

## SLOVENIAN DIALECTAL DIVERSITY AS PRESENTED IN THE SLOVENIAN LINGUISTIC ATLAS

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### ABSTRACT

*The article presents the various factors responsible for the current dialectal diversity of the Slovenian language – natural geographic features of the Slovenian territory and the political and ecclesiastical division of the Slovenian territory. This is followed by a description of the fundamental work of Slovenian dialectology, i.e. the Slovenian Linguistic Atlas (Slovenski lingvistični atlas; SLA), and a presentation of the treatment of entries in SLA and a presentation of two software tools (SlovarRed and ArcGIS) used for the digital management of dialect material and the making of language maps.*

**Keywords:** Slovenian dialects, Slovenian Linguistic Atlas (SLA), geolinguistics, information technology in linguistics, Geographic(al) information system (GIS)

## LA DIVERSITÀ DIALETTALE SLOVENA PRESENTATA NELL'ATLANTE LINGUISTICO SLOVENO

### SINTESI

*Il contributo espone i vari fattori determinanti l'attuale diversità dialettale della lingua slovena – oltre alle caratteristiche naturali geografiche anche la divisione politica ed ecclesiastica del territorio sloveno. Seguono la presentazione del lavoro fondamentale della dialettologia slovena, ossia dell'Atlante linguistico sloveno (Slovenski lingvistični atlas; SLA), l'illustrazione dell'elaborazione delle voci nello SLA, e la descrizione dei due strumenti software (SlovaRed e ArcGIS) usati per la gestione digitale del materiale dialettale e la realizzazione delle cartine linguistiche.*

**Parole chiave:** dialetti sloveni, Atlante linguistico sloveno (SLA), geolinguistica, tecnologia dell'informazione e linguistica, Sistema informativo geografico (GIS)

INTRODUCTION<sup>1</sup>

The Slovenian language is highly differentiated in terms of dialects, which is the result of various intra- and extralinguistic factors. From the synchronic point of view, the Slovenian language is categorised into seven dialect groups: Lower Carniolan (dolenjska n. s.), Littoral (primorska n. s.), Rovte (rovtarska n. s.), Carinthian (koroška n. s.), Upper Carniolan (gorenjska n. s.), Pannonian (panonska n. s.) and Styrian (štajerska n. s.), which are in turn divided into 47 dialects with subdialects. Subdialects are further differentiated into small areas called local dialects, which are the smallest systemic unit in the classification of dialects. The dynamic geography of Slovenia has been found to be one of the most important factors in the division of the Slovenian language. Natural barriers such as mountain ranges, valleys, forests and swamps prevented contact and thus communication between people, which accelerated linguistic differentiation, including the formation of dialects and subdialects.

The article (cf. Kumin Horvat & Gostenčnik, 2017) first presents the various factors responsible for the current dialectal diversity of the Slovenian language. This is followed by a description of the fundamental work of Slovenian dialectology, i.e. the Slovenian Linguistic Atlas (*Slovenski lingvistični atlas*; SLA), and a presentation of the treatment of entries in SLA, i.e. the structure of the commentary, the ways of mapping and a presentation of two software tools (SlovarRed and ArcGIS) used for the digital management of dialect material and the making of language maps.

## DIALECTAL DIVERSITY OF SLOVENIAN LANGUAGE

The main factor in the dialectal differentiation are the natural geographic features of the Slovenian territory, i.e. hill ranges, mountain ranges, valleys, impenetrable forests, swamps, watercourses. The dialectal division was further accelerated by the political and ecclesiastical division of the Slovenian territory, which shaped the communication and movement of the population for centuries (Logar, 1996, 4). The rich dialectal diversity has also been influenced by the proximity of the Slovenian language to non-Slavic languages or dialects: German, Friulian, Italian and Hungarian, the effects of which are noticeable in sentence intonation, lexis, syntax and partly in phonetics (Logar, 1996, 3). A relatively small colonisation by non-Slovenian settlers, who eventually assimilated, and Turkish incursions in the area of Bela Krajina also had a minor influence on the formation of dialects.

The first differentiation of the Slovenian language dates back to the early years of its formation out of Proto-Slavic, as a result of the arrival of Slavs to the Eastern

Alps in two migratory waves – from the north across the Danube to the Klagenfurt Basin, and from the south along the Sava, Drava and Mura rivers up to the Alps and the Karst plateau. Following the settlement at the end of the 6th century, the south-eastern and north-western Slovenian dialect areas were formed by the end of the first millennium. The Pannonian (panonska n. s.), Styrian (štajerska n. s.), Lower Carniolan (dolenjska n. s.) and Upper Carniolan (gorenjska n. s.) dialect groups arose in the first area, while the Carinthian (koroška n. s.), Littoral (primorska n. s.) and, as the youngest, Rovte (rovtarska n. s.) arose in the (north-)west (Zorko, 1998, 115).

Subsequently, the dialectal division of Slovenian was influenced by other geographic and historical factors, which cannot be examined in isolation as they were often intertwined – political and ecclesiastical administrative divisions of territory often followed natural boundaries and determined migratory and transport flows. For example, the extent of štajerska dialects (narečja štajerske n. s.) and subdialects was determined by centuries-old political and ecclesiastical administrative divisions that were mostly based on mountain ranges, hill ranges and rivers, so the division between the Upper Carniolan (koroška n. s.) and Styrian (štajerska n. s.) dialects still follows the former regional border between Carniola (koroška n. s.) and Styria (štajerska n. s.), from the Kamnik Alps to the Zasavje hills in the south-east (Logar, 1996, 392).

Another dividing line is the mountain chain Snežnik–Javorniki–Hrušica–Nanos, which forms a boundary between the Lower Carniolan (dolenjska n. s.) and Inner Carniolan dialects (notranjsko n.) in the south-east and the group of Rovte dialects (rovtarska n. s.) and the Inner Carniolan dialect (notranjsko n.) in the north-west. Similarly, the mountain chain Kanin–Stol–Mija–Matajur represents a boundary between the Upper Soča (obsoško n.) and dialects of Slavia Veneta (beneško-slovensko n.) (Logar, 1993, 6).

Some dialects are spoken in smaller areas formed due the geographic isolation of their speakers in valleys surrounded by tall mountains. The Resia dialect (rezijansko n.) is spoken in Resia, a mountainous alpine valley in the Italian province of Udine, and is separated from the Upper Soča dialect (obsoško n.) in the east by the high Kanin mountain range, which is also the state border between Slovenia and Italy, and from the Ter dialect (tersko n.) in the south by the steep and high Muzec chain. In the north, the Resians are separated from the people of Zilja in Carinthia by a wide and hilly belt now inhabited by Romance-speaking Friulians. The Resian valley is thus only open towards the west, i.e. the Friuli region, which has no Slovenian population, and Friulians have been the closest contact of Resians for

<sup>1</sup> The article has been produced based on research results within the i-SLA – Interaktivni atlas slovenskih narečij (i-SLA – Interactive Atlas of Slovene Dialects) project (L6-2628, 1. 9. 2020 – 31. 8. 2023), co-financed by the Slovenian Research Agency under the P6-0038 programme (1. 1. 2004 – 31. 12. 2021).

centuries (Logar, 1996, 232). Similarly, the formation of the Kropa local dialect (*krajevni govor Krope*) was determined by the geographic confinement to the narrow valley of the Kroparica stream at the foot of the Jelovica plateau (Škofic, 2019, 15). The diversity of the Posavje local dialects (*posavski govori*) of the Zasavje region (the towns of Trbovlje, Zagorje and Hrastnik) is also the result of confinement to individual basins surrounded by a hill range reaching up to 1000 metres above sea level (Medved & Smole, 2005, 71).

