ukraïns'kych hovoriv : z pojasnennjamy ; mirylo 1:4.000.000*. Praci Ukraïns'koho Naukovoho Institutu 14. Ukraïns'kyj Naukovyj Instytut, Warszawa.
- Jurij Volodymyrovč Ševel'ov. 1979. *A historical phonology of the Ukrainian language*. Historical phonology of the Slavic languages ; 4. Winter, Heidelberg.
- ## Language Resource References
- Daniel, Michael and Dobrushina, Nina and von Waldenfels, Ruprecht. 2013–2018. *The Language of the Ustja River Basin: A Corpus of North Russian Dialectal Speech*. Linguistic Convergence Laboratory, NRU HSE.
- Garder, M. O. and Petrova, N. S. and Moroz, A. B. and Panova, A. B. and Dobrushina, N. R. 2018. *Corpus of Spiridonova Buda Dialect*. Linguistic Convergence Laboratory, HSE University. Accessed on 24.10.2025.
- Kopp, Matyáš and Kryvenko, Anna and Rii, Andriana. 2023. *Ukrainian parliamentary corpus ParlaMint-UA 4.0.1*. Slovenian language resource repository CLARIN.SI.
- Marchenko, Igor A. and Dolgov, O. N. and Azanova, A. S. and Zambrzhitskaya, Maria S. and Zaliznina, Ekaterina A. and Zemlyanskaya, S. A. and Mochul'skij, D. I. and Tsejtina, E. I. and Chistyakova, D. G. and Ron'ko, Roman V. 2025. *Database of the Dialectological Atlas of the Russian Language*. Institute of the Russian Language RAS. Accessed October 24, 2025.
- Ronko, Roman and Volf, Elena and Grebyonkina, Maria and Ershova, Maria and Okhapkina, Anna and Khadasevich, Anna and Morozova, Valeria. 2019. *Corpus of Opochet'sky Dialects*. Linguistic Convergence Laboratory, HSE University; V.V. Vinogradov Russian Language Institute Russian Academy of Science. Accessed on 24.10.2025.
- Ryko, Anastasiia I. and Spiricheva, Margarita V. 2020. *Corpus of the Russian Dialect Spoken in Khislavichi District*. Linguistic Convergence Laboratory, HSE University. Available online at <https://lingconlab.ru/khislavichi/>, accessed on 23.10.2025.
- Shvedova, Maria and von Waldenfels, Ruprecht and Yaryhin, Sergey and Rysin, Andriy and Starko, Vasyl and Nikolaenko, Tymofij and Lukevskyi, Arsenii and others. 2017–2025. *General'nyj rehional'no anotovanyj korpus ukraïns'koï movy (HRAK) [General Regionally Annotated Corpus of the Ukrainian Language (GRAC)]*. University of Jena.
- Ter-Avanesova, A. V. and Balabin, F. A. and Dyachenko, S. V. and Malysheva, A. V. and Panova, A. B. and Morozova, V. A. 2019. *Corpus of the Malinino Dialect*. Linguistic Convergence Laboratory, NRU HSE; V.V. Vinogradov Russian Language Institute of the Russian Academy of Science. Accessed on 24.10.2025.

- Ter-Avanesova, A. V. and Dyachenko, S. V. and Kolesnikova, E. V. and Malysheva, A. V. and Ignatenko, D. I. and Panova, A. B. and Dobrushina, N. R. 2018. *Corpus of Rogovotka Dialect*. Linguistic Convergence Laboratory, NRU HSE. Accessed on 24.10.2025.
- Wenker, Georg and Maurmann, Emil and Wrede, Ferdinand. 1889–1923. *Sprachatlas des Deutschen Reichs [Language Atlas of the German Empire]*. Research Center Deutscher Sprachatlas. Original manuscript (1889–1923). Published as the Digital Wenker Atlas (DiWA).
- Zemicheva, S. S. and Dubtsova, L. A. and Gromov, M. L. and Galanina, V. V. and Ugryumova, M. M. and Vasilchenko, A. A. and Parshina, A. V. and Popova, D. P. and Duminskaya, A. V. and Zyuzkova, N. A. and Bukhanova, E. D. 2023. *Tomskij dialektnyj korpus 2.0 [Tomsk Dialect Corpus 2.0]*. Laboratorija obshhej i sibirskoj leksikografii NI TGU [Laboratory of General and Siberian Lexicography, National Research Tomsk State University]. Access mode: free.