Extensive swampland and forests also played an important role in the dialectal differentiation of Slovenian in the past. Thus, the boundary between the Upper Carniolan (*gorenjska n. s.*) and Lower Carniolan dialects (*dolenjsko n. s.*) runs along the once impassable Ljubljana Marshes (Logar, 1993, 7); in the Sora Plain, communication was prevented by extensive, almost impenetrable forests, giving rise to the boundary between the Upper Carniolan (*gorenjska n. s.*) and Rovte dialects (*rovtarska n. s.*). The delimitation is sharp, with no transitional local dialects, as forests used to separate the areas of Kranj and Medvode from the town of Škofja Loka and its vicinity, which then had a mixed Slovenian-German population (Logar, 1993, 7). A similar role was played by the forests of Kočevje and the geographic remoteness of being on the far side of the Gorjanci range in the formation of the dialects of Bela Krajina, a region separated from the rest of Slovenia on one side and connected to the neighbouring Croatian lands on the other (Logar, 1996, 79).

In addition to the above-mentioned natural factors, the dialect landscape of the Slovenian language has been shaped by other factors: the ecclesiastical and political administrative divisions, colonisation, Turkish incursions, economic ties between towns and regions etc.

The territories of individual parishes (if old enough) are often the areas in which individual local dialects developed as, historically, it was the parish centre that became the administrative and political centre shaping transport and communication among people (Logar, 1993, 6). For example, the Upper Savinja dialect (*zgorjnjesavinjsko n.*), which is part of the Styrian dialect group (*štajerska n. s.*), was formed in a territory that was the property of the Benedictine monastery of Gornji Grad in the 12th century; similarly, the delimitation between the Upper Savinja (*zgorjnjesavinjsko n.*) and Central Styrian (*srednjesavinjsko n.*) local dialects runs along the line that used to divide the territories of two ancient parishes: Laško and Ponikva (Logar, 1993, 6). Parish borders also defined the boundaries of the Dolinsko variant of the Prekmurje dialect (*dolinski govor prekmurskega narečja*), which covers the area of the former ancient parish of Turnišče (Novak & Novak, 1996, XI); moreover, parish borders correspond with the boundaries of the local dialect of Juršinci (*krajevni govor Juršinci*), which is part of the Prlekija dialect (*prleško n.*) (Škofic, 2004, 104).

The former (as well as current) political administrative division has left its mark on the Slovenian language area, drawing sharp borders between dialects. For example, the western boundary of the Savinja dialect (*savinjsko n.*) is also the eastern boundary of the Upper Carniolan dialect (*gorenjska n. s.*), following the former regional border between Carniola and Styria running from the Okrešelj cirque via the Ojstrica mountain to the Črnivec pass and Menina Planina and Čemšeniška Planina plateaus (Logar, 1996, 48). Similarly, the boundary between the Inner Carniolan (*notranjsko n.*) and Kras dialects (*kraško n.*) dates back to the time of the so-called Great Carantania, when this was the dividing line between the Friulian and Istrian marches. In the Vipava Valley, the boundary follows the delimitation of feudal dominions, which was placed on the Vrtovinšček stream at the end of the first millennium (Logar, 1996, 66). The boundary between the eastern and western versions of the Slovenske Gorice dialect (*slovenskogoriško n.*), which belongs to the Pannonian dialect group (*panonska n. s.*), follows the historical border between Carantania and Lower Pannonia, which ran along the line Marija Snežna – Sveta Ana on the Kremberg hill–Sveta Trojica–Vurberk at the Drava river (Koletnik, 2001, 38).

One of the factors in the dialectal differentiation is also more recent colonisations, especially the settlement of non-Slavic colonists – which gave rise to, among others, the Bača subdialect (*baško podnarečje*) and Selca dialect (*selško n.*): the hilly and wooded uninhabited area along the upper reaches of the Bača river and its tributaries in the Littoral region was colonised by German farmers from Pustertal in Tyrol around 1250 at the latest. This territory then belonged to the Tolmin dominion of the Patriarchate of Aquileia.

A decisive role in the creation of some Slovenian dialects was played by Turkish incursions, which heavily influenced the linguistic landscape of the Bela Krajina region, where the composition of the population started to change in the 15th and 16th centuries. It should be noted that geographic obstacles separated Bela Krajina from the rest of Slovenia, enabling stronger links with the neighbouring lands on the other side of the Kolpa river. It is thus understandable that Bela Krajina got its first Slavic population from the same direction as the neighbouring area in Croatia. Until the 13th century, Bela Krajina was a Croatian land in terms of politics, culture and transport. Only after that, it became part of the area of Slovenian political and cultural linguistic influence (Logar, 1996, 79). The Turkish incursions caused the native, at least partly Slovenised population of Bela Krajina to abandon their old homes and start to retreat north over the Gorjanci range. This applies especially to the lowlands and areas around the Kolpa river, while the inhabitants of higher, remote hilly areas most likely stayed, also accepting refugees arriving from the south. On the other hand, the partly evacuated parts of Bela Krajina were settled by refugees from the Croatian regions of Lika, Dalmatia and

Bosnia. Today's local dialects of Bela Krajina (belokranjsko n.) have thus developed based on the mixing of the old population with refugees from the south and more recent Slovenian immigrants (Logar, 1996, 79).

The above-mentioned examples demonstrate how the dialectisation of the Slovenian language area has been accelerated by different factors limiting or preventing communication between people in one way or another. On the contrary, the economic factor had a distinct unifying function: for example, the area around Tolmin and along the Idrijca river was a special administrative unit of the Patriarchate of Aquileia. In matters of administration and trade, it therefore had permanent transport connections to centres in the west: Udine, Cividale del Friuli, Aquileia, the road to which ran through the village of Srednje and the valley of the Idrija river. On the other hand, trade and, even more so, mountaineering connected the Tolmin region to the Bohinj and Selca valleys (Ramovš, 1931, 45). Economy thus had a decisive impact on the gravitation of the population in some places – this is how the Kropa local dialect (krajevni govor Kroke) was formed. Kropa, which was at the height of its iron industry from the 16th to the mid-19th century (having two foundries and several ironworks), attracted significant labour force from as far as Carinthia and the Selca valley; both the mixing of the population and the diversity of their local dialects naturally had a decisive impact on the formation of the local dialect (Škofic, 2019, 17).

Dialectisation was often influenced by a combination of multiple factors mentioned above. This can be exemplified by the local dialects on both sides of the Slovenian-Croatian state border in the very south of Slovenia, where Slovenian dialectology has only recently started to treat this interconnected area as a homogenous unit, regardless of the contemporary state border. In the territory of the Čebranka and Kostel dialects (čebraško in kostelsko n.) of the Lower Carniola dialect group (dolenjska n. s.), the Čebranka and Kolpa rivers, independent of the official authorities and state borders, have been a unifying factor that has linked the lives and thus the language of the inhabitants, while the surrounding high peaks, extensive forest areas and, later (17th century), the immigration of Shtokavian Orthodox populations have further hindered ties with the neighbouring regions, further solidifying internal links. (Gostenčnik, 2020a, 371) The Čebranka dialect (čebraško n.) is located along the Čebranka river, along the upper reaches of the Kolpa river and partly in

the Gorski Kotar region of Croatia. In spite of the (state) border as a political dividing line, the area of these local dialects represents a continuum in terms of language history (Gostenčnik, 2018, 11), which is now reflected particularly in the linguistic and dialectal characteristics of the local dialects in question. Further south-east, along the upper reaches of the Kolpa river and in the Gorski Kotar region of Croatia, lies the Kostel dialect (kostelsko n.) (Gostenčnik, 2020a, 353). It directly borders the Čebranka dialect in the west, the mixed Kočevje local dialects (mešani kočevski govori) in the north and the Southern Bela Krajina dialect (južnobelokranjsko n.) in the north-east. In the south, the Kostel dialect (kostelsko n.) extends to the town of Ravna Gora (with the Chakavian language area south of this border); in the south-east, it is separated from the East Goran local dialects of the Kajkavian dialect group of the Croatian language by the village of Blaževci (Gostenčnik, 2020a, 355).

Today's diversity of the Slovenian language area is illustrated by the very dynamic colours on the map of Slovenian dialects.

#### SLOVENIAN LINGUISTIC ATLAS (SLA)

SLA – the fundamental work of Slovenian dialectology – is being made at the Fran Ramovš Institute of the Slovenian Language at the SAZU Research Centre (ISJFR ZRC SAZU) in Ljubljana. Along with the dictionary, the normative guide and the grammar, this is one of the fundamental linguistic reference works. It is characterised by presenting language from the perspective of the geographic scope of individual linguistic phenomena. The atlas examines systemic organic idioms of the Slovenian language as they are spoken within and beyond the borders of Slovenia. The SLA covers all areas where Slovenian dialects are spoken; the network of localities includes 417 local dialects,<sup>2</sup> of which 339 are within the borders of Slovenia, 41 are in Austria, 28 are in Italy, 7 are in Croatia, and 2 are in Hungary (Gostenčnik, 2016, 50).

SLA was designed in 1934 by Fran Ramovš, a comparative linguist and dialectologist, and the first year of preparations coincides with the year of the publication of the *Linguistic Atlas of Polish Subcarpathia* (*Atlas językowy polskiego Podkarpacia*) by Mieczysław Małecki and Kazimierz Nitsch, which Ramovš used as a model. He followed the example of the Polish atlas especially when preparing the questionnaire<sup>3</sup> even though the Polish atlas

2 The full list of localities in the SLA network is available at: [http://www.fran.si/203/sla-slovenski-lingvisticni-atlas-2/datoteke/SLA2\\_Kraji.pdf](http://www.fran.si/203/sla-slovenski-lingvisticni-atlas-2/datoteke/SLA2_Kraji.pdf).

3 The questionnaire of the *Linguistic Atlas of Polish Subcarpathia* originally comprised 700 questions but was later expanded to 1000 questions. Only the material that exhibited phonetic, lexical or morphological differentiation was included in the geolinguistic examination (Kumin Horvat, 2016, based on Reichan & Woźniak, 2004, 12–13).



Figure 1: Geolinguistic presentation of the Čebranka and Kostel dialects (Gostenčnik, 2020b, 138).



Figure 2: Map of Slovenian dialects (authors: Tine Logar and Jakob Rigler (1983), amended by members of the Dialectology Section of ISJFR ZRC SAZU (2016)) (Source: SLA – Karta narečij (2022)).

is regional in type,<sup>4</sup> while the Slovenian atlas is national. Despite an early start, the SLA fieldwork, i.e. the collection of dialect material, only started after the Second World War. The original SLA network of localities was foreseen as comprising 230 local dialects, but the collection of material in the field soon showed that the dialectal differentiation of the Slovenian language area is much greater, so this number of local dialects would not suffice to cover all the characteristics of dialects. This is why new localities were added to the network over the years.

The figure below shows the network of data points, which appears fairly dense at first glance, but there are still areas where the data points are spaced rather far apart,<sup>5</sup> though most dialects are covered very well.

In all 417 local dialects, the material has been obtained with the same questionnaire, which includes 870 numbered questions and numbers no fewer than 3000 units when combined with supplementary questions.<sup>6</sup> The questions are given as standard equivalents (e.g. V001 *las* 'hair', V025 *roka* 'arm, hand', V129A *hiša* 'house', V175 *šola* 'school', V197 *koruza* 'maize'), based on which an explorer in the field uses the so-called survey method to formulate a suitable question without suggesting the answer to the informant (e.g. What do you call what people have on their heads? – *las* 'hair', What do you call the part of the body used for eating and writing? – *roka* 'hand').

The gathering of material in the field started in the mid-20th century, with Tine Logar as the main explorer. It was originally planned that a single explorer would collect all the material so that a uniform acoustic filter would be employed, but it soon turned out that this would not be possible due to the extent of the questionnaire and the plethora of local dialects included. This is why the gathering of material was taken up by Logar's graduates at the Faculty of Arts at the University of Ljubljana, and later by other linguists,<sup>7</sup> especially dialectologists. Answers are written in the so-called Slovenian phonetic transcription, which has undergone changes over the years. The current dialect transcription is based on the phonetic transcription for the Slavic Linguistic Atlas (OLA) with additional

graphemes for Slovenian dialectal phonemes and is presented in full in the introductory chapters of the Atlas (Kenda-Jež in SLA 1, 27–30, and in SLA 2, 27–31).<sup>8</sup>

The material is kept at the Dialectology Section of ISJFR ZRC SAZU in Ljubljana, in multiple formats. In part, the material is written on cards and stored in a so-called card index, where cards containing answers are ordered by individual questions. The entire card material, totalling 884,000 cards, is also scanned. The second part of the material is kept in a notebook collection (also digitally in the form of scans), which is located on an internal shared drive of the Dialectology Section of ISJFR ZRC SAZU – this material is ordered by locality. For some local dialects, the material is available both in card and notebook form; for others, only one of the formats is available. The notebook collection varies in terms of the orderliness of the material – one part of the material is completely unproblematic, with numbered questions and answers, while the second part comes in a rather problematic form for processing. This is because the answers are written in the notebooks sporadically, just as the explorer acquired them in the field, so they are sometimes not even numbered and are hard to find.

Because the SLA dialect material is still being collected – data points that are unrecorded so far are mostly those outside the state borders of Slovenia – it is now kept in the form of so-called electronic notebooks, i.e. Microsoft Word documents, which best facilitates further processing in terms of readability and management of the material.

#### TREATMENT OF ENTRIES IN SLA

Every entry included in SLA 1 and SLA 2 has:

- a commentary, where the dialect material is analysed and commented upon;
- a symbol- (and isogloss-)based map where the material is presented using the geolinguistic method;
- an index, i.e. material accompanying the map for the entire network of localities, presented in the Slovenian phonetic transcription.<sup>9</sup>

4 The *Linguistic Atlas of Polish Subcarpathia* is the first atlas of the Polish language. M. Małecki and K. Nitsch, Polish dialectologists, began preparations for a regional atlas of the Polish language where the examination of a geographically small area would demonstrate methodological, technical and content possibilities for mapping, thus enabling researchers to get well prepared for a general dictionary of Polish dialects. The area of Subcarpathia, which lies at the contact point between the Polish, Czech and Slovak language areas, was chosen for geolinguistic examination for multiple reasons. Due to its location, historical factors and migratory waves, it is highly differentiated and thus suitable for linguistic analysis, which is reflected in the grammatical and particularly the lexical diversity of the local dialects of the area (Reichan & Woźniak, 2004, 10–11).

5 Such areas are, for example, the westernmost part of the Prlekija dialect (prleško n.), the Mežica dialect (mežiško n.) etc.

6 Supplementary questions can be phonetic (for example, V730 asks about reflexes of the unstressed yat, and its supplementary questions are the cues črepinja 'shard', lenoba 'laziness', lesnika 'crab apple', levica 'left hand', plenica 'nappy', resnica 'truth' etc.), morphological (for example, V607 *hči* 'daughter' includes supplementary questions for the entire paradigm of this noun) or semantic in nature (for example, V618 *ujna* 'aunt, mother's sister' asks about the different meanings of this lexeme). The full SLA questionnaire is available at: [http://bos.zrc-sazu.si/c/Dial/Ponovne\\_SLA/P/03\\_1\\_Vprsalnica\\_STEV.pdf](http://bos.zrc-sazu.si/c/Dial/Ponovne_SLA/P/03_1_Vprsalnica_STEV.pdf) (Ponovne objave).

7 Their respective native local dialects have been explored by, for example, Francka Benedik, Janez Dular, Martina Orožen, Vera Smole, Marija Stanonik, Vlado Nartnik, Jože Toporišič, Ada Vidovič Muha and Zinka Zorko.

8 See: [http://www.fran.si/203/sla-slovenski-lingvisticni-atlas-2/datoteke/SLA2\\_Foneticka-transkripcija.pdf](http://www.fran.si/203/sla-slovenski-lingvisticni-atlas-2/datoteke/SLA2_Foneticka-transkripcija.pdf).

9 Example: the entry *sredinec* 'middle finger' (SLA 1.2, 2011, 106).

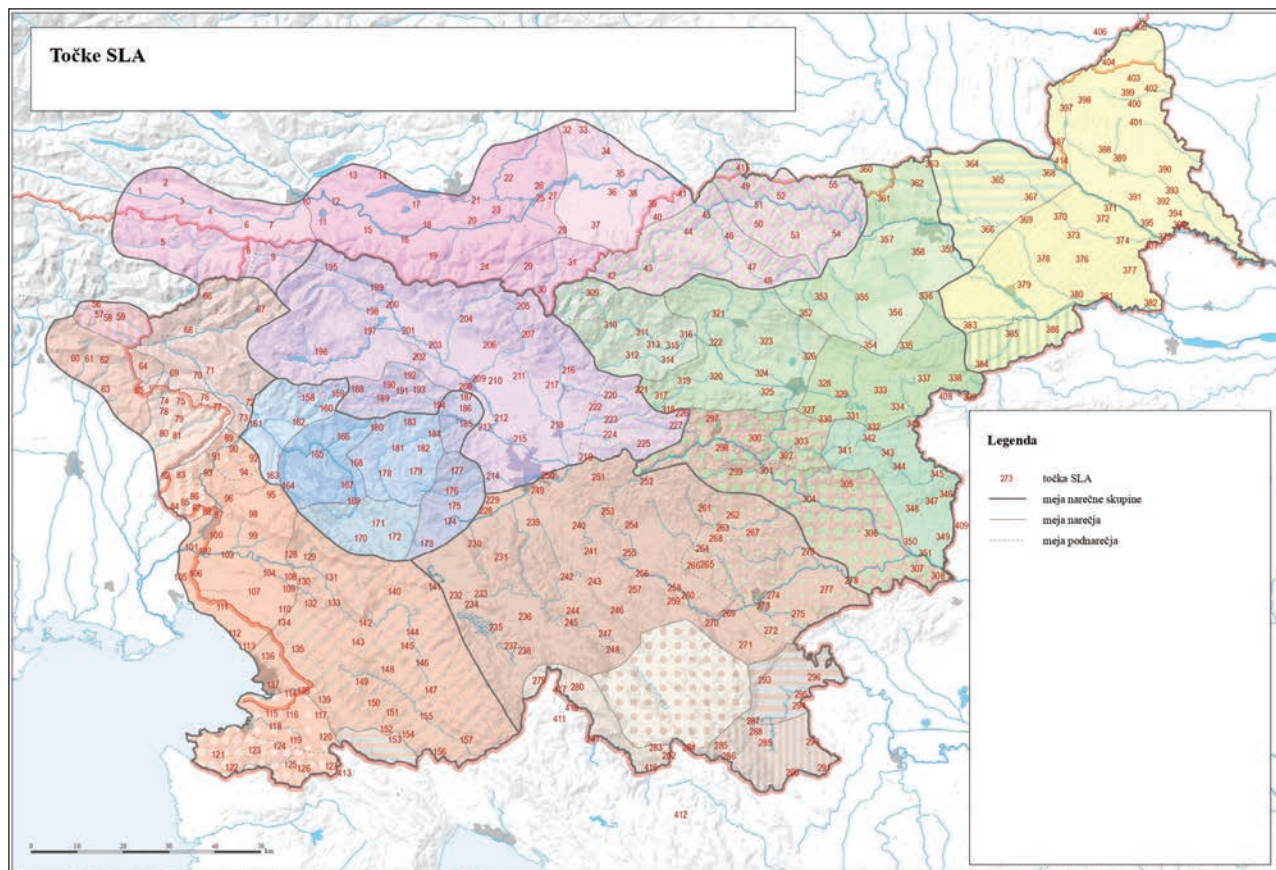


Figure 3: Network of data points in the Slovenian Linguistic Atlas (SLA 2.1, 13).

### Example of commentary structure

In this section, the structure of a commentary (see also Škofic in SLA 2.2, 16–17) is presented using an example of a commentary from the second volume of the Atlas (SLA 2), which includes lexis belonging to the *farming* semantic field, for *vodnjak* ‘well’ (SLA 2.2, 317–320, authored by Vera Smole and Mojca Horvat). The first point presents the semantic features of the material and the related issues, which are mostly based on the variation of the denotatum at hand across Slovenian regions.

The second point of the commentary, i.e. the morphological analysis,<sup>10</sup> analyses all the lexemes recorded for a

particular meaning, presenting their morphemic structure<sup>11</sup> as well as their origin. Some lexemes have not been analysed morphologically because they are unclear.<sup>12</sup>

The special features of a map when compared to other maps are presented in the third point, which lists each lexeme that is recorded in only one local dialect. For each local dialect, no more than two lexemes are mapped on the map, so this section also shows any so-called third and subsequent lexemes in individual points, which are not marked with a symbol on the map.<sup>13</sup>

To clarify many an issue, answers had to be found in additional literature relevant only to the commentary in question, so the fourth point lists bibliographic information about this.

10 On the morphological analysis methodology, see Škofic in SLA 2.2, 52–58.

11 Example of the morphemic structure of lexemes: *studnec* ‘spring’ < \*stud-e-n-ъc-ъ ← \*stud-e-n-ъ ‘cold’ (adj.), which is related to \*stud-ъ ‘cold’ (noun), \*stud-i-ti ‘to make cold’; *šteplh* < \*(štepix)-ъ ← MHG *stübich*, *stübich*, Austrian Bavarian *Stübich* ‘type of back basket’ with Bavarian German pronunciation (-b- > -p-) (I ≥ u in T039, T041, T049, T050, T051 T052, T053, T331, T333, T337, T340, T415; I ≥ o in T055) (Smole & Horvat in SLA 2.2, 317).

12 Example of lexemes with unclear origins: *lucterna* ‘well’, unclear, perhaps related to *šterna*, *plunkovec* ‘well’, unclear, perhaps \*plun-ъk-ov-ъc-ъ, related to the verb *plunkati* ‘to emit short, hollow sounds when liquid is flowing’, which is derived from \*plu-ti ‘to swim’ with an interpolated imitative -n- like in *plundra* ‘slush’ (the entry for *plunkati* in Snoj, 2003, 457), or perhaps \*plunk-a-v-ъc-ъ derived from the onomatopoeic verb \*plunk-a-ti (like *plūnka* ‘harp, zither’ (Bezljaj, 1995, 62) or perhaps \*plunk-a-v-ъc-ъ in relation to *pljuniti* ‘to spit’, *plunkati* (Smole & Horvat in SLA 2.2, 317–318).

13 For more on the SLA mapping method, see SLA 2.2, 18–19.

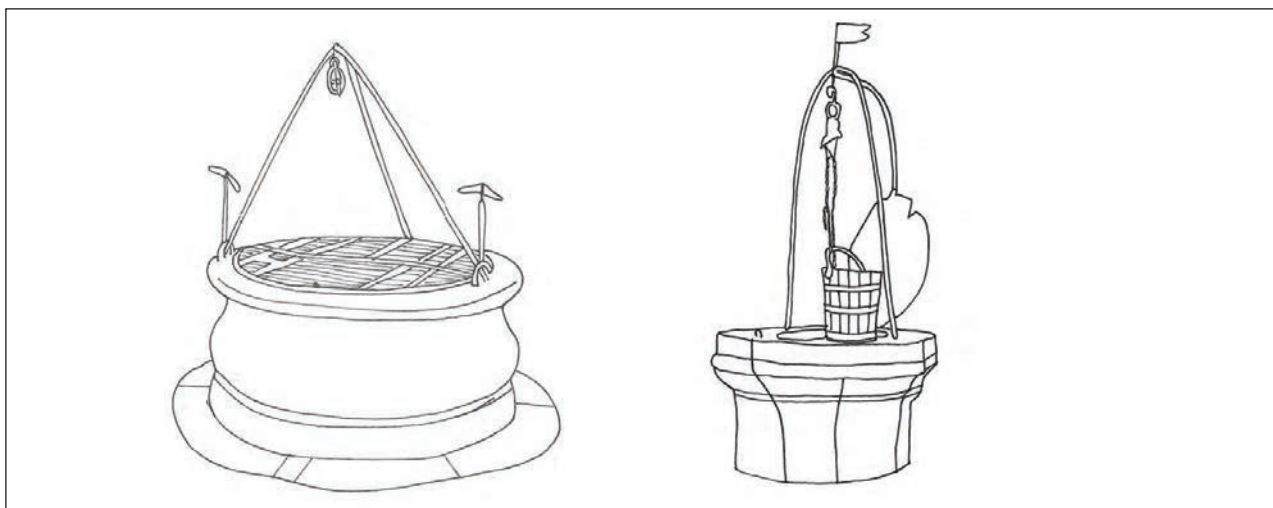


Figure 4: Example of sketch for SLA V162B.01 vodnjak.

The fifth point enables the development of an internal and external network of connections between the volumes of the SLA as it lists cross-references to maps dealing with a similar topic (for example, the commentary for *vodnjak* ‘well’ includes a cross-reference to the commentary for *studenec* ‘small spring’. This point also mentions other linguistic atlases, which cover the Slovenian language area in its entirety (e.g. *Obščeslavjanskij lingvističeskij atlas – OLA*, *Atlas Linguistique de l’Europe – ALE*) or just a part of it (e.g. *Slovenski dialektološki leksikalni atlas slovenske Istre – SDLA-SI*). There are also cross-references to the atlases of neighbouring languages that may cover a part of the Slovenian language area, i.e. *Atlante linguistico italiano – ALI*, *Atlante storico-linguistico-etnografico friulano – ASLEF*, *Új Magyar Nyelvjárási Atlasz – UMNyA* and *HJA (Hrvatski jezični atlas)*.

The sixth point is of particular interest to ethnologists as it provides an additional clarification of the topic from an ethnological point of view, accompanied by a sketch of the mapped denotatum with some regional variants.

#### Example of map

On the map, dialectal lexemes for the meaning ‘enclosed space or container, usually underground, for collecting and storing large quantities of drinking water’ appear in continuous areas, with the most extensive one being *studenec*, while another frequent expression is *pod*. The expressions *štepih* ‘well’, *štirna* ‘well’, *poč* ‘well’ and *štern* ‘well’ also appear in continuous areas.

Since 2013, SLA has been freely available online; as a PDF book, it is published on the ISJFR website (<http://sla.zrc-sazu.si/>), where non-Slovenian users can avail themselves of a table (SLA 2.1, 24–26) with all the entries in nine languages (Slovenian, English, German, French, Italian, Friulian, Russian, Croatian, Hungarian) to help them locate the question or lexeme they are interested in.

#### SLOVARRED AND GIS

The digital management of the dialect material and the making of language maps are conducted using two software tools, i.e. SlovarRed and ArcGIS.

The computer software tool was originally intended for the making of terminological dictionaries but now also serves as a database for the Slovenian Linguistic Atlas. The database is designed as an organised system for all data related to the SLA material. It also contains subdatabases, e.g. a subdatabase of recorders, a subdatabase of place names, a subdatabase of the geographic coordinates of the localities included in the network etc. The dialectal data entered in the database are verifiable owing to a link to the database of scanned card and notebook material, which is saved on a separate server (Škofic, 2008, 98).

Dialect material has been entered into SlovarRed in Slovenian phonetic transcription using the ZRCola input system.<sup>14</sup> Material that has already been collected and is located in the card and notebook index is copied to SlovarRed in citation form, i.e. in the phonetic transcription that was used at the time of recording, even though the transcription has changed over the years. This means

14 The ZRCola input system has been developed at the Research Centre of the Slovenian Academy of Sciences and Arts in Ljubljana ([www.zrc-sazu.si](http://www.zrc-sazu.si)). The input system for linguistic use is free of charge and freely accessible – it is available at <http://zrcola.zrc-sazu.si/>.



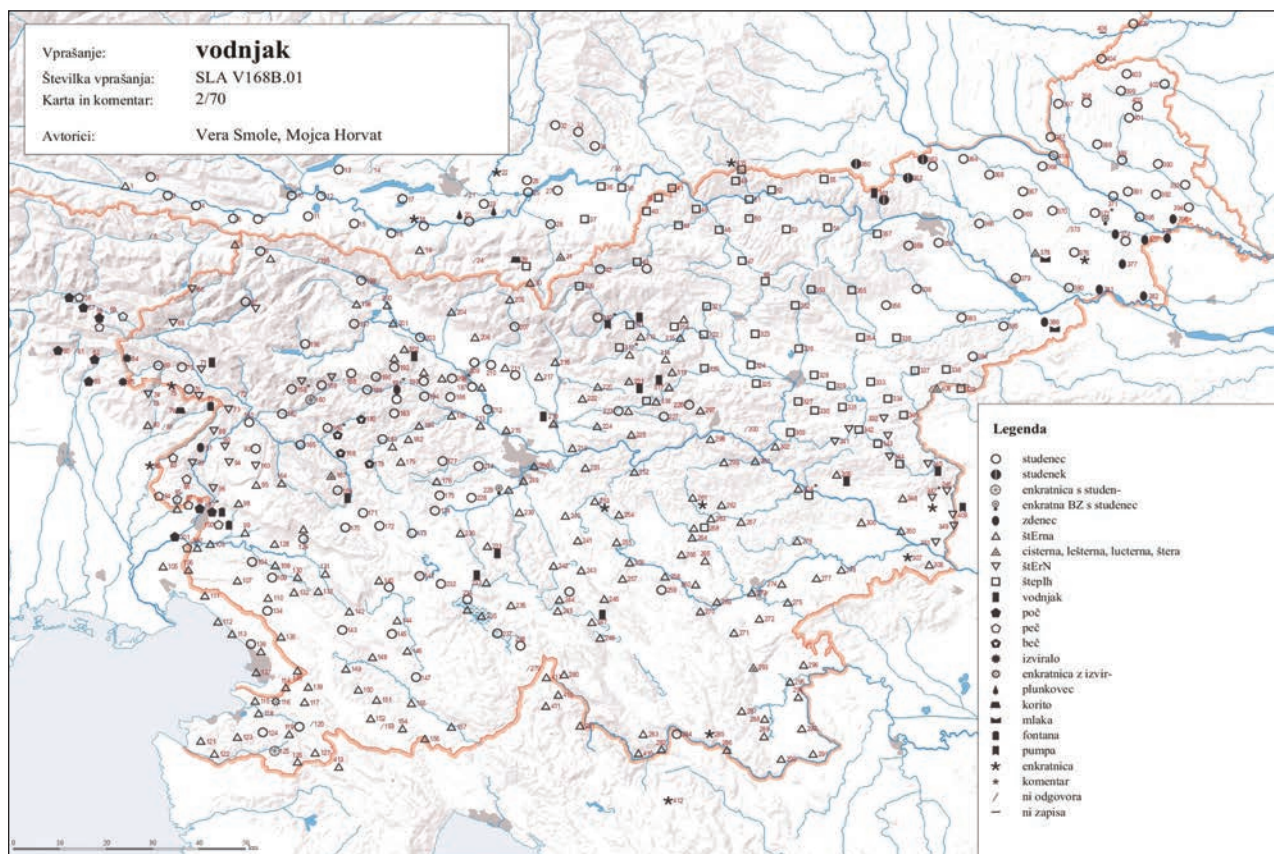


Figure 5: Map from SLA 2.1 (2016, 173), vodnjak ‘well’ (authored by Vera Smole, Mojca Horvat).

Štara ozn.	Četka	Zgornjevalc	Leto zapisa	Obč./Zasel	Odgovor zapis	Transl.	Pomočni zapis	Obč./Različica	Odgovor ID	Opombe zapis	Opombe	Odgovor	Sluj	Datoteka	Tip dat.	Označevalnik	Kraj	Vzrost	Datum v z.
+ 209	230	Šturmelj Marija	1967	DA	srednec	T			5626					V032V032 T230.jpg	Slika	Borovnica		MojcaH 5.12.20c	
+ 210	231	Rigler Jakob	1959	+	DA	tu srednji prst	T		5626					V032V032 T231.jpg	Slika	Rakova		MojcaH 5.12.20c	
+ 148	232	Logar Tane	1948	DA	srednec	N			5626					V032V032 T232.jpg	Slika	Rakovc		MojcaH 5.12.20c	
+ 211	233	Rigler Jakob	1959	DA	tu srednja	T			5655					V032V032 T233.jpg	Slika	Bogomje pri Čerknci		MojcaH 5.12.20c	
+ 211	233	Rigler Jakob	1959	DA	(srednec)	T			5626					V032V032 T233.jpg	Slika	Bogomje pri Čerknci		MojcaH 5.12.20c	
+ 149	234	Logar Tane	1948	DA	srednec	T			5626					V032V032 T234.jpg	Slika	Čerknica		MojcaH 5.12.20c	
+ 149	234	Petrovič Breda	1985	+	DA	srednec	T		5626					V032V032 T234.jpg	Slika	Čerknica		MojcaH 5.12.20c	
+ 149	234	Razdrh Intok	1972	+	DA	srednec	T		5626					V032V032 T234.jpg	Slika	Čerknica		MojcaH 5.12.20c	
+ 149	234	Petrovič Jože	1972	+	DA	srednec	T		5626					V032V032 T234.jpg	Slika	Čerknica		MojcaH 5.12.20c	
+ 149	234	Brenec Antonija	1959	§	DA	srednec	T		5626					V032V032 T234-a.jpg	Slika	Čerknica		MojcaH 5.12.20c	
+ 149a	235	Škofec-Olga	1969	DA	srednec	T			5626					V032V032 T235.jpg	Slika	Lipsenj		MojcaH 5.12.20c	
+ 212	236	Rigler Jakob	1960	DA	tu srednja	T			5655					V032V032 T235.jpg	Slika	Nova vas		MojcaH 5.12.20c	
+ 212	236	Drobnik Lidija	1981	+	DA	srednec	T		5626					V032V032 T235.jpg	Slika	Nova vas		MojcaH 5.12.20c	
+ 150	237	Logar Tane	1948	DA	srednec	T			5626					V032V032 T237.jpg	Slika	Stari trg pri Ložu		MojcaH 5.12.20c	
+ 150a	238	Murcovec Majda	1961	§	DA	srednec	T		5626					V032V032 T238.jpg	Slika	Vitinka pri Ložu		MojcaH 5.12.20c	
+ 207	239	Rigler Jakob	1960	DA	prst	T			5055					V032V032 T239.jpg	Slika	Ig		MojcaH 5.12.20c	
+ 220	240	Müller Jaka	1963	§	DA	srednec	T		5626					V032V032 T240.jpg	Slika	Grosuplje		MojcaH 5.12.20c	
+ 220b	241	Štoreš Ivanka	1970	+	DA	srednec	T		5626					V032V032 T240.jpg	Slika	Velika Ražna		MojcaH 5.12.20c	
+ 213	242	Rigler Jakob	1959	DA	srednec	T			5626					V032V032 T242.jpg	Slika	Račica		MojcaH 5.12.20c	
+ 213	242	Rigler Jakob	1959	DA	tu srednji prst	T			5080					V032V032 T242.jpg	Slika	Račica		MojcaH 5.12.20c	
+ 213a	243	Šušter Milan	1959	§	DA	srednec	T		5626	redko				V032V032 T243.jpg	Slika	Podgorica		MojcaH 5.12.20c	
+ 214	244	Rigler Jakob	1960	DA	(srednec)	T			5626					V032V032 T244.jpg	Slika	Sv. Gregor		MojcaH 5.12.20c	
+ 214a	244	Dvojak-Modič	1962	§	DA	/			409					V032V032 T244.jpg	Slika	Sv. Gregor		MojcaH 5.12.20c	
+ 215	245	Vitanič Vlastka	1959	§	DA	srednec	T		5626					V032V032 T245.jpg	Slika	Sodražica		MojcaH 5.12.20c	
+ 219a	246	Rigler Jakob	1960	DA	/	T			409					V032V032 T246.jpg	Slika	Kolenča vas		MojcaH 5.12.20c	
+ 216	247	Španič Vera	1960	§	DA	srednec	T		5626	1 a				V032V032 T247.jpg	Slika	Ribnica		MojcaH 5.12.20c	
+ 216	247	Pakič Marjana	1974	+	DA	srednec	T		5626	1 b				V032V032 T247.jpg	Slika	Ribnica		MojcaH 5.12.20c	
+ 216	247	Rigler Jakob	1959	DA	tu srednja prst	T			5080					V032V032 T247-a.jpg	Slika	Ribnica		MojcaH 5.12.20c	
+ 217	248	Rigler Jakob	1959	DA	tu srednja prst	T			5080					V032V032 T248.jpg	Slika	Dolnja vas		MojcaH 5.12.20c	

Figure 6: SlovarRed 2.1 software tool with material for srednec ‘middle finger’.

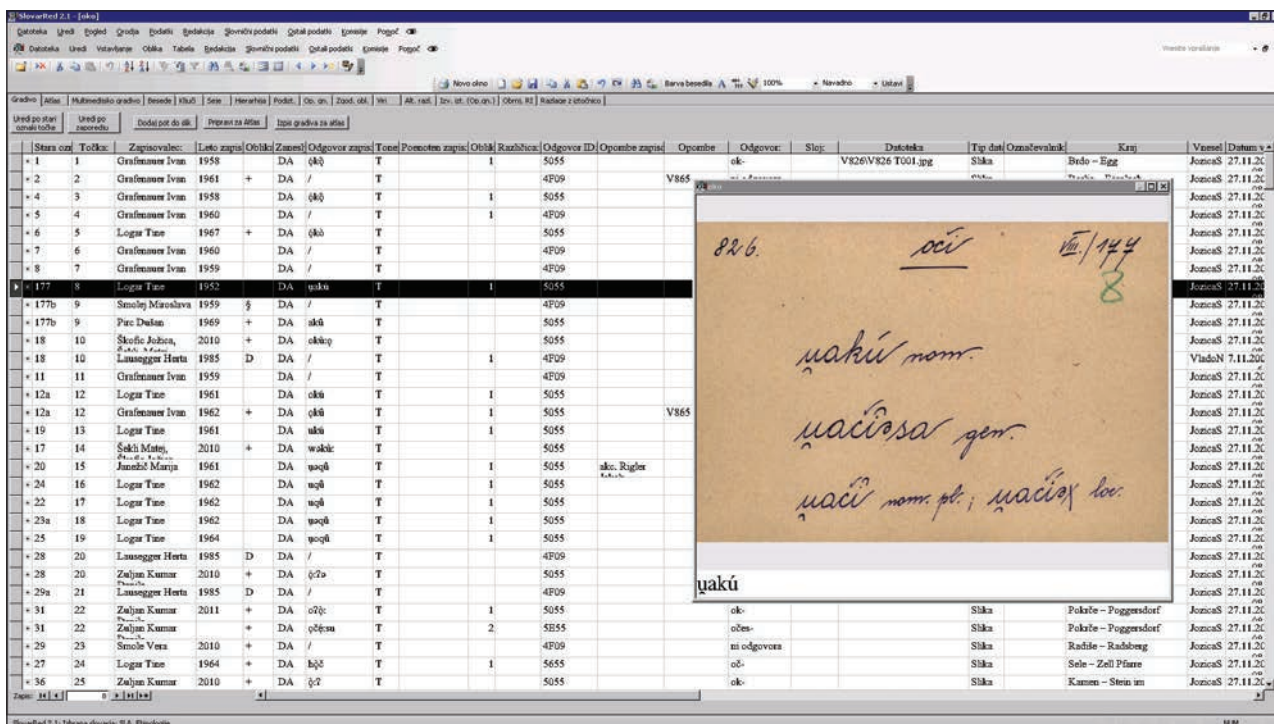


Figure 7: View of the scan of an original dialectal record.

that phonetic records are not harmonised, so a purely lay comparison between individual indices may lead to incorrect interpretations.<sup>15</sup>

The figure below shows a screenshot of SlovarRed, with the entry *sredinec* ‘middle finger’ selected.

For each lexeme or data point, a double click on the far left of the screen displays the scanned original record of the entered material either on a card or in a notebook.<sup>16</sup> The chosen entry is *oko* ‘eye’.

The SlovarRed database is connected with the ArcGIS program, which is in turn connected with a geographic information system (GIS) that displays the interpreted language data on a language map. ArcGIS enables different ways of mapping, i.e. of displaying language data on a map. It was developed for SLA in cooperation with members of the ZRC SAZU Institute of Anthropological and Spatial Studies, based on data provided by GURS (Surveying and Mapping Authority of the Republic of Slovenia) (Škofic, 2008, 98) ArcGIS enables one to freely add different layers. The screenshot below shows a map drawn in ArcGIS for *sredinec* ‘middle finger’ (SLA 1.1, 107), which has been added a layer with dialects.

The final language map as found in the published version of *Slovenski lingvistični atlas 1 – človek (telo,*

*bolezni, družina)* (Slovenian Linguistic Atlas 1 – Human (Body, Illnesses, Family)) looks like this:

Some maps are based not only on symbols, but isoglosses as well. This is made possible by the ArcGIS program with the option of manually drawing isoglosses, which has been utilised to enrich the expressiveness of a map itself or to highlight a certain phonetic or sometimes morphological phenomenon. The isogloss on the map for *oko* ‘eye’ (SLA 1.1, 59) presents and demarcates the area where the so-called tertiary shift of the circumflex has taken place, which is an accent innovation characteristic only of the displayed local dialects, not of Slovenian in general.

FRAN AND I-SLA

Since 2014, SLA has been available for browsing as part of the Fran web portal ([www.fran.si](http://www.fran.si)), which is a portal of the ZRC SAZU Fran Ramovš Institute of the Slovenian Language and contains all fundamental dictionaries for Slovenian. Currently, it integrates 32 dictionaries (eleven general, two etymological, five historical, fourteen terminological, six dialect dictionaries), one linguistic atlas, two language

15 For the non-tonemic Inner Carniola local dialect SLA T155 Trnovo (Ilirska Bistrica), there are multiple records, including one from 1974, which is written in the old phonetic transcription – material for V826 oko ‘eye’: *okū* ‘eye’, and another from 1984, which is written in the new transcription: *o'ku*: ‘eye’. At first glance, it might wrongly be concluded that the local dialect used to have tonemic accentuation and no longer has it.

16 While both the card and notebook indices are digitised, only the scanned card material is (partly) linked to SlovarRed for the time being.

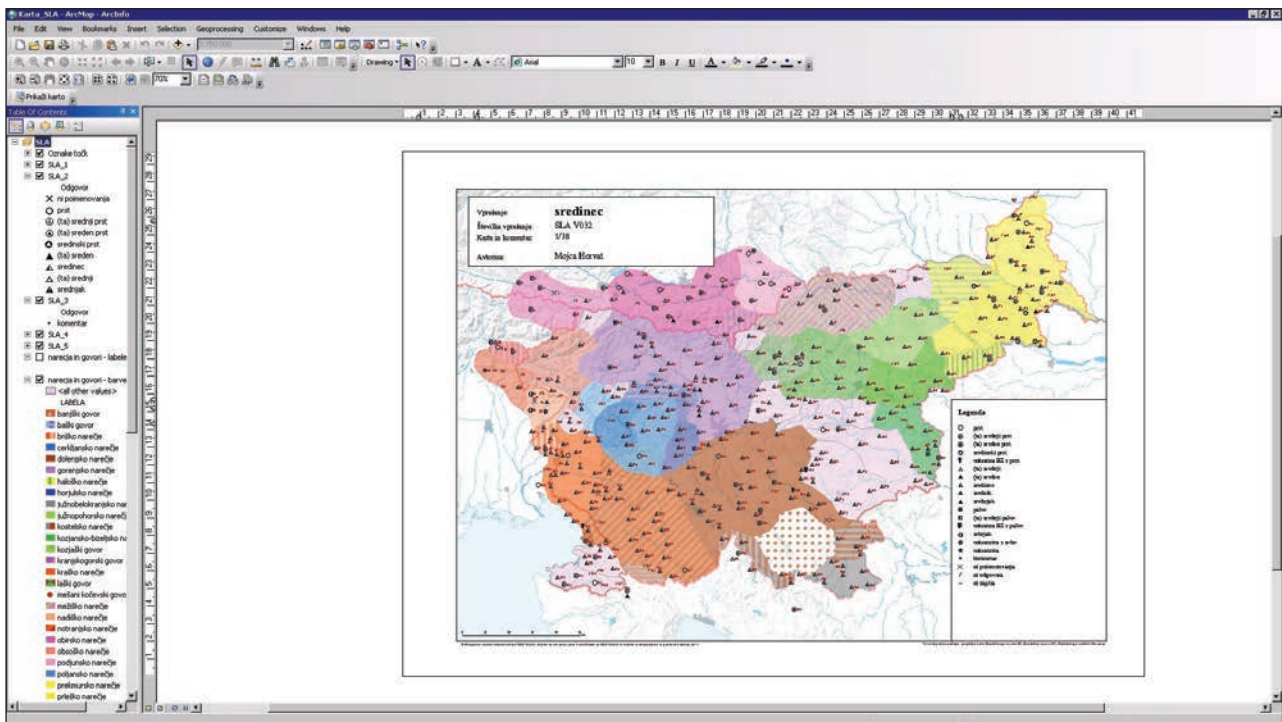


Figure 8: Map from SLA 1.1 in the ArcGIS program with a dialect layer added.

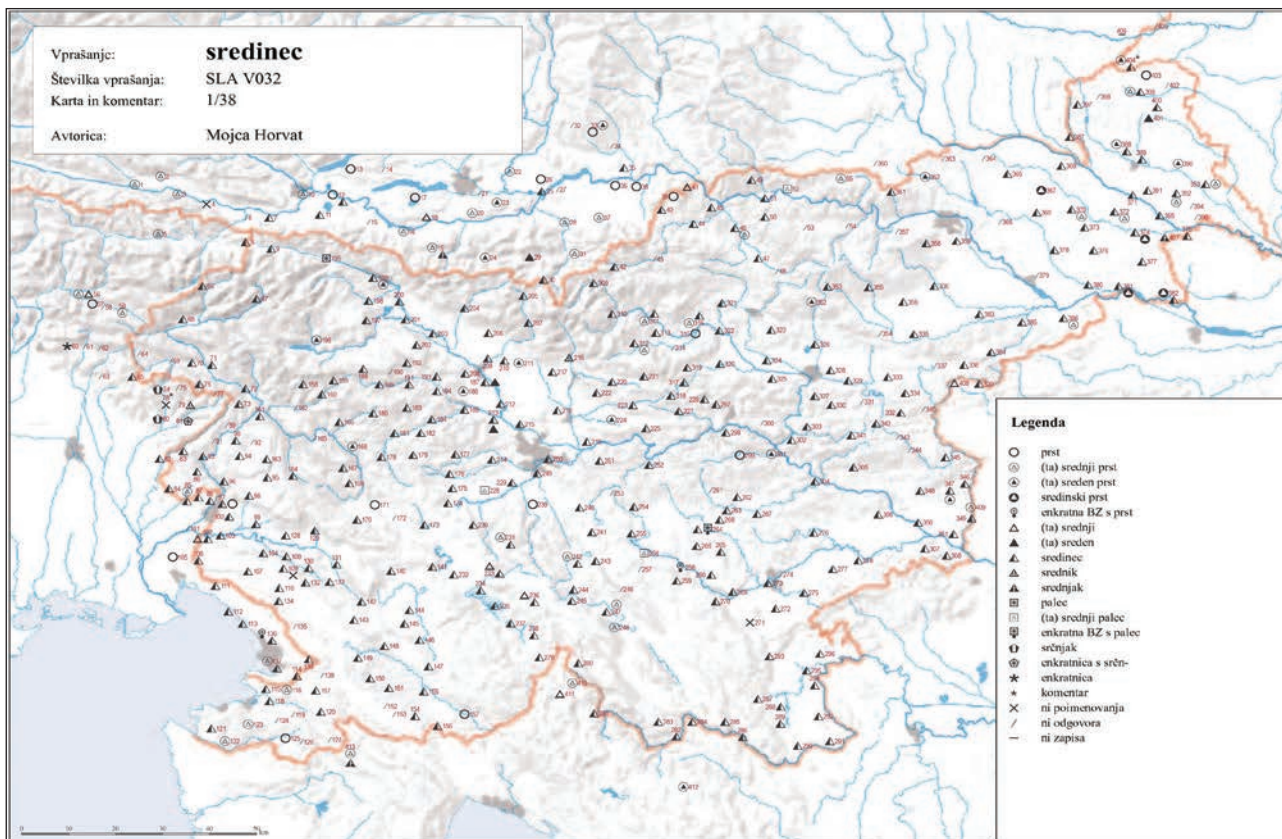


Figure 9: Map from SLA 1.1, 107, sredinec ‘middle finger’ (authored by Mojca Horvat).

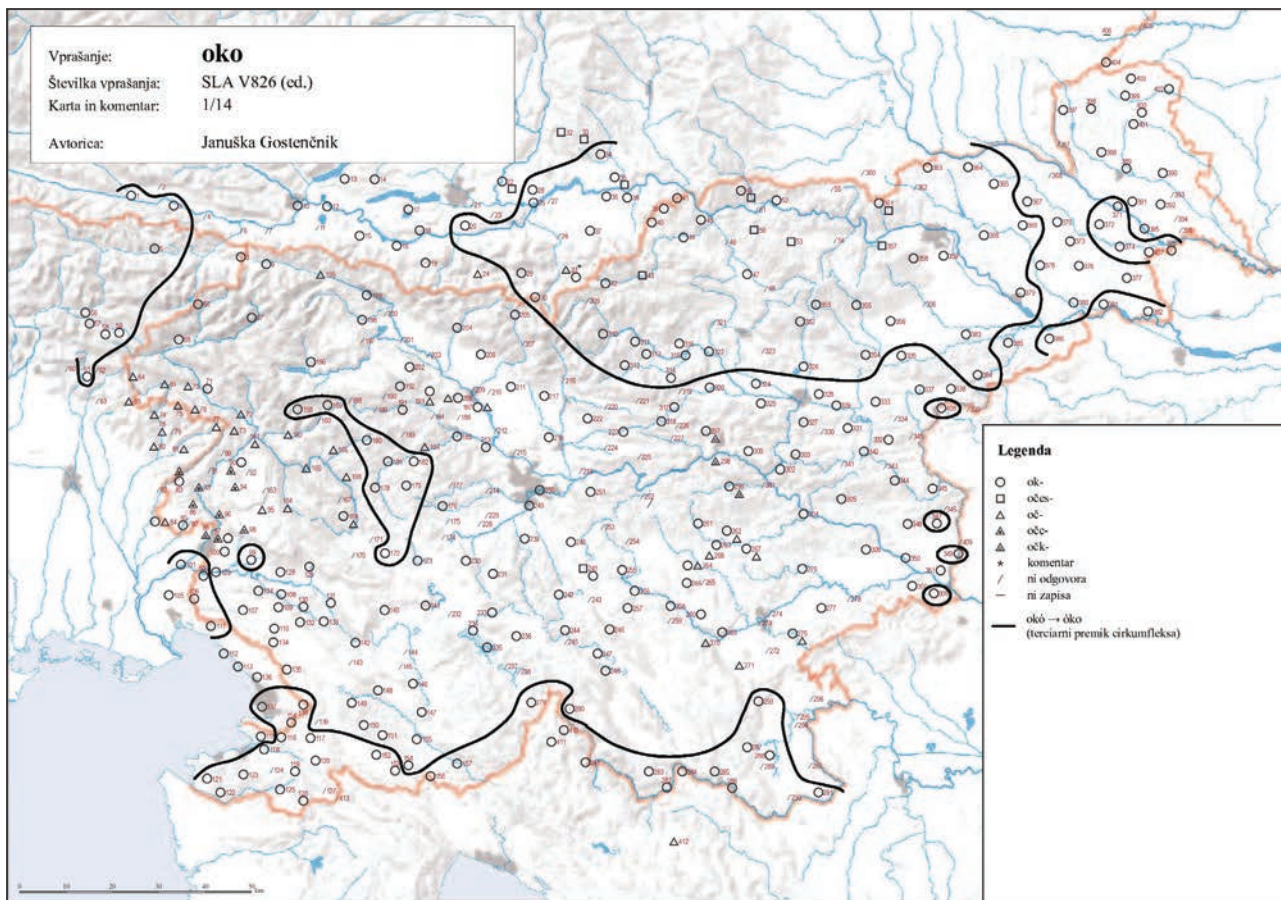


Figure 10: Map from SLA 1.1, 59, *oko* ‘eye’ (authored by Januška Gostenčnik).

counselling services and numerous links to external language corpora, so it functions like one huge dictionary. It can be characterised as presenting Slovenian from the perspective of its different versions in terms of varieties, time and space. The portal enables searching through all dictionaries simultaneously or limiting the search to only one dictionary or atlas that the user is interested in. Search results enable clicking between dictionaries, so it is possible, for example, to jump from the dictionary of standard language to historical dictionaries, terminological dictionaries or the linguistic atlas.

Moreover, an interactive version of the Atlas, the so-called e-SLA, is in the making at the Institute; it is being prepared by Jožica Škofic, a dialectologist, and Jernej Vičič, a language technologist. The idea of the interactive linguistic atlas has already been presented in public (Škofic, 2013, 95–111), so only its essential characteristics are noted here. It involves the preparation of a “truly interactive linguistic atlas by using the XML format and basing

it on the interconnectedness of different databases, while undoubtedly upholding the fundamental importance of a judicial (in terms of linguistic theory) analysis of the language material (in this case, the lexis of Slovenian dialects presented in the “traditional” linguistic atlas upgraded with researcher- and user-friendly electronic tools” (Škofic, 2013, 95–111). The intention is for the planned atlas to present and integrate data from databases so as to enable 1. adding or removing views of data on a map – e.g. switching different layers on and off; 2. selecting the mapped data on a given map; 3. direct browsing through data from the SlovarRed database; 4. linking to audio and video recordings from selected local dialects; 5. linking to online dialect dictionaries; (e. g. Narečna bera, 2013) 6. linking to online dialectological corpora; (cf. Govorni korpus Koprive, 2020) 7. linking to online information on the author of the record, the place<sup>17</sup> and bibliographic information on the research into particular local dialects; 8. switching between the map, commentary, index and morphological analysis etc.

17 E. g. information on the locality of the local dialect of Horjul (horjulsko n.) (cf. Wikipedia, 2022).

## SLOVENSKA NAREČNA RAZNOLIKOST V SLOVENSKEM LINGVISTIČNEM ATLASU

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### POVZETEK

*Narečna raznolikost slovenskega jezika je metodološko dovršeno predstavljena v temeljnem delu slovenske dialektologije, tj. v Slovenskem lingvističnem atlasu (dalje) SLA, katerega prvi zvezek je izšel leta 2011, drugi pa leta 2016. SLA prinaša v jezikoslovni luči interpretirano predmetnost iz celotnega slovenskega jezikovnega prostora. V njem je narečno gradivo prostorsko prikazano na t. i. besednih jezikovnih kartah in razloženo v strukturno enotnih komentarjih. Na primeru izbranih jezikovnih kart in komentarjev bodo v članku prikazane metode dela pri SLA, v okviru tega pa tudi posamezne fonetične, besedotvorne in leksične zanimivosti slovenskih narečij. Od leta 2014 je SLA prosto dostopen na inštitutskem spletnem portalu Fran ([www.fran.si](http://www.fran.si)), ki vključuje tudi vse preostale temeljne jezikovne priročnike slovenskega jezika. V pripravi je tudi interaktivni atlas oz. i-SLA.*

**Ključne besede:** slovenska narečja, Slovenski lingvistični atlas (SLA), geolingvistika, informacijske tehnologije v jezikoslovju, Geografski informacijski sistemi (GIS)

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